

## Supplements 1 – Expanded methods description

The development of the WICID framework was conducted in three phases, following an approach analogous to the “best fit” framework synthesis and using an adapted version of the WHO-INTEGRATE framework as a starting point<sup>1</sup>. In phase I, we adapted the framework through brainstorming exercises and applying it to case studies, in order to develop an analytical, generic tool (*a priori* framework). Phase II, consisted of a content analysis of a purposive sample of comprehensive strategy papers on lifting the lockdown measures in Germany (e.g. reopening schools, increased testing measures), which were coded against the *a priori* framework and based on which the WICID framework version 1.0 was created. In a next step (phase III), which is yet to be completed, we will advance the WICID framework version 1.0, by integrating the perspectives of a diverse set of affected stakeholders across society. Phase III allows for an assessment of the comprehensiveness of the framework criteria and the integration of factors insufficiently covered in the expert-based strategy documents.

### 1.1 Phase 1: Development of a preliminary adaption of the framework and of a coding frame

In phase I, we (i) discussed the WHO-INTEGRATE framework within the research team, (ii) assessed real-world decision-making criteria derived from an comprehensive overview-of-reviews<sup>2</sup>, and (iii) conducted a brainstorming exercise guided by the application of the WHO INTEGRATE Framework version 1.0 on two case studies (reopening high schools and reopening small businesses such as book shops).

This preliminary *a priori* framework was then imported into the software MAXQDA20 (verbi, Berlin), with the criteria and sub-criteria of the *a priori* framework being translated into codes of the coding frame to be used in phase II. In this process, we added two additional codes: (1) “evidence” - to cover considerations regarding information and evidence considered necessary of lacking in the decision-making process, and (2) the code “TBD” (*to be discussed*), which was meant mark unclear passages for later review and discussion by the research team.

### 1.2 Phase 2: Coding of strategy documents, best-fit framework synthesis, and development of the WICID framework

We used the technique of “best fit” framework synthesis<sup>1 3 4</sup>, which offers a method to build on an existing framework that is considered as relevant for the given circumstances, but potentially different in relevant areas (such as the WHO-INTEGRATE framework for decision-making on COVID-19 related decision-making). “Best fit” framework synthesis begins by creating a framework of *a priori* themes and coding data extracted from documents (in this case: the comprehensive strategy documents) against that thematic or conceptual framework (see 8.2.1). A new framework is created by performing a thematic analysis on any data that cannot be accommodated within the *a priori* framework. We used the adapted version of the WHO-INTEGRATE framework created in phase I, and translated this into the coding frame we used coded the strategy documents against (provided in as supplement 2)<sup>1</sup>.

#### 1.2.1 The strategy documents and the rationale behind their selection

We assumed, that selecting comprehensive strategy documents by expert commissions or expert groups would provide a broad, multi-perspective set of recommendations (in contrast to e.g. scientific publications

or statements by individual groups, which do not claim nor intend to reflect multiple relevant perspectives in concluding).

We defined these as documents (a) intended to provide a comprehensive strategy or strategic suggestions for phasing out the lockdown measures (rather than providing information or pointing out individual aspects), (b) not exclusively or primarily focused on mitigating the health related-consequences of the SARS-CoV-2 pandemic but also including other societal, economic, or health outcomes, (c) addressing various NPIs and their interplay (e.g. not exclusively focusing on testing), and (d) focusing on multiple considerations to be reflected in this process (i.e. not exclusively focused on health impact). Position papers of stakeholder groups reacting or positioning themselves to a document, measure, or event without providing comprehensive strategy guidance were excluded (n=8) but will be considered in phase III.

While the main discourse on implementing lockdown measures in Germany was focused on suppressing the spread of the outbreak and on averting a collapse of the health care system, the debate on the controlled phasing out of the implemented lockdown measures was more nuanced: focusing on the challenge to balance the implications of the measures e.g. on health, society, or the economy. Therefore, we concentrated on strategy documents that focused on the latter.

To include strategy documents with impact on real world decision-making, we selected papers developed by expert groups or task forces commissioned by German policymakers on two levels (federal and national governments as well as ministries on these levels) . We expanded the sample to comprehensive strategy documents on the exit from the lockdown measures developed by non-government affiliated expert groups intended to inform political decision-making, but not directly commissioned by governmental bodies.

