A healthy, innovative, sustainable, transparent, and competitive methodology to identify twenty benchmark countries that saved people lives against Covid-19 during 180 days

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Abstract

Since the "last day" of 2019, a new virus emerged in Asia, which in Feb./2020 was called by the World Health Organization (WHO, 2020) as Coronavirus disease (Covid-19). Due to its fast transmission, after 9 months since the first global official case, at 23:59 (GMT) on September 27, 2020, the world has accounted for about 33,297,501 new confirmed cases with 1,002,137 deaths and 24,621,170 recovered cases (WORLDOMETERS, 2020). The pandemic is the newest challenge for all nations, most of them eager to learn from countries that are successful against the virus. However, until now, no methodology was developed to identify them by taking into account a holistic approach with international rankings concerned to health, innovation, sustainability, image, and competitiveness, as well as the estimated real number of fatal cases by one million population during the first 180 days of facing the pandemic. Thus, the main objective is to develop a holistic methodology to identify twenty benchmark countries that are saving people's lives against Covid-19. The research is applied, as its results and recommendations are useful for academy, government policymakers and authorities. It is descriptive, with a qualitative and quantitative approach, based on bibliographic and documentary research, involving the study of official sites, articles, reports, manuals, and other technical documents related to 13 international rankings. As a result, the fifteen phases of the methodology, far from perfect, shows that among 108 well-evaluated countries, the top six benchmark countries are from Asia (1) Vietnam; 2) Taiwan; 3) Thailand; 4) China; 5) Malaysia; 6) Singapore), which suffered from fatal cases from first SARS-CoV in 2002/2003, followed by 7) South Korea; 8) New Zealand; 9) Australia; 10) Japan; 11) Hong Kong; 12) Cyprus; 13) Greece; 14) Latvia; 15) Iceland; 16) UAE; 17) Czech; 18) Lithuania; 19) Norway, and 20) Estonia.

Keywords: International Rankings; Covid-19; Fatal Cases; Health; Innovation; Sustainability.

1. Introduction

Since the end of 2019, the humanity is facing a new challenge, when a virus spread across the world from Asia, called by the World Health Organization (WHO, 2020) as Coronavirus disease, popularly known as Covid-19, from Severe acute respiratory syndrome coronavirus2 (SARS-CoV-2).

Nowadays, there are several sites to monitor the evolution of Covid-19, containing statistics on the number of new cases, recovered, tests, deaths, etc. Among them, there is the WHO Coronavirus Dashboard <https://bit.ly/2EhjNZN>, Covid19 Tracker <https://binged.it/2UBdRz6>, but the most dynamic are worldometers <https://bit.ly/3dpMErI>, our world in data <https://bit.ly/2Ehv0JQ> and John Hopkins University & Medicine Coronavirus Resource Center <https://bit.ly/2V6FRMp>.

Since December 31, 2019, when the first official case was announced in China, the human challenge can be seen by comparing three random periods:

Period 1) after 3 months (90 days), at 18:32 (GMT) on March 29, 2020, the Worldometers (2020) pointed out 710,950 confirmed cases with 33,553 fatal cases;

Period 2) after 8 months, at 23:59 (GMT) on August 31, 2020, the world has accounted for about 25,620,737 new confirmed cases with 854,222 fatal cases;

Period 3) due to Covid-19 fast transmission, after 9 months, at 23:59 (GMT) on September 27, 2020, the world has accounted for about 33,297,501 new confirmed cases with 1,002,137 fatal cases.

Since there is no effective vaccine or treatment against the Covid-19, each country is trying to adopt several measures to face the pandemic, to reduce its impact on its population and economy. Considering the number of total new cases, on March 29, 2020, the 10 most critical countries were the USA, Italy, China, Spain, Germany, France, Iran, UK, Switzerland, and Netherland.

In that time (March/20), Silva (2020):

a) developed an international survey with sixteen countries related to the evolution of new cases of Covid-19; b) showed ten reasons by which Brazil (it was in the 19th place) could move the world; c) provided ten conclusions and recommendations, and some of them were: c1) Brazil could be among the most-affected country before the end of May 2020; c2) although no nation is prepared to face epidemics and pandemics (NTI, JHU, and EIU, 2019), among the sixteen countries investigated, Thailand, Finland, Australia, South Korea, Denmark, and Sweden are cases that Brazil could study so as not to repeat the scenarios of China, USA, Italy, and Spain; c3) the research focused only the number of new cases per day, so it was recommend a study involving the fatal cases.

To complement Silva (2020) survey, this research main aim is to develop a holistic methodology to identify twenty benchmark countries that are saving people's lives against Covid-19.

The specific objectives are a) select and present international countries rating systems that take into consideration health, innovation, sustainability, image, and competitiveness; b) to select up to top fifty well-evaluated countries; c) identify the twenty best benchmark countries that are saving people lives against Covid-19.

The research is relevant: 1) for political leaders, policymakers, or managers responsible for Health Systems since they will know important ranking, and countries globally well evaluated and exceeding in fighting the Covid-19 during the first 180 days; 2) for academy it can be useful for focusing more resources and research to identify the best management practices adopted by the benchmark countries, in order to develop strategies for preventing or controlling similar pandemic episodes in the future.

Besides, although several authors have published relevant information about Covid-19 (BASHIR et al., 2020; CHAKRABORTY, AND MAITY, 2020; CHING, TZONG, AND HSUAN, 2020; COWLING et al., 2020; FLAXMAN et al., 2020; HA et al., 2020; LA et al., 2020; MAHATO, PAL AND GHOST,

2020; SILVA, 2020; PRATA, RODRIGUES, AND BERMEJO, 2020; ZAMBRANO-MONSERRATE, M.A., RUANO, AND SANCHEZ-ALCALDE, 2020; YUNUS, MASAGO, AND HIJIOKA, 2020; WANG, NG, AND BROOK, 2020), there is a need to scientifically develop a methodology to recognize the benchmark countries, taking into consideration a holistic approach evaluation with the real estimated number of Covid-19 fatal cases by one million population during the first 6 months facing the pandemic.

2. World Health Organization (WHO), SARS and bad examples of countries leaders

The WHO is the global guardian of public health, with more than 7000 professionals working in more than 150 countries, working with over 300 topics, ranging from abortion, air pollution, asthma, cancer, zoonosis, but the most popular are Ebola, Nutrition, Hepatitis, and now Covid-19.

According to WHO (2012), an epidemic of Severe Acute Respiratory Syndrome (SARS-CoV) appeared in November 2002 in southern China. According to WHO (2003), until August 7, 2003, it affected 8422 people from 32 countries with a total of 916 fatal cases (10,9%), most of these located in China (5327 cases; 349 deaths), Hong Kong (1755 cases; 300 deaths), Taiwan (665 cases; 180 deaths), Canada (251 cases; 41 deaths), Singapore (238 cases; 33 deaths), Vietnam (63 cases; 5 deaths), USA (33 cases; 0 death), Thailand (9 cases; 2 deaths), and Malaysia (5 cases; 2 deaths).

Since then, several authors (HOLMES, 2003; PANG, 2003; RILLEY, 2003; BELL, 2004; INSTITUTE OF MEDICINE, 2004) tried to call the attention of the leaders about measures necessary to prevent, control and respond to future global outbreaks.

After seventeen years, the WHO Office, located in China, reported on Dec/21/19, the occurrence of people suffering from unknown pneumonia in Wuhan, located in China's Hubei. On February 11, 2020, WHO announced as a new virus of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) with a popular disease name as Covid-19, and almost one month later, it was announced as a pandemic.

#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop
	World	33,297,501	+250,460	1,002,137	+3,852	24,621,170	7,674,194	65,337	4,272	128.6		
1	USA	7,320,669	+33,108	209,453	+276	4,551,321	2,559,895	14,100	22,085	632	104,322,093	314,722
2	Brazil	4,732,309	+14,194	141,776	+335	4,060,088	530,445	8,318	22,225	666	17,900,000	84,067
3	India	6,073,348	+82,767	95,574	+1,040	5,013,367	964,407	8,944	4,391	69	71,257,836	51,514
4	Mexico	726,431	+5,573	76,243	+399	521,241	128,947	2,631	5,620	590	1,665,057	12,882
5	UK	434,969	+5,693	41,988	+17	N/A	N/A	262	6,399	618	23,188,836	341,150
6	Italy	309,870	+1,766	35,835	+17	224,417	49,618	254	5,127	593	11,087,064	183,439
7	Peru	805,302	+5,160	32,262	+120	664,490	108,550	1,370	24,343	975	3,850,122	116,383
8	France	538,569	+11,123	31,727	+27	94,891	411,951	1,098	8,247	486	10,556,474	161,639
9	Spain	735,198		31,232		N/A	N/A	1,465	15,723	668	11,820,505	252,795
10	Iran	446,448	+3,362	25,589	+195	374,170	46,689	4,059	5,299	304	3,932,571	46,677

Figure 1: The most critical countries in terms of total deaths cases of Covid-19 on Sep. 27, 2020
Source: Worldometers (2020)

Due to its fast transmission (Figure 1), after 9 months (271 days) since the first official case in China, at 23:59 (GMT) on September 27, 2020, the world has accounted for about 1,002,137 fatal cases, with:

1st) USA (209,453), 2nd) Brazil (141,776), 3rd) India (95,574), 4th) Mexico (76,243), 5th) UK (41,988), 6th) Italy (35,835), 7th) Peru (32,262), 8th) France (31,727), 9th) Spain (31,232), 10th) Iran (25,589) leading with the total of fatal cases (WORLDOMETERS, 2020).

The most critical countries (USA and Brazil) officially lost 351,229 lives, 35% of total reported deaths in 215 countries. Probably, most lives could have been saved if allies presidents Jair Bolsonaro and Donald Trump had not adopted the bad behaviors described in Chart 1.

BAD BEHAVIORS	SOURCES
Ignored early alerts and advises from scientists, WHO, and the intelligence	Poznansky (2020), Romano (2020), Graham (2020), CNN (2020), CNN, S.D. and I.K. (2020)
Attack WHO and don´t follow the Covid-19 Safety Protocols, sowing confusion and discouraging correct measures	The Lancet (2020), BBC News (2020), Glick (2020), McDonald et *al*. (2020), NY Times (2020), Agência Brasil (2020), and Human Right Watch (2020).
Spread more than 595 Fake News or distorted statement on Covid-19	CNN, D.D. and T.S. (2020), Statista (2020), Paz (2020), Ricard and Medeiros (2020)
Discloses and forces the use of medicines (hydroxychloroquine and chloroquine) without proven efficacy against Covid-19	News, ABC (2020), Segundo, iG Ú. (2020), Euronews (2020), and Wessel (2020)
No initiative and leadership to act early to unite and organize the country against the virus.	Armstrong (2020), Barberia and Gómez (2020), Hamilton (2020), Haltiwanger (2020), Tisdall (2020), The Lancet (2020), and Ward (2020)

Chart 1: Bad behaviors adopted by President Trump and Bolsonaro during the pandemic

Source: Author (2020)

In any crisis, society discovers the best and worst leaders. During this pandemic, the USA under Trump's leadership and Brazil under Bolsonaro's lead is very far from any good example to follow.

So, what are the best countries? How to identify them? Those are the main questions of the study.

3. The proposed holistic methodology and main results

The holistic methodology has fifteen phases divided by rankings (Figure 2 and Chart 2).

The research is applied, as its results and recommendations are useful for academy, government policymakers and authorities. It is descriptive, with a qualitative and quantitative approach, based on bibliographic and documentary research, involving the study of official sites, articles, reports, manuals, and other technical documents related to 13 international rankings.

The first thirteen phases are composed by international ranking chosen by the following criteria:

First) evaluated at least 50 countries;

Second) be related with health, innovation, sustainability, image, and competitiveness issues;

Third) use a score scale from 0 to 100 points or another numerical scale (0 to 1000; 1 to 5) that permit to be normalized to a scale from 0 to 100 points;

Fourth) has been realized in the last four year, giving preference to the last updated assessment.

