



INFORM COVID RISK INDEX

VERSION 0.1.2

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RESULTS AND ANALYSIS

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Background

INFORM is a multi-stakeholder forum for developing shared, quantitative analysis relevant to humanitarian crises and disasters. INFORM includes organisations from across the multilateral system, including the humanitarian and development sector, donors, and technical partners. The Joint Research Center of European Commission is the scientific and technical lead for INFORM.

INFORM is developing a suite of quantitative, analytical products to support decision-making on humanitarian crises and disasters. These help make decisions at different stages of the disaster management cycle, specifically prevention, preparedness and response. INFORM develops methodologies and tools for use at the global level and also supports their application at subnational level.

In response to the COVID-19 pandemic, INFORM has released a COVID Risk Index to support the specific decision-making needs of humanitarian and other organisations.

Purpose and scope

The INFORM COVID-19 Risk Index is a composite index that identifies: **“countries at risk from health and humanitarian impacts of COVID-19 that could overwhelm current national response capacity, and therefore lead to a need for additional international assistance”**.

The INFORM COVID-19 Risk Index is primarily concerned with structural risk factors, i.e. those that existed before the outbreak. In other words, it tells us about the risk from COVID-19 if there is community transmission of the disease in a country. It can be used to support prioritization of preparedness and early response actions for the primary impacts of the pandemic, and identify countries where secondary impacts are likely to have the most critical humanitarian consequences.

The main scope of the INFORM COVID-19 Risk Index is global and regional risk-informed resource allocation, i.e. where comparable understanding of countries' risk is important. It cannot predict the impacts of the pandemic in individual countries. It does not consider the mechanisms behind secondary impacts - for example how a COVID-19 outbreak could increase conflict risk.

INFORM is working on developing other products that can help monitor changing risks as a result of the pandemic.

Methodology

Starting points

The **INFORM Epidemic Risk Index** is highly relevant, easily adapted and was developed through an **extensive process** prior to COVID-19. Therefore it has been used as the starting point for a COVID-19 specific risk index, with the structure and relevant indicators retained as far as possible.

The INFORM Epidemic Risk Index consists of Hazard & Exposure, Vulnerability and Lack of Coping Capacity dimensions. The Person to Person component of Hazard & Exposure is the most relevant to COVID-19 and is used alone.

Vulnerability and Lack of Coping Capacity consist of hazard dependent (specific to the epidemic hazard) and hazard independent (relevant to all hazards covered by the INFORM Global Risk Index). Both parts are retained:

- There are many indicators or broader vulnerability and lack of coping capacity that are directly relevant for COVID-19.
- COVID-19 will compound existing risks (i.e. will not happen alone), so broader factors of vulnerability and lack of coping capacity are important when considering the humanitarian impact of the pandemic.

The main focus of the adaptation for COVID-19 is improvement of the hazard-dependent parts of the index (i.e. factors specific to COVID-19), but within the existing structure.

The COVID-19 Risk Index (like other INFORM risk indexes) is focused on structural factors. It does not contain rapidly changing information, for example on cases, government restrictions, and changing health system capacity in response to the pandemic. However, INFORM is looking at how dynamic risk information on COVID-19 can be organised and potentially aggregated for use in conjunction with the risk index.

Only risk factors for which there is sufficient evidence are included.

Key changes to the INFORM Epidemic Risk Index analytical framework

The following changes were made to the original INFORM Epidemic Risk Index analytical framework. The full analytical framework for the INFORM COVID-19 Risk Index is shown on Page 2.¹ The previously published INFORM Risk methodology is applied.²

The changes to the analytical framework are based on literature review and expert input and take into account:

- 1) the most relevant and certain factors relating to COVID-19;
- 2) availability of comprehensive and quality indicators that measure the identified factors directly or by proxy.

All of the research around COVID-19 is new. Only factors where there is sufficient published or pre-publication evidence, or that are widely accepted and publicized by credible organisations are included.

Hazard & Exposure

- Only the Person to Person component is used.

Vulnerability

- Movement and behaviour components retained. Although these are less relevant during restrictions on movement, they will become more relevant when restrictions are partially or fully lifted.
- Demographic and Comorbidities specific to COVID-19 added.
- Less relevant vulnerable groups removed.

Lack of Coping Capacity

- Health system capacity specific to COVID-19 added.
- Less relevant institutional and infrastructure capacities removed.

Analysis

In this paper, we show how the INFORM COVID Risk Index can be used with other INFORM products to support prioritisation of preparedness and early response activities for the pandemic.

We also discuss the relevant importance of COVID-specific vulnerabilities and broader vulnerabilities in countries from different income groups.

Access to data, revisions and updates

The INFORM COVID-19 Risk Index may be revised to take into account feedback or increased scientific understanding of the pandemic and its effects. However, since most of the data is structural, there is no plan to update the index on a regular basis.