In order to ensure that the strategy documents addressed a broad range of societal and economic implications beyond the health sector, we focused on strategy documents which – directly or indirectly – addressed one of the following NPIs: (a) closure and reopening of schools, (b) closure and reopening of businesses, and (c) “shelter-in-place” regulations. We excluded strategy papers that were not or only marginally concerned with these three NPIs. Strategy papers primarily concerned with hygiene measures or the testing capacity were excluded as well.

**Table S1** in the annex displays the inclusion and exclusion criteria for phase II. All identified borderline cases were retained to be analyzed in phase III.

**Table S1: Inclusion and exclusion criteria for the search of eligible documents for phase II**

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>• The document addresses measures related to the handling of the SARS-CoV-2 pandemic in Germany</li> <li>• The document is intended to inform real-world policy and public health decision-makers in Germany</li> <li>• The document is intended to provide a comprehensive strategy or strategic suggestions for phasing out the lockdown measures</li> <li>• The document addresses societal, economic, or health considerations beyond health considerations associated with SARS-CoV-2 (e.g. number of infections)</li> <li>• The document focuses addresses multiple considerations to be considered in this process (e.g. not exclusively focused on health impact considerations).</li> <li>• The document addresses considerations for multiple NPI or considerations of relevance for multiple NPIs on a more abstract level</li> </ul>	<ul style="list-style-type: none"> <li>• The document is not primarily targeted to inform policy or public health decision makers</li> <li>• The document does not provide a comprehensive strategy to phase out the lockdown, but is rather a reaction or positioning paper to an event, decision, or measure or provides general statements on aspects to consider (e.g. statement not to forget migrant workers)</li> <li>• The document is only or primarily concerned with direct health consequences of COVID-19 and/or the mitigation of these effects (e.g. the right number of tests to be performed), without discussing broader considerations (e.g. regarding societal implications, economic implications, feasibility and resource considerations)</li> <li>• The document is exclusively focused on the effectiveness of a measure (e.g. impact of school closures on COVID-19 transmission), without taking</li> </ul>

<ul style="list-style-type: none"> <li>• Position papers of stakeholder groups reacting or positioning themselves to a document, measure, or event without providing comprehensive strategy guidance are considered in phase III.</li> <li>• To document was developed by an expert group or task forces implemented by or commissioned to write the document by the federal or national governments as well as ministries of the German federal Government OR by non-government affiliated expert groups intended to guide public health and health policy decision making on the federal or national level.</li> <li>• The document addresses – directly or indirectly – addressed one of the following NPIs: (a) closure and reopening of schools, (b) closure and reopening of businesses, and (c) “shelter-in-place” regulations.</li> </ul>	<p>broader considerations (e.g. societal, economic, feasibility, or ethical considerations) into account.</p> <ul style="list-style-type: none"> <li>• The document is providing general information on COVID-19, the pandemic, or NPIs; not intended to guide decision-making (e.g. what is allowed in a federal state)</li> <li>• The document is a scientific study, guidance documents and guidelines to inform patients or health care providers on treatment and therapeutic approaches of COVID-19 (e.g. guidelines on the safety of ibuprofen)</li> <li>• The document is focused on health care system and medical care planning without relation to the selected NPIs (e.g. on triage-procedures, necessity of intubation therapy, relation of intensive vs. palliative treatment, number of ICU-beds necessary)</li> </ul>
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### 1.2.2 Identification and selection of strategy papers

The search was conducted through multiple approaches channels:

- Two researchers (JMS, LA) independently searched in the search engine Google™ with various versions of keyword combinations of the terms and synonyms of “strategy” or “expert commission” and “COVID-19” in German.
- Two researchers (JMS, LA) independently searched the websites of major newspaper outlets in Germany (including: Die Zeit, Frankfurter Allgemeine Zeitung, Die Welt, Deutschlandfunk, Der Spiegel) outlets using the website’s search engine with similar keywords
- One researcher (JMS) searched the websites of the 16 German federal states, the national government and selected national government ministries, focusing on the section of press releases.
- We contacted a sample of experts involved in public health decision-making or expert groups to provide us with strategy documents; either directly or through the platform of the interdisciplinary *Kompetenznetz Public Health COVID-19 (Competence Network Public Health COVID-19, www.public-health-covid19.de)*.
- We posed freedom of information requests to the federal states’ governments, the national government, as well as selected national government ministries to provide us with strategy documents developed by expert groups, if available and publicly accessible.