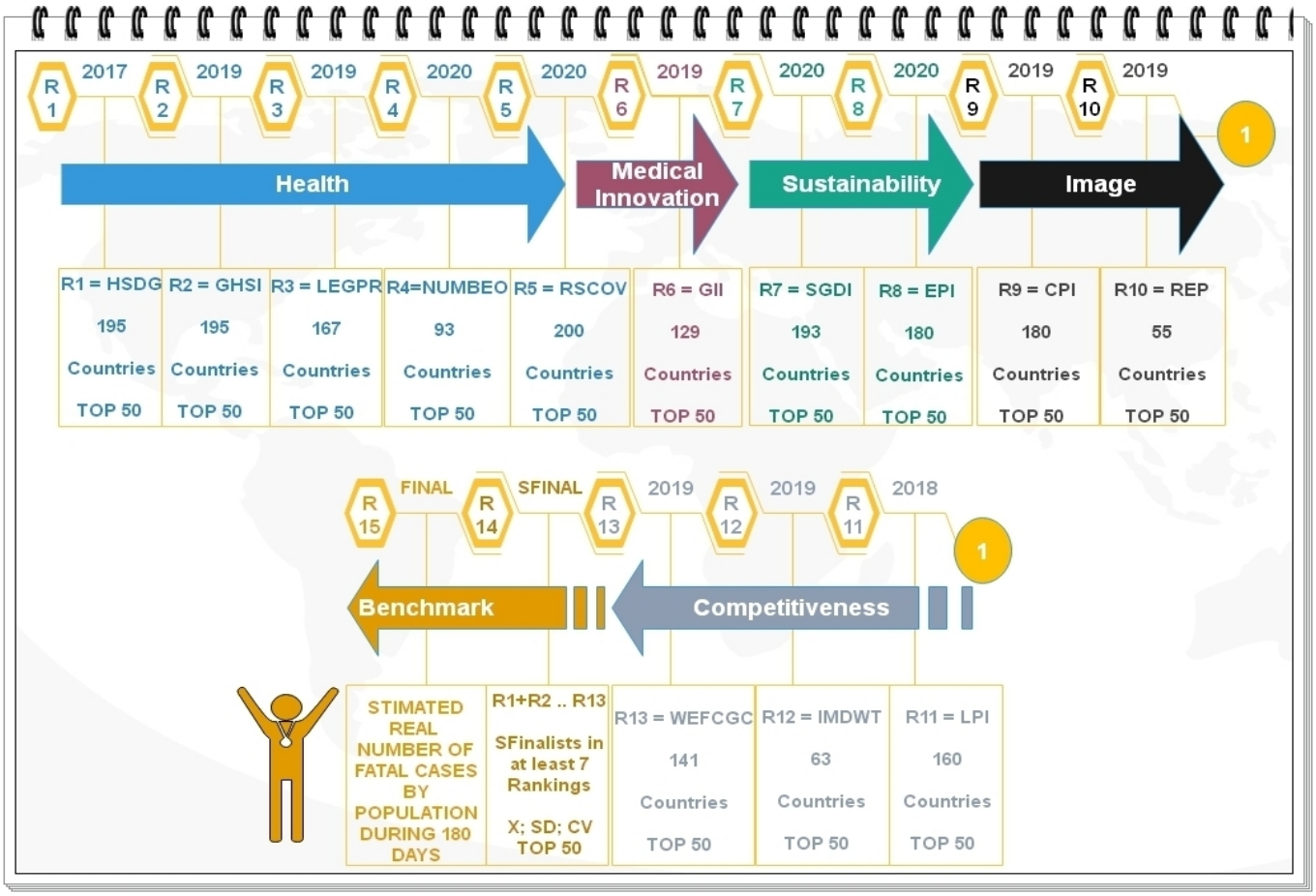


Figure 2: The model to identify the benchmark countries that are saving people lives against Covid-19
Source: Author (2020)

RANK	CODE	MAIN FOCUS	NAME	NC	YEAR	SCORE	SOURCES
R1	HRSDGI17	HEALTH	Health-related SDG Index	195	2017	0-100	GBD 2017 SDG Collaborators (2018)
R2	GHSI19		Global Health Sec. Index	195	2019	0-100	NTI, JHU and EIU (2019)
R3	LPI19		The Legatum Prosperity Index (Pillar 10 Health)	167	2019	0-100	Legatum Institute (2019)
R4	NHCI20		NUMBEO Health Care Index	93	2020	0-100	Numbeo (2020)
R5	RSCOV20		Covid-19 Regional Safety Assessment	200	2020	0-1000*	Deep Knowledge Group (2020)

Continuation of Chart 2.

RANK	CODE	MAIN FOCUS	NAME	NC	YEAR	SCORE	SOURCES
R6	GII19	MEDICAL INNOVATION	Global Innovation Index	129	2019	0-100	Cornell Univ., INSEAD, and WIPO (2020)
R7	SDGI20	SUSTAINABILITY	The SDG and Covid-19	193	2020	0-100	Sachs et al. (2020)
R8	EPI20		Environment Performance Index	180	2020	0-100	Wendling et al. (2020)
R9	CPI19	IMAGE	Corruption Perception Index	180	2019	0-100	E.V, T. I. (2020)
R10	REP19		Country Reputation Track	55	2019	0-100	Reputation Inst. (2019)
R11	LPI18	COMPETITIVENESS	Logistic Performance Index	160	2018	1 – 5 **	The World Bank (2018)
R12	IMDWT19		IMD World Talent	63	2019	0-100	IMD World Competitiveness Center (2019)
R13	WEFGCI19		The Global Competitiveness Index	141	2019	0-100	Schawb (2019)

Chart 2: Profile of the thirteen international rankings

Note: * and * * scores needed to be normalized for 0 to 100 points

The Chart 2 summarizes the profile of the thirteen international rankings investigated, showing the code, the main focus, the name of the report, the number of countries evaluated, the term country is used to refer the territories included in each ranking, also shows the year, score range, it was necessary to normalize the score and the source.

In short, from ranking one until ranking 13, in each of them, it was selected the top 50 highest score countries, all of them written in a spreadsheet. After that, a total of 108 countries were to the semifinal rank, where the average score, standard deviation, coefficient variation, and median were applied for each country, generating a list of 44 well-evaluated countries that were present in at least seven of the investigated rankings.

And finally, for each of the 44 semi-finalists, it was used the concept of Fatality Total Index (FTI) to estimate real number of fatal cases by the one million population during 180 (6 months) days facing the pandemic. The collection and analysis methods used in each ranking are described with more details with the main results in the next sections.

3.1 Ranking 1: Health-related Sustainable Development Goal Index (HRSDGI) 2017

Since September of 2015, 193 leaders of all UN Members adopted The Sustainable Development Goals (SDG) to fight poverty, protect the planet and ensure that all people enjoy peace and prosperity by using the 2030 Agenda for Sustainable Development (UNDP, 2016a).

The 2030 Agenda focus on seventeen SDGs, 169 targets, and 232 indicators covering economic, environmental, and social dimensions, from (1) No poverty until (17) Partnerships for the Goals (UNDP, 2016a). Besides, to help each country to implement and measure the progress towards the SDGs, the United Nations Development Programme (UNDP) has offered several tools, guidance, resources, and methodologies (UNDP, 2016b; UNDP, 2017; UNDP, 2020; UNDP, n.d).

In terms of Health, the closest goal of SDG is number 3, related to Good Health and Well-Being to ensure healthy lives and promote well-being for all at all ages. Besides, concerning to measurement or assessment, since 2015, some methodologies tried to evaluate the HRSDGs (WHO,2016; SACHS et al., 2016; GBD 2015 SDG Collaborators; 2016) with improvement in the last years (GBD 2017 SDG COLLABORATORS, 2018; SACHS et al., 2020).

According to GBD 2015 SDG Collaborators (2016 p. 1839), there are are several important similarities and differences between their assessment of the HRSDGs and those produced by WHO (2016) and the Sustainable Development Solutions Network (SACHS et al., 2016), especially because they focused more on the HRSDG indicators and did not cover indicators across all SDG goals as Sachs et al. (2016) did.

Historically, The Global Burden of Diseases, Injuries, and Risk Factors Study (GDB) 2015 estimated 33 HRSDG indicators and overall HRSDG Index from 1990 to 2015 for 188 countries. In GDB 2016, the number of indicators was expanded to 36, and projections of HRSDG achievement in 2030 were estimated for the first time. Finally, the GDB 2017 measured the progress of 40 HRSDG indicators from 1990 to 2017 (Figure 3), reason by which the GBD 2017 SDG Collaborators (2018) methodology was chosen to become the Ranking 1.

HRSDG indicators are indicators for health services, health outcomes, and environmental, occupational, behavioral, and metabolic risks with well-established causal connections to health (GBD 2015 SDG COLLABORATORS; 2016 p. 1815).

The overall index for GBD 2017 consisted of 40 HRSDG indicators (Figure 3) from 195 countries, the value for each indicator was transformed on a scale of 0–100, with 0 as the 2·5th percentile and 100 as the 97·5th percentile of 1000 draws calculated from 1990 to 2030. It was calculated the geometric mean of scaled health-related SDG indicators by the target and then took the geometric mean across all HRSDG targets to produce the overall HRSDG index.

GDB 2017 SDG Collaborators (2018) provides further information about the methodology, methods, indicators, standardization, and other details about the calculation of SDG Index and the median values

used for this article were taken from Figure 1 (GDB 2017 SDG COLLABORATORS, 2018, page 2014 – 2016) related to the performance on the HRSDG Index and 40 individual health-related indicators, by location, in 2017.

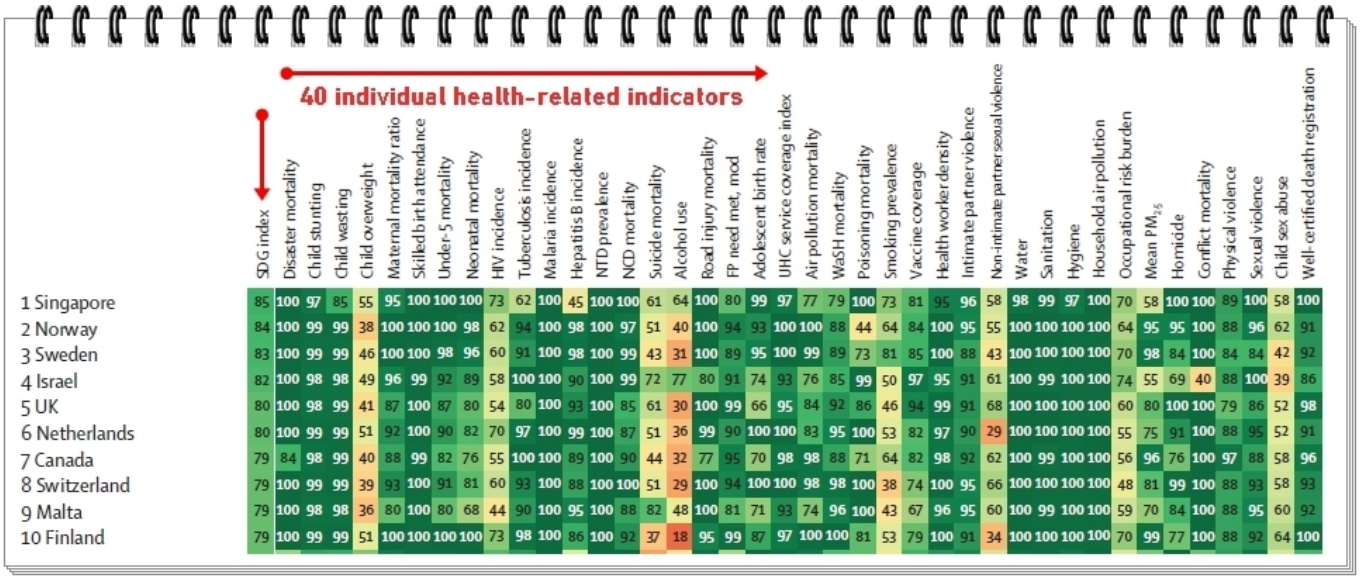


Figure 3: Ten best countries performance on the health-related SDG Index, in 2017.

Source: GBD 2017 SDG Collaborators (2018 p. 2104)

As a result, in 2017, the global median HRSDG index was 59.4 and the ten best countries (Figure 3) were: 1) Singapore (85 points); 2) Norway (84); 3) Sweden (83); 4) Israel (82); 5) UK (80); 6) Netherlands (80); 7) Canada (79); 8) Switzerland (79); 9) Malta (79) and 10) Finland (79). Besides, the HRSDGs Index of each country can be easily accessed by using the interactive Viz Hub platform <https://vizhub.healthdata.org/sdg/> developed by the IHME from the University of Washington.