The latest version of the index and other INFORM products can be found on the **INFORM website** or **HDX page**.

¹ Poljanšek, K., Marin-Ferrer, M., Vernaccini, L., Messina, L., Incorporating epidemics risk in the INFORM Global Risk Index, EUR 29603 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-98670-3, doi:10.2760/647382, JRC114652

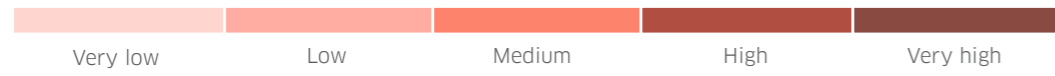
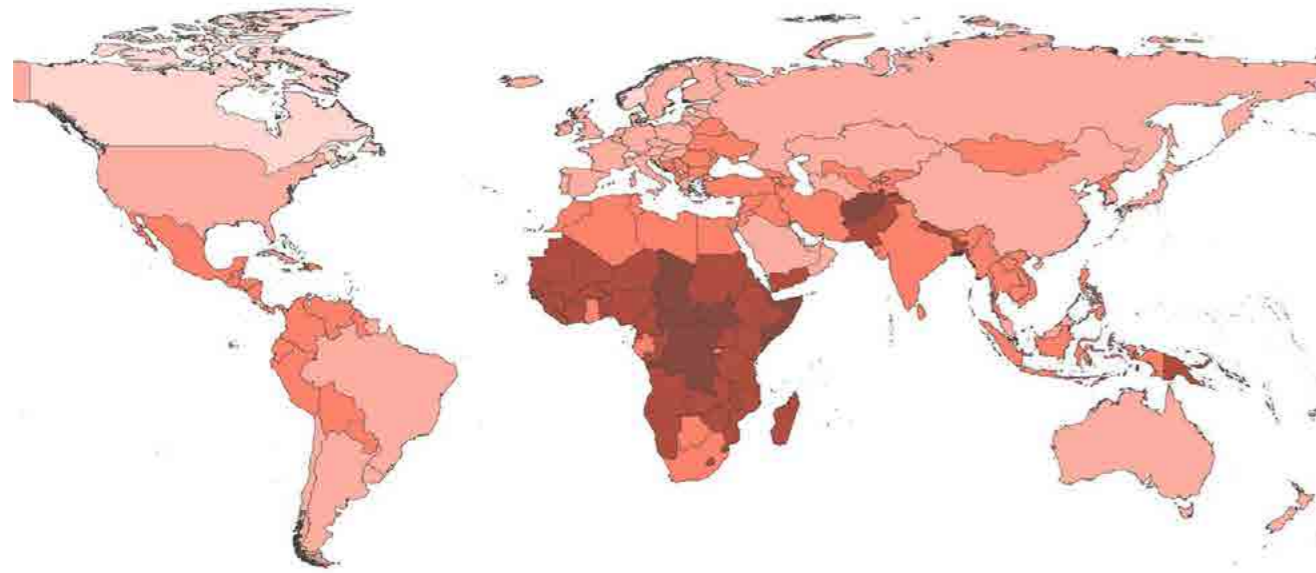
² Marin-Ferrer, M., Vernaccini, L. and Poljansek, K., Index for Risk Management INFORM Concept and Methodology Report – Version 2017, EUR 28655 EN, doi:10.2760/094023

INFORM COVID RISK INDEX ANALYTICAL FRAMEWORK

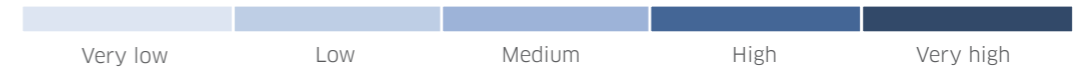
Dimension	Category	Component	Sub-component	Sub-component
Hazard & Exposure	Person to person	Population	Population density	
			Urban population growth	
			Population living in urban areas	
			Population living in slums	
			Household size	
		WaSH	Sanitation	
			Drinking water	
		Hygiene		
Vulnerability	Covid-19 Vulnerability	Movement (25%)	International movement	Air transport, passengers carried
				International tourism, number of arrivals
			Point of entry	
		Behaviour (25%)	Internal movement	Access to Cities
				Road density
			Awareness	Adult literacy rate
		Mobile cellular subscriptions		
		Internet users		
	Demographic and Comorbidities (50%)	Proportion of the population at increased risk of severe COVID-19 disease	1+ underlying conditions plus 0 conditions (65+ yrs)	
	INFORM Vulnerability	Socio-Economic Vulnerability	Development & Deprivation	Human Development Index
				Multidimensional Poverty Index
			Inequality	Gender Inequality Index
			Gini Index	
Economic Dependency Index		Public Aid per capita (US\$)		
		Net ODA received (% of GNI)		
Vulnerable Groups		Uprooted people	Volume of remittances	
		Health Conditions	HIV	
	Incidence of Tuberculosis			
Food Security	Malaria incidence per 1,000 population at risk			
	People requiring interventions against neglected tropical diseases			
Lack of coping capacity	Covid-19 Lack of coping capacity	Health Capacity	Health system capacity specific to Covid-19	
			International Health Regulations Core Capacities average score	
	INFORM Lack of coping capacity	Institutional	Governance	Country Preparedness and Response Status for COVID-19
				Corruption Perception Index
		Infrastructure	Access to health care	Government Effectiveness
				Health system capacity
	Immunization coverage			
	Per capita public and private expenditure on health care			
	Maternal Mortality ratio			