As the documents are considered grey literature and mostly written in in German, we did not conduct a literature search in scientific data bases for these types of documents at this point of time.

### 1.2.3 Coding of documents against the *a priori* framework

The coding process was conducted by two authors (JMS, LA; personal characteristics in line with the COREQ-checklist<sup>5</sup> are reported in [table S2](#)). First, one sample strategy document was coded by the two authors to assess the need to adapt the preliminary coding frame and to develop a coding guidance document, outlining when a specific code should be used and which text passages to code. The coding frame (translated from German) is provided as a supplement ([supplement 2](#)). Based on this adapted frame, one author (JMS) used the Software MAXQDA 20 (VERBI GmbH, Berlin) to code all identified strategy papers. Afterwards, all coded documents were critically reviewed by a second author (LA) who highlighted conflicts (passages where this reviewer perceived a code was missing, suggested not to code, or to code differently). Conflicts were solved through discussion between the authors.

In the subsequent process, the researchers applied the level 1 codes (referring to the *criteria* in the framework) and level 2 codes (referring to the *aspects* in the framework) of the coding frame to passages in the strategy document making references to criteria, considerations, or values covered within the codes. Level 2 codes (*aspects*) are meant to describe considerations (e.g. factors, values, norms) contained within the level 1 codes (*criteria*) and support the user in the understanding, interpretation, and application of the criteria. When the content of such a passage was perceived as not adequately covered by the coding frame, new level 2 or level 1 codes were created. When the researchers identified passages containing references to criteria, considerations, or values of relevance which were assumed to be covered by a specific level 1 or level 2 code, but which seemed to expand on this or provide details or nuances (e.g. a passage on the implications of an measure risking the insolvency of small enterprises within the code *economic implications*), the researchers took note of these passages for later review. Unclear passages were assigned the code TBD code for later review.

After coding all selected strategy documents, both authors critically reflected on content saturation and dimensions of the framework insufficiently covered within the strategy documents. As most criteria of the preliminary framework were adequately covered and due to an overlap of consideration across documents, a content saturation was reached.

**Table S2: g characteristics of researchers involved in the content analysis**

	JMS	LA
Credentials	MD, BSc (Geography)	MSc (Epidemiology), MA (Health Promotion), BA (Social Work)
Occupation	Research scientists and PhD Student Epidemiology and public health at LMU Munich	Advisor epidemiology and health monitoring at the Academy of Public Health Services in Düsseldorf
Gender	Male	Female
Experience and training	Has received training on qualitative content research at the University of Tübingen (Germany); Multiple completed research projects employing qualitative content analysis.	Has received training on qualitative content research at the University of Applied Science Ravensburg-Weingarten (Germany); Participation and implementation of various research projects with qualitative content analysis.

#### 1.2.4 Adapting the preliminary coding frame

Next, one researcher (JMS) conducted a thematic analysis of the passages assigned to the newly created codes as well as those passages noted down for expanding on or providing nuance within existing codes. A draft of an adapted phase II framework was created by reflecting on whether there was a need to adapt the *a priori* framework to cover the content in the coded passages. This included whether: (a) *criteria* (reflecting level 1 codes) should be created, (b) new aspects (reflecting level 2 codes) should be added to the framework, (c) new or preexisting *criteria* or *aspects* should be merged or separated, or (e) moved to another position within the framework, and (f) wording of the *criteria* or *aspects* needs to be adapted.

This newly developed draft of the adapted framework was critically reviewed by a second researcher (LA). Afterwards, the results of steps (a-f) were critically discussed within the research team (JMS, LA) to solve conflicts and revise the adapted phase II framework accordingly.

Afterwards, two researchers jointly reviewed all passages noted down for later review (code TBD) and assessed the need to add *criteria* or *aspects*, as well as the need for revision, rewording or repositioning within the framework.

In a final step, two researchers (JMS, LA) went through each of the coded passages to critically reflect on whether the criteria, considerations, or values contained within these passages was adequately covered within the newly adapted phase II framework.

## References

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