3.2 Ranking 2: Global Health Security Index (GHSI) 2019

The GHSI 2019 was published last year (NTI, JHU, and EIU, 2019) and presents the global assessment of the health security capacity of 195 countries, based on a questionnaire with 140 questions divided into 6 categories, 34 indicators, and 85 sub-indicators.

The six main categories are:

1) prevention (emergency prevention or pathogen release);

2) detection and reporting (detection and early notification of epidemics of international interest);

3) rapid response (rapid response and mitigation of the spread of an epidemic);

4) health system (robust health system to treat patients and protect health professionals);

5) compliance with international standards (commitment to improving national capacity, finance plans to fill gaps and adhere to international standards);

6) environmental risk.

The GHSI 2019 <https://www.ghsindex.org/> methodology is described in the Report of NTI, JHU, and EIU (2019 p. 61) and the overall score (0 – 100) for each country is a weighted sum of the six categories. Each category is scored on a scale from 0 to 100, in which 100 represents the most favorable health security conditions, and 0 means the least favorable.

In short, the report:

a) reveals that the overall average of the GHSI 2019 of 195 countries is 40.2 points;

b) point out that health security is fundamentally weak on the planet, no country is fully prepared to face epidemics and pandemics, and each country has gaps to be resolved;

c) points out 33 recommendations, among them related to the health security capacity of each country, needs to be transparent and regulated;

d) the average score for the indicated Health System is 26.4, being considered the category with the lowest score;

e) transparency and trust are vital elements in preparing for the pandemic;

f) the ten countries (Figure 4) with the best overall scores were: 1) USA (83.5); 2) UK (77.9); 3) Netherlands (75.6); 4) Australia (75.5); 5) Canada (75.3); 6) Thailand (73.2); 7) Sweden (72.1); 8) Denmark (70.4); 9) South Korea (70.2) and Finland (68.7).

OVERALL SCORE			1. PREVENTION OF THE EMERGENCE OR RELEASE OF PATHOGENS			2. EARLY DETECTION & REPORTING FOR EPIDEMICS OF POTENTIAL INTERNATIONAL CONCERN			3. RAPID RESPONSE TO AND MITIGATION OF THE SPREAD OF AN EPIDEMIC		
Rank		Score	Rank		Score	Rank		Score	Rank		Score
1	United States	83.5	1	United States	83.1	1	United States	98.2	1	United Kingdom	91.9
2	United Kingdom	77.9	2	Sweden	81.1	2	Australia	97.3	2	United States	79.7
3	Netherlands	75.6	3	Thailand	75.7	2	Latvia	97.3	3	Switzerland	79.3
4	Australia	75.5	4	Netherlands	73.7	4	Canada	96.4	4	Netherlands	79.1
5	Canada	75.3	5	Denmark	72.9	5	South Korea	92.1	5	Thailand	78.6
6	Thailand	73.2	6	France	71.2	6	United Kingdom	87.3	6	South Korea	71.5
7	Sweden	72.1	7	Canada	70.0	7	Denmark	86.0	7	Finland	69.2
8	Denmark	70.4	8	Australia	68.9	7	Netherlands	86.0	8	Portugal	67.7
9	South Korea	70.2	9	Finland	68.5	7	Sweden	86.0	9	Brazil	67.1
10	Finland	68.7	10	United Kingdom	68.3	10	Germany	84.6	10	Australia	65.9

Figure 4: The ten best countries in the GHS Index 2019

Source: NTI, JHU and EIU (2019 p. 20)

3.3 Ranking 3: The Legatum Prosperity Index (LPI) 2019

The LPI 2019 goal is to provide the most effective data tool for political leaders, policymakers, business leaders, investors, philanthropists, media, and civil society to help set the agendas and implement strategies for social and economic development that will further create the pathways from poverty to prosperity for all nations (LEGATUM PROSPERITY, 2019 p. 82).

It has been refined, and for the version 2019 (13th consecutive year), 167 countries (99.4% of the global population) were evaluated by using 3 Domains, 12 pillars, 65 elements and hearing more than 100 academics and experts around the world with particular expertise on each pillar: P1) Safety & Security; P2) Personal Freedom; P3) Governance; P4) Social Capital; P5) Investment Environment; P6) Enterprise Conditions; P7) Market Access; P8) Economic Quality; P9) Living Condition; P10) Health; P11) Education; P12) Natural Environment.

The methodology is described in the Report of Legatum Prosperity (2019, p. 80-82) and here <https://www.prosperity.com/about/resources> it is possible to download the full data set in Microsoft

format to understand that the overall score (0 – 100) for each country is the average of the 12 pillars (each one has the same weight). Besides, each pillar is also scored on a scale from 0 to 100, in which 100 represents the highest value, and 0 means the lowest value.

For this research, only the Pillar 10 (Health) is considered (Figure 5), composed by six elements: Behavioral Risk Factors (weight 10%), Care Systems (15%), Longevity (30%), Mental Health (10%), Physical Health (20%), and Preventive interventions (15%), which measures the extent to which people are healthy and have access to the necessary services to maintain good health.

Figure 5: Domains, Pillars and Elements of the Legatum Prosperity Index 2019
Source: Legatum Prosperity (2019, p. 35)

According the Legatum Prosperity (2019, p. 72), those who enjoy good physical and mental health report high levels of well being, whilst poor health provides a major obstacle to people fulfilling their potential. The coverage and accessibility of effective healthcare, combined with behaviors that sustain a healthy lifestyle, are critical to both individual and national prosperity.

As a result, the global average score (167 countries) of Pillar 10 (Health) is 68.28 (S=11; CV=0.17; Mean=71.81) and the ten best countries (Figure 6) in this pillar were:

1) Singapore (86.6); 2) Japan (86.3); 3) Switzerland (84.2); 4) South Korea (84;2); 5) Norway (83.4); 6) Hong Kong (83;1); 7) Iceland (82.8); 8) Denmark (82.8); 9) Netherlands (82.6); and 10) Austria (82,5).

When comparing the score by the element, between 2009 and 2019, the elements with more improvements were Preventive interventions, Care Systems and Longevity, while Mental Health and Physical Health showed slight negative evolution.

COUNTRY												
PILLAR WEIGHTING	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1
Singapore	91.95	51.99	75.28	63.69	87.71	87.02	84.81	79.70	95.61	86.63	90.69	54.68
Japan	91.50	72.14	80.56	44.45	78.31	83.02	74.79	67.03	93.58	86.25	86.46	66.55
Switzerland	93.97	85.98	87.35	72.42	78.71	88.17	78.15	79.56	96.36	84.16	85.69	73.20
South Korea	82.22	64.41	70.33	42.48	76.82	70.80	73.71	73.38	91.56	84.16	89.44	57.16
Norway	93.84	94.56	90.38	77.49	83.29	83.54	74.77	73.17	95.84	83.37	85.99	71.27
Hong Kong	92.96	66.90	81.25	58.90	81.94	90.78	81.75	73.88	94.50	83.10	87.57	65.31
Iceland	92.72	89.05	84.30	74.52	73.10	75.04	76.65	70.64	93.43	82.82	85.28	71.08
Denmark	92.93	92.88	88.97	77.14	81.14	84.44	77.81	74.02	97.08	82.76	87.84	70.50
Netherlands	91.27	89.73	88.72	73.28	78.92	84.36	80.38	74.72	96.94	82.62	86.41	58.92
Austria	91.53	83.51	82.95	67.72	79.00	79.85	74.32	68.44	94.55	82.51	83.01	75.69

Figure 6: The ten best countries in the Pillar 10 (Health) of the Legatum Prosperity Index 2019
Source: Legatum Prosperity <https://www.prosperity.com/rankings>

3.4 Ranking 4: Numbeo Health Care Index (NHCI) 2020

It has been published since 2012, and nowadays, new evaluations are made every semester, by applying a survey to the visitors of the Numbeo (2020) website and using a scale from 0 to 100.

To generate the index, Numbeo (2020) uses data up to 36 months old and the Health Care Index is an estimation of the overall quality of the health care system, health care professionals, doctors, cost, equipment, staff, etc.

By using the scores of Numbeo (2020) 93 countries, it is possible to note that the average score is 63.14 (S=10.31; CV=0.16; Mean=64.48) and the ten best countries were: 1) Taiwan (86.71); 2) South Korea (81.97); 3) Japan (81.14); 4) Denmark (80); 5) France (79.99); 6) Spain (78.88); 7) Austria (78.73); 8) Thailand (77.95); 9) Australia (77.8); and 10) Finland (75.79).

3.5 Ranking 5: Covid-19 Regional Safety Assessment 2020

The Covid-19 Regional Safety Assessment 2020 Report is one of several reports published by Deep Knowledge Group (2020) about the Covid-19 situation around the world. According to Deep Knowledge Group (2020, p. 70), this report is designed to classify, analyze and rank economic, social, and health stability achieved in 200 regions, countries, and territories, by dividing them into 4 different Tiers:

Tier 1 with 20 countries and 130 parameters, ranked highest in terms of regional safety and stability; Tier 2 has 20 regions with 60 parameters; Tier 3with 60 regions with 60 parameters; and Tier 4 with 100

regions that scored least favorably during a first-phase analysis, which suffer from a high level of data unavailability, reason by which is used only 40 parameters.

The framework has six top-level categories (Figure 7) called: 1) Quarantine Efficiency (Weight=2.2); 2) Government Efficiency of Risk Management (Weight=2.2); 3) Monitoring and Detection(Weight=1.5); 4) Health Readiness (Weight=1.3); 5) Regional Resilience (Weight=1.3); and 6) Emergency Preparedness (Weight=1.5). The explanation of this methodology is long and can be studied from page 69 until 116 of the report (DEEP KNOWLEDGE GROUP, 2020).

Figure 7: Example of the categories, indicators, weight used to calculate the total score.
Source: Deep Knowledge Group (2020, p. 136)

In short, each category has a score point that uses a scale from 0 to 100, which is multiplied by a weight and later summed with other categories score point, generating a cumulative score from 0 to 1000.

Figure 7 shows the case of Switzerland, the best country in this rank with a total of 752 points.

For the Deep Knowledge Group (2020, p. 118) the most critical factors impacting regional safety is not the general level of different region's theoretical capacity to withstand and neutralize national emergencies, but rather the specific policies and crisis management strategies and tactics they employ.

In June, 2020, the ten best countries are: 1) Switzerland (752 points); 2) Germany (749); 3) Israel (748); 4) Singapore (744); 5) Japan (738); 6) Austria (726); 7) China (717); 8) Australia (716); 9) New Zealand (715); and 10) South Korea (712).

It is important to note that for this study, the total score point (0 – 1000) will be divided by ten to generate a total score normalized from 0 to 100.

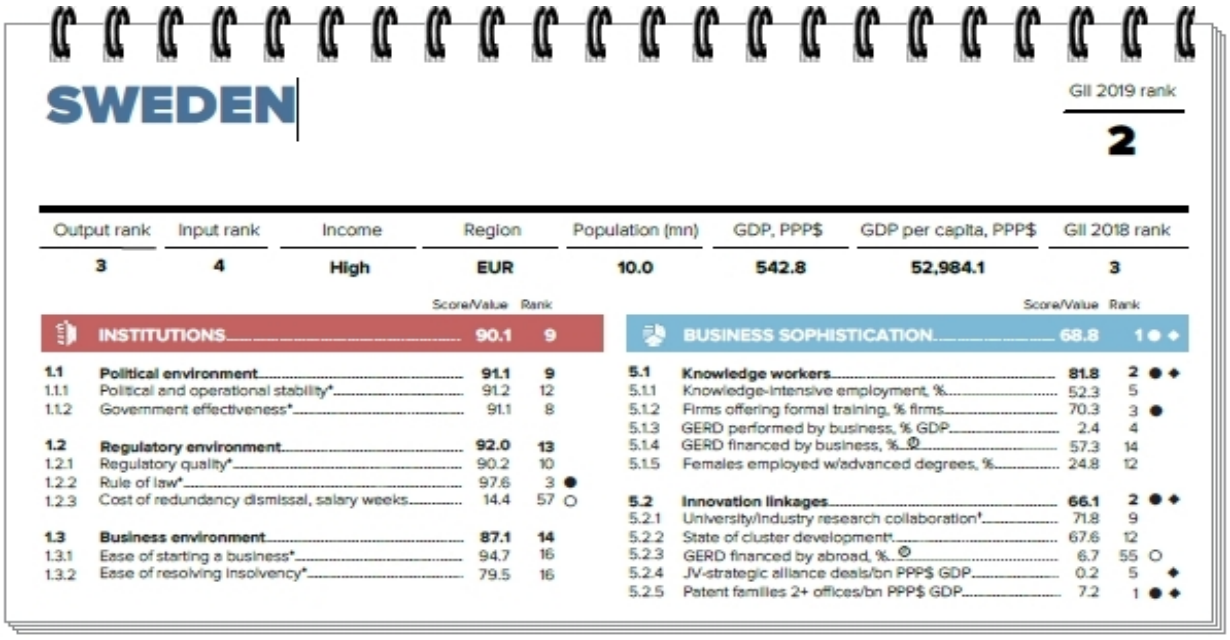
3.6 Ranking 6: Global Innovation Index (GII) 2019

Since 2007, The collaborators of Cornell University, INSEAD, and WIPO (2019) realize the GII, to provide insightful data on innovation and, in turn, to assist economies in evaluating their innovation performance and making informed innovation policy considerations. Every year around 130 countries are evaluated by using a theme, and for the 12th edition, 2019, the theme is "Creating Healthy Lives – The Future of Medical Innovation".