INFORM COVID RISK INDEX: RESULTS

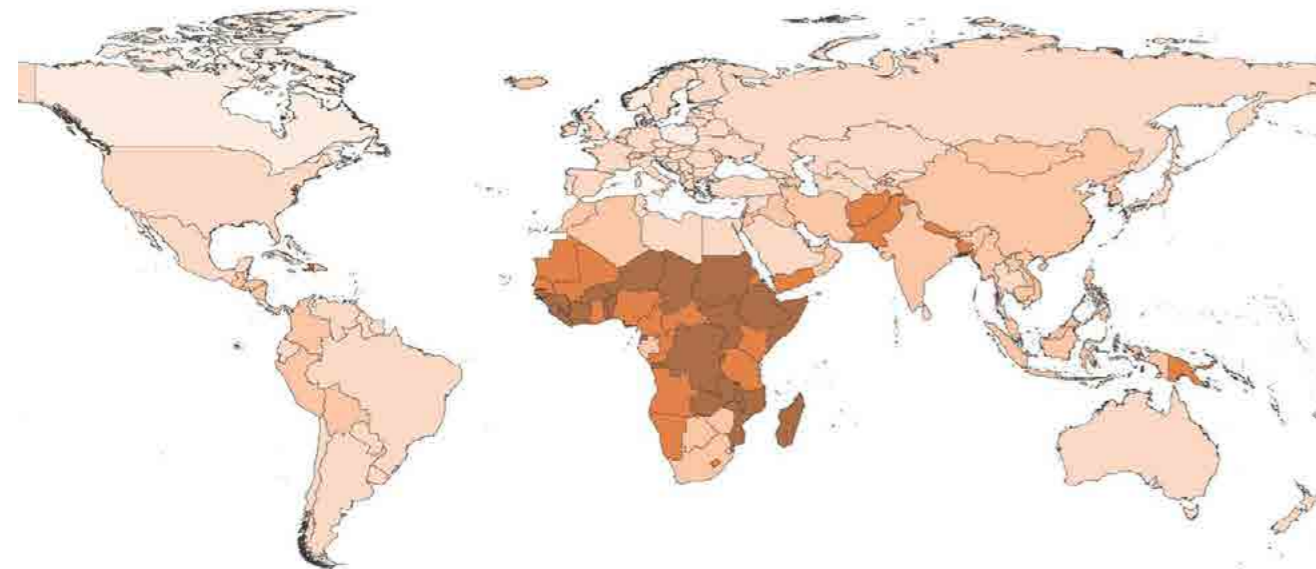
INFORM COVID Risk Index



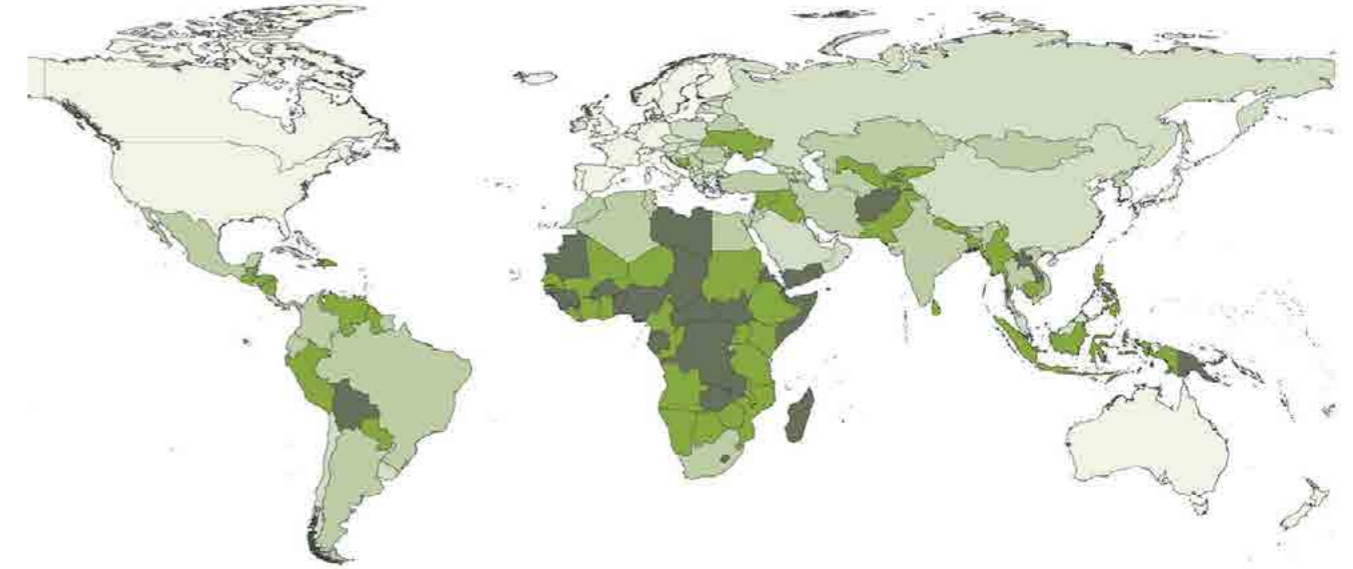
INFORM COVID Risk Index: Vulnerability dimension



