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Pan-European Response to the ImpactS of COVID-19 and
future Pandemics and Epidemics

An Assessment Framework for Policy Measures Adopted in Europe During the COVID-19 Pandemic

Deliverable 1.1

PERISCOPE

Pan-European Response to the ImpactS of COVID-19 and future Pandemics and Epidemics

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Taxonomy of policy responses and impact assessment mapping

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EXECUTIVE SUMMARY

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This document contains a conceptual framework for the classification and impact assessment of policy measures adopted in Europe since the beginning of the COVID-19 pandemic. We develop a framework that will guide all partners in PERISCOPE in their research endeavours, with the goal of evaluating which measures proved to be most effective since the beginning of the pandemic. PERISCOPE aims at collecting data on impacts, as well as on the policy measures and governance choices adopted by policymakers at all levels of government. We thereby adopt a taxonomy of impacts and a taxonomy of policy measures. In laying the foundations for our assessment, we adopt a theoretical framework that goes beyond the notion of economic growth and GDP, as well as beyond the cost-benefit analysis of policies, to embrace a framework based on three interrelated concepts: subjective well-being, resilience, and sustainability.

We focus on the "policy mix" adopted by policymakers at all levels of government in Europe. This implies that we collect information on the policies adopted and match policy types with potential impacts, to enable a comparative analysis of measures adopted in different portions of the European policy space. This specific focus has three important advantages for our research project: (i) it enables policy learning by offering a comprehensive view on how governments have reacted to the pandemic; and (ii) it allows us to develop policy guidance for future policy decisions; (iii) it allows for the identification of the economic, social and environmental dimensions that were the primary focus of policy measures, as well as the areas that were less considered: this, in turn, will be the basis for our innovation challenge, organised around innovative solutions that address unmet (or less met) needs.

PERISCOPE collects information also on the **policy process**, not only policy outcomes. We are interested in understanding all governance aspects related to the policy measures adopted, from the use of scientific inputs in policymaking to the organisation of decision-making within governments, to the dissemination and communication of the policies adopted. This includes an analysis of how different countries handle multi-level governance, by decomposing the policy mix into decisions adopted at the national and decisions adopted at the subnational level.

It is important to stress that PERISCOPE will not be able to assess in detail each of the thousands of policy actions that have been undertaken during the pandemic: at this stage, **mapping, clustering and matching policy approaches or types of policy measures with indicators of well-being, resilience and sustainability** is our preferred choice to ensure policy learning and benchmarking of national and subnational experiences.

INTRODUCTION

INTRODUCTION

This document contains a conceptual framework for the classification and impact assessment of policy measures adopted in Europe since the beginning of the COVID-19 pandemic. The ambition is to develop a framework that can guide all partners in PERISCOPE in their research endeavours, with the goal of evaluating which measures proved to be most effective during the past year.

The following clarifications are essential in order to fully characterise the effort made within PERISCOPE.

First, **PERISCOPE is collecting data on impacts, as well as on the policy measures and governance choices adopted by policymakers** at all levels of government. Section 1 below illustrates the full taxonomy of impacts and policy measures. We consider this section to be a "living document", subject to revision in the coming weeks. As explained in Section 1, we are examining both direct and indirect/ancillary impacts of policy measures, and both short- and likely medium- to long-term impacts.

Second, the first weeks of PERISCOPE have been dedicated i.a. to a discussion of an **overall framework to adopt for the evaluation of the impact of policy measures**. One key issue for such a framework is: What do we mean by "most effective"? Effectiveness, in public policy, typically refers to the achievement of the goals set by the policymaker. Traditionally, in policy evaluation, effectiveness has been associated with efficiency, under a **cost-benefit analysis framework**; however, the limits of using traditional cost-benefit analysis have been highlighted by several contributions over the past decades, especially when important non-monetary effects, as well as important distributional effects can be identified (see Adler, 2014, 2020; Sunstein 2014). In PERISCOPE, we decided to adopt a different framework, based on three interrelated concepts: **subjective well-being, resilience, and sustainability**. Effectiveness will then be gauged against a framework that combines these three dimensions. Section 2 explains in detail the consequences of adopting this different framework when identifying and analysing impacts.

Third, one way in which PERISCOPE can contribute to the state of the art, as well as to policy learning over time, is to **focus on the "policy mix" adopted by policymakers at all levels of government in Europe**. This implies that we collect information on the policies adopted and match policy types with potential impacts, to enable a comparative analysis of measures adopted in different portions of the European policy space. This specific focus has three important advantages for our research project: (i) it enables policy learning by offering a comprehensive view on how governments have reacted to the pandemic; and (ii) it allows us to develop policy guidance for future policy decisions; (iii) it allows for the identification of the economic, social and

environmental dimensions that were the primary focus of policy measures, as well as the areas that were less considered: this, in turn, will be the basis for our innovation challenge, organised around innovative solutions that address unmet (or less met) needs. Section 3.1 illustrates the policy mix concept in more detail.

Fourth, PERISCOPE not only collects information on policies but also, very importantly, on the **policy process**. We are interested in understanding all governance aspects related to the policy measures adopted, from the use of scientific inputs in policymaking to the organisation of decision-making within governments, to the dissemination and communication of the policies adopted. A "fact sheet" per country and subnational levels of government should thus be produced, including pre-existing preparedness on multiple areas (e.g. health care, financial preparedness, crisis management, stockpile of protective gears): these will then be matched with the policy mixes adopted, and our assessment of their effectiveness, in order to provide comparative knowledge. Section 3.2 explores this issue.

Fifth, our analysis of decision-making should also enable an analysis of **how different countries handle multi-level governance**, by decomposing the policy mix into decisions adopted at the national and decisions adopted at the subnational level. This will be done mostly through comparative case studies, which will strive to capture differences in political (de)centralisation at the national level. This should provide us with a more granular view of how decisions are being taken, and how responsibilities are allocated; at the same time, it will give us the possibility to explore existing approaches to experimental policymaking in multi-level governance contexts (see Sabel and Zeitlin 2010). Section 3.3 provides more details on this aspect.

It is important to stress that PERISCOPE will not be able to assess in detail each of the thousands of policy actions that have been undertaken during the pandemic: at this stage, **mapping, clustering and matching policy approaches or types of policy measures with indicators of well-being, resilience and sustainability** is our preferred choice to ensure policy learning and benchmarking of national and subnational experiences. Given the number of policy measures available (for the past 12 months alone, CoronaNet has identified 58,000 policy decisions across the 195 countries covered by this comprehensive dataset), it is impossible to provide a detailed impact assessment of each measure.

PERISCOPE aims to carry out the following activities:

1.   *Cluster policy measures based on type* (as in table 2 below).

2.   *Classify policies according to their timing (introduction/modification/termination)*.

3.   *Couple observed policy measures with a stringency index* (CoronaNet Mobility Restiveness Index, Oxford Policy Tracker, or Gros et al, 2021). See Section 1.2.1.

4.   *Match the policy types with possible direct and ancillary effects*, based on the taxonomy presented in Section 1.1.

5.   *Build a representation of "policy mixes" adopted in each country/region*, by showing the intensity of coverage of different impacts.

6.   *Discuss and (where possible) assess interactive effects* of policies included in specific mixes, including risk-risk trade-offs.

7.   *Match policy types with indicators of resilience, wellbeing and SDGs*, as described in Section 2 below.

8.   *Provide a comparative analysis of policy mixes across countries*.

9.   *Observe possible transferability of policy practices.*

10.   *Convert findings into guidance for policymakers.*

Step 1
Cluster policy measures based on type

Step 2
Distribute policies according to timing.

Step 3
Couple observed policy measures with a stringency index

Step 4
Match the policy types with possible direct and ancillary effects

Step 5
Build representative "policy mixes"

Step 6
Discuss/assess interactive effects

Step 7
Match policy types with indicators of resilience, subjective well-being and the SDGs

Step 8
Comparative analysis of policy mixes

Step 9
Observe possible transferability of practices

Step 10
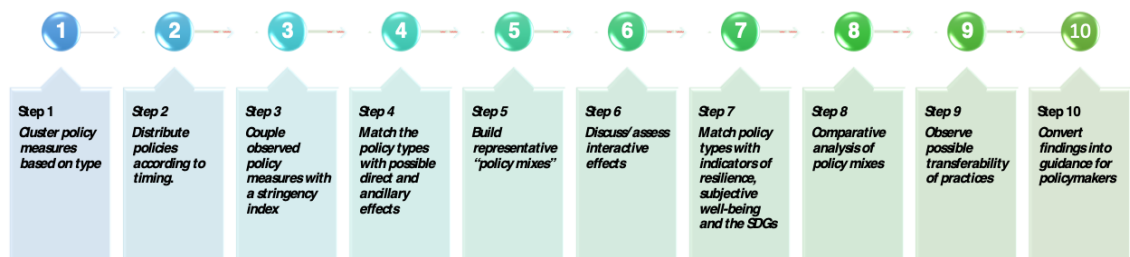Convert findings into guidance for policymakers

Figure 1 - **A ten-step approach to assessing the impacts of the COVID-19 pandemic in PERISCOPE**

1.   PERISCOPE's Taxonomy of Impacts and Policy Measures

1. PERISCOPE's Taxonomy of Impacts and Policy Measures

The first step to develop an assessment framework in PERISCOPE is to adopt a taxonomy of policy measures adopted during the pandemic. These are presented below.

1.1 Taxonomy of impacts

PERISCOPE looks at a large number of health, economic, social and behavioural impacts of the pandemic and at related policy measures. This collection should enable a "before and after" evaluation, as in the case of excess mortality statistics, which infer the actual impact of the pandemic from the differential in number of deaths between a representative year and 2020. Specifically, we collect information on direct and indirect health, economic, social and environmental indicators, as well as human rights violations.

1.1.1 Health impacts

Covid-19 itself, but also the non-pharmaceutical interventions employed to curb its spread have impacts on physical health, mental health, health equality and on vulnerable groups, that will be the subject matter of our project. Also, potential positive impacts are at least theoretically plausible, and will be observed, in parallel with neutral and negative impacts (that have and will continue to dominate research, analysis and holistic policy guidance).

- **DHI - The Direct Health Impacts of the pandemic** includes the counts of infected individuals over time in the general population, infected healthcare workers, hospitalized patients, and COVID-19 related fatalities; as well as indicators such as case fatality rate, infection fatality rate, etc. It is relatively easy to retrieve most of these data from various sources, such as: ECDC, the Lancet Commission, Johns Hopkins, Oxford, Our World in Data, etc.), although some other data is more elusive, e.g., data on concrete health consequences (morbidity), continuous, consistent, and comparable data at the subnational level, or in about the case of Long Covid. These data can also incorporate distributional impacts, such as, e.g., about the differential impact on the most vulnerable individuals based on pre-existing conditions (see e.g. CKD patients); and impacts on different ethnic groups (on which data are not widely

available in Continental Europe, due to especially historic trauma that often prevents e.g. Jewish and Roma communities from supporting data collection on racial and ethnic origin. Given the controversies and the repeated use of racial and ethnic data for purposes that are illegal or contrary to the original intention (and therefore quite possibly contrary to European data protection standards), few NGOs advocate for data collection on ethnic and racial origin (Farkas, 2017, p31-35).

- *AHI - Ancillary Health Impacts* concern all the health-related indicators that were affected by the pandemic, but not directly caused by Covid-19. These can be related to several factors:

  o   Absent or delayed care, monitoring, and prevention, due to the fact that healthcare facilities and personnel were over-burdened with COVID cases, or that individuals (even individuals with health problems) decided not to visit healthcare facilities for fear of being infected;

  o   Changes in both patient and clinician conditions;

  o   Health system re-organisation;

  o   Longer-term impacts such as post-traumatic stress diseases and post-traumatic growth (Jayawickreme et al, 2020).

Some indicators could also have been positively affected by the pandemic. For example, mortality in the workplace may have decreased in some cases due to telework or the suspension of work on construction sites. Changes in lifestyle could lead to reduced health risks in some circumstances.

Overall, it is particularly important to understand the effects of the pandemic on non-communicable diseases, including both disease burden and health service provision ("collateral damage"), and how to minimize these effects in the future, but also to understand why some health benefits occurred ("collateral benefits"). A good reference in this respect is the study on excess mortality by Morgan et al. (2020) for the OECD; and more specific studies such as Ball et al. (2020) on the indirect impact of the COVID-19 pandemic on services for cardiovascular diseases in the UK. Methodologically challenging are concurrent changes to background mortality and morbidity, e.g., a drop in stress-induced cardiovascular events due to lockdown while worsened management increases events at the same time. IHS (2020) provides a map of collateral damage generated by the pandemic, as shown in Figure 2 below.
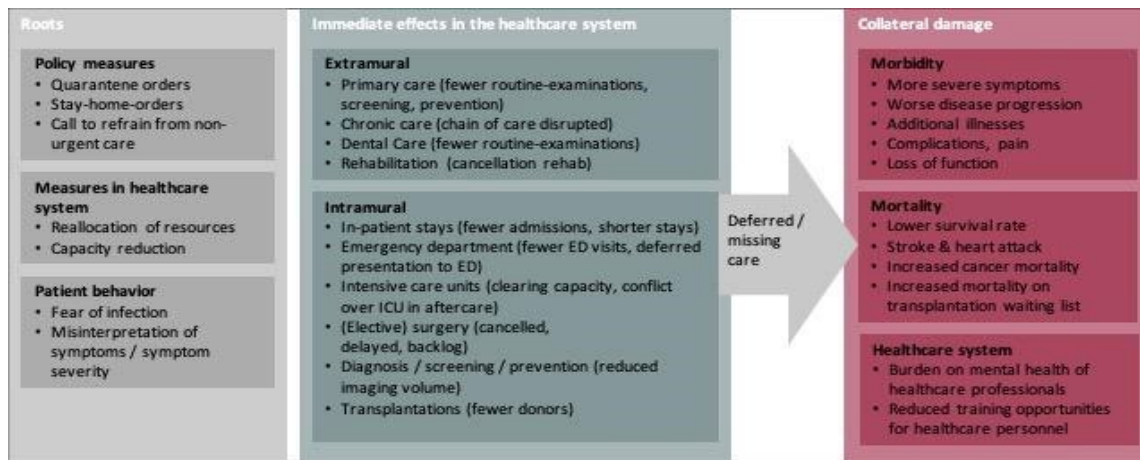
Figure 2 - **Framework: pathways of COVID-19 collateral damage in the healthcare system**.
Source: IHS (2020)

As healthcare can also be prone to overuse, impact of an ancillary nature could also be reduction of wasteful spending. This is another avenue of investigation that can be taken in the project.

● ***MHI - Mental Health Impacts.*** The Lancet recently argued that there is "mounting evidence that the COVID-19 pandemic is having monumental effects on the mental health and wellbeing of populations worldwide". These include impacts on stress, depression, anxiety and other mental health consequences. Some existing studies are trying to map these impacts for the population as a whole in specific countries (e.g., Brooks et al, 2020; Rubin et al, 2020; Dawel et al, 2020; Winkler et al, 2020); whereas other studies look specifically at psychiatric patients, healthcare workers, or specific portions of the population (e.g., female adolescents). A good repository of articles is curated by the journal Globalization and Health here. Salari et al. (2020) provide a visual map of mental health impacts, shown in Figure 3 below.
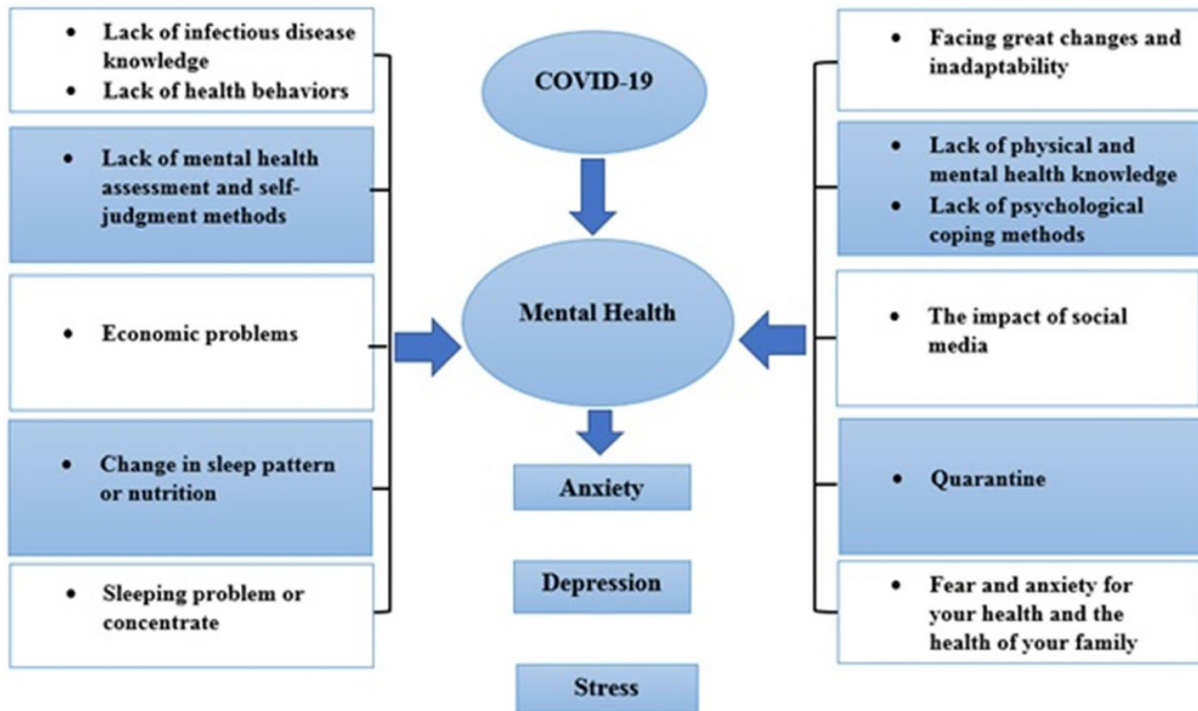
Figure 3 – Visualisation of the mental health impacts of the pandemic- Source: Salari et al. 2020

In the UK, the Local Government Association and the Directors of Public Health produced an extensive and interesting taxonomy of mental health impacts, reproduced below in Figure 4. Some people will experience trauma – that is, harmful experiences or life-threatening events that can have lasting impacts on mental, physical, emotional and/ or social well-being. It is a normal part of a human response to major emergencies and may not require specific medical support unless Post Traumatic Stress Disorder (PTSD) is diagnosed. But there is a range of harmful impacts that need to be considered, including anxiety, depression, inability to cope, grief and loss from bereavement, domestic abuse and crowd behaviour which creates social norms which reinforce harmful behaviour (for example, panic buying that makes those vulnerable less able to cope). There may be additional stress for people who must make major lifestyle changes, such as people living in parts of the country affected by stricter restrictions, people who are self-isolating, people who have had procedures or medical treatment postponed (this could include children or young people waiting for Child and Adolescent Mental Health Services (CAMH) assessment).