The GII 2019 evaluated 129 countries/economies (91.8% of the world population) and its Framework focus on two sub-index called Innovation Input Sub-Index and Innovation Output Sub-Index, with seven pillars:

Innovation Input Sub-Index: P1) Institutions (Political environment, Regulatory environment, and Business environment); P2) Human Capital and Research (Education, Tertiary education, R & D); P3) Infrastructure (ICTs, General infrastructure, Ecological sustainability); P4) Marketing sophistication (Credit, Investment, Trade, compensation, and market scale); P5) Business sophistication (Knowledge workers, Innovation linkages, and Knowledge absorption);

Innovation Output Sub-Index: P6) Knowledge and technology outputs (Knowledge creation, Knowledge impact, and Knowledge diffusion); P7) Creative outputs (Intangible assets, Creative goods and services, and Online creativity).



SWEDEN

GII 2019 rank: 2

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
3	4	High	EUR	10.0	542.8	52,984.1	3

		Score/Value	Rank
	INSTITUTIONS	90.1	9
1.1	**Political environment**	91.1	9
1.1.1	Political and operational stability*	91.2	12
1.1.2	Government effectiveness*	91.1	8
1.2	**Regulatory environment**	92.0	13
1.2.1	Regulatory quality*	90.2	10
1.2.2	Rule of law*	97.6	3 ●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	57 ○
1.3	**Business environment**	87.1	14
1.3.1	Ease of starting a business*	94.7	16
1.3.2	Ease of resolving insolvency*	79.5	16

		Score/Value	Rank
	BUSINESS SOPHISTICATION	68.8	1 ● ◆
5.1	**Knowledge workers**	81.8	2 ● ◆
5.1.1	Knowledge-intensive employment, %	52.3	5
5.1.2	Firms offering formal training, % firms	70.3	3 ●
5.1.3	GERD performed by business, % GDP	2.4	4
5.1.4	GERD financed by business, %	57.3	14
5.1.5	Females employed w/advanced degrees, %	24.8	12
5.2	**Innovation linkages**	66.1	2 ● ◆
5.2.1	University/industry research collaboration†	71.8	9
5.2.2	State of cluster development†	67.6	12
5.2.3	GERD financed by abroad, %	6.7	55 ○
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.2	5 ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	7.2	1 ● ◆

Figure 8: Partial view of the Sweden indicators

Source: Cornell University, INSEAD and WIPO (2019, p. 328)

The Methodology, data, and changes in the last version are explained by Cornell University, INSEAD, and WIPO (2019, p. 367-374) and scores at all levels until 80 indicators are normalized in the 0 to 100 range. The overall score is the average of the input and output sub-index scores, and for each country, they published a short report with the rank and all indicators (Figure 8).

One of the main findings of the report is that to create healthy lives through medical innovation requires more investment in innovation and increased diffusion efforts.

And the ten best countries/economies in 2019 were:1) Switzerland (67.24); 2) Sweden (63.25); 3) USA (61.73); 4) Netherlands (61.44); 5) UK (61.3); 6) Finland (59.83); 7) Denmark (58.44); 8) Singapore (58.37); 9) Germany (58.19); and 10) Israel (57.43).

3.7 Ranking 7: The Sustainable Development Goals Index (SDGI) and Covid-19

The SDGI Report has been published since 2015, it is the first global survey to evaluate each country concerning achieving the SDGs. It is also well known as SDG Index Report and Dashboards, and the version of last June 2020, is useful because also brings much information about Covid-19.

According to Sachs et al. (2020, p. 24-25), in this last version, the SDGI tracks 166 country performance on the 17 SDGs, as agreed by the international community in 2015 with equal weight to all 17 goals. The score signifies a country's position between the worst (0) and the best or target (100) outcomes, and the methodology has been peer-reviewed (SCHMIDT-TRAUB et al., 2017) and was audited by the European Commission Joint Research Centre (PAPADIMITRIOU, NEVES, and BECKER, 2019).

As a result, the 2020 SDGI ten best countries are: 1) Sweden (84.7); 2) Denmark (84.6); 3) Finland (83.8); 4) France (81.1); 5) Germany (80.8); 6) Norway (80.8); 7) Austria (80.7); 8) Czech (80.6); 9) Netherlands (80.4); and 10) Estonia (80.1). It terms of meaning, that the best country (Sweden) overall Index score (84.7) suggests that the country is on average 85% of the way to the best possible outcome across the 17 SDGs.

3.8 Ranking 8: Environmental Performance Index (EPI) 2020

Some authors tried to call the attention of the authorities about the increasing of people vulnerability to the coronavirus due to environmental pollution issues (CUI et *al*, 2003; WATTS, 2003; KAN et *al.*, 2005), this is why a ranking specially dedicated to evaluating countries on an environmental issue is part of the methodology.

Since 2006, The EPI has been published and the 2020 version provides a data-driven summary of the state of sustainability around the world by using 32 performance indicators across 11 issue categories (example: air quality, sanitation & drinking water, waste management, etc), to rank 180 countries on environmental health and ecosystem vitality (WENDLING et *al*, 2020, p. 2).

According to Wendling et *al*. (2020, p. 2), the metrics of 2020 ranking are from a variety of sources and represent the most recent data, often from 2017 or 2018, reason by which, the analysis does not reflect recent developments, including the dramatic drop in air pollution in 2020 due to the COVID-19 pandemic or the greenhouse gas emissions from the extensive Brazil Amazonian fires in 2019.

Each indicator has a scale from 0 to 100 scale, from worst to best performance. For each country, it was weighed and aggregated the scores for indicators into issue categories, policy objectives, and then, finally, into an EPI score.

By using the report and also the material available in this site <https://epi.yale.edu/downloads> it was possible to download the spreadsheet to identify that the global average score of 180 countries is

48.26 (S=17.03; CV = 0.35; Median = 48) and that the best ten countries are: 1) Denmark (82.5); 2) Luxembourg (82.3); 3) Switzerland (81.5); 4) UK (81.3); 5) France (80); 6) Austria (79.6); 7) Finland (78.9); 8) Sweden (78.7); 9) Norway (77.7); and 10) Germany (77.2).

3.9 Ranking 9: Corruptions Perceptions Index (CPI) 2019

One of the principles of the GHS Index 2019 is that transparency and trust are vital elements in preparing for the pandemic. Shared Transparency, data publicity is needed to draw a more comprehensive and reproducible picture of global gaps related to preparedness (NTI, JHU, and EIU, 2019 p. 34).

One of the international ranking that evaluates the level of perception of a sample of the population with its leaders is carried out annually in 180 countries, called "Corruption Perceptions Index - CPI", published by Transparency International <https://www.transparency.org/>.

The last report was CPI 2019 with 34 pages and its methodology aggregates data from different sources that allow evaluating on a scale from 0 to 100, the perception of specialists and entrepreneurs with the level of corruption in the public sector, where 100 points mean that the country is very clean, while 0 point means that the region is highly corrupt (E.V, T.I., 2019, p.4).

In short, this report points out that: a) the average score for all countries was 43 points; b) 2/3 of the countries had points below 50; c) the ten most transparent countries are: 1) Denmark (87 points); 2) New Zealand (87); 3) Finland (86); 5) Singapore (85); 6) Sweden (85); 7) Switzerland (85); 8) Norway (84); 9) Germany (80); and 10) Luxembourg (80).

3.10 Ranking 10: Country Reputation Track (REP) 2019

This rank has been published by Reputation Institute, which believes that countries with a good reputation: a) welcome more tourists; b) increase export; c) improve diplomacy; d) attract foreign direct investment; e) attract foreign knowledge and talent.

According to Reputation Institute (2019, p. 7), the REP 2019 evaluated 55 countries considered with the largest economies by GDP, with a period of data collection from march until April 2020 with a sample with more than 30000 general public consumers from 23 countries, including nations from old G8. They were asked about their perceptions of both their own country and others (up to a maximum of 2 countries per respondent). In addition, the rank evaluates dimensions and variables as bellow:

1) Quality of Life (38,2%): friendly and nice people (W=8.7); natural environment (7.2); life style (7.1); leisure and entertainment (W=6.9);

2) Institutional Quality (37%): security (W=7.5); ethic and transparency (W=6.8); international respect (W=6.5); institutional and policy environment (W=6); social well-being (W=5.8); efficient use of resources (W=5.7); economic environment (W=4.8);

3) Development Level (24,7%): educated and confident people (W=5.1); culture (W=4.9); product and services quality (W=5); educational system (W=4.3); brand and companies recognized (W=4.2); technology and innovation (W=3.4).

The methodology is explained in the Reputation Institute (2019, p. 7-10) report, which used a scale from 1 to 100 to identify the total score of each nation. As a result, the global average is 61 points and ten most reputable countries in 2019 are: 1) Sweden (83.9); 2) Switzerland (83.9); 3) Norway (82.6); 4)

Finland (82); 5) New Zealand (81.8); 6) Canada (79.7); 7) Denmark (79.3); 8) Australia (79.2); 9) Netherlands (79.2); and 10) Japan (76.3).

3.11 Ranking 11: Logistic Performance Index (LPI) 2018

The logistical speed is important not during common times, but when a nation face pandemic, this is why this rank was selected, developed by The World Bank (2018), which scores countries to identify how efficient they move well across and within borders.

The LPI 2018 evaluated 160 countries by using a worldwide online survey (qualitative) of operators of global freight forwarders and express carriers. Also, the feedback of the operators is supplemented with quantitative data from the performance of key components of the logistic chain in the country.

The LPI Methodology can be accessed here <https://bit.ly/2Z736b0> and it evaluates six core components of logistic performance: efficiency of customs, Infrastructure, International Shipments, Logistics quality and competence, tracking and tracing, and Timeliness.

At the final, for each country, a score from 1 to 5 is given and the global score average is 2.87 and the best 10 countries of LPI 2018 are: 1) Germany (4.20); 2) Sweden (4.05); 3); Belgium (4.04); 4) Austria (4.03); 5) Japan (4.03); 6) Netherlands (4.02); 7) Singapore (4.00); 8) Denmark (3.99); 9) UK (3.99); and 10) Finland (3.97).

For each country, to convert the Score 1 (1 – 5) to a normalized Score 2 (1 to 100), the highest score from Germany (4.2) was considered as the maximum point and it was used the formula (1):

$$(1)\ \text{Score 2} = [(\text{Score1} - 1) * 100] / (4.2 - 1)$$

For the calculation, the data of all 160 countries were taken from a spreadsheet available here <https://lpi.worldbank.org/>.

As a result, the global score average is 58.28 and the Chart 2 shows the Score 2 normalized of the ten best countries: 1) Germany (100); 2) Sweden (95.36); 3); Belgium (94.93); 4) Austria (94.52); 5) Japan (94.51); 6) Netherlands (94.31); 7) Singapore (93.59); 8) Denmark (93.45); 9) UK (93.30); and 10) Finland (92.74).