INFORM COVID Risk Index: Hazard & Exposure dimension



INFORM COVID Risk Index: Lack of Coping Capacity dimension



INFORM COVID ANALYSIS 1: Supporting decisions on prioritisation for preparedness and early response

The following is an analysis that addresses key questions for humanitarian organisations by combining information from 3 INFORM products:

The new **INFORM COVID Risk Index**, which identifies “countries at risk from health and humanitarian impacts of COVID-19 that could overwhelm current national response capacity, and therefore lead to a need for additional international assistance”.

The **INFORM Risk Index** (Mid-2020 version), which identifies “countries at risk from humanitarian emergencies that could overwhelm current national response capacity, and therefore lead to a need for international assistance”. The INFORM Risk Index takes into account natural and human hazards, as well as vulnerability and lack of coping capacity.

The **INFORM Severity Index** (March 2020 version) is a regularly updated model for measuring the severity of humanitarian crises globally, which brings together indicators of impact, conditions of affected people, and complexity.

An Excel file with the data used for this analysis is available on the INFORM HDX page: <https://data.humdata.org/dataset/inform-covid-analysis-v01>

Covid-19 Risk

What countries are most at risk from health and humanitarian impacts of COVID-19 (in the case of community transmission in the country)?

Countries with the highest structural risks relevant to COVID-19 (INFORM COVID Risk Index) and the severity of any existing humanitarian crisis (INFORM Severity Index March 2020). Showing 50 highest risk countries sorted by decreasing risk.

	COVID-19 Risk (0-10)		Severity of existing crisis (0-5)	
Central African Republic	7.6	Very High	3.7	High
Somalia	7.3	Very High	4.5	Very High
South Sudan	7.3	Very High	4.0	High
Chad	7.2	Very High	3.9	High
Afghanistan	6.8	Very High	4.5	Very High
Congo DR	6.8	Very High	4.2	Very High
Haiti	6.6	Very High	3.3	High
Burundi	6.5	Very High	2.8	Medium
Yemen	6.4	High	4.5	Very High
Burkina Faso	6.3	High	3.0	Medium
Niger	6.2	High	3.2	High
Mozambique	6.2	High	2.9	Medium
Liberia	6.2	High	-	-
Guinea-Bissau	6.2	High	-	-
Uganda	6.1	High	2.8	Medium
Sierra Leone	6.1	High	-	-
Madagascar	6.1	High	2.1	Medium
Zambia	6.1	High	2.3	Medium
Guinea	6.0	High	-	-
Comoros	6.0	High	2.1	Medium
Lesotho	6.0	High	-	-
Nigeria	5.9	High	3.8	High
Ethiopia	5.9	High	3.3	High
Eritrea	5.9	High	3.5	High
Togo	5.9	High	-	-
Kiribati	5.9	High	-	-
Sudan	5.8	High	4.6	Very High
Mauritania	5.8	High	2.4	Medium
Benin	5.8	High	-	-
Equatorial Guinea	5.8	High	-	-
Cameroon	5.7	High	3.3	High
Mali	5.7	High	3.6	High
Congo	5.7	High	-	-
Malawi	5.7	High	2.0	Low
Papua New Guinea	5.7	High	2.3	Medium
Gambia	5.7	High	-	-
Kenya	5.6	High	3.1	High
Tanzania	5.6	High	-	-
Côte d'Ivoire	5.6	High	1.4	Low
Angola	5.6	High	-	-
Solomon Islands	5.6	High	-	-
Djibouti	5.5	High	2.5	Medium
Timor-Leste	5.5	High	-	-
Marshall Islands	5.4	High	-	-
Pakistan	5.3	High	3.4	High
Zimbabwe	5.3	High	3.4	High
Eswatini	5.3	High	1.9	Low
Bangladesh	5.2	High	3.3	High
Vanuatu	5.2	High	-	-
Nauru	5.2	High	-	-

Humanitarian Impacts

What are the risks relating to COVID-19 in countries already affected by humanitarian crises?