Immediate mental health impact of COVID-19 across life course

	Pre-term	0-5 years	School years	Young adults	Working age adults	Old age
Key issues to consider	Anxiety about impact of COVID on baby Financial worries Anxiety about delivery and access to care Isolation	Coping with significant changes to routine Isolation from friends Impact of parental stress and coping on child	School progress and exams Boredom Anxiety or depression or other mental health problems Isolation from friends Impact of parental stress Carer stress	Self isolation at university and away from family Carer stress Difficulty accessing usual support networks Job and financial anxiety Relationship stress	Balancing work and home Being out of work Carer stress Anxiety about measures and family or dependents or children Financial worry Isolation	Isolation and disruption of routine Anxiety from being dependent on services Financial worry Fear about impact of COVID if infected Carer stress
Staff/ volunteers	Cumulative load of stress from significant changes. Traumatic incidents. Isolation from work colleagues. Having to manage working from home. Potential bullying from or to others as part of not coping. Frontline staff working under exceptional pressure.					
Loss	Loss of loved ones dying may be particularly severe and grieving disrupted because of inability to do normal grieving rites eg being physically close to dying person, have usual funeral rites, attend funeral etc.					
Specific issues	Impact of delayed diagnoses and treatment (eg chronic conditions,surgery, people living in pain). Suicide and self harm risk for most at risk populations. Members of faith communities may feel disconnected because of the changes to public worship. Domestic abuse may be issues across life course. Drug and alcohol issues. People reliant on foodbanks or on low incomes or self-employed may have additional stress. People with learning disabilities and/or autism will have additional needs which should be considered in detail. Student populations may have particular issues. Impact of delayed diagnoses and treatment (eg chronic conditions, surgery, people living in pain) because of backlogs or people worried about accessing health services. Impact of changes to level of restrictions in local areas.					

Figure 4 - Immediate mental health impacts of COVID-19 across life course. Source: UK Local Governments Association

These impacts could be **short-term (for the duration of the epidemic), medium-term (2 year) or long-term**. They can be experienced by all sections and all ages of society. Consequences could include increased demand on local government and the NHS, increased suicides, suicide attempts and self-harm, increased cost to public services and increased workplace sickness absence due to stress.

Table 1 Short, medium and long term mental health impacts of the pandemic. Source: UK Local Government Association

Timing of impact	Type of impact
Short-term impacts	• *Anxiety caused by concerns about outbreak and possible illness.* • *Loneliness caused by self-isolation and social distancing.* • *Stress caused by adjusting to new routines, financial and employment insecurity.* • *Depression caused by lack of activity or exercise, loss of normal routine, increased caring role.*
Medium- term impacts	• *Post-traumatic stress caused by impact of outbreak.* • *Depression caused by loneliness and isolation.* • *Increased risk of suicide and self-harm.* • *Relationship breakdown.*
Long-term impacts	• *Grief caused by bereavement.* • *Recurrence of previous mental health problems.* • *Support people to return to normality and/or prepare for further waves of infections.* • *Worsening of other health and wellbeing inequalities for children and young people.* • *Developmental and behavioural issues arising due to isolation or social distancing at key developmental milestones.* • *Development of mental health disorders as a result of stress.*

As reported in the Lancet, on Oct 6, 2020, the WHO published the results of a survey of the impact of COVID-19 on mental, neurological, and substance use (MNS) services in 130 WHO Member States. The survey revealed that most countries are experiencing some disruption to MNS services, with the greatest impact on community-based and prevention and promotion services. Reasons for disruption included an insufficient number or redeployment of health workers to the COVID-19 response (in 30% of countries), use of mental health facilities as COVID-19 quarantine or treatment facilities (in 19% of countries), and insufficient supply of personal protective equipment (in 28% of countries). Although 116 countries (89%) reported that mental health and psychological support was part of their national COVID-19 response plans, only 17% said they had committed additional funding for this.

A very important source of information for PERISCOPE is the Health Policy Platform, managed by Mental Health Europe, a PERISCOPE partner. The EU Health Policy Platform is an interactive tool to boost discussions about public health concerns, share knowledge and best practices to support health and social workers, look at mental health impact on citizens and specific groups and identify and address knowledge gaps. The platform held a first webinar in October 2020 on "Addressing Mental Health Needs of Healthcare Workers".

Key official publications in this domain include the WHO survey of 169 long-stay institutions in the WHO European Region to assess the impact of the COVID-19 pandemic on services, staff, service users and residents with psychosocial and intellectual disabilities; and the WHO factsheet on mental health impacts on vulnerable populations, which intersects with our next item, dedicated to health inequalities. A briefing note was published by "United for Global Mental Health", summarising some of the key aspects. Impacts on adolescents have been studied and reported on by UNICEF, whereas impacts on older adults are the subjects of study in articles such as Vahia et al. (2020). For an interesting review of the literature, see Saladino et al. (2020).

Finally, Pierce et al. (2020) in a study of the UK population found that by late April 2020, mental health in the UK had deteriorated compared with pre-COVID-19 trends. Policies emphasising the needs of women, young people, and those with preschool-aged children are likely to play an important part in preventing future mental illness.

1.1.2 Health inequalities

Health inequalities have increasingly become subjects of attention since the beginning of the pandemic and evidence is emerging about the unequal impact of COVID-19 and policy measures on different societal groups. Moreover, it seems that such unequal impacts were not fully anticipated or taken into account, at least during the design and implementation of initial response plans, as documented by the WHO Regional Office for Europe (2020). Such failure to anticipate and mitigate against unintended impacts has led to a risk of "exacerbating health, social and economic inequities in the long term and of giving rise to new vulnerabilities within the population" (p. 1).

Nonetheless, differences in health across Europe (both between and within different countries) existed before the COVID-19 crisis, and therefore, health inequalities associated with COVID-19 and containment measures are "occurring against a backdrop

of social and economic inequalities in existing non-communicable diseases (NCDs) as well as inequalities in the social determinants of health", as explained, among others, by Bambra et al. (2020, at 965). The paper argues that inequalities in COVID-19 infection and mortality rates are therefore arising as a result of a syndemic of COVID-19: inequalities in chronic diseases and the social determinants of health. The paper also argues that the COVID-19 pandemic is already showing significant impacts on specific vulnerable groups, and that the syndemic aspects of COVID-19 will probably be exacerbated by the economic depression that is generated by the pandemic.
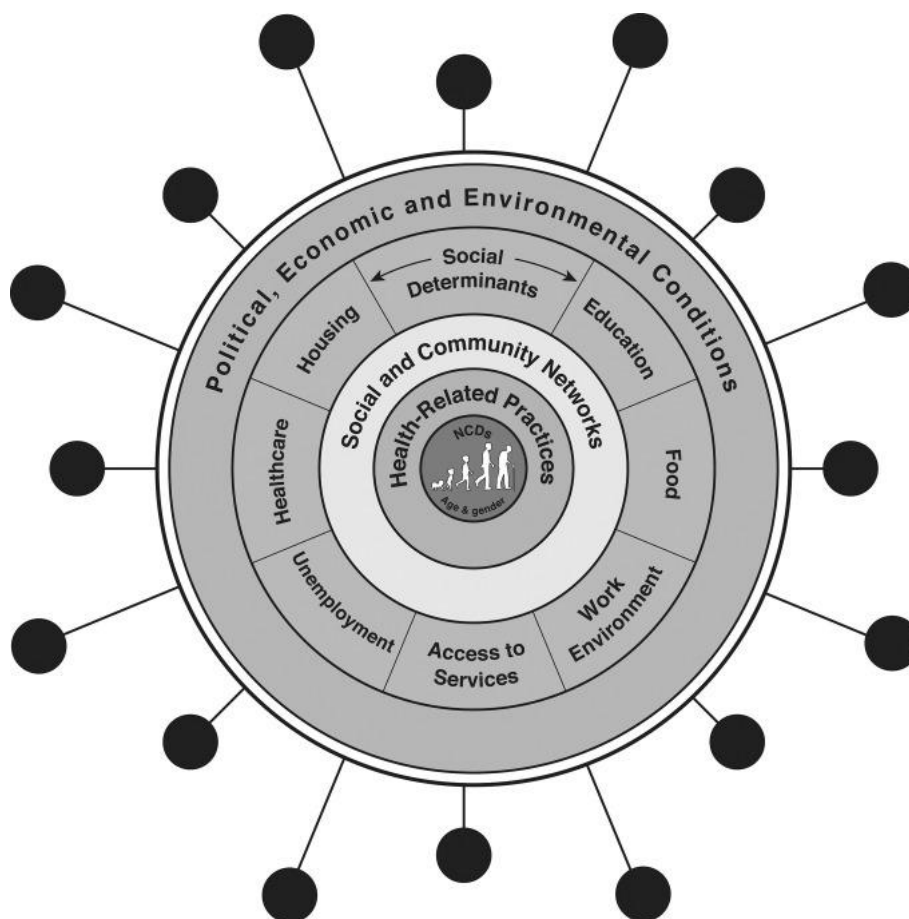
Figure 5 - Source: Bambra et al. (2020)

In Europe, figures provided by 33 countries to Eurostat in 2018, suggest that 147 million people (24% of the population) were at risk of poverty or severe material deprivation or were living in households with very low work intensity. World Bank data for the period 2012 to 2018 indicate that in a further 14 non-European Union (non-EU) countries in the Region, 32 million people lived below the national poverty line (11% of the population,

ibid.)). More information about pre-existing health inequalities (baseline) would be key for an assessment of how COVID-19 has potentially exacerbated them.

Several mechanisms can be described to assess the impacts of COVID-19 (and policy measures) on health inequalities. It is important to consider potential overlaps between such impacts and those on mental health and indirect health impacts.

The WHO European Regional Office describes three different mechanisms for COVID-19 to either create or exacerbate health inequalities: (1) health inequities after exposure to infection, risk of severe outcomes, including Long COVID and death (i.e., health effects). These may go on to generate or enhance pre-existing socioeconomic inequities and non-COVID-19 conditions; (2) unequal socioeconomic impacts of COVID-19 containment measures may generate non-COVID-19 health inequities, and these conditions may themselves predispose people to subsequent inequities in adverse outcomes of COVID-19; (3) socioeconomic inequities can increase the risk of further non-COVID-19-related health inequities; and non-COVID-19-related health effects that are indirectly generated by containment measures or as the consequence of health problems caused by contracting COVID-19, may lead to further socioeconomic inequities. This cyclical mechanism can reinforce health and socioeconomic inequities.

There are, therefore, at least two different aspects of health inequalities that need further data and exploration:

(1) COVID-19 health inequalities in the narrow sense: the unequal impact of COVID-19 on different groups according to a socio-economic gradient (this can be aggravated by pre-existing inequalities conducive to risk factors). Data seems to be much more easily available in the United States, and to some extent in Europe. For example, Little et al. (2021) suggest that an unequal socioeconomic gradient in the demographic and clinical presentation of COVID-19 patients exists, including differences in age, gender and race between poverty groups.

On racial and ethnic disparities, Kolin et al. (2020) found that when assessing the association between Black race and Covid-19, adjusting for deprivation, reduced the relative risk of Covid-19 by 33%. In the context of sociological research, these findings suggest that discrimination in the labour market may play a role in the high relative risk of Covid-19 for Black individuals. This study also confirmed the association of blood type A with Covid-19, among other clinical and regional factors. Nevertheless, individual data

on race or ethnicity is largely absent, except for in a few countries such as the UK and the US.

Some literature is emerging on socioeconomic disparities. Wachtler and Hoebel (2020, page 1) argue that "it can therefore be assumed that also in Germany people with a lower socioeconomic status might be more affected during the further course of the pandemic. In addition, the interventions to contain the pandemic might have unequal social, economic and psychological impacts on different social groups. Hence, the COVID-19 pandemic has the overall potential to increase social and health inequalities. Social-epidemiological research into COVID-19 is therefore needed to advance measures of health protection and infection control in an evidence-based, targeted and socially equitable manner".

(2) Other non-COVID-19 health inequalities: the unequal impact of policy measures in response to COVID-19 that could create or exacerbate non-COVID-19 health inequalities. Especially on income factors, Glover et al. (2020) develop a conceptual framework to identify and categorise the adverse effects of COVID-19 lockdown measures. They base their framework on Lorenc and Oliver's framework for the adverse effects of public health interventions and the PROGRESS-Plus equity framework. To test its application, they sampled COVID-19 policy examples from around the world and evaluated them for the potential physical, psychological, and social harms, as well as opportunity costs, in each of the PROGRESS-Plus equity domains: Place of residence, Race/ethnicity, Occupation, Gender/sex, Religion, Education, Socioeconomic status, Social capital, Plus (age, and disability). They found examples of inequitably distributed adverse effects for each COVID-19 lockdown policy example, stratified by a low- or middle-income country and high-income country, in every PROGRESS-Plus equity domain. They identified the known policy interventions intended to mitigate some of these adverse effects. The same harms (anxiety, depression, food insecurity, loneliness, stigma, violence) appear to be repeated across many groups and are exacerbated by several COVID-19 policy interventions. Their conceptual framework highlights the fact that COVID-19 policy interventions can generate or exacerbate interactive and multiplicative equity harms.

Impact on vulnerable groups

Here we should consider having a section on vulnerable groups, that FEAM, UGHENT & INSERM are especially focusing on in PERISCOPE, e.g. elderly, migrants, asylants, homeless…

In a systematic review focusing on the impacts of COVID-19 on migrants in high-income countries, Hayward *et al.* (2020, page 3) found that "migrants are at increased risk of infection and are disproportionately represented among COVID-19 cases. Available datasets suggest a similarly disproportionate representation of migrants in reported COVID-19 deaths, as well as increased all-cause mortality in migrants in some countries in 2020. Undocumented migrants, migrant health and care workers, and migrants housed in camps and labour compounds may have been especially affected. In general, migrants have higher levels of many risk factors and vulnerabilities relevant to COVID-19, including increased exposure to SARS-CoV-2 due to high-risk occupations and overcrowded accommodation, and barriers to health care including inadequate information, language barriers, and reduced entitlement to healthcare coverage related to their immigration status".

The review focused mostly on the direct health impacts of COVID-19 and, to a lesser extent, on indirect health impacts, including mental health impacts, and other impacts stemming out of policy measures (e.g. lockdowns, travel restrictions). The study (page 25) suggests that "understanding the lived experience of marginalised migrants will be vital to tackling issues around barriers to care (including of migrants with long-term symptoms), testing uptake, and obstacles and facilitators to eventual COVID-19 vaccination and ensuring good vaccine coverage of, and uptake by migrants and ethnic minorities".

Other studies have looked at the broad impacts of COVID-19 in specific vulnerable populations. A perception survey called ApartTogether, which had over 30000 respondents from almost all Member States of the WHO, aimed to identify "how the new coronavirus SARS-CoV-2 (COVID-19) has impacted refugees and migrants around the world, as experienced and reported by them, especially for social and public health aspects".

A cross-sectional study called ECHO was conducted in 18 homeless shelters, with a sample of 535 persons, mostly in the Paris and Lyon regions from the 2nd of May to the 7th of June 2020, which coincided with the duration and aftermath of the first COVID-19-

related lockdown. Through a questionnaire delivered by trained interviewers, the study aimed "to better understand the perceptions of the COVID-19 epidemic as well as knowledge of preventive measures, and mental health and substance use, in this vulnerable population". Key findings included among these groups included:

- Good level of knowledge of COVID-19 symptoms and satisfactory acceptance of preventive and curative measures (e.g. tests, isolation);
- Lack of access to healthcare for non-COVID-19 related reasons during lockdown;
- Deterioration of mental health and socioeconomic situation;
- Trends in vaccine hesitancy and associated factors similar among homeless persons and the general population.

Overall, studies focusing on the impacts of COVID-19 and response policy measures, might/might not follow a similar taxonomy of impacts as provided above (e.g. mental health impacts; COVID-19 health inequalities;

1.1.3 Impacts on health systems

No doubt, COVID-19 has affected health systems enormously. An attempt to conceptualise the impact, with specific emphasis on the governance of healthcare, is provided in Lal et al. (2020). The WHO Regional Office for Europe already published [recommendations](#) in April 2020. Other interesting papers include Narain et al. (2020); and the 40 Healthcare Systems Study by Braithwaite et al. (2020). The OECD dedicated several papers to health systems, including a special section on resilience in Health at a Glance 2020 (OECD, 2020a). The European Observatory on Health Systems and Policies provides several [cross-country analyses](#) as well.

The Expert Panel on effective ways of investing in health (EXPH) dedicated an entire [opinion](#) to the resilience of health systems, and noted the most important areas of impact and common challenges:

- Primary care providers reportedly struggled to ensure continuity of care and found it difficult to switch swiftly to new methods of service delivery (e.g. telemedicine, telemonitoring and other e-health solutions);

- Hospitals faced great strain due to insufficient capacity, unavailability of adequately trained health workers (See Braithwaite et al, 2020 for data), and lack of experience in managing an unprecedented emergency.

- Social care facilities, unprepared for protecting residents and struggling to obtain support from authorities, recorded a surge in infections and mortality.

- Weak integration between primary care, outpatient specialist and hospital care and social care resulted in overburdened hospitals in some Member States, while many elderly homes became incubators in the spread of the pandemic.