Rank	Country	Score1	Score 2	Customs	Infrastructure	Int. shipments	Log. quality&comp	Tracking and tracing	Timeliness
1	Germany	4,20	100,00	4,09	4,37	3,86	4,31	4,24	4,39
2	Sweden	4,05	95,36	4,05	4,24	3,92	3,98	3,88	4,28
3	Belgium	4,04	94,93	3,66	3,98	3,99	4,13	4,05	4,41
4	Austria	4,03	94,52	3,71	4,18	3,88	4,08	4,09	4,25
5	Japan	4,03	94,51	3,99	4,25	3,59	4,09	4,05	4,25
6	Netherlands	4,02	94,31	3,92	4,21	3,68	4,09	4,02	4,25
7	Singapore	4,00	93,59	3,89	4,06	3,58	4,10	4,08	4,32
8	Denmark	3,99	93,45	3,92	3,96	3,53	4,01	4,18	4,41
9	UK	3,99	93,30	3,77	4,03	3,67	4,05	4,11	4,33
10	Finland	3,97	92,74	3,82	4,00	3,56	3,89	4,32	4,28

Chart 2: The ten best countries of the LPI 2018

Source: LPI (2018)

3.12 Ranking 12: IMD World Talent Ranking 2019

According to the IMD World Competitiveness Center (2019, p. 3), this rank evaluates 63 economies to identify the extent to which economies develop, attract, and retain highly-skilled professionals. Basically, 32 criteria are evaluated inside of these 3 factors:

F1) the Investment & Development factor measures the resources committed to cultivating homegrown human capital. Some criteria are total public expenditure on education, government expenditure on education per student, employee training, health infrastructure, etc;

F2) the Appeal factor evaluates the extent to which a country attracts local and foreign talent. Some criteria are: cost-of-living index, worker motivation, quality of life, exposure to particle pollution, attracting and retaining talents, etc;

F3) the Readiness factor quantifies the quality of the skills and competencies that are available in a country. Some criteria are labor force growth, skilled labor, competent senior managers, graduates in science, education assessment (PISA), etc.

The methodology is presented in IMD World Competitiveness Center (2019, p. 98-104) Report, and all factors are normalized for an overall ranking to the 0 to 100 range to facilitate the interpretation of results. For each country, there is a report containing the overall performance score, the score of each factor and criteria, triangles indicating improvement or declining status, the position, etc.

As a result, the ten best countries are: 1) Switzerland (100); 2) Denmark (90.80); 3) Sweden (86.94); 4) Austria (86.91); 5) Luxembourg (86.65); 6) Norway (85.95); 7) Iceland (85.15); 8) Finland (83.14); 9) Netherlands (81.81); and 10) Singapore (81.80).

3.13 Ranking 13: The Global Competitiveness Index (GCI) 2019

This last edition of The Global Competitiveness Report series, first launched in 1979, features the Global Competitiveness Index 4.0 (GCI 4.0) with the main aim to help policy-makers, business leaders and other stakeholders shape their economic strategies in the era of the Fourth Industrial Revolution.

Basically, 141 economies (99% of the world`s GDP) are evaluated by using a full set of factors that determine productivity, growth, and human development. These are organized into 12 main drivers of productivity or pillars (Figure 9): Institutions; Infrastructure; ICT adoption; Macroeconomic stability; Health; Skills; Product market; Labour market; Financial system; Market size; Business dynamism; and Innovation capability (SCHAWB 2019, p. 7).

The methodology (SCHAWB 2019, p. 611-639) uses a combination of data from international organizations and the World Economic Forum`s business executive (15,000) surveys.

The overall GCI 4.0 score is the average of the scores of the 12 pillars (total of 103 indicators). Each country overall performance can be between 0 to 100 score, where the maximum point means the ideal state where an issue ceases to be a constraint to productivity growth.

Also, there is a report for each economy showing the position comparing with 141 economies, the overall score, the score of each pillar, and other results described with detail.

As a result, the ten best economies of GCI 4.0 2019 are: 1) Singapore (84.8, Figure 9); 2) USA (83.7); 3) Hong Kong (83.1); 4) Netherlands (82.3); 5) Switzerland (82.3); 6) Japan (82.3); 7) Germany (81.8); 8) Sweden (81.2); 9) UK (81.2); and 10) Denmark (81.2).

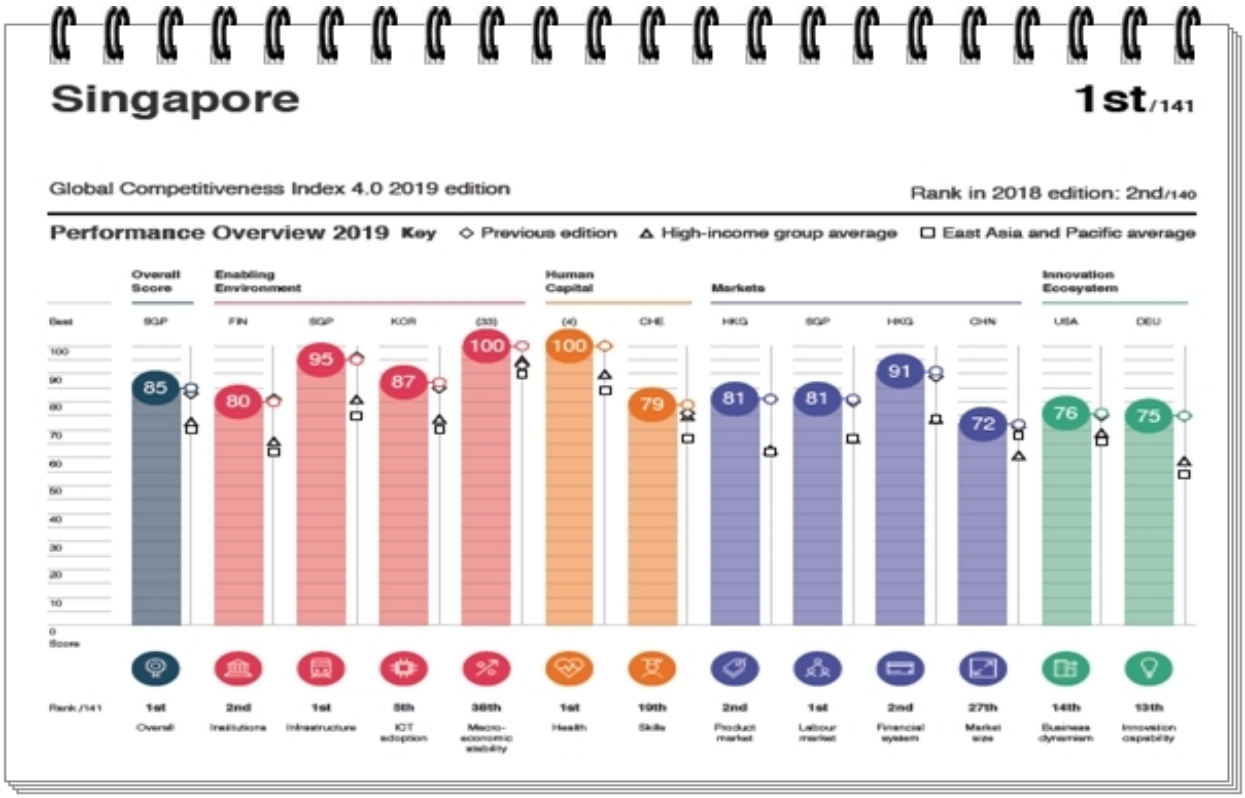


Figure 9: Part of the report showing Singapore performance

Source: Schawb (2019, p. 506-509)

3.14 Ranking 14: The Semifinalist

The Semifinalists are those countries with the highest performance, identified as belonging in at least seven rankings (54% of thirteen positions).

It was developed two spreadsheets to identify them: the first one (Chart 3) contains the position of each country in each one of 13 rankings. The goal was to identify the number of a country's participation in all 13 rankings (NP13R), taking into consideration the 50 top best nations; the second one contains the score value of each nation in each ranking, to be able to make the calculations of the Average (X), Standard Deviation (S), Coefficient of Variation (CV), and Median (Med).

As a result, a total of 108 countries (Chart 3 and its continuation in Appendix A) were identified as belonging in at least one of the 13 rankings.

Chart 3 shows a partial list of the countries organized by their rank and alphabetical order, the rest of the countries can be viewed in Appendix A.

This Chart shows that the NP13R of Albania is lower than seven, only was able to be once (NP13R) on the 50 Top positions among 13 rankings. The best position was 39th in the Ranking 2 (Global Health Security Index 2019), reason by which receive a red color and was not able to go to the Semi-Final list.

On the other hand, Australia NP13R is higher than seven, it is present as top 50 in all rankings (NP13R=13), with the 4th position being the best in Ranking 2, reason by which received a black color and was able to be considered as Semifinalist for further calculations. The same logic was adopted for other countries, and the character "-" means that the country was not evaluated by the ranking.

R	COUNTRY	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	NP13R
1	Albania	70	39	69	77	88	83	68	62	106	-	88	-	81	1
2	Algeria	48	173	73	74	93	113	56	84	106	46	117	-	89	2
3	Argentina	52	25	46	31	62	73	51	54	66	29	61	48	83	5
4	Armenia	43	44	67	-	81	64	75	53	77	-	92	-	69	2
5	Australia	27	4	18	9	8	22	37	13	12	8	18	16	16	13
6	Austria	29	26	10	7	6	21	7	6	12	13	4	4	21	13
7	Bahamas	33	142	-	-	100	-	--	93	29	-	112	-	-	2
8	Bahrain	39	88	53	-	23	78	82	56	77	-	59	-	45	3
9	Bangladesh	155	113	113	91	84	116	109	162	146	47	100	-	105	1
10	Barbados	28	133	-	-	110	-	87	77	30	-	-	-	77	2
11	Belarus	118	-	76	-	63	72	18	49	66	-	103	-	-	2
12	Belgium	15	19	24	15	78	23	11	15	17	14	3	14	22	12
13	Bhutan	129	78	-	-	140	-	80	107	25	-	149	-	-	1
14	Bosnia&Herzegovina	84	79	93	79	72	76	50	78	101	-	72	-	92	1
15	Botswana	133	139	119	-	122	80	121	103	34	-	-	-	91	1
16	Brazil	46	22	58	66	91	66	53	55	106	34	56	61	71	3
17	Brunei	20	128	-	-	-	71	88	46	35	-	80	-	56	3
18	Bulgaria	91	61	65	72	48	40	39	41	74	-	52	52	49	5
19	Cabo Verde	110	146	79	-	162	-	92	144	41	-	-	-	112	1
20	Canada	7	5	25	24	12	17	21	20	12	6	20	13	14	13
21	Chile	67	27	70	44	41	51	28	44	26	28	34	46	33	10
22	China	88	51	21	47	7	14	48	120	80	45	26	42	28	9
23	Colombia	62	65	44	37	150	67	67	50	96	48	58	54	57	4
24	Costa Rica	82	62	36	52	125	55	35	52	44	-	73	-	62	3
25	Côte d'Ivoire	167	105	-	-	182	103	128	176	106	-	50	-	118	1
26	Croatia	51	38	57	51	36	44	19	34	63	-	49	53	63	6
27	Cuba	68	110	27	-	114	-	55	64	60	-	146	-	-	1
28	Cyprus	17	77	29	81	40	28	34	31	41	-	45	21	44	10
29	Czech	42	42	28	12	43	26	8	21	44	20	22	39	32	13
30	Denmark	14	8	8	4	15	7	2	1	1	7	8	2	10	13

Chart 3: Partial view of 108 countries position belonging in at least one of the 13 rankings

Source: Author (2020)

After the calculations (using the average of all scores), it was possible to identify the best well-evaluated countries. From 108 nations, only 44 (40,7%) countries can go for the next phase (Table1).

Table 1 shows the basic information of the 44 Semi-Finalist countries, organized by descending average (X) order:

a) most of the semifinalist are from Europe with 26 nations (59,1%), followed by 13 (29,5%) Asia countries, 2 (4,5%) from North America, 2 (4,5%) from Oceania, and only one (2,3%) from South America continent;

b) the global average of all 44 countries score in all ranking is 69,6 points, with a median of 71.6 points, a little bit higher than the global average.

c) the top ten semifinalist nations are:

1) Switzerland (X=80.6); 2) Denmark (79.6); 3) Sweden (78.3); 4) Netherlands (78.1); 5) Finland (77.6); 6) Germany (X=76.9; S=9,9; CV=12.8%); 7) Norway (X=76.9; S=9,9; CV=12.9%); 8) Austria (75.8); 9) Hong Kong (75.4); and 10) Canada (75.3). Most of these ten countries belong to all 13 rankings, showing that they have been on the top of 50 countries, except Sweden (NP13R=12) and Hong Kong (NP13=8).