Countries with an existing humanitarian crisis (INFORM Severity Index March 2020) and their COVID-19 risk (INFORM COVID Risk Index). Showing all countries with a reported humanitarian crisis sorted by decreasing severity.

	Severity of existing crisis (0-5)		COVID-19 Risk (0-10)	
Somalia	4.5	Very High	7.3	Very High
Afghanistan	4.5	Very High	6.8	Very High
Congo DR	4.2	Very High	6.8	Very High
Yemen	4.5	Very High	6.4	High
Sudan	4.6	Very High	5.8	High
Syria	4.8	Very High	4.7	Medium
Korea DPR	4.1	Very High	4.7	Medium
Central African Republic	3.7	High	7.6	Very High
South Sudan	4.0	High	7.3	Very High
Chad	3.9	High	7.2	Very High
Haiti	3.3	High	6.6	Very High
Niger	3.2	High	6.2	High
Nigeria	3.8	High	5.9	High
Eritrea	3.5	High	5.9	High
Ethiopia	3.3	High	5.9	High
Mali	3.6	High	5.7	High
Cameroon	3.3	High	5.7	High
Kenya	3.1	High	5.6	High
Pakistan	3.4	High	5.3	High
Zimbabwe	3.4	High	5.3	High
Bangladesh	3.3	High	5.2	High
Palestine	3.4	High	5.0	High
Iraq	4.0	High	4.8	Medium
Myanmar	3.2	High	4.8	Medium
Venezuela	4.0	High	4.4	Medium
Libya	3.8	High	4.3	Medium
Colombia	3.5	High	4.3	Medium
Ukraine	3.3	High	4.0	Medium
Burundi	2.8	Medium	6.5	Very High
Burkina Faso	3.0	Medium	6.3	High
Mozambique	2.9	Medium	6.2	High
Uganda	2.8	Medium	6.1	High
Zambia	2.3	Medium	6.1	High
Madagascar	2.1	Medium	6.1	High
Lesotho	2.1	Medium	6.0	High
Mauritania	2.4	Medium	5.8	High
Malawi	2.3	Medium	5.7	High
Djibouti	2.5	Medium	5.5	High
Lebanon	2.6	Medium	5.0	High
Honduras	2.8	Medium	4.9	Medium
Guatemala	2.8	Medium	4.8	Medium
Philippines	2.5	Medium	4.7	Medium
Indonesia	2.1	Medium	4.4	Medium
Peru	2.3	Medium	4.3	Medium
Jordan	2.2	Medium	4.3	Medium
El Salvador	2.2	Medium	4.2	Medium
Turkey	2.6	Medium	3.9	Medium
Ecuador	2.2	Medium	3.9	Medium
Iran	3.0	Medium	3.7	Medium
Congo	2.0	Low	5.7	High
Tanzania	1.4	Low	5.6	High
Eswatini	1.9	Low	5.3	High
Namibia	1.9	Low	5.1	High
Senegal	1.8	Low	5.1	High
Algeria	1.8	Low	3.9	Medium
Bahamas	1.8	Low	3.9	Medium
Thailand	1.7	Low	3.8	Medium
Trinidad and Tobago	1.4	Low	3.8	Medium
Egypt	1.4	Low	3.6	Medium
Brazil	1.8	Low	3.5	Medium
Greece	1.8	Low	3.3	Low
Costa Rica	1.0	Very Low	3.4	Low

New Crisis Watch List

Where might impacts of COVID-19 compound existing risks to cause a new humanitarian crisis?

Countries with no existing humanitarian crisis (INFORM Severity Index March 2020) with high COVID-19 risk (INFORM COVID Risk Index) and crisis risk from all hazards (INFORM Risk Index). Showing 50 highest risk countries (average of INFORM COVID Risk and INFORM Risk Index) with countries with a reported humanitarian crisis removed.