- Some clinical activities, such as transplant and rehabilitation programmes, came almost to a standstill due to resource and logistical problems.

- Increased risk to patients with rare and complex diseases, not only affecting the access to their usual doctors or medicines but – in case of COVID-19 related complications – access to ICU provision.

- Underdeveloped crisis preparedness resulted in shortages and lack of coordination at national and at EU level, which took time to resolve (e.g., low availability of personal protective equipment, limited laboratory and testing capacity etc.).

- The pandemic and the confinement measures created a psychosocial burden for the population and, especially, the wellbeing of the health workforce.

In addition, uncertainty regarding e.g., age-related limitations of transferral of older citizen, often residents in elderly care facilities, to hospital emergency departments, as well as further in-house transferral to more advanced levels of care such as ICUs for the elderly, has decreased trust in health care systems, and considerable blame gaming in several member states.

1.1.4   Economic impacts

The economic impact of the pandemic has already been the subject of several studies. Impacts identified tend to fall within the following categories:

- **MEI - Macroeconomic Impact**. Production (value-added or GDP) falls both because production is closed (supply shock) and because demand for travel and some services falls (demand shock). The initial impact was widespread with many sectors affected. Some sectors have recovered rather quickly (e.g. manufacturing and industry), but others, like services and retail, have experienced a much longer recession. This means one has to also consider sectoral impacts.

- **Productivity growth** was also heavily affected**,** as shown i.a. by Dieppe (2020), which argues that a comprehensive broad-based approach is necessary to rekindle productivity. Bloom et al. (2020) analyse the impact of Covid-19 on productivity in the UK using data derived from a large monthly firm panel survey: their analysis suggests that Covid-19 will reduce TFP in the private sector by up to 5% in 2020 Q4, falling back to a 1% reduction in the medium term. Firms anticipate a large reduction in 'within-firm' productivity, primarily because measures to contain Covid-19 are expected to increase intermediate costs. The negative 'within-firm' effect is partially offset by a positive 'between-firm' effect as low productivity sectors, and the least productive firms among them, are disproportionately affected by Covid-19 and consequently make a smaller contribution to the economy. In the longer run, productivity growth is likely to be reduced by diminished R&D expenditure and diverted senior management time spent on dealing with the pandemic.

- **PFI - Impact on public finance.** Governments adopted unprecedented fiscal packages to provide replacement income and support the economy. Typical elements of these packages were short term working schemes (modelled in many cases on the German 'Kurzarbeit' scheme which appeared to have been very successful in 2009) under which employers receive financial support from the government when they keep workers on their payroll and provide them will almost the full salary although these workers are used only for a fraction of their usual time. Credit guarantees were also widely used. This instrument has been often misunderstood as public and political discussions did not distinguish between the maximum amount theoretically available under guarantee schemes (close to 50 % of GDP in Germany, for example) and the amounts of guarantees actually given. The ECB has documented that the countries with the highest announced headline figures were also the ones where the amount of guarantees given ended up rather low. Public debt-to-GDP ratios have soared under the twin impact of deficits and the fall in GDP. At the same time, interest rates have fallen further, leading to a heated debate about whether debt-to-GDP ratios still matter.

- **LHC - Loss of human capital or schooling**. One of the more important impacts with long term consequences is the loss of schooling which might lead to a measurable permanent loss of human capital (skills etc.). This might reduce the employability and productivity of an entire generation. According to the World Bank, around 1.6 billion school children were affected by Covid-related school and

childcare centre closures at their peak. In their model, Fuchs-Schündeln et al. (2020) suggest that school and childcare closures have significant negative long-term consequences on the human capital and welfare of the affected children, especially those from disadvantaged socioeconomic backgrounds. The loss in schooling and associated human capital accumulation is harder to offset the longer the crisis lasts.[1]

1.1.5 Social impacts

Social impacts are of fundamental importance in PERISCOPE, especially given our focus on subjective well-being (see below, Section 2). In particular, we seek to collect data on the following social dimensions:

- ***Employment impacts.*** These go beyond the level of employment (which will be captured also under economic impacts), and includes, in particular, the conditions of workers, their perceived and actual stability, the prevalence of informal employment, forms of discrimination on the workplace (including racial/gender discrimination), occupational safety and health. Also, the opportunity to distance work seems to impact different businesses/job positions differently (PTS 2020, Stenfors et al, forthcoming). The immediate impact of the crisis on employment has been "muted" in Europe (relative to the US) because of the widespread use of short-term working schemes (Ounnas and Gros, 2021). The effect on employment had initially a strong gender dimension, especially in the United States ('she recession'). It remains to be seen whether this will also be the case as the economy recovers. Employment of marginal groups (youth, elderly, unskilled etc.) tends to react strongly to changes in overall employment prospects. It remains to be seen whether this was also the case on this occasion.

- ***Social inclusion and protection of particular groups***. This area is complementary to the study of health inequalities, and covers inequality more generally; equal access to goods and services; access to placement services or to services of general economic interest; and communication to the public at large. It also covers impacts on specific groups of individuals, such as: individuals at risk of poverty; children;

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[1] See also Fuchs-Schündeln, N, M Kuhn and M Tertilt (2020a), "The Short-Run Macro Implications of School and Child-Care Closures", CEPR Discussion Paper 14882. Fuchs-Schündeln, N, D Krueger, A Ludwig and I Popova (2020b), "The Long Term Distributional and Welfare Effects of Covid-19 School Closures", CEPR Discussion Paper 15227.

women and gender minorities; elderly; disabled; unemployed; ethnic, linguistic and religious minorities; asylum seekers; firms or other organisations (for example churches) or localities; third-country nationals.

- ***Individuals, private and family life, and personal data.*** This area typically covers a very diverse set of impacts, including: additional administrative requirements on individuals or increased administrative complexity; impacts on the privacy of individuals (including their home and communications); the processing of personal data or a concerned individual's right of access to personal data; right to liberty of individuals; freedom of assembly; right to move freely within the EU; family life or the legal, economic or social protection of the family; rights of the child.

- ***Domestic and public violence against individuals, and specific groups.*** Data on domestic violence are still sparse, but the literature has grown in quantity and quality over time. Kumar (2020) reviews some of the key contributions. PERISCOPE should be able to contribute data from some of the Member States.

- ***Gender Equality****.* Textbook recessions are thought to affect men's employment more severely than women's employment. In the case of COVID-19, social distancing measures seem to have had a large impact on sectors with high female employment shares. Relevant measures in this respect include closures of schools and day-care centres. Alon et al. (2020) find that the effects of the crisis on working mothers are likely to be persistent, due to high returns to experience in the labour market. EIGE has a dedicated [website](#) on COVID-19 and gender equality. DG R&I in the European Commission published two papers on this topic, including [one](#) by LSE's Clare Wenham, our gender expert in PERISCOPE.

- ***Governance (including multi-level governance), participation, good administration, access to justice, media and ethics.*** This area is very heterogeneous, and includes impacts such as: the involvement of stakeholders in issues of governance; whether actors and stakeholders are treated on an equal footing, with due respect for their diversity; cultural and linguistic diversity; autonomy of the social partners in the areas for which they are competent; right of collective bargaining or the right to take collective action; public institutions and administrations, for example in regard to their responsibilities; individual's rights and relations with the public administration; individuals' access to justice; availability of effective remedies before a tribunal; the public's information about a particular issue; public's access to

information; impacts on political parties or civic organisations; media, media pluralism and freedom of expression. On multi-level governance, a key report was published by the OECD and the Committee of the Regions (OECD, 2020b).

● *Access to and effects on social protection, health and educational systems*. This area includes several possible impacts, such as impacts on access to services; education and mobility of workers (health, education, etc.); access of individuals to public/private education or vocational and continuing training; cross-border provision of services, referrals across borders and co-operation in border regions; financing/organisation/access to social, health and care services; universities and academic freedom/self-governance.

● *Culture.* Includes the preservation of cultural heritage, cultural diversity, citizens' participation in cultural manifestations, or their access to cultural resources. Some data are reported in this document by Europa Nostra, as well as in this brief article. The OECD also organised webinars on this issue (OECD, 2020c).

● *Social impacts in third countries.* Includes social impact on third countries that would be relevant for overarching national/EU policies, such as development policy; international obligations and commitments of the national government; impacts on poverty in developing countries or impact on the income of the poorest populations.

● *Crime, Terrorism and Security.* Effects on security, crime or terrorism; criminals' chances of detection or their potential gains from the crime; number of criminal acts; law enforcement capacity; security interests; right to liberty and security, right to fair trial and the right of defence; rights of victims of crime and witnesses. Possible sources include Europol; Gerell et al. (2020) on Sweden; Halford et al. (2020) on the UK.

1.1.6 Environmental impacts

PERISCOPE will devote less attention to environmental impacts, given the shortage of data and the focus of the project on socio-economic dimensions. That said, efforts to gather data and information are increasingly being produced to document the various impact of COVID-19 on the environment are increasing. Here, it is important to keep in mind that impacts may also be generated by addition to possible direct impacts, as well as relatively immediate indirect impacts (such as lockdowns resulting in reduced air

pollution while increased use of individual motorized transport in lieu of public transport increases pollution), COVID-19 might have a delayed indirect effect on the environment through a reduction of environmental public spending by governments on, e.g., environmental protection, as public budgets are increasingly used for support measures to the economy, society and the health system.

Important initiatives to capture these impacts have been adopted by the European Environment Agency, which created a portal to explore a variety of impacts on the environment. The National Institute of Health in the US also maintains a collection of very interesting articles.

Other useful pages with data and informative papers include the Geneva Environment Network dedicated COVID page; an informative literature review by Shakil et al. (2020); an interesting article on the environmental impact of protective personal equipment in the UK; and a report by the OECD on biodiversity and COVID-19 (OECD, 2020d).

A preliminary list of environmental impacts (not all relevant for PERISCOPE) includes the following:

- *Climate impacts*: emission of greenhouse gases (e.g., carbon dioxide, methane etc.) into the atmosphere; emission of ozone-depleting substances (CFCs, HCFCs); Ability to adapt to climate change?

- *Transport and the use of energy*: energy and fuel needs/consumption; energy intensity of the economy; fuel mix (between coal, gas, nuclear, renewables etc.) used in energy production; demand for transport (passenger or freight); modal split of transport; vehicle emissions; etc.

- *Air quality*: effect on emissions of acidifying, eutrophying, photochemical or harmful air pollutants that might affect human health, damage crops or buildings or lead to deterioration in the environment (soil or rivers etc.).

- *Biodiversity, flora, fauna and landscape*: number of species/varieties/races in any area (i.e., biological diversity); range of species; protected or endangered species or their habitats or ecologically sensitive areas; migration routes, ecological corridors or buffer zones; scenic value of protected landscape.

- *Water quality and resources*: quality or quantity of freshwater and groundwater; quality of waters in coastal and marine areas (e.g., through discharges of sewage, nutrients, oil, heavy metals, and other pollutants); drinking water resources; etc.

- *Soil quality and resources:* acidification, contamination or salinity of soil, and soil erosion rates; loss of available soil (e.g., through building or construction works); amount of usable soil (e.g., through land decontamination)

- *Land use*: new areas of land ('greenfields') into use for the first time; land designated as sensitive for ecological reasons; change in land use (for example, the divide between rural and urban, or change in type of agriculture).

- *Renewable and non-renewable resources*: use and regeneration of renewable resources (fish etc.); use of non-renewable resources (groundwater, minerals etc.).

- *The environmental consequences of firms and consumer behaviour*: sustainable production and consumption; relative prices of environmentally friendly and unfriendly products; promotion/restriction of environmentally un/friendly goods and services through changes in rules on capital investments, loans, insurance services etc.; businesses becoming more or less polluting through changes in the way in which they operate.

- *Waste production/generation/recycling*: waste production (solid, urban, agricultural, industrial, mining, radioactive or toxic waste); waste treatment, disposal of or recycling.

- *Likelihood and scale of environmental risk*: likelihood or prevention of fire, explosions, breakdowns, accidents and accidental emissions; risk of unauthorised or unintentional dissemination of environmentally alien or genetically modified organisms.

- *Animal welfare*: impact on health of animals; animal welfare (i.e., humane treatment of animals); safety of food and feed.

- *International environmental impacts*: impact on the environment in third countries that would be relevant for overarching national/EU policies, such as development policy.

1.2   Policy measures

Building a taxonomy of policy measures is essential for PERISCOPE. It is also a very delicate exercise, since it is important to reconcile the taxonomy used by some of our key data sources (in particular, CoronaNet) with the level of granularity needed to ensure a meaningful assessment of the observed practices.

In this respect, it is important to recall that CoronaNet features 19 types of policies with more than 100 sub-types (see Cheng et al. 2020); the ECDC has a different taxonomy of policy measures; the OECD runs a web page with policy responses (OECD, 2020e); and the World Bank has a website dedicated to government responses to COVID-19. Key websites with repositories of government measures includes the Lancet Commission portal (which includes i.a. Oxford data, Our World in Data, etc.).

A comprehensive repository of government response trackers (including CoronaNet) is run by Lukas Lehner. And one level up, Data4SDGs gathers most sources into a single home page. The JRC maintains a database with data at the regional level.

The Database of Government Actions on COVID-19 in Developing Countries collates and tracks national policies and actions in response to the pandemic, with a focus on developing countries. It provides information for 20 Global South countries – plus six Global North countries for reference. The database contains a comprehensive set of 100 non-pharmaceutical interventions – organized into a framework intended to make it easy to observe common variations across and within countries in the scope and extent of major interventions. Interventions we are tracking include:

- *Health-related*: strengthening of healthcare systems, detection and isolation of actual / possible cases, quarantines;

- *Policy-related*: government coordination and legal authorization, public communications and education, movement restrictions;

- *Distancing and hygiene*: social distancing measures, movement restrictions, decontamination of physical spaces;

- *Economic measures*: economic and social measures, logistics / supply chains and security.

ACAPS, the HIT COVID tracker by Johns Hopkins University, and the CCCSL database provided by the Vienna Complexity Science Hub, also maintain interesting, open

datasets of measures including social distancing; movement restrictions; public health measures; social and economic measures; and lockdowns. All of these three databases are going to be integrated and merged with the CoronaNet database in the coming months. Finally, at lower levels of government, the CoR and Eurocities keep repositories of measures adopted adopted at the level of regions, counties, or individual cities/towns to mitigate the impacts of COVID-19.

Based on all these sources, we have built a reference taxonomy for PERISCOPE, which contains the following clusters of measures, shown in Table 2 below. This reference taxonomy, which is presented in the first column in Table 2, mirrors the CoronaNet taxonomy (note, the reference taxonomy includes only selected measures from the CoronaNet taxonomy. For a full list of measures available in the CoronaNet taxonomy, please see Appendix 1). The taxonomy will evolve in the future as (i) PERISCOPE incorporates more information on government policies beyond what is collected in CoronaNet (ii) the pandemic evolves and governments implement measures which they have not previously implemented before and (iii) we identify ways to build bridges to other taxonomies. The second column of Table 2 anticipates likely measures that will be included in PERISCOPE, both from CoronaNet and outside of CoronaNet. The full codebook can be found in chapter 4 of this document.

Table 2 - Clusters of policy measures in PERISCOPE

Current Taxonomy (based on data availability in CoronaNet)	*Measures to be included (both from CoronaNet and outside of CoronaNet)*
Declaration of Emergency	
External Border Restriction	
Health Screenings	
Health Certificates	
Travel History Form	
Visa restrictions	
Visa extensions	
Proof of COVID-19 Vaccination	
Total Border Cross Ban	

Quarantines	
Self-Quarantine	
Government Quarantine	
Quarantine outside the home or government facility	
Other Quarantine	
Lockdown	
Curfew	
Social distancing (see also here)	
Keep a distance of at least 2 meters or 1.5 feet	
Keep a distance of some other distance which is not 2 meters or 1.5 feet	
Restrictions on private vehicles in public circulation	
Restrictions on ridership of subways and trams	
Restrictions on ridership of trains	
Restrictions on ridership of buses	
Restrictions ridership of other forms of public transportation	
Wearing masks in all public places/everywhere	
Wearing masks in all indoor spaces	
Wearing masks (unspecified)	
Other masking wearing policy	
Restrictions of Mass Gatherings	
Cancellation of an annually recurring event	
Postponement of an annually recurring event	
Cancellation of a recreational or commercial event	
Postponement of a recreational or commercial event	
Attendance at religious services restricted	
Prison population reduced	
Events at private residencies restricted	
Events allowed to occur but no audience is allowed	

All/Unspecified mass gatherings	
Health Monitoring	
Contact Tracing	[Contact-tracing apps](#) (governance variants, and types of agreements w/MNOs, tech giants, etc.)
Closure and Regulations of Schools	
Preschool or childcare facilities	
Primary Schools	
Secondary Schools	
Higher education institutions	
Restrictions and Regulations of Businesses	
All Businesses	
Retail Businesses	
Restaurants	
Bars	
Shopping Centers	
Commercial Business	
Personal Grooming Services	
Supermarkets/Grocery stores	
Private Health Offices	
Pharmacies	
Paid Lodgings	
Health Resources	
Masks	Number of critical care beds, access to covid-19 wards, ventilators per capita
Ventilators	Training of healthcare professionals
Personal Protective Equipment	Health literacy
Temporary Medical Centers	Number of contact tracers
Temporary Quarantine Centers	Degree of digitalization of healthcare system (inc.

	electronic health data-sharing)
	Transparency/Data availability
	Governance of the healthcare system
	Hospital reorganisation
	Mobilisation of retired doctors/nurses
Public awareness measures	
Information on the content of public awareness measures	
Information about the way COVID-19 statistics will be calculated or re- ported	Measures against vaccine hesitancy
Instructions/tips on COVID-19 prevention	
Announcements about approved treatment procedures	
Information/reminders about how COVID-19 spreads	
Information about the risks and dangers of COVID-19 for individuals' health	
Information about the risks and dangers of COVID-19 for the community	
Information on how public awareness measures are disseminated	
Call center/hotline	
TV/radio/newspaper (traditional media)	
Internet-based news outlets	
Government portals, websites, apps	
Social media pages of local government agencies or state officials	
Booklets, leaflets, other individual printed materials	
Billboards, signs, publicly displayed visuals	
Press-conferences, briefings	
Information to be conveyed by other agencies (schools, NGOs, medical organizations)	

Other information dissemination channels	
COVID-19 Vaccines	
Resources for research and development of a COVID-19 vaccine	
Regulatory approval process for administering the COVID-19 vaccine	
Production of COVID-19 vaccines	
Purchase of COVID-19 vaccines	
Distribution (shipping, storage, administration) of COVID-19 vaccines	
Storage of the vaccine	
Shipping of the vaccine	
Administering of the vaccine	
	Measures to support the economy
	Fiscal and monetary policies
	Temporary layoff subsidies
	Bans on terminating labour contracts (layoff bans)
	Cash transfers to businesses
	Tax Waivers/postponement of deadlines
	Recovery and resilience investment (incl. NextGenEU)
	Debt cancellation
	Support for business
	Trade measures (e.g. export bans; trade agreements on PPEs)
	Industrial policy measures (e.g. industry restructuring, nationalisation, bailouts)
	Social policy measures

	Welfare and well-being support to citizens/households
	Financial inclusion and aid to individuals/households/businesses
	Use of technology
	Contact-tracing (see Health Resources)
	Use of artificial intelligence in testing and/or tracing
	Other AI uses
	Use of data from public or private sector
	Use of blockchain to distribute funds
	Collaborative platforms, data cooperatives, citizen engagement
	Telemedicine
	Other
	Restrictions to fundamental rights
	Freedom of association
	Freedom of expression
	Right to privacy

1.2.1 Vaccine procurement and distribution

PERISCOPE partners had to adapt their work plan to account for the availability of vaccines, which in turn triggered a new set of policy measures for the procurement and the distribution of vaccines, as well as the promotion of vaccination among the population. The CoronaNet database now also covers vaccination policies, which will enable us to track these developments in the future COVID Atlas.