Table 1: The 44 Semifinalist, best well evaluated countries organized by average (X) descending order

R.	NP13R	COUNTRY	CONT.	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	X	S	CV %	MED
1	13	SWITZERLAND	Europe	79	67	84,16	72,44	75,2	67,24	79,4	81,5	85	83,9	90,63	100	82,3	**80,6**	9,1	11,3	81,5
2	13	DENMARK	Europe	77	70,4	82,76	80	67,1	58,44	84,6	82,5	87	79,3	93,45	90,8	81,2	**79,6**	9,6	12,1	81,2
3	12	SWEDEN	Europe	83	72,1	81,96	69,23	52,2	63,65	84,7	78,7	85	83,9	95,36	86,94	81,2	**78,3**	11,3	14,5	82,0
4	13	NETHERLANDS	Europe	80	75,6	82,62	74,65	65,1	61,44	80,4	75,3	82	79,2	94,31	81,81	82,4	**78,1**	8,2	10,5	80,0
5	13	FINLAND	Europe	79	68,7	79,96	75,79	58,4	59,83	83,8	78,9	86	82	92,74	83,14	80,2	**77,6**	9,9	12,7	80,0
6	13	GERMANY	Europe	75	66	82,35	73,32	74,9	58,19	80,8	77,2	80	69,5	100	80,78	81,8	**76,9**	9,9	12,8	77,2
7	13	NORWAY	Europe	84	64,6	83,37	74,36	68,5	51,87	80,3	77,7	84	82,6	84,23	85,95	78,1	**76,9**	9,9	12,9	80,3
8	13	AUSTRIA	Europe	72	58,5	82,51	78,73	72,6	50,94	80,7	79,6	77	75,4	94,52	86,91	76,6	**75,8**	11,2	14,8	77,0
9	8	HK	Asia	-	-	83,1	66,08	69,8	55,54	-	-	76	-	91,21	78,14	83,1	**75,4**	11,3	15,0	77,1
10	13	CANADA	North Am	79	75,3	80,2	71,58	69,9	53,88	78,2	71	77	79,7	85,17	78,63	79,6	**75,3**	7,7	10,3	78,2
11	13	JAPAN	Asia	79	59,8	86,25	81,14	73,8	54,68	79,2	75,1	73	76,3	94,51	61,69	82,3	**75,1**	11,0	14,7	76,3
12	13	AUSTRALIA	Oceania	72	75,5	81,78	77,38	71,6	50,34	74,9	74,9	77	79,2	85,94	76,41	78,7	**75,1**	8,4	11,1	76,4
13	12	UK	Europe	80	77,9	80,54	74,46	51,3	61,3	79,8	81,3	77	69,5	93,3	69,09	81,2	**75,1**	10,5	14,0	77,9
14	13	NEW ZELAND	Oceania	76	54	80,83	73,81	71,5	49,55	79,2	71,3	87	81,8	89,82	75,57	76,7	**74,4**	11,5	15,4	76,0
15	12	SINGAPORE	Asia	85	58,7	86,63	70,84	74,4	58,37	67	58,1	85	71,6	93,59	81,8	84,8	**75,1**	12,1	16,1	74,4
16	12	BELGIUM	Europe	77	61	80,53	74,34	49,8	50,18	80	73,3	75	74,5	94,93	78,42	76,4	**72,7**	12,4	17,1	75,0
17	11	USA	North Am	74	83,5	74,94	69,27	53	61,73	76,4	69,3	69	56,2	90,12	79,24	83,7	**72,3**	10,9	15,0	74,0
18	12	FRANCE	Europe	70	68,2	81,89	79,99	52,9	54,25	81,1	80	69	66,5	88,85	68,53	78,8	**72,3**	10,8	14,9	70,0
19	10	TAIWAN	Asia	70	-	79,37	86,71	66,7	-	-	57,2	65	64,3	81,2	71,56	80,2	**72,2**	9,3	12,9	70,8
20	10	LUXEMBOURG	Europe	69	43,8	81,44	-	57,6	53,47	74,3	82,3	80	-	82,15	86,65	77	**71,6**	14,0	19,6	77,0
21	13	SK	Asia	72	70,2	84,16	81,97	71,2	56,55	78,3	66,5	59	59,2	81,59	62,54	79,6	**71,0**	9,7	13,6	71,2
22	13	SPAIN	Europe	74	65,9	82,07	78,88	54,3	47,85	78,1	74,3	62	75,6	88,44	63,59	75,3	**70,8**	11,5	16,2	74,3
23	11	ICELAND	Europe	79	46,3	82,82	65,92	60	51,53	77,5	72,3	78	-	69,5	85,15	74,7	**70,2**	12,2	17,4	73,5
24	12	IRELAND	Europe	76	59	80,86	51,89	55,1	56,1	79,4	72,8	74	77,5	78,42	73,29	75,1	**70,0**	10,4	14,8	74,0
25	12	ISRAEL	Asia	82	47,3	82,37	73,29	74,8	57,43	74,6	65,8	60	50,1	72,09	73,26	76,7	**68,4**	11,4	16,7	73,3
26	13	PORTUGAL	Europe	71	60,3	79,4	71,88	54,2	44,65	77,6	67	62	73,1	82,56	69,8	70,4	**68,0**	10,5	15,5	70,4
27	11	ESTONIA	Europe	68	57	75,27	72,67	55,6	49,97	80,1	65,3	74	-	72,21	66,88	70,9	**67,3**	9,0	13,3	69,5
28	12	SLOVENIA	Europe	78	67,2	79,22	64,58	56,4	42,25	79,8	72	60	-	72,3	64,16	70,2	**67,2**	10,8	16,1	68,7
29	11	ITALY	Europe	70	56,2	81,83	66,59	53,3	46,3	77	71	53	74,3	85,56	61,59	71,5	**66,8**	12,0	17,9	70,0
30	13	CZECH	Europe	69	52	79,77	74,62	54,5	49,43	80,6	71	56	67,1	83,72	56,92	70,9	**66,6**	11,7	17,5	69,0
31	10	UAE	Asia	61	46,7	76,14	67,04	70	42,17	70,3	55,6	71	58,1	92,35	65,69	75	**65,5**	13,1	20,1	67,0
32	12	POLAND	Europe	69	55,4	77,49	61,01	57	41,31	78,1	60,9	58	62	79,32	58,83	68,9	**63,6**	10,7	16,9	61,0
33	9	MALAYSIA	Asia	66	62,2	77,62	68,1	56,5	42,68	71,8	47,9	53	61,7	69,37	70,82	74,6	**63,3**	10,6	16,8	66,0
34	9	MALTA	Europe	79	37,3	82,05	68,81	54,4	49,01	76	70,7	54	-	56,66	-	68,5	**63,3**	14,0	22,1	68,5
35	10	CYPRUS	Asia	76	43	79,69	51,75	55	48,34	75,2	64,8	58	-	67,18	71,35	66,4	**63,1**	11,8	18,7	65,6
36	9	LITHUANIA	Europe	58	55	70,94	69,49	56,6	41,46	75	62,9	60	-	63,02	66,51	68,4	**62,3**	9,0	14,4	63,0
37	10	CHILE	South Am	65	58,3	73,1	65,44	54,9	36,64	77,4	55,3	67	60,3	72,38	49,97	70,5	**62,0**	11,1	17,9	65,0
38	9	LATVIA	Europe	64	62,9	71,34	62,91	56,4	43,23	77,7	61,6	56	-	56,54	62,08	67	**61,8**	8,6	13,9	62,5
39	10	THAILAND	Asia	59	73,2	78,75	77,95	54,1	38,63	74,5	45,4	36	65,1	75,31	53,84	68,1	**61,5**	14,9	24,3	65,1
40	9	GREECE	Europe	64	53,8	79,06	56,21	56	38,9	74,3	69,1	48	66,3	68,86	54,77	62,6	**60,9**	11,1	18,1	62,6
41	9	HUNGARY	Europe	67	54	75,45	47,8	65,6	44,51	77,3	63,7	44	-	75,55	50,28	65,1	**60,9**	12,3	20,2	64,4
42	9	CHINA	Asia	62	48,2	80,86	64,48	71,7	54,82	73,9	37,3	41	48,3	81,37	54,02	73,9	**60,9**	14,8	24,4	62,0
43	8	QATAR	Asia	61	41,2	76,07	73,3	57,5	33,86	64,7	37,1	62	51	77,28	67,36	72,9	**59,6**	14,8	24,8	62,0
44	7	VIETNAM	Asia	46	49,1	77,29	57,7	63,7	38,84	73,8	33,4	37	59,4	71,03	-	61,5	**55,7**	14,8	26,6	58,6

Source: Author (2020)

d) on the other hand, the ten last semifinalists are: 44) Vietnam (55.7); 43) Qatar (59.6); 42) China (X=60.9; S=14.8); 41) Hungary (X=60.9; S=12.3); 40) Greece (X=60.9; S=11.1); 39) Thailand (61.5); 38) Latvia (61.8); 37) Chile (62); 36) Lithuania (62.3); and 35) Cyprus (63.1).

Most of these countries are among the 50 best nations in at least 9 rankings, except Vietnam with NP13R = 7.

3.15 Ranking 15: The Finalists, Benchmark countries

Finally, the last rank of the holistic methodology aims to identify the FATALITY TOTAL INDEX (FTI) of each country, since it is a way to measure how effective a country is in saving people`s lives against Covid-19.

Balsari, Buckee, and Khanna (2020) stressed the importance of data, and alerted that bad data could produce serious missteps, specially when models are produced and presented without appropriate expertise.

Several organizations around the world are trying to collect data to develop indicators that involve the amount of fatal (or death) cases, such as a) total number of fatal cases by a total number of cases; b) the total number of fatal cases by a total number of recovered cases; c) a total number of fatal cases by

100 confirmed cases; d) a total number of fatal cases by 100,000 population; e) a total number of death cases by age, etc.

For instance:

1) The John Hopkins University & Medicine Coronavirus Resource Center <https://coronavirus.jhu.edu/data/mortality> creates the concept of Mortality, by using two indicators: the number of deaths cases per 100 confirmed cases (case-fatality ratio); the number of deaths per 100,000 population;

2) The worldometers <https://bit.ly/3dpMErI> publish the indicator Deaths per 1M Population;

3) Our World in Data <https://ourworldindata.org/covid-deaths> publishes dynamic charts related to the death issue, and there is a section dedicated to total confirmed Covid-19 deaths per million people.

The Our world in data recommend to adjust the number of the death by the size of the population, by giving the following argument: a) if 1,000 people died in Iceland, out of a population of about 340,000, that would have a far bigger impact than the same number dying in the USA, with its population of 331 million; b) the death count in more populous countries tends to be higher (Figure 10).

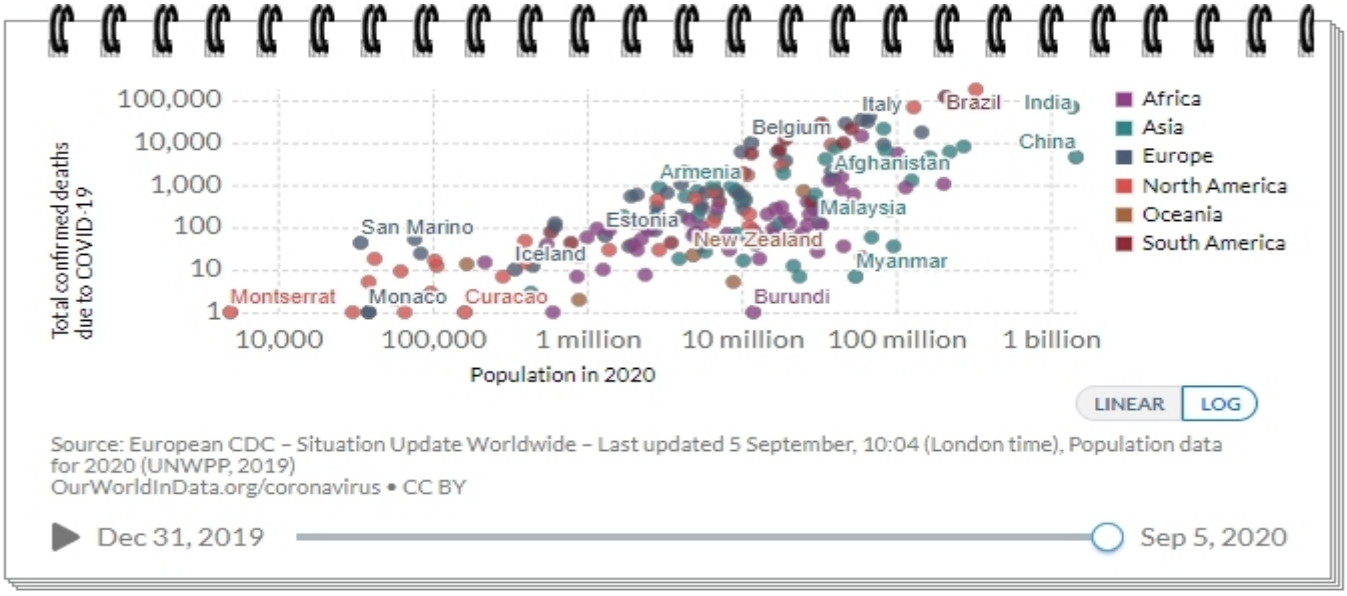


Figure 10: Total confirmed deaths due to Covid-19 versus population, September 5, 2020

The Our world in data also provides other indicators related to the death as can be viewed in this link <https://bit.ly/3jPYazc>.