	COVID-19 Risk (0-10)		INFORM Risk (all hazards) (0-10)	
Côte d'Ivoire	5.6	High	5.9	High
Papua New Guinea	5.7	High	5.7	High
Liberia	6.2	High	5.1	High
Sierra Leone	6.1	High	5.2	High
Guinea	6.0	High	5.2	High
Guinea-Bissau	6.2	High	4.8	Medium
Angola	5.6	High	5.1	High
Togo	5.9	High	4.6	Medium
Nepal	5.1	High	5.3	High
Solomon Islands	5.6	High	4.5	Medium
Comoros	6.0	High	3.9	Medium
Benin	5.8	High	4.1	Medium
India	4.6	Medium	5.3	High
Equatorial Guinea	4.8	High	3.9	Medium
Gambia	5.7	High	4.0	Medium
Timor-Leste	5.5	High	4.2	Medium
Cambodia	4.9	Medium	4.8	Medium
Kiribati	5.9	High	3.6	Medium
South Africa	4.7	Medium	4.7	Medium
Vanuatu	5.2	High	4.1	Medium
Rwanda	5.0	High	4.3	Medium
Nicaragua	4.6	Medium	4.6	Medium
Bolivia	4.9	Medium	4.2	Medium
Gabon	5.0	High	4.1	Medium
Marshall Islands	5.4	High	3.6	Medium
Micronesia	5.0	High	3.9	Medium
Lao PDR	4.6	Medium	4.2	Medium
Tajikistan	4.3	Medium	4.5	Medium
Mexico	3.7	Medium	5.1	High
Ghana	4.7	Medium	4.0	Medium
Nauru	5.2	High	3.2	Low
Morocco	4.3	Medium	4.0	Medium
Azerbaijan	3.9	Medium	4.4	Medium
Tuvalu	5.1	High	3.1	Low
Sri Lanka	4.3	Medium	3.8	Medium
Dominican Republic	4.3	Medium	3.7	Medium
Georgia	4.0	Medium	3.9	Medium
Tonga	4.0	Medium	3.9	Medium
Bosnia and Herzegovina	4.1	Medium	3.7	Medium
Botswana	4.7	Medium	3.0	Low
Dominica	4.2	Medium	3.4	Low
Kyrgyzstan	3.8	Medium	3.8	Medium
China	3.4	Low	4.2	Medium
Sao Tome and Principe	5.1	High	2.4	Low
Belize	3.8	Medium	3.7	Medium
Viet Nam	3.8	Medium	3.7	Medium
Moldova Republic of	4.4	Medium	2.9	Low
Bhutan	4.1	Medium	3.2	Low
Albania	4.2	Medium	3.0	Low
Panama	3.7	Medium	3.5	Medium

Capacity Check

Where are the risks of humanitarian impacts related to COVID-19 highest compared to 'normal' risks and might therefore require the biggest change in response levels?*

*Assuming current capacity is aligned with pre-COVID risks.

Countries with the greatest discrepancy between their all-hazard risk of a humanitarian crisis (INFORM Risk Index) and COVID-19 risk (INFORM COVID Risk Index), where there may be the largest difference in current humanitarian capacity and capacity required to deal with potential health and humanitarian impacts of COVID-19. Showing all countries at high and very high risk of humanitarian crisis, sorted by Δ INFORM COVID Risk - INFORM RISK.

	COVID-19 Risk (0-10)		INFORM Risk (all hazards) (0-10)		Δ
Liberia	6.2	High	5.1	High	1.1
Sierra Leone	6.1	High	5.2	High	0.9
Madagascar	6.1	High	5.2	High	0.9
Guinea	6.0	High	5.2	High	0.8
Eritrea	5.9	High	5.2	High	0.7
Congo	5.7	High	5.1	High	0.6
Angola	5.6	High	5.1	High	0.5
Burundi	6.5	Very High	6.1	High	0.4
Tanzania	5.6	High	5.2	High	0.4
Djibouti	5.5	High	5.2	High	0.3
Mauritania	5.8	High	5.6	High	0.2
Haiti	6.6	Very High	6.4	High	0.2
Zimbabwe	5.3	High	5.2	High	0.1
Papua New Guinea	5.7	High	5.7	High	0.0
Lebanon	5.0	High	5.0	High	0.0
Burkina Faso	6.3	High	6.4	High	-0.1
Nepal	5.1	High	5.3	High	-0.2
Palestine	5.0	High	5.2	High	-0.2
Chad	7.2	Very High	7.5	Very High	-0.3
Honduras	4.9	Medium	5.2	High	-0.3
Central African Republic	7.6	Very High	7.9	Very High	-0.3
Côte d'Ivoire	5.6	High	5.9	High	-0.3
Ethiopia	5.9	High	6.3	High	-0.4
Uganda	6.1	High	6.5	Very High	-0.4
Mozambique	6.2	High	6.7	Very High	-0.5
Kenya	5.6	High	6.1	High	-0.5
Mali	5.7	High	6.3	High	-0.6
Korea DPR	4.7	Medium	5.3	High	-0.6
Nigeria	5.9	High	6.6	Very High	-0.7
South Sudan	7.3	Very High	8.0	Very High	-0.7
India	4.6	Medium	5.3	High	-0.7
Congo DR	6.8	Very High	7.6	Very High	-0.8
Pakistan	5.3	High	6.1	High	-0.8
Bangladesh	5.2	High	6.0	High	-0.8
Guatemala	4.8	Medium	5.6	High	-0.8
Philippines	4.7	Medium	5.5	High	-0.8
Cameroon	5.7	High	6.6	Very High	-0.9
Sudan	5.8	High	6.8	Very High	-1.0
Colombia	4.3	Medium	5.4	High	-1.1
Turkey	3.9	Medium	5.1	High	-1.2
Niger	6.2	High	7.4	Very High	-1.2
Afghanistan	6.8	Very High	8.1	Very High	-1.3
Mexico	3.7	Medium	5.1	High	-1.4
Egypt	3.6	Medium	5.1	High	-1.5
Myanmar	4.8	Medium	6.3	High	-1.5
Iran	3.7	Medium	5.2	High	-1.5
Yemen	6.4	High	8.0	Very High	-1.6
Somalia	7.3	Very High	9.0	Very High	-1.7
Iraq	4.8	Medium	6.7	Very High	-1.9
Libya	4.3	Medium	6.6	Very High	-2.3
Syria	4.7	Medium	7.2	Very High	-2.5