PERISCOPE also contains an important research stream on vaccine hesitancy and vaccine non-adoption. However, the immediate problem facing policy makers in Europe

is both one of hesitancy, and its opposite. Currently, the demand for vaccinations far outstrips supply. As governments grapple with the winter wave in Europe, they would like to start mass scale vaccination campaigns, but the supply of vaccines is lagging. Moreover, social and private costs are not aligned. Adjustment costs lead firms to increase capacity only gradually, delivering at the end of their contractual periods. But this is not optimal from a social point of view. The problem for public authorities is then to find a way to accelerate production capacity. Gros et al. (2021) apply standard economic models to this problem and find that the best way to achieve a quicker increase in the availability of vaccines would be to pay a higher price for early delivery – though the goal here must be to achieve an actual increase in supplies, not a re-directing of supplies to those countries able and willing to pay more for it, at the expense of poorer countries, which would invite a political backlash.

2. Assessing the Impacts of Policy Measures

2. Assessing the Impacts of Policy Measures

The two overall approaches that we plan to adopt in PERISCOPE to assess the impacts of the different policy measures are (1) the "*before and after*" approach (*i.e.*, comparing the pre-existing situation either pre-pandemic, or before the policy measure was adopted, with the situation after the policy measure was adopted); or (2) the *benchmarking* approaches based on a comparison - at the same time or over time - between territories that have adopted different policy mixes, allowing for various types of analysis (e.g., spatial autoregressions, difference-in-difference) thanks to the existence of a control group.

An interesting recent paper that uses a before and after approach is Brauner et al. (2020), which uses a Bayesian hierarchical model that links the date of implementation of non-pharmaceutical interventions to national case and death counts and then supports the results with extensive empirical validation. (Closing all educational institutions, limiting gatherings to 10 people or less, and closing face-to-face businesses each reduced transmission considerably. The additional effect of stay-at-home orders was found to be comparatively small. However, Brauner et al. (2020) only look for the inferred effect of the analysed measures on the reproduction rate: in other words, they only look for one specific impact of the mitigation measures, which we included in the DHI-coded impacts above. The key mission of PERISCOPE, by contrast, is to map all other relevant socio-economic and behavioural impacts of the pandemic and related policy measures. This, in turn, means that **we will look for the impact of the same (or a broader) set of policies on DHI, AHI, MHI, health inequalities, as well as various social impact categories.**

You Li et al. (2020) find that individual NPIs, including school closures, workplace closures, public events bans, bans on gatherings of more than ten people, requirements to stay at home, and internal movement limits, are associated with reduced transmission of SARS-CoV-2, but the effect of introducing and lifting these NPIs is delayed by 1–3 weeks, with a longer delay when lifting.

A number of complementary methods are potentially available to PERISCOPE researchers in order to realise the mission of the project. They will need to be assessed in terms of feasibility and added value before deciding which way to go.

2.1 Option 1: Develop individual policy scorecards for all countries and over time

Under this option, PERISCOPE researchers match all types of policies summarised in Table 2 above by matching them with possible direct and indirect health impacts, health inequalities, economic impacts, as well as various social impact categories, leading to a "heat map" or

"scorecard" qualitative representation. The assessment is done first in theory, by looking at the existence of a theoretical correspondence between a policy and the possible impacts and then completing the binary representation with what is observed in practice. It is possible to imagine a more sophisticated version of this exercise, in which we identify (i) the *direct impacts* of each policy, specifying whether the extent of the specific impact is expected to be low, medium or high; (ii) the indirect impacts, again low/medium/high; and (iii) the variability (risks) of the policy impacts. This exercise, based on the analysis of single policies, could be useful once the specific policies adopted by countries and regions are conflated into "policy mixes". This would, in turn, enable our mapping of the direction of policy mixes adopted by different countries and regions, and trigger additional research questions. We might also follow the approach of Brauner et al. (2020), but for policy sets/mixes as opposed to single policy measures.

2.2 Option 2: Develop multidimensional indicators of resilience per countries and over time

In this option, PERISCOPE research develops multidimensional methods to combine the different impacts of each country's policy mix into a multidimensional indicator of resilience that varies over time. First attempts in this area have focused on the resilience shown by countries in their response to COVID-19. One good example is Bloomberg's COVID resilience ranking (Chang et al, 2020), which scores the largest 53 economies on their success at containing the virus with the least amount of social and economic disruption. More recently, and perhaps more importantly for PERISCOPE, the European Commission JRC has released a dashboard (Joint Research Centre, 2020) for measuring economic, social and health-related impacts of resilience, as shown in Figure 6 below. One possibility would be to infer the possible impacts of the policy mixes adopted at the national level on future resilience, using the dashboard as a starting point; and check possible correspondence between pre-pandemic resilience, policy mix adopted, and overall socio-economic, and health-related outcomes.
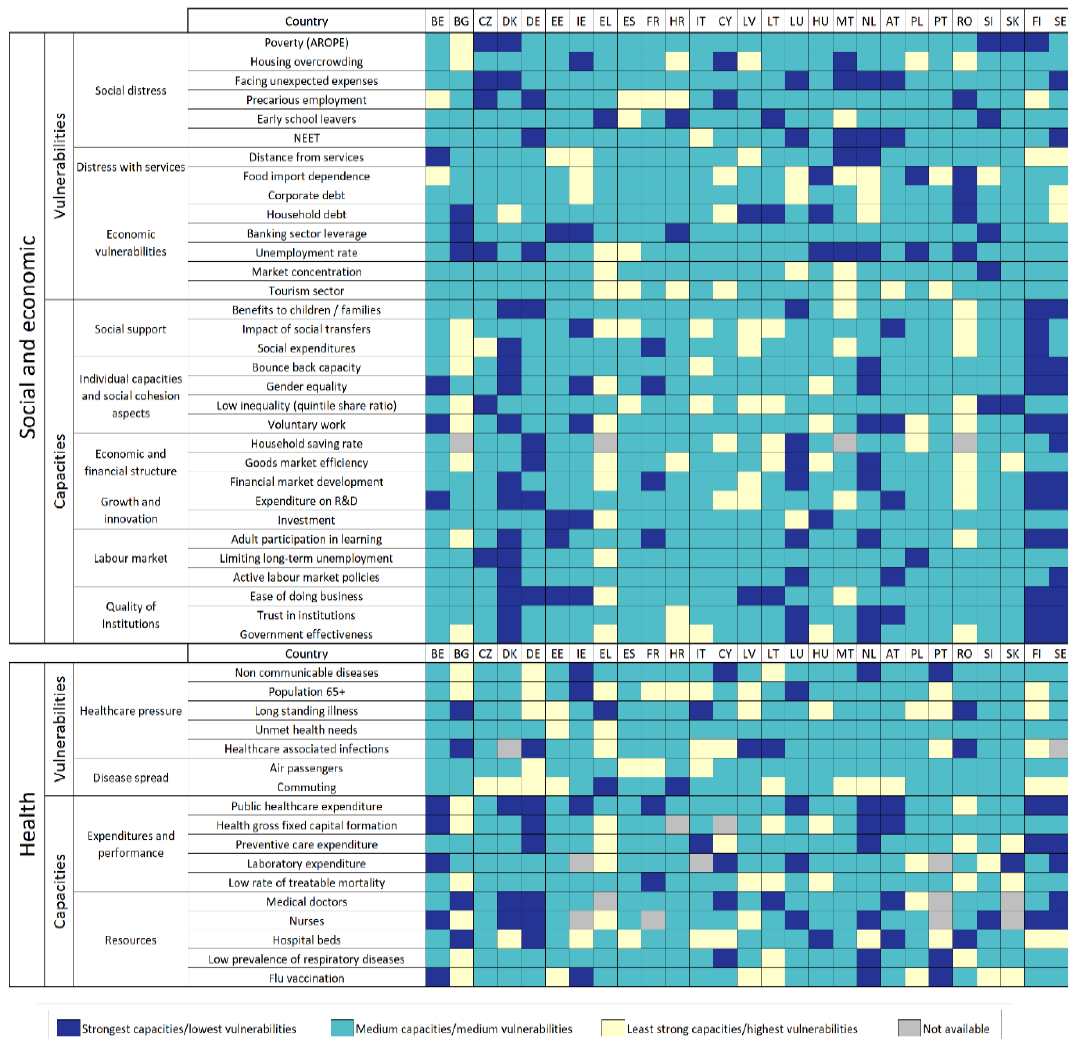
Figure 6 - Prototype dashboard on social, economic, and health aspects related to the COVID-19 crisis

2.3 Option 3: Develop indicators of well-being per countries and over time

In this option, PERISCOPE research attempts to express the different policy impacts in a common measurement unit: that of well-being. Measures related to health conditions are typically associated with quantification challenges, as well as with significant distributional impacts, which make the traditional cost-benefit analysis framework unfit for purpose. After all, public policy was conceptualised by Jeremy Bentham (1789) as the art of ensuring the greatest happiness for the greatest number, and only later economists started to use utility and then income as a proxy for happiness (Adler, 2014; Renda, 2011, 2018). Direct measurement of well-being would avoid key imperfections in the current evaluation models used, such as methodological individualism and the difficulty of factoring in behavioural impacts such as mental health consequences and states

of mind (e.g. stress, anxiety). Understanding which policy mixes exert a better impact (or a less negative impact) on (which part of) the population would be essential to provide policymakers with guidance on how to manage a pandemic without generating ancillary impacts in terms of well-being. However, well-being has traditionally been measured only at the very aggregate and subjective level, for example by surveying the population on their life satisfaction, their perceived state of happiness, mostly overall rather than with respect to one specific policy (e.g. tax reform), one institution (government), etc.[2] Examples of questionnaire-based contributions include the Scottish survey (Director-General Education, 2020) on the impact of COVID-19 on wellbeing; and Cheng et al. (2020) on Singapore. A more granular approach to incorporating robust subjective well-being indicators would provide policymakers with extremely useful guidance. A number of countries have started mainstreaming wellbeing indicators in public policy: the key report in this respect is OECD (Exton, 2018). One possibility would be to ask WP2 leaders, and in particular Karolinska Institute, to map the possible well-being impacts related to different types of policy measures shown in Table 7 above, using emerging frameworks for evaluation such as the ones used in New Zealand, or in the OECD general framework for wellbeing and public policy (see below). The well-being measures could be compared and contrasted with data on healthcare care usage and psychiatric diagnoses in in- and outpatient care.

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[2] The most commonly used measure of this is life satisfaction. People are asked "Overall, how satisfied are you with your life these days?" on a scale of 0-10 (0 = 'not at all satisfied,' 10 = 'extremely satisfied'). Such a measure is well-correlated with biomarkers and third-party reports, and it has strong predictive powers—it is, for example, one of the best predictors of life-expectancy. It is also reliable—people give consistent answers when retested. See De Neve at https://www.psychologytoday.com/us/blog/the-economics-well-being/ 202011/taking-well-being-years-approach-policy-choice
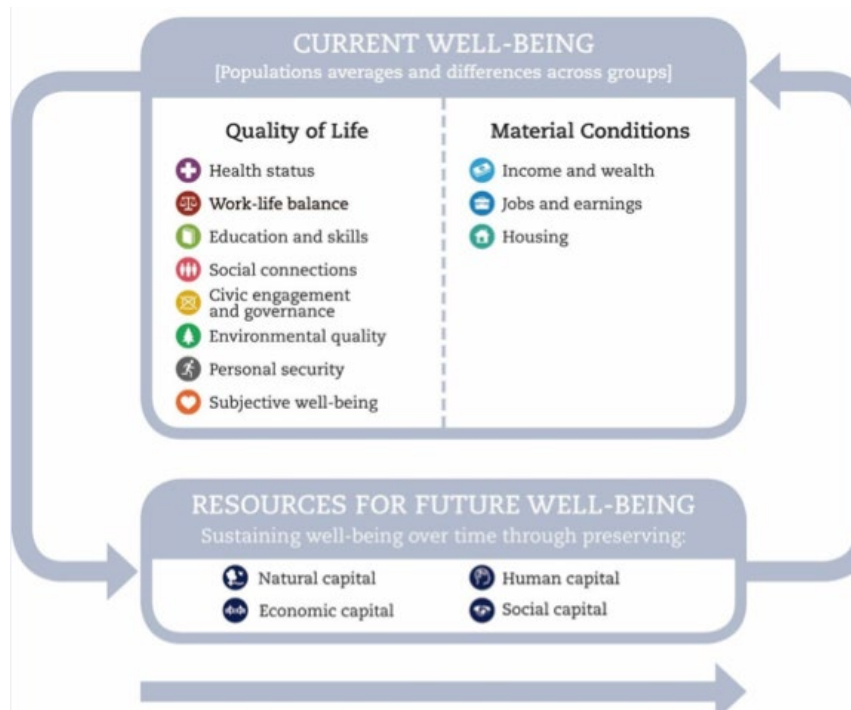
Figure 7 - OECD framework for measuring well-being. Source: OECD (2017)

For what concerns COVID-19 and well-being, a good reference is Saladino et al. (2020), which shows empirical data from recent studies on the effect of the pandemic and reflects on possible interventions based on technological tools. Perhaps the most surprising results for now are reported in Foa et al. (2020), for the Bennet Institute at Cambridge, showing improvements in subjective well-being under lockdown: they use weekly data from YouGov's Great Britain Mood Tracker poll and weekly reports from Google Trends. A useful complement to this paper is Layard et al. (2020), who take a cost-benefit analysis approach based *i.a.* on measures of subjective well-being. The concept that surfaces is that of WELLBY, or well-being-years as a measure of the impact of a public policy. WELLBYs are conceptually similar to Quality-Adjusted Life-Years (QALYs) and Disability-Adjusted Life-Years (DALYs) but include a broader set of effects. They are in their very infancy in terms of application, which inevitably suggests caution in considering their implementation within PERISCOPE.

From a more methodological perspective, it is useful to mention the work of *i.a.* Enrico Giovannini for the OECD Better Life Index (OECD, 2020f); key recent papers incorporating the well-being perspective in the context of COVID-19 include Fan et al. (2018) on a post-GDP perspective; and Cylus et al. (2020), who argue that health policy makers and analysts should consider new approaches that highlight the multiple direct and indirect pathways by which health systems contribute to wellbeing and ensure that these are incorporated into evaluation methods.

The wellbeing measures could be uploaded on the CovidAtlas and related to different types of policy measures, using statistical / AI methods, in order to provide patterns that would enable comparisons between MS and regions.

2.4   Option 4: Develop indicators of sustainable development per country

In this option, PERISCOPE research will combine different country specific measures of well-being, and their time dynamic profile, into sustainable development measures. At risk of wildly oversimplifying, one might say that moving from a well-being perspective to a sustainability perspective is tantamount to moving from a human-centric perspective on public policy to a planet-centric one. The oversimplification is evident if one considers the more "objective" frameworks of well-being that are being used, such as the one adopted in New Zealand, where the so-called "Four Capitals", or the preconditions for long-term well-being, are factored into the framework (see Figure 8). This way, the focus on well-being ends up being conflated with a more long-term perspective on sustainability, which in turn avoids the most evident problem of well-being frameworks based on reported life satisfaction, *i.e.,* the incorporation of short-termism, methodological individualism and behavioural biases (e.g., hyperbolic discounting) into the overall measurement and evaluation framework.