4) The Centre for the Mathematical Modelling of Infectious Diseases (CMMID) at the London School of Hygiene & Tropical Medicine The London <https://bit.ly/30N6qtj> since January 09, 20 (Table 2) collect data and publishes regularly a report entitled "Using a delay-adjusted case fatality ratio to estimate under-reporting" to estimate the percentage of symptomatic Covid-19 cases reported in different countries using case fatality ratio estimates based on data from the European Centre For Disease Prevention and Control (ECDC), correcting for delays between confirmation-and-death. (GOLDING, N. et *al*. 2020)

Table 2: Partial view of the daily countries PSCR estimates available in CSV file

DATE	COUNTRY	MEDIAN	LOWER_95_CRI	UPPER_95_CRI
2020-01-09	China	0,062561207119329	0,026352077931166	0,335729749788873
2020-01-10	China	0,106136838582178	0,041074620129517	0,337474784326419
2020-01-11	China	0,222473255679798	0,06270917627675	0,522314682497327
2020-01-12	China	0,442589295406042	0,125010754019003	0,905093413977999
2020-01-13	China	0,699369172465278	0,238309090849068	0,998076707880888
2020-01-14	China	0,870614958703778	0,243811163419528	0,999999006827187
2020-01-15	China	0,936617428421074	0,280530981923762	0,999999999998957
2020-01-16	China	0,952256130591838	0,280536366860139	1
2020-01-17	China	0,955504848706729	0,280541611111054	1
2020-01-18	China	0,956426386151832	0,280546708811926	1
2020-01-19	China	0,956391221510922	0,280551654088151	1
2020-01-20	China	0,956174607851056	0,275274143631855	1
2020-01-21	China	0,955973095350612	0,262339738977067	1
2020-01-22	China	0,955798662428949	0,251652085154879	1
2020-01-23	China	0,955653811270551	0,243386713856836	1
2020-01-24	China	0,955540976285247	0,238345038527729	1
2020-01-25	China	0,955462738141124	0,23834916928814	1

Source: Golding, N. et. *al* (2020)

Although the Golding, N. et *al*. (2020) methodology has not been peer-reviewed, it describes the methods and limitations used to calculate the percentage of symptomatic cases reported (PSCR). The Confidence Intervals are calculated using an exact binomial test with 95% significance.

According to Golding, N. et *al*. (2020, p. 2-3) this methodology arguments that:

a) asymptomatic Covid-19 infections are often unreported, which means that confirmed case counts may not accurately reflect underlying epidemic dynamic;

b) in real-time, dividing deaths-to-date by cases-to-date leads to a biased estimate of the case fatality ratio (CFR), because this calculation does not account for delays from confirmation of a case to death, and under-reporting of cases;

c) using the distribution of the delay from hospitalization to death for fatal cases, it is possible to estimate how many cases so far are expected to have known outcomes (i.e. death or recovery), and hence adjust the naive estimates of CFR to account for these delays and produce a delay-adjusted CFR (CFR);

d) for each country it is possible to calculate the dCFR on each day and use the ratio of the baseline CFR to the dCFR estimate to produce daily estimates of the proportion of unreported cases;

e) the data are collected from countries that have reported more than ten deaths to date, then use these under-ascertainment estimates to reconstruct global epidemics in all countries where case and death time series data are available.

This study is important to understand the % of symptomatic cases reported, and the % of symptomatic cases have been missed by the surveillance system.

For example, the last report published August 25, 2020 concerning to the current under-report, estimated the median of PSCR of 155 countries listed in alphabetic order, and Figure 11 shows that the PSCR median of Australia (one of the semi-finalist) is 32%, meaning that the only 32% of the all

symptomatic cases were reported during the period analyzed, and around 68% of symptomatic cases were missed by the Australia surveillance system.

Using this last result, the real estimated total deaths in Australia until August 25, 2020, could be around 1616 cases (517 / 0.32), with 1099 cases missed, not officially reported by the authorities.

Country	Percentage of symptomatic cases reported (95% CI)	Total cases	Total deaths
Afghanistan	31% (21%-45%)	38,070	1,397
Albania	49% (35%-67%)	8,605	254
Algeria	78% (61%-96%)	41,858	1,446
Andorra	65% (27%-100%)	1,060	53
Angola	29% (21%-43%)	2,222	100
Argentina	51% (45%-57%)	350,854	7,366
Armenia	74% (58%-90%)	42,825	854
Australia	32% (24%-41%)	24,916	517
Austria	97% (84%-100%)	25,547	733

Figure 11: Estimates for the proportion of symptomatic cases reported (PSCR) in part of 155 countries using cCFR estimates based on case and death time series data from the ECDC, August 25, 20

Source: <https://bit.ly/30N6qtj>

After giving the above information, the FATALITY TOTAL INDEX (FTI) for each 44 country was calculated by using the formula (2)

$$(2)\ FTI = [\ (TFC / MPSCRnd) / 1MP / ND)\ ]$$

Where:

TFC = Total Fatal Cases

MPSCRnd = Median of PSCR related to the ND

1MP = one million of the population

ND = Nth day facing the Covid-19 since the first official case reported by the government

The TFC will be collected from the worldometer site <https://bit.ly/3dpMErI> since it is one of the most dynamic and updated sites about Covid-19;

The population of each country was collected at the beginning of July, from the United Nations Population Fund, U. (2019), which shows the population of each country and other indicators for 2020.

Since each country will be evaluated for six months (ND=180), it will be used the median of PSCR related to the nth day identified for each country, taking into consideration the delay of 13 days, by using the under-reporting estimates available in .csv file on the CMMI site <https://bit.ly/30N6qtj> as shown in Table 2.

For those countries that there is no value of PSCR (example: Hong Kong, Malta, Taiwan, and Vietnam) due to the number of fatal cases be very low, it was considered the PSCR value of 50%, to be able to find the FTI.

To have a more comprehensive idea of the evolution of the Median of PSCR over time, for each country, it was collected the MPSCRnd for 60, 70, 80, 90, 100, 120, 150, and 180 days, taken the average and results from Table 3 and Table 4 show that in terms of the percentage of symptomatic cases reported:

The ten best countries are: 1) Qatar (XMPSCR=96.30%); 2) China (95.95%); 3) Singapore (91.61%); 4) Iceland (91.34%); 5) Australia (90.79%); 6) Cyprus (88.92%); 7) Malaysia (81.05%); 8) Thailandia (77.04%); 9) Luxembourg (74.06%); and 10) Chile (71.31%);

On the other hand, the weakest countries are: 44) France (14.35%); 43) Italy (15.34%); 42) UK (17.68; 41) Hungary (20.07%); 40) USA (24.26%); 39) Sweden (24.47%); 38) Belgium (26.39%); 37) Canada (27.34%); 36) Spain (28.09%); and 35) Japan (28.61%).

Table 3: The 22 best finalist countries in terms of MPSCRnd from 60 to 180 days

RANK	COUNTRIES	CONTINENT	XMPSCR	MPSCR60	MPSCR70	MPSCR80	MPSCR90	MPSCR100	MPSCR120	MPSCR150	MPSCR180
1	QATAR	Asia	96,30%	98,19%	98,46%	98,49%	98,33%	97,95%	96,10%	91,73%	91,17%
2	CHINA	Asia	95,95%	96,54%	96,74%	96,60%	95,93%	94,12%	94,53%	96,42%	96,69%
3	SINGAPORE	Asia	91,61%	.	.	87,60%	88,83%	90,57%	93,17%	94,70%	94,80%
4	ICELAND	Europe	91,34%	91,50%	91,71%	91,75%	91,66%	91,52%	91,27%	91,07%	90,25%
5	AUSTRALIA	Oceania	90,79%	95,19%	95,21%	93,45%	89,97%	88,87%	94,67%	96,38%	72,55%
6	CYPRUS	Asia	88,92%	89,25%	89,15%	89,00%	88,86%	88,79%	88,92%	89,00%	88,41%
7	MALAYSIA	Asia	81,05%	29,40%	53,64%	78,79%	92,38%	97,26%	99,31%	99,31%	98,29%
8	THAILAND	Asia	77,04%	.	65,61%	66,44%	71,52%	76,90%	83,87%	87,20%	87,71%
9	LUXEMBOURG	Europe	74,06%	47,67%	51,54%	58,71%	68,75%	79,15%	92,45%	97,62%	96,57%
10	CHILE	South America	71,31%	73,88%	73,99%	75,47%	73,29%	61,08%	80,49%	72,27%	60,03%
11	NORWAY	Europe	70,41%	34,01%	46,95%	65,07%	76,77%	80,39%	80,36%	89,63%	90,12%
12	ESTONIA	Europe	67,81%	39,35%	47,66%	57,23%	66,72%	74,66%	84,31%	87,71%	84,81%
13	UAE	Asia	66,23%	.	67,54%	47,08%	28,55%	28,22%	92,90%	99,79%	99,56%
14	CZECH REP	Europe	65,48%	30,56%	32,91%	40,38%	56,08%	73,85%	93,23%	98,79%	98,07%
15	DENMARK	Europe	63,54%	27,98%	36,20%	45,68%	56,00%	66,42%	83,72%	95,23%	97,05%
16	NEW ZELAND	Oceania	62,03%	54,12%	56,52%	59,06%	61,29%	63,16%	66,01%	68,22%	67,89%
17	PORTUGAL	Europe	60,89%	36,35%	34,72%	29,74%	31,47%	58,75%	99,49%	99,85%	96,78%
18	ISRAEL	Asia	59,45%	46,42%	49,94%	44,56%	38,79%	49,01%	93,65%	99,66%	53,54%
19	SOUTH KOREA	Asia	56,22%	60,00%	40,83%	31,58%	31,54%	37,34%	57,58%	92,78%	98,08%
20	FINLAND	Europe	50,19%	50,22%	32,18%	19,64%	17,54%	25,86%	69,30%	94,05%	92,72%
21	HONG KONG	Asia	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%
22	MALTA	Europe	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%

Source: Author (2020)

Table 4: The 22 weakest finalist countries in terms of MPSCRnd from 60 to 180 days