INFORM COVID ANALYSIS 2: Vulnerability in countries from different income groups

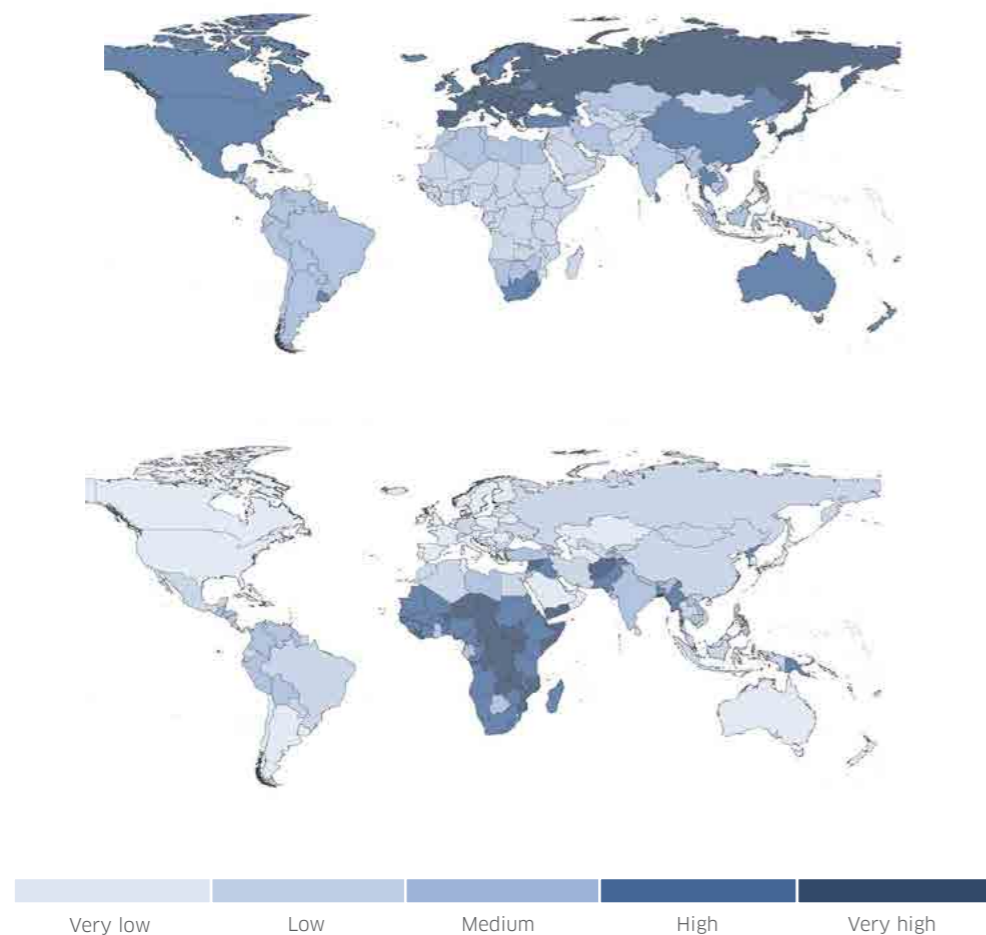
The Vulnerability dimension of the INFORM COVID Risk Index requires a specific analysis.

The two sub-dimensions, COVID-specific vulnerability (e.g. age, comorbidities, movement) and hazard-independent vulnerability (broad vulnerability to all hazards e.g. poverty, inequality, food insecurity, insecure living conditions) are negatively correlated (cc -0.7). In other words, countries with high COVID-specific vulnerability generally have low broader vulnerability (see maps).

COVID-specific vulnerability and hazard-independent Vulnerability contribute similarly to the overall Vulnerability (cc 0.31 vs 0.44). But when you look at income groups or regions the results are different (see charts)

For High income countries and Europe only the COVID-specific vulnerability is important (cc 0.95, cc 0.97), while in Lower and Lower-middle Income countries and Africa, the opposite is true (cc 0.11, cc 0.01).

INFORM COVID Risk Index: Vulnerability – COVID-specific vulnerability (top) and hazard-independent vulnerability (bottom)



What does this mean?