Figure 8 - New Zeeland's four capitals (source: NZ Treasury)

Sustainability indicators incorporate economic, social, environmental and governance aspects, and can be subsumed under the general umbrella of SDGs and related targets and indicators. A key link between well-being and sustainability is visible in existing frameworks such as the Swedish EQOs, which are directly related to the SDGs (see Figure 9 below),

Economic Headline Indicators	Environmental Headline Indicators	Social Headline Indicators
GDP per capita	Air quality	Low-level living standard
Employment rate	Water quality	Self-assessed health status
Unemployment rate	Protected nature	Education level
Household debts	Chemical pollution	Interpersonal trust
Public debts	Greenhouse gas emissions	Life satisfaction

Figure 9 - Swedish New Measures for well-being (nya mått på välstånd). Source: OECD (Exton, C. & Shinwell 2018)

De Neve and Sachs (2020) explore the empirical links between achieving the SDGs and subjective well-being. They find that in terms of well-being, there are increasing marginal returns to sustainable development (Figure 10 below).
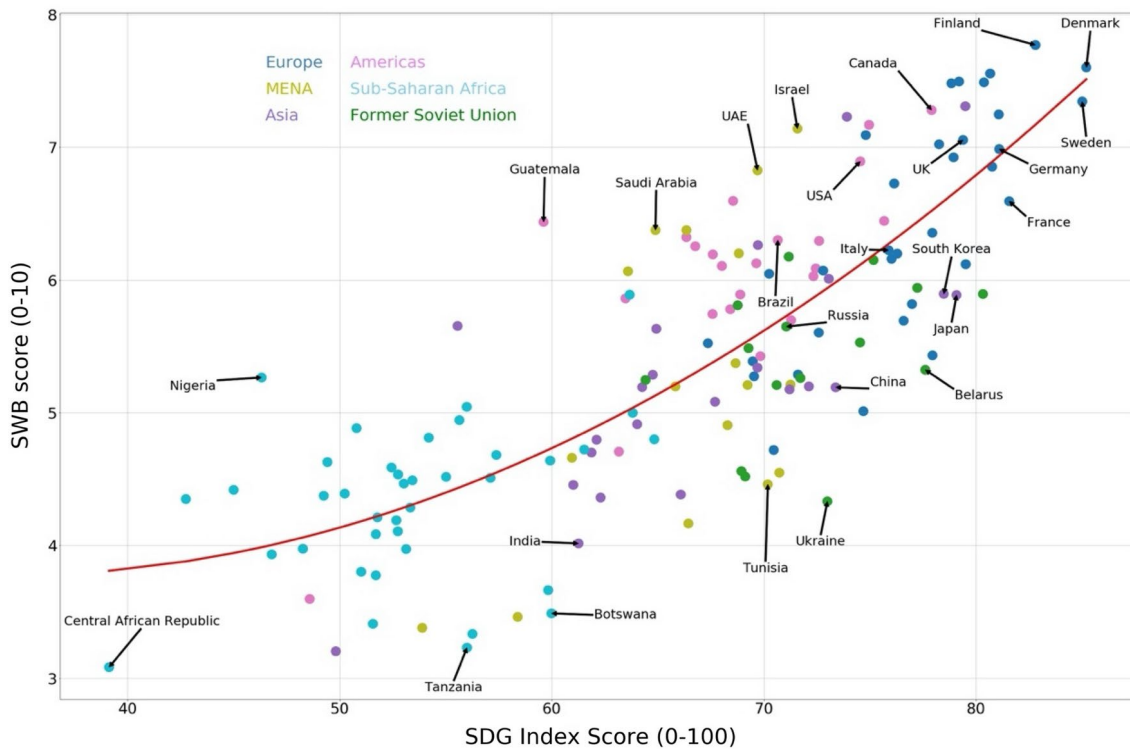
Figure 10 - SDGs v SWB (De Neve and Sachs 2020)

In their paper, they find that unpacking the SDGs by looking at how each SDG relates to well-being shows, in most cases, a strong positive correlation. However, SDG12 (responsible production and consumption) and SDG13 (climate action) are negatively correlated with well-being. This suggests that in the short run there may be certain trade-offs to sustainable development, and further heterogeneity is revealed through an analysis of how these relationships play out by region. Variance decomposition methods also suggest large differences in how each SDG contributes to explaining the variance in well-being between countries. These

and other empirical insights highlight that more complex and contextualized policy efforts are needed in order to achieve sustainable development while optimising for well-being. They use life evaluations, the standard measure of well-being used in the World Happiness Report rankings and most other research on the topic; and draw on data from the Gallup World Poll, which continually surveys 160 countries representing about 98% of the world's adult population.[3]

'One health' is a multi—and cross- disciplinary and collaborative approach that has been growing in importance due to novel and emerging infectious outbreaks of zoonotic origins such as SARS, H5N1, and now in the COVID-19 pandemic. It identifies the connection between the health of people, animals, and our shared environment, and has thus been identified as an effective way of fighting health issues at the human-animal-environment interface.

More than half of all infections that humans can get are of zoonotic origin, that is; they spread between animals and people (Centers for Disease Control and Prevention , National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)). Human activities are the main drivers of zoonotic diseases, including changes in ecosystems and land use such as deforestation and urbanisation, international travel, and trade, as well as intensive farming practices. All of these increase the risk of zoonoses, and the latter also contributes to a heightened risk of antibiotic resistance (Mackenzie et al., 2019).

A recent study by Beyer et al. (2021) concluded that bats are probably the source of SARS-CoV-1 and SARS-CoV2 and identified a global hotspot of climate change-driven increase in bat richness in the southern Chinese Yunnan province and neighboring regions, even if robust evidence is currently missing (Zarocostas 2021).

'One health' acknowledges the need to address and act according to the interconnectedness between human-animal- and planetary health (see Figure 11). It emphasizes the need of combining the expertise of different disciplines, and on different policy levels, with the ambition to create programs, policies and research that can improve public health and prevent future health risks (WHO, 2017).

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[3] The Gallup survey item asks respondents to value their current lives on a 0–10 scale, with the worst possible life as 0 and the best possible life as 10. The data is from nationally representative samples, for the years 2016–2018. Some methodological issues remain with subjective well-being measures, but life evaluations are widely recognised as the standard measure of subjective well-being. Data on other dimensions of subjective well-being, such as the experience of positive and negative emotions, are analysed separately and can be found here.
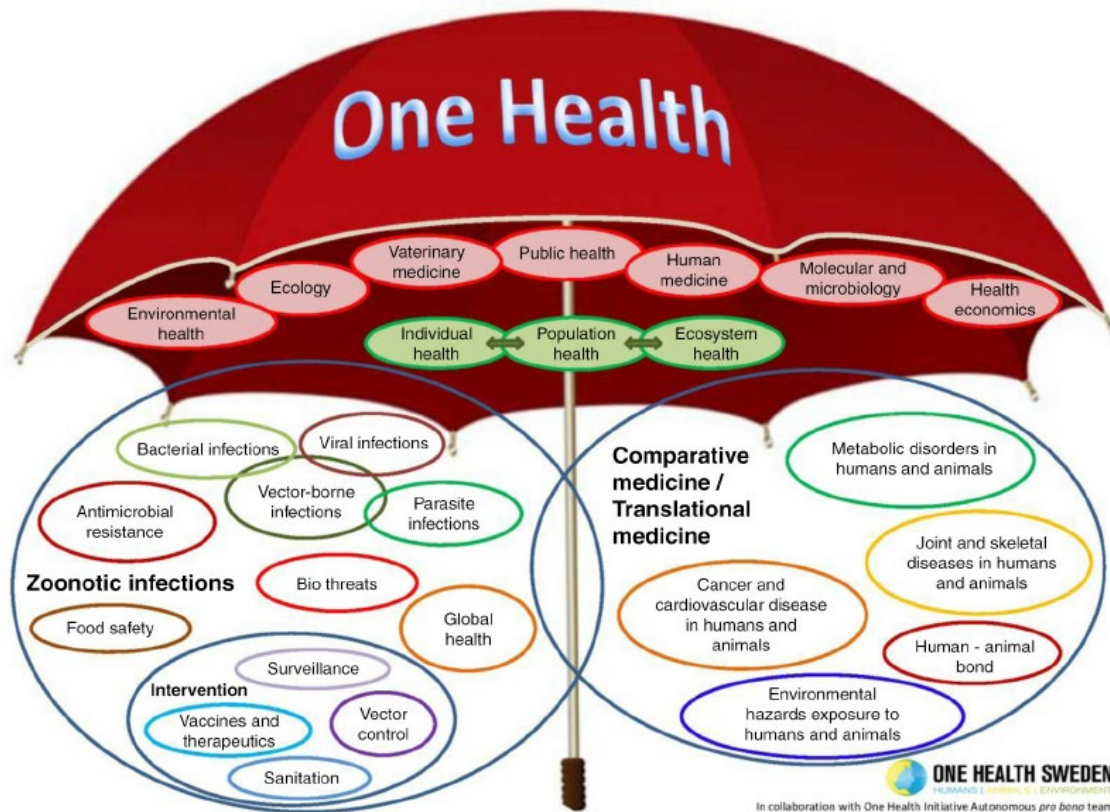
Figure 11 - One Health

Other examples of frameworks and indicators that explore human-animal-planetary connections include One Nature (Özdemir, 2020) and connectedness to nature (Schultz 2002). Also, the rather profound effect the current COVID-19 pandemic has had on global health (MacNeill et al., 2021, Fears et al., 2020, Guerriero et al., 2020), economy and sustainability, and how it has disclosed non-resilient technological structures and processes in e.g. governance, and in preventive and treatment strategies (including e.g. vaccination rollout) highlight the need for integrating inner development /transformative capacities and outer sustainability approaches (Wamsler et al, forthcoming). In a recent article in *Lancet Planetary Health* Hamilton et al. (2021), published in Lancet Planetary Health, calls for a need to put greater emphasis on health in sustainable policy making and specifically nationally determined contributions (NDCs), as it can act as a motivator for systemic change by identifying health benefits and reductions of deaths (e.g., related to pollution, diet, physical activity), which can outweigh the initial cost of the policy.

3. The "Policy Mix" and the "Policy Process"

3. The "policy mix" and the "policy process"

3.1 The "policy mix" as a unit of analysis

Ideally, PERISCOPE should be able to classify government reactions to COVID-19 by identifying a **limited number of policy mixes, on the basis of the observed evidence**. A policy mix, in our case, is made of the collection of all measures included in Table 2 above, including short-term NPIs, economic and social policy measures, coupled with longer-term reforms (which will be observable in the EU27's Recovery and Resilience plans under the Next Generation EU). The underlying assumption is that it is a country's overall policy mix, rather than single measures, that determine the overall effectiveness of the mitigating measures adopted, as well as the orientation towards resilience, well-being and sustainability of the measures adopted.

Recent papers show that stricter lockdown policies go in tandem with a reduction in COVID-19-related deaths (Conyon et al., 2020); banning mass gatherings is one of the most effective ways of containing the virus (Ahammer et al., 2020; Hunter et al., 2020; Weber, 2020); air travel restrictions are effective, especially those on international flights at the early stages of the pandemic (Hubert, 2020; Keita, 2020, Leffler et al., 2020); stay-at-home requirements and workplace closures can curb the propagation of the disease (Deb et al., 2020; Hunter et al., 2020; Weber, 2020), as can the use of face masks (Hatzius et al., 2020; Leffler et al., 2020; Mitze et al., 2020; Czypionka et al. 2020). But the literature is far from consolidated, as is normal just a few months from the emergence of the virus.

There are different ways in which PERISCOPE can build and classify policy mixes:

- *Encoding approaches to individual policy measures or groups of policy measures in Table 2, and then combining them into specific mixes*. The codes provided would be representative of the actions taken (e.g., full lockdown, semi-lockdown, stop-and-go lockdown, self-discipline, no action for NPIs).

- *Observing the policy measures that are contributing more effectively to a set of long-term goals (e.g., resilience, well-being or SDGs), and analysing them in-depth to find similarities and differences*, without engaging in a comprehensive analysis of all policy mixes in all countries.

- *Adopt a high-level characterisation of the policy measures taken*, by only looking at specific clusters of policies: for example, NPIs and monetary-fiscal coordination (see e.g. Bartch et al, 2020).

- *Adopting a resilience-oriented characterisation of the policy mix, by differentiating between "protect", "prepare" and "transform"* and grouping countries according to similarities in these three baskets.

Overall, it is important to realise that the policy mixes adopted in different countries are not necessarily easy to transfer or generalise. Mei (2020) observes the policy "style" and "mix" adopted in China in mitigating the spread of the contagion and observes that "in the case of China's fight against COVID-19, the policy mix that has worked is not necessarily a set of best practices that could or should be transferred to other countries. Instead, it is a policy mix compatible with the policy style of China featuring a centralized leadership, bureaucratic mobilization and memories of the right policy mix of previous

crises. The policies in this mix have been proven to be consistent with each other, which has resulted in its eventual effectiveness". How would EU Member States score in terms of policy coherence? Is there a way to develop indicators of policy coherence and cohesion and apply them to the measures adopted during the emergence of COVID-19?

3.2   The policy process and cycle

The discussion on the policy mix questions nicely leads to a second important focus for PERISCOPE: the **policy process**. This includes an analysis of the way in which decisions are normally adopted in a specific legal system or institution ("policy formation"); and the way in which policies are implemented, monitored and evaluated over time ("policy implementation/delivery"), which altogether form the so-called **"policy cycle"**.

Of particular importance for PERISCOPE is the policy formation process, on which several research questions have already been formulated. These include:

- *How did countries/regions adopt their decisions during the pandemic?* For example, were decisions centralized in the cabinet office, in an *ad hoc* task force, in an inter-ministerial context? Were NPIs decided in a way that was coordinated with economic and social policy measures?

- *Did countries/regions* create ad hoc task forces to manage the pandemic phase, or set priorities for recovery and resilience?

- *Was accountability and/or overall public communication attributed to a central figure (e.g. surgeon general, chief scientific advisor, national pandemic manager)?*

- Did countries with a multi-level governance structure (e.g., in the UK, Sweden, Italy, Spain) set up *specific coordination groups* to ensure consistencies of policy measures across levels of government? (see also next section). In these national contexts, was responsibility attributed in a similar way across levels of government?[4]

- What role did *scientific advice* play in general, and in unpacking policy trade-offs? Did pre-existing health literacy levels play a role in individual response to the pandemic?

- *How were scientific evidence and risk communicated at the national and subnational level during the pandemic*? What differences can be found across countries?

- Are *economic analysis tools* such as cost-benefit analysis, multi-criteria analysis, specific parameters (e.g., VSL, VSLY, WELLBYs) being used?

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[4] We shall need to distinguish between centralisation/decentralisation and federalism in general and in all matters pandemic. For example, while Germany and Austria are both federal countries, decisions on epidemics are a prerogative of the federal level in Austria, but a prerogative of the states in Germany. And in federal Switzerland, the national government proclaimed the equivalent of a state of emergency and thus centralized power over COVID-19 decision, setting aside the cantonal (≈state) level policymaking authority (Büthe et al 2020), whereas in Germany the prerogative of the states was never seriously questioned (Siewert et al 2020).

- Are *data science tools* such as statistical or machine learning predictive tools being used in support of government decisions?

- Did governments make use of behavioural tools (e.g., "nudge") in their attempt to induce compliance with rules adopted during the pandemic, or incentivize risk-reducing behaviour?

- *How transparent is decision-making?* How is the decision-making process and outcome communicated? At press conferences? Documents available for the public? On governmental / agencies home pages?

- *How democratic is crisis decision-making?* To what extent have member states changed their decision-making procedures to adapt to the challenges of the pandemic? How has this affected the democratic process in EU member states and at the EU level? This analysis will be based on data collected by IDEA. IDEA provides an excellent operationalisation of 'democracy' and a data set which yields information on 5 attributes and 24 sub-attributes of democracy ('Global Monitor of COVID-19´s impact on Democracy and Human Rights' and 'Pre-pandemic Global State of Democracy Indices (GSoD Indices)'). In addition, they set up a data tracker on parliamentary responses to the pandemic, which displays any changes that have been made to the way that national parliaments operate and exercise their legislative and democratic control function (Inter Pares, 2020). This data constitutes the perfect base for the analysis of the (potentially changing) democratic character of EU member states in the course of the pandemic.

3.3   Multi-level governance

The issue of multi-level governance is particularly important for PERISCOPE, as most countries have experienced some form of tension between the national and the local level of decision-making during the pandemic, as well as the need to reconcile the need for common rules with the need to address the specificities of the situation on the ground. The issue of multi-level governance is also important from the standpoint of policy learning: PERISCOPE aims to assess whether, and to what extent, countries have attempted to engage in experimentation by testing different solutions in different subnational government contexts (e.g., in different regions, or municipalities) before scaling them up to the national level. Analyses of the performance of multi-level governance arrangements during the pandemic include Van Overbeke and Stadig (2020), who argue that efficient multi-level policy cooperation in Belgium and the Netherlands has "run up against the limits of existing institutions, leading to significant political grievances". In Belgium, the slow speed of the negotiations between the central and regional governments has put the federal system in question. Büthe, Messerschmidt and Cheng (2020) show that in Germany, the Länder, which constitute the first sub-national level, initially engaged in substantial policy experimentation, but due to the combination of the long incubation period of COVID-19 and the sense of urgency, none took the time to really examine the effectiveness of measures already implemented elsewhere before taking the next measures, thus undercutting learning from experiment from each other. In a recent book by Joyce et al. (2020), the experiences of France and Italy are described in individual chapters; Büthe et al (2020) examine the varied performance of federal Germany and Switzerland in comparison with the (more) unitary Italy and Spain.

The OECD collected information on the extent of decentralisation in the health sector, building three groups of countries (see figure 12 below).

	High	Medium	Low
Share of subnational government health spending	> 40% of total public health spending > 20% of total subnational government spending > 4% of GDP	15% - 40% of total public health spending 10% - 20% of total subnational government spending Subnational government health spending 0.5% - 4% of GDP	< 15% of total public health spending < 10% of subnational government spending < 0.5% of GDP
Countries	**Federal & quasi-federal**: Switzerland*, Spain, Australia, Austria, United States **Unitary**: Sweden, Italy, Denmark, Finland	**Unitary:** Poland, Norway, Latvia**, Lithuania, Estonia, Japan, Czech Republic	**Federal:** Belgium Germany **Unitary:** Korea, Slovenia***, Netherlands, Portugal, Slovak Republic, Hungary United Kingdom, France, Turkey, Luxembourg, Iceland, Israel, Greece, Ireland, New Zealand

Figure 12 - The level of decentralisation in health care in the OECD countries (OECD, 2020g)

In PERISCOPE, some data on multi-level governance are available in CoronaNet, but further research on specific countries will be needed to complete the picture, and add to our description of the policy mix adopted by each country. In particular, research by Karolinska Institute for Sweden in WP9, and research by Tim Besley for LSE (WP1, WP9), plus research by CEPS and Mareike Kleine from LSE will contribute to a deeper understanding of governance arrangements in different countries. Other PERISCOPE researchers have worked on multi-level governance issues, such as LSE's Joan Costa-Font and IHS' Thomas Czypionska in the book by Costa-Font et al. (2013) and TUM's Tim Büthe, who developed Institutional Complementarity Theory to advance the theoretical understanding of multilevel governance (e.g. in Büthe and Mattli 2011).

PERISCOPE Public Health and Social Measures (PHSMs) Codebook v.0.0

4. PERISCOPE Public Health and Social Measures (PHSMs) Codebook v.0.0

This codebook for COVID-19 public health and social measures made available in the PERISCOPE Data Atlas currently exactly mirrors on the taxonomy from the [CoronaNet Research Project](#) (CoronaNet). In general, the vast majority of the public health and social measures (PHSMs) data in the PERISCOPE DataAtlas will come directly from CoronaNet's data collection efforts.

Due to the changing nature of the pandemic as well as potential cooperation between CoronaNet and other tracking efforts, we will likely adjust the taxonomy presented here both better capture what policies governments are actually implementing on the ground as well as to better align our taxonomy with other data tracking efforts

In the next sections, we will outline how the data was collected (4.1), the geographical scope of the data collected (4.2) and the information on what is available per variable (if applicable) (4.3). In section 4.4, we will then provide further detail on each individual variable available in the data.

4.1 Data Collection

As researchers learn more about the various health, economic, and social effects of the COVID-19 pandemic, it is crucial that to the greatest extent possible, they have access to data that is reliable, valid, and timely. CoronaNet has adopted a data collection methodology that we believe optimizes over all three of these constraints.

To collect the data, CoronaNet has organized more than 600 research assistants (RAs) from colleges and universities around the world, representing 20 out of the 24 time zones actively collecting data at any given point in time. Large social scientific datasets typically rely on experts, coders, or crowd-sourcing to input data. The literature has shown that common coding tasks can be completed via crowd-sourcing (Benoiet et al., 2016; Sumner et al., 2020), but that there are also limitations to the wisdom of crowds when specific contextual or subject knowledge is required (Marquardet et al., 2017; Urlacher, 2017) To address these tradeoffs, we decided to train current RAs to code our entries, leveraging the benefits of wide-spread recruitment and a diverse pool of country- specific knowledge from across the globe. Data collection started on March 28, 2020 and has proceeded rapidly, reaching more than 55,000 records as of February 2021 for the more than 195 countries covered in the CoronaNet datasetin total. Note that the PERISCOPE Data Atlas includes only information on European countries, of which there are more than 8,000 entries as of February 2021.

Each RA is responsible for tracking government policy actions for at leastone country. RAs are allocated depending on their background, language skills and expressed interest in certain countries (Horn 2019) Note depending on the level of policy coordination at the national level, certain countries were assigned multiple

RAs, e.g. Germany, or France.

In what follows, we describe in greater detail how (i) RAs identify raw sources for documenting government policies and; (ii) document the policies that they identify using our data collection software instrument. We further (iii) outline our post data-collection cleaning and validation procedures. Please refer to the Supplementary Methods Appendix B in Cheng et al. (2020) describing the dataset, for more information on our procedure for on-boarding and training RAs as well as how the project is organized overall.

4.1.1 Identifying Raw Sources

We have partnered with two machine learning companies, Jataware and Overton to collect raw sources of information about policies. Jataware has collected more than 200,000 news articles from around the world related to COVID-19. Jataware employs a natural language processing (NLP) classifier using Bidirectional Encoder Representations from Transformers (BERT) to detect whether a given article is indicative of a governmental policy intervention related to COVID-19. They then apply a secondary NLP classifier to categorize the type of policy intervention based on the definitions in our codebook (e.g. "declaration of emergency", "quarantine", etc.). Next, Jataware extracts the geospatial and temporal extent of the policy intervention (e.g. "Washington DC" and "March 15, 2020") whenever possible. The resulting list of news sources is then pro- vided to our RAs as an additional source for manual coding and further data validation.

Meanwhile Overton also uses a machine learning algorithm to scrape the web for documents related to government policies. Overton has allowed CoronaNet access to documents related to COVID-19 policies, which CoronaNet has extracted and organized for the convenience of its research assistants.

Research assistants may further check the following platforms to identify relevant policies: (i) the information page on COVID-19 policies of the US. Embassy website of a particular country (ii) the Wikipedia page on a particular country's response to the COVID-19 pandemic (iii) the relevant government websites of a particular country (e.g. executive office, health ministry) (iv) newspaper coverage of a particular country (via e.g. LexisNexis or Factiva).

4.1.2 Data Collection Software Instrument

We designed a Qualtrics survey with survey questions to systematize and stream-line the documentation of a given government policy over a wide range of di mensions. With this tool, RAs can easily and efficiently document information about different policy actions by answering the relevant questions posed in the survey (Büthe et al., 2020). For example, instead of entering the country that initiated a policy action into a spreadsheet, RAs answer the following question in the survey: "From what country does this policy originate?" and choose from the available options given in the survey. survey, especially in terms of the universe of policy actions that countries have implemented against COVID-19. For example,

if the survey only allowed RAs to select 'quarantines' as a government policy, it would not capture any data on 'external border restrictions', which would seriously reduce the value of the resulting data.

As such, to ensure the comprehensiveness of the data, before designing the survey, we collected in depth, over-time data on policy actions taken by one country since the beginning of the outbreak, Taiwan, as well as cross-national data on travel bans implemented by most countries for a total of 245 events. The specific data source we cross referenced for this effort was the March 20, 2020 version of a New York Times article on travel restrictions across the globe (Salcedo et al., 2020)

We chose to focus on Taiwan on because of its relative success, as of March 28, 2020, in limiting the negative health consequences of COVID-19 within its borders (Beech 2020). As such, it seemed likely at the time that other countries would choose to emulate some of the policy measures that Taiwan had implemented, bolstering the comprehensiveness of the questions we ask in our survey. Indeed at the time of writing, it would appear that some countries have indeed sought to mirror some parts of Taiwan's response (Aspinwall 2020).

Meanwhile, by also investigating variation in how different countries around the world have implemented travel restrictions, we have also helped ensure that our survey is able to comprehensively document variation in how an important and commonly used policy tool is applied, e.g., restrictions on different methods of travel (e.g. flights, cruises), restrictions across borders and within borders, restrictions targeted toward people of different statuses (e.g. citizens, travelers). There are many additional benefits of using a survey instrument for data col- lection, especially in terms of ensuring the reliability and validity of the resulting data:

1. Preventing unforced measurement error: RAs are prevented from entering data into incorrect fields or unknowingly overwriting existing data—as would be possible with manual data entry into a spreadsheet—because RAs can only document one policy action at a time in a given iteration of a survey and do not have access to the full spreadsheet when they are entering in the data.
2. Standardizing responses: We are able to ensure that RAs can only choose among standardized responses to the survey questions, which increases the reliability of the data and also reduces the likelihood of measurement error. For example, when RAs choose different dates that we would like them to document (e.g., the date a policy was announced) they are forced to choose from a calendar embedded into the survey which systematizes the day, month and year format that the date is recorded in.
3. Minimizing measurement error: A survey instrument allows coding different conditional logics for when certain survey questions are posed. This technique obviates the occurrence of logical fallacies in our data. For example, we are able to avoid situations where an RA might accidentally code the United States as having closed all schools in another country.
4. Reduction of missing data: We are able to reduce the amount of miss- ing data in the dataset by using the forced response option in Qualtrics. Where there is truly missing data, there is a text entry at the end of the survey where RAs can describe what

difficulties they encountered in collecting information for a particular policy event.

5. Reliability of the responses: We increase the reliability of the documen- tation for each policy by embedding descriptions of different possible re- sponses within the survey. For example, in the survey question where RAs are asked to identify the policy type (type variable, see Supplemen- tary Methods Appendix A), the survey question includes pop-up buttons which allow RAs to easily access descriptions and examples of each pos- sible policy type. Such pop-up buttons were also made available for the survey questions which code for the people or materials a policy was tar- geted at (target who what) and whether the policy was inbound, out- bound or both (target direction). Embedding such information in the dataset both clarifies the distinction between different answer choices and increases the efficiency of the policy documentation process (as RAs are not obliged to refer back and forth from the survey to the codebook).

6. Linking observations. The use of a survey instrument facilitates the linking of policy events together over time should there be updates to existing policies. Once coded, each policy is given a unique Record ID, which RAs can easily look up, reference and link to if they need to update a particular policy.

4.1.3 Post Data Collection Cleaning and Validation Checks

We further implement the following processes to clean and validate dataset:

1. Internal Cleaning: We give guidance to RAs to review the quality of the data for the country or sub-national region that they are responsible for (which, depending on when they have entered the project, they have not necessarily coded themselves). Such guidance takes the form of regional and country managers who verbally point out what issues to look out for, country overview and timeline templates to help RAs make sense of the policies in their country, and a data checklist for them to systematically review what issues to look out for in their country or sub-national region.

2. External Cleaning: We have a team of RAs who are highly experienced in the CoronaNet taxonomy to check the raw data for logical inconsistencies and typographical errors.

3. Multiple Coding for Validation: Others have shown that the random al- location of tasks and the validation of labels by more than one coder are among the best ways to improve the quality of a dataset (Amazon 2011, Sheng et al., 2008). We randomly sample 10% of the dataset using the source of the data (e.g. newspaper article, government press release) as our unit of randomization. We use the source as our unit of randomization because one source may detail many different policy types. We then provide this source to a fully independent RA and ask her to code for the government policy contained in the sampled source in a separate, but identical, survey instrument. If the source is in a language the RA cannot read, then

a new source is drawn. The RA then codes all policies in the given source. This practice is repeated a third time by a third independent coder. Given the fact that each source in the sample is coded three times, we can assess the reliability of our measures and report the reliability score of each coder.

4. Evaluation and Reconciliation: We then check for discrepancies between the originally coded data and the second and third coding of the data through two primary methods. First, we use majority-voting to establish a consensus for policy labels. Using the majority label as an estimate of the "hidden true label" is a common method to address classification problems (Raykar et al 2009) One issue with this approach is that it assumes that all coders are equally competente (Raykar et al., 2010). This criticism is generally levied at data creation with crowd-sourced laborers. We mitigate this problem by training our RAs in the data collection pro- cess and prioritizing RA country-knowledge and language skills, therefore ensuring a more equal baseline for RA quality. In addition, we will provide RA identification codes that will allow users to evaluate coder accuracy.

If the majority achieves consensus, then we consider the entry valid. If a discrepancy exists, a fourth RA or PI makes an assessment of the three entries to determine whether one, some, a combination of all three is most accurate. Reconciled policies are then entered into the dataset as a correction for full transparency. If an RA was found to have made a coding mistake, then we sample six of their previous entries: 3 entries which correspond to the type of mistake made (e.g. if the RA incorrectly codes an 'External Border Restriction' as a 'Quarantine', we sample 3 entries where the RA has coded a policy as being about a 'Quarantine') and randomly sample 3 more entries to ascertain whether the mistake was systematic or not. If systematic errors are found, entries coded by that individual will be entirely recoded by a new RA.

At the time of writing, we are in the process of completing our second coding of the validation sample. Thus far, 549 policies have been double coded --- 505 double-coded policies after excluding the category 'Other policies' from the analysis --- out of the original 1,200 randomly-selected policies included in our validation set. This is equivalent to 10% of the first 12,000 policies in the dataset. We will be gradually expanding the validation set until we cover 10% of all observations. The percentage agreement of this validated data is: 76.53%, the Cohen's Kappa is 0.75 and the Krippendorff's alpha is 0.82. More information about the validation set as well as the most updated figures can be found on the CoronaNet website at: https://www.coronanet-project.org/ validation check

4.2   Geographic Scope

The data covers national level policies for the following 27 European countries:

country	ISO_A3
Austria	AUT
Belgium	BEL
Bulgaria	BGR
Croatia	HRV
Cyprus	CYP
Czechia	CZE
Denmark	DNK
Estonia	EST
Finland	FIN
France	FRA
Germany	GER
Greece	GRC
Hungary	HUN
Ireland	IRL
Italy	ITA
Latvia	LVA
Lithuania	LTU
Luxembourg	LUX
Malta	MLT
Netherlands	NLD
Poland	POL
Portugal	PRT
Romania	ROU
Slovakia	SVK
Slovenia	SVN
Spain	ESP
Sweden	SWE

4.3   Variable Information

The following information is made available for every variable (if applicable):

Question: The question in the Qualtrics survey which measures a given variable.
Clarification: Greater detail, context, or background on what underlying concept the question is trying to capture.

Responses: Specific response categories to a particular question. Moreclarification for a given response category may also be provided here.

Response Type: The CoronaNet survey instrument collects both standardized responses and free-text responses. Possible types of responses include:

- *Standardized Categories*: These are textual responses that are hard-coded into the survey.
- *Standardized Dates*: These are calendar-date responses for which JavaScript was used to ensure the same date format (mm/dd/yyyy) for each response.
- *Free-text*: These are responses to survey questions that are free-text entries.

Date added to the survey: This is the date that the survey question was added to a survey. When responses to the survey were added later to the survey, this information is also noted here.

4.4 Variables

4.4.1 Record Identifiers

Record ID (record_id**)**
Unique record ID for each observation in the dataset. This ID is generated automatically in Qualtrics.

Policy ID (policy_id**)**
An ID which links policies over time, where the beginning of policy is noted as a 'New Entry' and follow-ons to a policy are noted as an 'Update' (see entry type). Policies can be updated as long as the following information remains constant: policy initiator, policy type, policy sub type, geographic target, demographic target. E.g. a policy which is extended over time would count as an update, but a policy that changes its demographic target would count as a new policy. This id is generated randomly in Qualtrics.

Entry type (entry_type**)**
Information as to where in the policy history of a given policy a record is situated.

Responses:
New Entry: The record is the first instance of a policy being made on a given date for the following combination of dimensions: the policy initiator, policy type, policy sub type, geographic target, demographic target.
Update: The record is an update to a new entry insofar as some dimension of the record changes other than the following dimensions: the policy initiator, policy type, policy sub type, geographic target, demographic target.

Date added to the survey: March 28, 2020 (original question)

Update type (update_type**)**
If the entry type is an "Update", then this variable records more information as the nature of the update.

Responses:

Change of Policy: A dimension other than the policy initiator, policy type, policy sub type, geographic target, demographic target has changed

End of Policy: Either the policy has been cancelled/terminated or one of the following dimensions has changed: the policy initiator, policy type, policy sub type, geographic target, demographic target.

Date added to the survey: April 27, 2020

Update Level (update_level**)**
If the entry type is an "Update", then this variable records more information as to the magnitude of the update.

Responses:

Strengthening: A policy strengthens in terms of its conditions, coverage, or compliance, or duration

Relaxing: A policy relaxes in terms of its conditions, coverage, or compliance, or duration

Strengthening and Relaxing: A policy strengthens in terms of its conditions, coverage, or compliance, or duration for some dimensions and relaxes on other dimensions.

Date added to the survey: April 8, 2020

4.4.2   Policy Types (type)

There are 19 broad policy types that a given government policy category can be categorized under. These are documented in question below:

Question: Please select the appropriate policy category:

Clarification: This variable captures the type of government policy. Note that in the survey, it is possible to access the definitions and examples for each policy type via pop-up buttons in the survey.

Responses:

Declaration of Emergency: The head of government declares a state of national emergency.

Lockdown: Targets of the policy are obliged shelter in place irrespective of potential likelihood of COVID-19 transmission and are only allowed to leave their shelter for specific reasons

Curfew: Government policies that limit domestic freedom of movement to certain times of the day.

Quarantine: Targets of the policy are obliged to isolate themselves for at least 14 days because there is reason to suspect a person is infected with COVID-19

External Border Restrictions: Government policies which reduce the ability to access ports of entry or exit to or from different governmental jurisdictions.

Restrictions of Mass Gatherings: Government policies that limit the number

of people allowed to congregate in a place. Please enter the number in the text entry.

Social Distancing: Government policies that limit physical contact between individuals in public spaces.

Closure and Regulations of Schools: Government policy which regulates educational establishments in a country. This may include: closing an educational institution completely, allowing an educational institution to open with certain conditions; allowing an educational institution to stay open without conditions

Restriction and Regulations of Businesses: Government policy regulates private, commercial activity. This can include closing down commercial establishments completely; allowing commercial establishments to open with conditions; or allowing commercial establishments to open without conditions.

Health Resources: Government policies which affect the material (e.g. medical equipment, number of hospitals for public health) or human (e.g. doctors, nurses) health resources of a country.

COVID-19 Vaccines: Government policy made with regards to either the research and development, regulation, production, purchase and/or distribution of a given COVID-19 vaccine

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question). The following responses were added at later dates: Hygiene (April 26, 2020); Anti-Disinformation Measures (April 29, 2020); Lockdown (May 6, 2020); COVID-19 Vaccines (December 22, 2020)

4.4.3   Policy Sub Types (type_sub_cat)

Many broad policy types (type) also have sub categories. They are collected from different questions depending on the broader policy type and then collated into the type sub cat variable. In what follows, we present the questions used to document the sub policy types for each of these variables.

Quarantine Sub-Type **(**type_sub_cat**)**
Question: Please choose all that apply in terms of the conditions of the quarantine:

Clarification: This variable provides additional detail on the conditions of the quarantine, if available. That is, [type sub cat] takes on the following response values if the [type] == "Quarantine":

Responses:

Self-Quarantine: Accommodations for the quarantine are made privately and are not dictated by the policy. This can be a private home.

Government Quarantine: Accommodations for the quarantine are restricted to government facilities.

Quarantine outside the home or government facility: Accommodations for the quarantine are dictated by the policy but do not include being in a home

or a government facility.
Other Quarantine: Conditions of quarantine are other than those listed above.