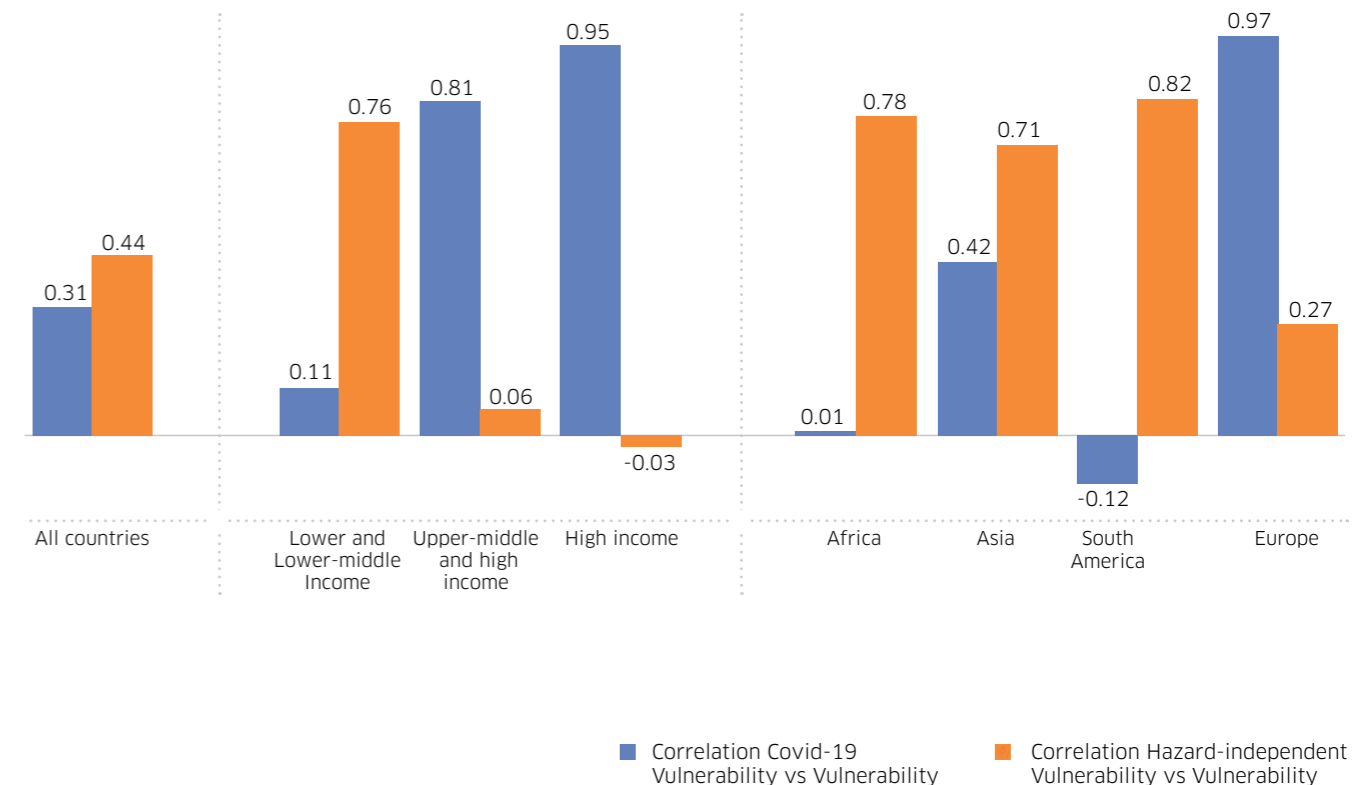
Analysis of the INFORM COVID Risk Index suggests that factors that make individuals vulnerable to COVID-19, like age and specific pre-existing conditions, drive vulnerability and risk in higher income countries.

However, in countries with the highest risk of humanitarian crisis as a result of COVID-19, which are overwhelmingly low and lower-middle income countries, factors of vulnerability that are highly specific to COVID-19 are less important than broader socio-economic factors or those associated with vulnerable groups like the food insecure, people in poor health and displaced persons.

Although this conclusion partly arrives from the way risk index is conceptualised, it suggests that – at least in the preparedness and early response phase of the pandemic in countries at high risk of humanitarian crisis – risk can be reduced by addressing broader vulnerabilities through ‘no regrets’ type interventions.

This is also important because impacts on humanitarian operations and the secondary impacts of the pandemic are also likely to have wide-ranging humanitarian consequences beyond the direct health impacts of the disease.

Contribution to vulnerability by income groups and regions – in lower and lower-middle income countries COVID-specific vulnerability is less important than broader factors of vulnerability





INFORM is a collaboration of the Inter-Agency Standing Committee and the European Commission. The Joint Research Centre of the European Commission is the scientific and technical lead of INFORM.

This report is based on the data available at <https://drmkc.jrc.ec.europa.eu/inform-index> and <https://data.humdata.org/organization/inform>

INFORM Steering Group



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