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

External Border Restriction Sub-Type **(**type_sub_cat**)**
Question: Please select all that apply in terms of the strategies that are employed to restrict movement on the external border:

Clarification: This variable provides additional detail on what strategies the government used to restrict movement across borders. That is, [type sub cat]takes on the following response values if the [type] == "External Border Re- strictions":

Responses:
Health Screenings: Health screenings done at ports of entry to ascertain thehealth of travelers in general.
Health Certificates: Certifications given by a medical professional which verify that at the time of the certification, the traveler did not have COVID-19 or symptoms associated with COVID-19
Travel History Form: A form in which travelers document which countries they've recently visited
Visa restrictions: Measures that make the process for obtaining a visa to visit/reside in a country more difficult.
Visa extensions: Measures that make the process for obtaining a visa to visit/reside in a country easier
Proof of COVID-19 Vaccination: Documentation which demonstrates that has a traveler has received a COVID-19 vaccination
Total Border Crossing Ban: Measures that categorically prohibit the entry or exit from a geographical region.

Response Type: Standardized Categories

Date added to the survey: March 30, 2020. The following responses were added at later dates: Travel History Form (March 31, 2020); Visa restrictions (April 29, 2020); Visa extensions (April 29, 2020); Total Border Crossing Ban (September 18, 2020); Proof of COVID-19 Vaccines (December 22, 2020)

Restrictions of Mass Gatherings Sub-Type **(**type_sub_cat**)**
Question: Please select the most appropriate choice in terms of what kind of mass gathering that has been restricted, when applicable.

Clarification: This variable provides additional detail on the type of mass gathering that has been restricted, when applicable. That is, [type sub cat] takes on the following response values if the [type] == "Restrictions of MassGatherings":

Responses:
Postponement of an annually recurring event (e.g. election, national festival).
Cancellation of a recreational or commercial event (e.g. sports game, music

concert)
Postponement of a recreational or commercial event (e.g. sports game, music concert)
Attendance at religious services prohibited (e.g. mosque/church closings)
Prison population reduced (e.g. early release of prisoners)
Events at private residencies restricted (e.g. parties held at home)
Events allowed to occur but no audience is allowed
All/Unspecified mass gatherings

Response Type: Standardized Categories

Date added to the survey: April 29, 2020. The following responses were added at later dates: Events at private residencies restricted (e.g. parties held at home) (July 23, 2020); Events allowed to occur but no audience is allowed (November 24, 2020); All/Unspecified mass gatherings (August 18, 2020)

Social Distancing **(**type_sub_cat**)**
Question: Please select all that apply in terms of the types of social distancing rules that are applied:

Clarification: This variable provides additional detail about the type of social distancing rules being applied. That is, [type sub cat] takes on the following response values if the [type] == "Social Distancing":

Responses:
Keep a distance of at least 2 meters or 1.5 feet
Keep a distance of some other distance which is not 2 meters or 1.5 feet
Restrictions on private vehicles in public circulation
Restrictions on ridership of subways and trams
Restrictions on ridership of trains
Restrictions on ridership of buses
Restrictions ridership of other forms of public transportation
Wearing masks in all public places/everywhere
Wearing masks in all indoor spaces
Wearing masks (unspecified)
Wearing masks in other places not specified above/ other masking wearing policy

Response Type: Standardized Categories

Date added to the survey: April 26, 2020. The following responses were added at later dates: Wearing masks in all public places/everywhere (April 29, 2020) ; Wearing masks in all indoor spaces (April 29, 2020); Wearing masks in all indoor spaces (April 29, 2020); Wearing masks (unspecified) (April 29, 2020); Wearing masks in other places not specified above/ other masking wearing policy (April 29, 2020); Restrictions on private vehicles in public circulation (June 23, 2020); Restrictions on ridership of subways and trams (June 23, 2020); Restrictions on ridership of trains (June 23, 2020); Restrictions ridership of other forms of public transportation (June 23, 2020); Keep a distance of some other distance which is not 2 meters or 1.5 feet (September 14, 2020).

Closure and Regulation of Schools **(**type_sub_cat**)**

Question: Please select all that apply in terms of the types of social distancing rules that are applied:

Clarification: This variable provides additional detail about the type of social distancing rules being applied. That is, [type sub cat] takes on the following response values if the [type] == "Closure and Regulations of Schools":

Responses:

Preschool or childcare facilities: These institutions are generally targeted for children ages 5 and under.

Primary Schools: These institutions are generally targeted for children ages 5 to 10.

Secondary Schools: These institutions are generally targeted for children ages 10 to 18

Higher education: These institutions are generally targeted towards degree granting institutions (e.g. BAs, MAs) or certification-granting institutions

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Restriction and Regulations of Businesses **(type_sub_cat)**

Question: Please choose all that apply in terms of the types of business activity that was restricted:

Clarification: This variable provides additional detail on the types of business activity that have been restricted COVID-19, if available. That is, [type sub cat] takes on the following response values if the [type] == "Restriction and Regulations of Businesses":

Responses:

All businesses: This refers to all private businesses.

Retail Businesses: This refers to shops such as clothing stores, specialty goods, flower shops, etc.

Restaurants: This refers to establishments that provide prepared food and drink services to patrons.

Bars: This refers to establishments that primarily provide alcoholic drink services to patrons.

Shopping Centers: This refers to commercial centers in which retail businesses are available in a centralized location

Commercial Businesses: These refer to establishments that provide recreational services such as movie theaters, gyms.

Personal Grooming Services: These refer to establishments that provide services for personal care or hygiene, e.g. hair or nail salons.

Supermarkets/Grocery stores: These refer to establishments that sell food (e.g. fresh produce, meat, baked goods).

Private Health Offices: These refer to establishments through which private doctors provide medical care.

Pharmacies: These refer to establishments which sell prescription drugs.

Paid Lodgings: These refer to establishments that provide rental services

ofshort-term dwellings (e.g. hotel, motel, hostel, inn).

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question). The following responses were added at later dates: Supermarkets/grocery stores (April 29, 2020); Pharmacies (April 29, 2020); Private Health Offices (April 29, 2020); Paid lodgings (November 24, 2020)

Health Resources **(**type_sub_cat**)**

Question: Please choose all that apply in terms of the type of health resources that the government policy affects.

Clarification: This variable codes additional detail about the nature of the health resource the policy deals with. That is, [type sub cat] takes on the followingresponse values if the [type] == "Health Resources":

Responses:

> Masks: This refers to masks that cover the face which help filter out pollutants in the air.
> Ventilators: This refers to medical equipment which aids breathing in patients who are no longer able to do so on their own.
> Personal Protective Equipment: This refers to medical-grade articles of clothing and goggles which help prevent the transmission of disease
> Temporary Quarantine Facilities: Physical structures that have been temporarily erected for the purpose of accommodating people under quarantine
> Temporary Medical Units: Physical structures that have been temporarily erected for the explicit purpose of treating COVID-19 patients
> Doctors: Accredited professionals with a license to provide medical treatment and services and are permitted to make medical decisions.
> Nurses: Accredited professionals with a license to support medical treatment and services but cannot make medical decisions. Health Volunteers:
> Unaccredited volunteers who may support medical treatment and outcomes
> Army(medical corps):
> Military personnel who may support or provide medical treatment and services
> Unspecified Health Staff: Medical or health related staff or personnel for which there is no further elaboration given in thesource or sources found
> Other Health Staff: Medical or health related staff or personnel other than those listed above.

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question). The following responses were added at later dates: Army (medical corps) (December 22, 2020).

COVID-19 Vaccines **(**typesubcat**)**
Question: Please select the intended policy goal with regards to a given COVID- 19 vaccine:

Clarification: This variabledocuments the intended policy goal with regards to COVID-19 vaccines. That is, [type sub cat] takes on the following responsevalues if the [type] == "COVID-19 Vaccines":

Responses:
    Resources for research and development of a COVID-19 vaccine
    Regulatory approval process for administering the COVID-19 vaccine
    Production of COVID-19 vaccines
    Purchase of COVID-19 vaccines
    Distribution (shipping, storage, administration) of COVID-19 vaccines

Response Type: Standardized Categories
Date added to the survey: March 28, 2020 (original question)

4.4.4 Additional Policy Type dimensions

For some policy types, there are additional dimensions that are captured which provides more detail about the intended policy goal. They are captured in these additional variables and more information on each is provided below:

- Institution Status (institution_status)

- Health Monitoring Strategy (type_health_mon_stra)

- "Health Resource" Staff Measure (type_health_staff)

- "Health Resource" Material Measure (type_health_material)

- COVID-19 Vaccine Distribution Strategy (type_vac_dist)

- "Public Awareness Measures" Content (type_pub_content)

- "Public Awareness Measures" Engagement (type_pub_format)

Institution Status (institution_status**)**
For three broad variable types: *Closure and Regulation of Schools*, *Restric- tions and Regulations of Businesses* and *Restrictions and Regulations of Gov- ernment Services*, data is recorded as to whether a given institutions is open, open with conditions or closed. These are captured in three separate ques- tions (one for each broad policy type) and then combined into a the variable (instituto_ status). The relevant questions ares as follows:

Institution Status for "Closure and Regulation of Schools" **(**institution _status**)**
Question: Please choose one of the following in terms of how [see response oftype sub cat when type == 'Closure and Regulation of Schools'] are allowed to operate according to this policy:

Clarification: For each sub type of school that is regulated by a given policy, this variable documents whether the school is open, open with conditions or closed/locked down. That is, [institution status] takes on the following responses if the [type] == "Closure and Regulations of Schools":

Responses:
[see response of type sub‿cat when type == 'Closure and Regulation of Schools'] allowed to open with no conditions
[see response of type sub cat when type == 'Closure and Regulation of Schools'] allowed to open with conditions
[see response of type sub cat when type == 'Closure and Regulation of Schools'] closed/locked down

Response Type: Standardized Categories

Date added to the survey: May 19, 2020

Institution Status for "Restrictions and Regulations of Government Services" (institutions_status)
Question: Please choose one of the following in terms of how activity related to the [see response of type sub ‿cat when type == 'Restrictions and Regulations of Government Services'] is regulated by this policy:

Clarification: For each government service that is regulated by a given policy, this variable documents whether the government service is open, open with conditions or closed/locked down. That is, [institution status] takes on the following responses if the [type] == "Restrictions and Regulations of Government Services":

Responses:
This service provided by the government is provided with no conditions attached
This service provided by the government is provided with conditions attached
This service is no longer provided by the government

Response Type: Standardized Categories

Date added to the survey: May 24, 2020

Institution Status for "Restrictions and Regulations of Businesses" (institutions_tatus)
Question: Please choose one of the following in terms of how activity related to business [see response of type sub cat when type == 'Restrictions and Regulations of Businesses'] is regulated by this policy:

Clarification: For each business that is regulated by a given policy, this variable documents whether the business is open, open with conditions or closed/locked down. That is, [institution status] takes on the following responses if the [type] == "Restrictions and Regulations of Businesses":

Responses:

This type of business [see response of type sub cat when type == 'Restrictions and Regulations of Businesses'] is allowed to open with no conditions
This type of business [see response of type sub cat when type == 'Restrictions and Regulations of Businesses'] is allowed to open with conditions
This type of business [see response of type sub cat when type == 'Restrictions and Regulations of Businesses'] is closed/locked down

Response Type: Standardized Categories

Date added to the survey: May 1, 2020

"Health Resource" Staff Measure (type_health_staff**)**
Question: Please select all that apply in terms of the intended policy goal for this health staff resource:

Clarification: When the broad policy [type] == "Health Resources" and the type sub cat is either: 'Doctors', 'Nurses', 'Health Volunteers', 'Army (medical corps)', 'Unspecified Health Staff', or 'Other Health Staff', this variable provides additional detail as to the intended policy goal for a given health staff resource.

Responses:
Increase in hiring of health staff to address health effects of COVID-19
Increase in hiring of health staff to administer COVID-19 tests
Increase in hiring of health staff to administer of COVID-19 vaccines
Tele-medicine/Virtual care services
Mental Health Service provision Medical licensing waivers
Other health staff policy goal
Not applicable

Response Type: Standardized Categories

Date added to the survey: December 22, 2020

"Health Resource" Material Measure (type_health_material**)**

Question: Please select all that apply in terms of the intended policy goal for this health material resource

Clarification: When the broad policy [type] == "Health Resources" and the type sub cat is either: 'Masks', 'Ventilators', or 'PPE', this variable provides additional detail as to the intended policy goal for a given health material resource.

Responses:
Increase new production capacities for this health material
Repurpose existing production to increase amount of this health material
Increased purchase of this health material
Increase distribution of this health material
Other health material policy goal
Not applicable

Response Type: Standardized Categories

Date added to the survey: December 22, 2020

Health Monitoring Strategy (type_health_mon_stra**)**
Question: Please choose all that apply in terms of the types strategies that the government has employed to monitor people's health:

Clarification: This variable provides additional detail as to what strategy was used to monitor people's likelihood of COVID-19 infection when the broader policy type [type] == "Health Monitoring".

Responses:
> Contact tracing through human teams
> Contact tracing through smart phones (e.g. apps) Wearable technology (e.g. bracelets, anklets, beacons)Other

Response Type: Standardized Categories

Date added to the survey: November 24, 2020

COVID-19 Vaccine Distribution Strategy (typ_vac_dist**)**
Question: Please select all that apply in terms of which part of the distribution process the policy is being made for:

Clarification: This variable documents which part of the COVID-19 distribution process a policy is being created for . This variable is shown only if 'Distribution (shipping, storage, administration) of COVID-19 vaccines' is selected in as a policy sub type when the [type] == 'COVID-19 Vaccines'.

Responses:
> Storage of the vaccine Shipping of the vaccine
> Administering of the vaccine (i.e. giving people the vaccine shot)

Response Type: Standardized Categories

Date added to the survey: December 22, 2020

Public Awareness Measures" Content (type_pub_content**)**

Question: Select all that apply to the content of the policy/campaign or message. Public awareness campaigns or messages are aimed at disseminating "Public Awareness Measures". Note: We do NOT collect the actual COVID-19 statistics themselves. If a government offers counseling services to the public to support their mental health, this should be coded as "Health Resources".

Responses:
> Information about the way COVID-19 statistics will be calculated or reported
> Instructions/tips on COVID-19 prevention Announcements about approved treatment procedures
> Information/reminders about how COVID-19 spreads
> Information about the risks and dangers of COVID-19 for individuals' health

Information about the risks and dangers of COVID-19 for the community
Other (text box)

Response Type: Standardized Categories

Date added to the survey: November 24, 2020

"Public Awareness Measures" Engagement (type_pub_format**)**
Question: Select all that apply with regards to the format in which the information is either disseminated or gathered:

Clarification: This variable provides additional information as to the message format/means of an engagement of a public awareness measure, i.e. when the broad policy [type] == "Public Awareness Measures".

Responses:
Call center/hotline
TV/radio/newspaper (traditional media)Internet-based news outlets
Government portals, websites, apps
Social media pages of local government agencies or state officials
Booklets, leaflets, other individual printed materials
Billboards, signs, publicly displayed visualsPress-conferences, briefings
Information to be conveyed by other agencies (schools, NGOs, medical organizations)
Other (text box)

Response Type: Standardized Categories

Date added to the survey: November 24, 2020

4.4.5 Policy Initiators

Initiating Government Level (init country level**)**
Question: Was the policy made from a level of government other than the national level?

Clarification: This variable documents what level of government a particular government policy originated from.

Responses:
National Level: No, it is at the national level Province/State Level: Yes it is at the province/state level
City/Municipal Level: Yes, it is at the city/municipal level
Other government level: Yes, it is at another governmental level [e.g. county]

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Country (country**)**

Question: From what country does this policy originate from?

Clarification: This variable documents the country in which a particular government policy is initiated. This variable always takes a value irrespective of what level of government the policy was made at (init country level).

Responses:
See the table in Section 4.2 for the full country list with the corresponding ISO codes.

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Province (province**)**
Question: Please select the appropriate province/state [(country)]:

Clarification: This variable documents the province from which a policy is initiated, if applicable. This variable only takes a value if the response to init country level is 'Provincial'.

Responses: ISO-2 level regions.

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

City (city**)**
Question: If this policy was announced by a particular city, please specify the city here: [(city)]:

Clarification: This variable documents the city from which a policy is initiated, if applicable. This variable only takes a value if the response to init_country_city is 'City'.

Response Type: Free text

Date added to the survey: March 28, 2020 (original question)

4.4.6 Geographic Targets

Geographic Target Level (target geog level**)**
Question: Please specify which geographical or administrative entity is the target of the policy:

Clarification: This variable documents the geographic or administrative entity that the policy targets.

Responses:

>All countries
>One or more regional groupings
>One or more countries, but not all countries
>One or more countries and a one or more regional grouping.
>One or more geographical or administrative units within one or more countries
>An international organization

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Target Region (target region**)**
Question: Please choose as many applicable regions as possible.

Clarification: This variable documents the region or regions that is/are the targets of a particular government policy.

Responses:

>Africa
>ASEAN Countries
>Asia
>Central America
>Europe
>European Union (with the UK)
>European Union (without the UK)
>Latin America
>Middle East
>North America
>Oceania
>Schengen Area (with the UK)
>Schengen Area (without the UK)
>Other Regions (please specify below)

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Target Country (target_country**)**
Question: Please select as many countries that are targets of this policy as applicable.

Clarification: This variable documents the country or countries that is/are the target of a particular government policy. This variable always takes a value irrespective of what geographic level the policy is targeting.

Responses: ISO-1 administrative level regions

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Target Province (target_province**)**
Question: Please select what province(s)/states this policy is targeted towards.
Clarification: This variable documents the province that is/are the target of a particular government policy, if applicable. This variable only takes a value if the response to target geog level is One or more geographical or administrative units within one or more countries'.

Responses: ISO-2 administrative level regions

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Target City (target_city**)**
Question: Please write in what cities/municipalities this policy is targeted to-wards:

Clarification: This variable documents the city that is/are the target of a particular government policy, if applicable. This variable only takes a value if the response to target geog level is One or more geographical or administrative units within one or more countries'.

Response Type: Free text

Date added to the survey: March 28, 2020 (original question)

Target Other (target_other**)**
Question: Please write in what other geographic or administrative unit this policy is targeted towards:

Clarification: This variable documents the subnational region or regions that is/are the target of a particular government policy which are not provinces or cities.

Response Type: Free text

Date added to the survey: March 28, 2020 (original question)

Target Direction (target_direction**)**
Question: Please select whether this policy is inbound, outbound or both in-bound/outbound.

Clarification: This variable documents the "directionality" of a government policy if the geographic target of a policy is not the same as the policy initiator.

Responses:

Inbound: Government policy that seeks to control movement of people entering the country initiating the policy.
Outbound: Government policy that seeks to control movement of people exiting the country initiating the policy.
Inbound/Outbound: Government policy that seeks to control the movement of people entering or exiting the country
Not applicable

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Travel Mechanism (travel_mechanism**)**
Question: If applicable, please select what mode of transportation this policy is applied to:

Clarification: This variable codes the mechanisms of travel that a policy is targeted toward.

Responses:
All mechanisms: Government policy that applies toward all mechanisms of travel. See other categories for more detail on possible mechanisms of travel.
Flights: Government policy that applies to air travel.
Land Border: Government policy that applies to non-air travel across land borders.
Trains: Government policy that applies towards train travel.
Buses: Government policy that applies towards bus travel.
Seaports: Government policy that applies towards water travel.
Cruises: Government policy that applies towards cruise travel.
Ferries: Government policy that applies towards ferry travel.
Not applicable

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

4.4.7 Demographic Targets

Broad Demographic Target (target_who_what

Question: Please select from the list below what or whom the policy is targeted at

Clarification: This variable codes the people or materials who are the target of a particular policy.

Responses:
All (Travelers + Residents): Government policy that applies to all humans regardless of residency or travel status.

All Travelers (Citizen Travelers + Foreign Travelers): Government policy targeted toward all travelers, both foreign and domestic
Citizen Travelers: A government policy that applies only to domestic na tionals travelling outside the country initiating the policy.
Foreign Travelers: A government policy that applies to only to foreign nationals travelling outside the country initiating the policy.
All Residents (Citizen Residents + Foreign Residents): Government policy targeted toward residents, both foreign nationals and domestic nationals, in the country initiating the policy.
Citizen Residents: Government policies that apply only to citizens who are residing in the country initiating the policy.
Foreign Residents: Government policies that that apply only to foreign na tionals who are residing in the country in initiating the policy
All Foreign Nationals: Government policies that that apply only to foreign nationals who are residing in the country in initiating the policy
All Citizens: Individuals with citizenship or permanent residency in the country initiating the policy
Health Staff: Government policy targeted toward human health staff

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question)

Special Demographic Targets (target_who_gen)
Question: If a policy targeted toward a particular part of a population (under a criteria other than 'citizenship' status or 'residency' status, which is captured by the 'target who what' question), please select all that apply in the choices given below.

Clarification: This variable captures information more generally about who the target of a policy is, using a criteria other than 'citizenship' status or 'residency' status, which is captured by the 'target who what' question.

Responses:
Asylum/refugee seekers Homeless population Domestically abused people Domestic abusers
Prisoners
People in nursing homes/long term care facilities
People of a certain age (please note age range in the text entry)
People with certain health conditions (please note which health conditions in the text entry)
Essential workers (please note their occupation in the text entry where applicable)
Non-essential workers (please note their occupation in the text entry where applicable)
Migrant workers (please note their occupation in the text entry where applicable)
Other workers where the distinction between essential and non-essential is not explicitly made (please note their occupation in the text entry where applicable)
Other population not specified above
No special population targeted

Response Type: Standardized Categories

Date added to the survey: June 5, 2020. The following responses were added at later dates: Essential workers (August 18, 2020); Non-Essential workers (Au- gust 18, 2020); Migrant workers (August 18, 2020); Other workers where the distinction between essential and non-essential is not explicitly made (August 18, 2020); Women (November 25, 2020)

4.4.8 Compliance (compliance)

Question: What kind of enforcement does this policy have (if any)?

Clarification: This variable captures information about the de jure compliance of a policy.

Responses:

Mandatory With Legal Penalties: The prescribed government policy is mandatory/ must be followed. If the policy is not followed, people may face legal penalties like jail time.

Mandatory with Fines: The prescribed government policy is mandatory/ must be followed but some exceptions are allowed. If the policy is not followed, people must pay a fine.

Mandatory (Unspecified/Implied): The prescribed government policy is mandatory/must be followed but the penalty for failing to comply is not made explicit or is implied. For instance, in the example given below, the implication of the policy (even though it is not explicitly stated) is that travelers with-out a health certificate will not be allowed to enter the country. E.g. In the Dominican Republic, as of March 19, "all travelers arriving in the country must complete a travel history form"

Mandatory with Exceptions: There are some exceptions to the policy but it is mandatory for those for whom it applies. E.g. "As of March 13, the Indian government suspended most travel and tourism visas, with the exception of 'diplomatic, official, U.N. or International Organizations, employment and project visas' until April 15.

Recommended/Voluntary but no penalties: The prescribed policy is recommended by the initiating body but compliance is voluntary.

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question). The following response was added at a later date: Mandatory (Unspecified/Implied) (March 31, 2020).

4.4.9 Institutional enforcer (enforcer)

Question: Please select as many organizations that apply in terms of enforcing compliance or issuing recommendations for the policy you are documenting.

Clarification: The organizational body in charge of enforcing compliance with a particular policy or issuing recommendations for a particular policy. This variable can take on one or more of the following values:

Responses:

National government: This refers to the body that is responsible for national-level decision making.

Ministry/Department of Health: This refers to the body that is responsible for overseeing health outcomes at the national level.

Ministry/Department of Justice: This refers to the body that is responsible for overseeing the legal and judicial process of a country at the national level.

Ministry/Department of Foreign Affairs: This refers to the body that is responsible for overseeing the government relationships with foreign countries at the national level.

Ministry/Department of Education: This refers to the body that is responsible for overseeing education outcomes at the national level.

Military: This refers to the body that is responsible for security or defense at the national level.

Provincial/state government: This refers to the body that is responsible for province or state level decision making.

Municipal government: This refers to the body that is responsible for city or municipal level decision making.

Ministry/Department of Education: This refers to the body that is responsible for city or municipal level decision making.

Police: An organization empowered by the state to enforce the law at any level of government (e.g. national, provincial, etc.)

Response Type: Standardized Categories

Date added to the survey: March 28, 2020 (original question). The following responses were added at later dates: Police (March 29, 2020); Ministry/Department of Justice (May 23, 2020); Ministry/Department of Foreign Affairs (May 23, 2020); Ministry/Department of Education (September 27, 2020)

4.4.10 Policy Timing

Policy Announced Date (date_announced**)**
Question: When was this policy announced?

Clarification: This variable documents the date that the government policy was announced.

Responses Type: Standardized Dates (format: mm/dd/yyyy)
Date added to the survey: March 28, 2020 (original question)

Policy Start Date (date_start**)**
Question: When does the policy take effect?

Clarification: This variable documents the date that the government policy takes effect. If there is no available information about this, then the date announced is used.

Responses Type: Standardized Dates (format: mm/dd/yyyy) Date with calendar format: mm/dd/yyyy

Date added to the survey: March 28, 2020 (original question)

Policy End Date Category (date_end_spec**)**
Question: Please select the choice which best describes the end date for this policy:

Clarification: This variable records information about type of end date of a particular policy.

Responses:
> The policy has a clear end date: The end date of the policy is clearly announced by the policy initiator.
> The policy is a one-time measure: The policy is a one-time event such that the execution of the policy occurs over a very short time-span; e.g. thepublication or translation of government documents related to COVID-19.
> The policy has an imprecise natural end date: The policy is an event which is executed over a discrete period of time which is related to how long it takes to execute the policy, but that period of time is not necessarily known in advance.
> The policy has an unlimited time span: The policy is executed continuously over time such that unless there is an explicit policy that directly counters it, this policy can in theory go on forever. These are often laws which can only be countered if another law repeals the original law or general recommendations that continue to be applicable after they are issued unless counter recommendations are created.
> The policy's end date is unknown or unreported: At the time of the announcement of the start of a particular policy, there is no known or reportedend date.

Date added to the survey: January 20, 2021.

Policy Start Date (date_start**)**
Question: When does the policy end?

Clarification: This variable captures the date that the government policy endsor is projected to end.

Responses Type: Standardized Dates (format: mm/dd/yyyy)Date with calendar format: mm/dd/yyyy

Date added to the survey: March 28, 2020 (original question)

4.4.11 Meta Data

Source URL Link (link)

URL link of the original source used to document a given record. Where possible, a government source is used. When a government source in not available, at least 2 reputable sources should be used.

Date added to the survey: March 28, 2020 (original question)

Date Recorded (recorded_date)
The date that the record was recorded. This is recorded automatically in Qualtrics.

Responses Type: Standardized Dates (format: mm/dd/yyyy)

Date Updated (date_updated)
The last date that a RA checked to see if there was any government activity for a given policy type.

Responses Type: Standardized Dates (format: mm/dd/yyyy)

Correct type (correct_type)
Information as to whether a given record has been corrected or not.

Responses:
  Original: The record has been entered as originally coded
  Corrected: The original entry has been corrected.

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5. References

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5.3   Additional Resources on Mental Health

LGA has a range of information on coronavirus for councils on their **website** and resources to support **workforce** health, resilience and wellness during COVID-19. There is also a wellbeing **guide** for staff working in schools and trusts.

PHE has issued **Guidance for the public on the mental health and wellbeing aspects of coronavirus (COVID-19)** and **Guidance for parents and carers on supporting children and young people's mental health and wellbeing during the coronavirus (COVID-19) outbreak**

PHE has also updated the **Every Mind Matters** platform with specific advice on maintaining good mental wellbeing during the outbreak, including looking after a child's mental health and self-care for young people.

Real World Public Mental Health podcast, hosted by the Behavioral Science and Public Health Network (BSPHN), looks at how evidence is being used in the real world to prevent and promote better mental health for all. It is part of a public mental health collaboration between BSPHN, PHE, ADPH, LGA, Centre for Mental Health, Mental

Health Foundation and NIHR – School for Public Health Research. The podcast series follows the webinar Prevention and Promotion for Better Mental Health in Local Systems, hosted by PHE in November 2020 on behalf of the collaboration, which can be viewed on the COVID-19 public mental health **community of practice**.

DHSC **Staying mentally well: winter plan 2020 to 2021**

Revised government guidance on **shielding and protecting extremely vulnerable people** from COVID-19.

Young Minds has produced tips, advice and information on where to get help during the COVID outbreak.

Mind resources on Coronavirus and wellbeing.

WHO advice 'mental health considerations during COVID-19 outbreak'

Centre for Mental Health **COVID-19 and the nation's mental health: forecasting needs and risks in the UK**

The Royal College of Psychiatrists has **prepared guidance** to help their members provide the best mental health services possible during the Covid-19

The Institute of Health Visiting has published COVID-19 Professional advice for Family Perinatal Mental Health

Maternal Mental Health Alliance resources and support

WHO Long-stay mental health care institutions and the COVID-19 crisis:identifying and addressing the challenges for better response and preparedness **https://apps.who.int/iris/bitstream/handle/10665/333964/WHO-EURO-2020-40745-54930-eng.pdf** **(2020, August)**

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5.5 Additional Resources on COVID-19 and the Environment

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5.6　Additional Resources for the PERISCOPE Codebook v.0.0

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Appendix

6. Appendix

Definition	Policy Type	Policy Sub-Types
The head of government declares a state of national emergency.	**Declaration of Emergency**	N/A
Targets of the policy are obliged to isolate themselves for at least 14 days because there is reason to suspect a person is infected with COVID-19	**Quarantine**	Self-Quarantine
		Government Quarantine
		Quarantine outside the home or govt. facility
		Other
Targets of the policy are obliged shelter in place and are only allowed to leave their shelter for specific reasons	**Lockdown**	N/A
Government policies which reduce the ability to access ports of entry or exit to or from different governmental jurisdictions.	**External Border Restrictions**	Health Screening
		Health Certificates
		Travel History Form
		Visa Restrictions
		Visa Extensions
		Other
		Total border crossing ban

Government policies which reduce the ability to move freely within a country.	**Internal Border Restrictions**	N/A
Government policies that limit the number of people allowed to congregate in a place. Please enter the number in the text entry.	**Restriction of Mass Gatherings**	Cancellation of annually occurring event
		Annually recurring event allowed to occur with conditions
		Postponement of annually recurring event
		Cancellation of a recreational or commercial event
		Postponement of a recreational or commercial event
		Attendance at religious services restricted
		Prison population reduced
		Events at private residencies restricted
		Other mass gatherings not specified above
		All/Unspecified mass gatherings
Government policies that limit physical contact between individuals in public spaces.	**Social Distancing**	Keeping 6 feet distance
		Keep a distance of some other distance not listed above. Please note the distance in meters in the text entry.
		Restrictions on private vehicles in public circulation
		Restrictions on ridership of subways and trams
		Restrictions on ridership of trains

		Restrictions on ridership of buses
		Restrictions ridership of other forms of public transportation
		Wearing masks in all public places/everywhere
		Wearing masks in all indoor spaces
		Wearing masks (unspecified)
		Wearing masks in other places not specified above
Government policies that limit domestic freedom of movement to certain times of the day.	**Curfew**	N/A
Government policy which regulates educational establishments in a country. This may include: closing an educational institution completely, allowing an educational institution to open with certain conditions; allowing an educational institution to stay open without conditions	**Closure and Regulation of Schools**	Preschool or childcare facilities
		Primary Schools
		Secondary Schools
		Higher Education Institutions
Government policy regulates government services. This can include ceasing the provision of government services completely; allowing the provision of government services with conditions; or allowing the provision of government services without conditions.	**Restrictions and Regulation of Government Services**	Regulated use of government services
		Issuing Permits/ certificates and/or processing of governmnet
		Election procedures [mail in voting]

		Regulation of publicly provided waste management services
		Regulated use of public outdoor spaces
		Beaches
		Campsites
		Parks
		Tourist sites
		Unspecified outdoor spaces
		Other public outdoor spaces
		Regulated use of Public Facilities
		Public libraries
		Public museums/galleries
		Public courts
		Unspecified public facilities
		Other public facilities
		Regulated hours government services available
		Regulated government working hours
		Regulations on government meetings
		Other government service not specified above
		All nonessential government services regulated
		All essential government services regulated

Government policy regulates private, commercial activity. This can include closing down commercial establishments completely; allowing commercial establishments to open with conditions; or allowing commercial establishments to open without conditions.	**Restriction and Regulation of Businesses**	Retail Businesses
		Restaurants
		Bars
		Shopping Centers
		Non-Essential Commercial Businesses
		Personal Grooming Businesses
		Supermarkets/ Grocery Stores
		Private Health Offices
		Pharmacies
		Agriculture, Forestry and Fishing
		Mining and Quarrying
		Electricity, Gas, Steam and air conditioning supply
		Water Supply, Sewerage, Waste Management and remediation activities
		Construction
		Telecommunications
		Information Service Activities
		Publishing Activities
		Financial Service Activities - Except insurance and pension funding
		Insurance, reinsurance, and pension funding
		transportation

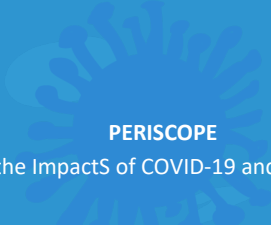|		
		Warehousing and support activities for transportation
		Other Non-Essential Businesses
		Other Essential Businesses
		All or unspecified non-essential businesses
		All or unspecified essential businesses
Government policies that seek to monitor the health of individuals who are afflicted with or who are likely to be afflicted with the coronavirus	**Health Monitoring**	A snapshot of a person's health at a given point in time
		A person's absolute (e.g. GPS) location over time
		Who this person has come into contact with over time
		A community's epidemiological status
Government policies which seeks to sample large populations for coronavirus regardless of suspected likelihood of affliction with coronavirus	**Health Testing**	Self-testing
		Drive-in testing centers
		Mobile Health testing station (excluding drive-ins)
		Fixed Health testing station (excluding drive-ins)
		Door-to-door testing
		• Health testing of entire population under the government's jurisdiction
		Other health testing

Government policies which affect the material (e.g. medical equipment, number of hospitals for public health) or human (e.g. doctors, nurses) health resources of a country.	**Health Resources**	Health Materials
		Masks
		Ventilators
		Personal Protective Equipment [Gowns, Goggles]
		Hand Sanitizer
		Test Kits
		Non COVID-19 Vaccines
		Dry ice for COVID-19 vaccine storage
		Cold storage capacity for COVID-19 vaccines
		Thermal cyclers (PCR machines/DNA amplifiers)
		Syringes
		Health Infrastructure
		Hospitals
		Temporary Quarantine Centers
		Temporary Medical Centers
		Public Testing Facilities [Drive thru testing]
		Health Research Facilities
		Health Staff
		Doctors
		Nursers
		Health Volunteers
		Army (medical) corps

		Health Insurance
Government efforts to promote hygiene in public spaces (e.g. disinfection of subways, burials)	**Hygiene**	Commerical Areas
		Public Areas
		Public Transport
		Burial Procedures
		Other Areas Hygiene Measures Applied
Efforts to disseminate or gather reliable information about COVID-19, including ways to prevent or mitigate the health effects of COVID-19.	**Public Awareness Measures**	Disseminating information related to COVID-19 to the public
		Gathering information related to COVID-19 from the public
		Both Disseminating and Gathering information related to COVID-19
Efforts by the government to limit the spread of false, inaccurate or harmful information with regards to COVID-19	**Anti-Disinformation Measures**	N/A
Government policy that changes the administrative capacity of a part of government to respond to the crisis.	**New Task Force, Bureau or Administrative Configuration**	New Task Force or Bureau
		Existing government entity given new powers
		Cooperation among different jurisdictional entities
		Other Administrative Configurations

	COVID-19 Vaccines	Resources for research and development of a COVID-19 vaccine
		Regulatory approval process for administering the COVID-19 vaccine
		Production of COVID-19 vaccines
		Purchase of COVID-19 vaccines
		Distribution of COVID-19 vaccines