RANK	COUNTRIES	CONTINENT	XMPSCR	MPSCR60	MPSCR70	MPSCR80	MPSCR90	MPSCR100	MPSCR120	MPSCR150	MPSCR180
44	FRANCE	Europe	14,35%	5,24%	3,62%	3,86%	5,28%	6,70%	8,73%	24,11%	57,27%
43	ITALY	Europe	15,34%	7,42%	9,87%	11,33%	12,06%	13,13%	13,53%	20,16%	35,22%
42	UK	Europe	17,68%	4,75%	4,48%	6,11%	9,21%	12,31%	15,43%	26,19%	62,99%
41	HUNGARY	Europe	20,07%	9,53%	10,89%	11,85%	12,29%	12,71%	17,43%	39,47%	46,40%
40	USA	North America	24,26%	16,08%	13,24%	11,92%	12,03%	15,19%	22,34%	35,66%	67,59%
39	SWEDEN	Europe	24,47%	8,86%	6,16%	6,74%	9,04%	11,14%	15,67%	60,74%	77,37%
38	BELGIUM	Europe	26,39%	5,14%	6,07%	9,02%	12,43%	14,64%	19,66%	47,83%	96,35%
37	CANADA	North America	27,34%	33,96%	23,02%	14,84%	12,14%	13,68%	15,89%	28,63%	76,55%
36	SPAIN	Europe	28,09%	3,97%	5,59%	8,20%	7,43%	5,62%	26,00%	76,60%	91,34%
35	JAPAN	Asia	28,61%	13,08%	22,68%	28,60%	26,49%	19,34%	10,08%	17,39%	91,21%
34	NETHERLANDS	Europe	31,62%	4,85%	5,62%	7,97%	9,96%	11,18%	16,54%	98,20%	98,64%
33	GERMANY	Europe	34,57%	37,13%	23,71%	17,55%	16,09%	17,21%	22,20%	46,60%	96,03%
32	IRELAND	Europe	37,06%	18,81%	25,05%	31,63%	34,48%	31,92%	22,94%	48,65%	83,02%
31	SLOVENIA	Europe	39,36%	16,56%	19,37%	24,25%	31,26%	39,81%	56,12%	65,41%	62,11%
30	GREECE	Europe	44,30%	26,01%	25,06%	23,78%	24,63%	29,56%	54,37%	83,90%	87,06%
29	LITHUANIA	Europe	44,40%	34,65%	32,14%	29,80%	29,47%	32,52%	48,52%	72,16%	75,97%
28	POLAND	Europe	45,19%	23,35%	30,55%	38,00%	42,00%	41,78%	43,11%	64,40%	78,34%
27	LATVIA	Europe	48,26%	45,49%	45,48%	45,50%	45,62%	46,12%	48,98%	53,91%	55,01%
26	SWITZERLAND	Europe	48,54%	20,09%	20,35%	22,28%	26,95%	35,88%	67,66%	96,43%	98,68%
25	AUSTRIA	Europe	49,17%	22,27%	26,42%	33,32%	36,90%	35,11%	44,50%	97,74%	97,10%
24	HONG KONG	Asia	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%	50,00%

Source: Author (2020)

With the data from Tables 3 and 4, it was possible to calculate the FTI of each country.

To facilitate the visualization, two tables were built. Table 5 shows the basic information of the twenty best benchmarks, considered the finalist listed in FTI180 ascending order, while Table 6 shows the performance of the other 24 semi-finalist countries.

Both tables contain Rank, Countries, Continent, SARS2003_TFC (Total Fatal Case of SARS in 2003)/TC (Total Case), START (Data of the first Covid-19 case reported), P2020(Population per Million), PD20 (Population Density 2020), AGE>65 (Percentage of people over 65 years old in 20), HBED/1K (Number of Hospital Beds per 1000 people), DTFC180 (Date of Total Fatal Case complete 180 days), FTI180 (Fatal Total Case in the 180th day taking into consideration the delay of 13 days).

The basic profile (Table 5) of the twenty finalists is:

First) most (11=55%) are from Asia, while seven (35%) are from Europe, two from Oceania (10%), and no one from North America or South America;

Second) the six best benchmark countries are those from Asia (1. Vietnam (FTI180=0,0000); 2. Taiwan (FTI180=0,0033); 3. Thailand (FTI180=0,0053); 4. China (FTI180=0,0185); 5. Malaysia (FTI180=0,0215); 6. Singapore (FTI180=0,0268)), which suffered with fatal cases from first SARS-CoV in 2002/2003, followed by 7. South Korea (FTI180=0,0324); 8. New Zealand (FTI180=0,0375); 9. Australia (FTI180=0,0384); 10) Japan (FTI180=0,0473); 11. Hong Kong (FTI180=0,1081; 12. Cyprus (FTI180=0,1091); 13. Greece (FTI180=0,1481); 14. Latvia (FTI180=0,1807); 15. Iceland (FTI180=0,1811); 16. United Arab Emirates (FTI180=0,1933); 17. Czech (FTI180=0,2211); 18. Lithuania (FTI180=0,2277); 19. Norway (FTI180=0,3014); and 20. Estonia (FTI180=0,3152);

Table 5: The 20 best benchmark countries that saved people lives against the Covid-19 during 180 days

RANK	COUNTRIES	CONTINENT	SARS2003_TFC/TC	START	P2020 (Mil)	PD20	AGE>65(20)	DTFC180	TFC180	FTI180
1	VIETNAM	Asia	5 / 63	23/01/20	97,30	308,13	7,90	20/07/20	0	0,0000
2	TAIWAN	Asia	180 / 665	21/01/20	23,81	673,00	3,27	18/07/20	7	0,0033
3	THAILAND	Asia	2 / 9	13/01/20	69,80	135,13	13,00	10/07/20	58	0,0053
4	CHINA	Asia	349 / 5327	31/12/19	1439,32	147,67	12,00	27/06/20	4634	0,0185
5	MALAYSIA	Asia	2 / 5	25/01/20	32,40	96,25	7,20	22/07/20	123	0,0215
6	SINGAPORE	Asia	33 / 238	23/01/20	5,90	7915,73	13,40	20/07/20	27	0,0268
7	SOUTH KOREA	Asia	0 / 3	20/01/20	51,30	527,97	15,80	17/07/20	293	0,0324
8	NEW ZELAND	Oceania	0 / 1	28/02/20	4,80	18,21	16,40	25/08/20	22	0,0375
9	AUSTRALIA	Oceania	0 / 6	25/01/20	25,50	3,20	16,20	22/07/20	128	0,0384
10	JAPAN	Asia	NO CASE	16/01/20	126,51	347,78	28,40	13/07/20	982	0,0473
11	HONG KONG	Asia	300 / 1755	23/02/20	7,50	7039,71	18,20	20/08/20	73	0,1081
12	CYPRUS	Asia	NO CASE	09/03/20	1,21	127,66	14,40	04/09/20	21	0,1091
13	GREECE	Europe	NO CASE	26/02/20	10,43	83,48	22,30	23/08/20	242	0,1481
14	LATVIA	Europe	NO CASE	02/03/20	1,90	31,21	20,70	28/08/20	34	0,1807
15	ICELAND	Europe	NO CASE	28/02/20	0,34	3,40	15,60	25/08/20	10	0,1811
16	UAE	Asia	NO CASE	27/01/20	9,90	112,44	1,30	24/07/20	343	0,1933
17	CZECH REP	Europe	NO CASE	01/03/20	10,71	137,18	20,10	27/08/20	418	0,2211
18	LITHUANIA	Europe	NO CASE	28/02/20	2,73	45,13	20,60	25/08/20	85	0,2277
19	NORWAY	Europe	NO CASE	26/02/20	5,40	14,46	17,50	23/08/20	264	0,3014
20	ESTONIA	Europe	NO CASE	27/02/20	1,33	31,03	20,40	24/08/20	64	0,3152

Source: Author (2020)

Third) most (14=70%) of twenty countries are governed by man (Chart 4), while only six (30%) are governed by a woman (2. Taiwan; 8. New Zealand; 11. Hong Kong; 13. Greece; 19 Norway; and 20. Estonia). When is checked the gender of the Minister of Health of all twenty countries, it was noted that

80% are men and only 20% are women. This result indicates that is false the assumption that the best countries facing Covid-19 are managed in majority by woman leaders.

Table 6: The others semifinalist countries performance in saving people lives against the Covid-19 during 180 days

RANK	COUNTRIES	CONTINENT	SARS2003_TFC/TC	START	P2020 (Mil)	PD20	AGE>65(20)	DTFC180	TFC180	FTI180
21	MALTA	Europe	NO CASE	07/03/20	0,44	1454,04	21,30	02/09/20	13	0,3275
22	FINLAND	Europe	0 / 1	29/01/20	5,54	18,14	22,60	26/07/20	329	0,3558
23	POLAND	Europe	NO CASE	04/03/20	37,85	124,03	18,70	30/08/20	2033	0,3809
24	QATAR	Asia	NO CASE	27/02/20	2,90	227,32	1,70	24/08/20	194	0,4076
25	AUSTRIA	Europe	NO CASE	25/02/20	9,00	106,75	19,20	22/08/20	732	0,4653
26	SLOVENIA	Europe	NO CASE	04/03/20	2,10	102,62	20,70	30/08/20	133	0,5665
27	DENMARK	Europe	NO CASE	27/02/20	5,80	136,52	20,20	24/08/20	623	0,6149
28	GERMANY	Europe	0 / 9	27/01/20	83,80	237,01	21,70	24/07/20	9201	0,6352
29	HUNGARY	Europe	NO CASE	04/03/20	9,70	108,04	20,20	30/08/20	614	0,7579
30	ISRAEL	Asia	NO CASE	21/02/20	8,70	402,61	12,40	18/08/20	708	0,8444
31	PORTUGAL	Europe	NO CASE	02/03/20	10,20	112,37	22,80	28/08/20	1815	1,0215
32	LUXEMBOURG	Europe	NO CASE	29/02/20	0,62	231,45	14,40	26/08/20	124	1,1432
33	SWITZERLAND	Europe	0 / 1	25/02/20	8,70	214,24	19,10	22/08/20	2000	1,2942
34	CANADA	North America	41 / 251	27/01/20	37,71	4,04	18,10	24/07/20	8881	1,7092
35	NETHERLANDS	Europe	NO CASE	27/02/20	17,13	508,54	20,00	24/08/20	6202	2,0391
36	IRELAND	Europe	0 / 1	29/02/20	4,93	69,87	14,60	26/08/20	1777	2,4120
37	USA	North America	0 / 33	21/01/20	331,00	35,61	16,60	18/07/20	143376	3,5604
38	SPAIN	Europe	0 / 33	31/01/20	46,80	93,10	20,00	28/07/20	28436	3,6956
39	SWEDEN	Europe	0 / 3	31/01/20	10,10	24,72	20,30	28/07/20	5759	4,0943
40	FRANCE	Europe	1 / 7	24/01/20	65,30	122,58	20,80	21/07/20	30165	4,4812
41	BELGIUM	Europe	NO CASE	04/02/20	11,60	315,56	19,30	01/08/20	9841	4,8917
42	UK	Europe	0 / 4	31/01/20	67,90	272,90	18,70	28/07/20	41135	5,3432
43	CHILE	South America	NO CASE	03/03/20	19,10	24,28	12,20	29/08/20	11181	5,4176
44	ITALY	Europe	0 / 4	31/01/20	60,50	205,86	23,30	28/07/20	35277	9,1976

Source: Author (2020)

RANK	COUNTRIES	CONTINENT	HEAD	GENDER	LAST DEGREE	MINISTRY OF HEALTH	GENDER	LAST DEGREE
1	VIETNAM	Asia	Nguyen Xuan Phuc	M	Graduated	Nguyễn Thanh Long	M	PhD
2	TAIWAN	Asia	Tsai Ing-wen	F	PhD	Chen Shih-chung	M	Graduated
3	THAILAND	Asia	Prayut Chan-o-cha	M	Graduated	Anutin Charnvirakul	M	Graduated
4	CHINA	Asia	Xi Jinping	M	Graduated	Chen Zhu	M	PhD
5	MALAYSIA	Asia	AB Tan Sri Dato' Haji Muhyid	M	?	Adham Baba	M	Graduated
6	SINGAPORE	Asia	Lee Hsien Loong	M	Master	Lee Hsien Loong	M	Master
7	SOUTH KOREA	Asia	Moon Jae-in	M	Graduated	Park Neung-hoo	M	PhD
8	NEW ZELAND	Oceania	Jacinda Ardern	F	Graduated	Chris Hipkins	M	Specialist
9	AUSTRALIA	Oceania	Hon Scott Morrison	M	Graduated	Brendan Murphy	M	Graduated
10	JAPAN	Asia	Shinzo Abe	M	Graduated	Katsunobu Katō	M	Graduated
11	HONG KONG	Asia	Carrie Lam	F	Graduated	CHAN Hon-yee	F	Master
12	CYPRUS	Asia	Katsunobu Katō	M	Graduated	Constantinos Ioannou	M	Master
13	GREECE	Europe	Katerina Sakellaropoulou	F	Specialist	Kyriakos Mitsotakis	M	Master
14	LATVIA	Europe	Egils Levits	M	Graduated	Ilze Vinkele	F	Master 2x
15	ICELAND	Europe	Guðni Th. Jóhannesson	M	PhD	Svandis Svavarsdóttir	F	?
16	UAE	Asia	Khalifa bin Zayed Al Nahyan	M	Graduated	Abdul Rahman Mohammed	M	Graduated
17	CZECH REP	Europe	Miloš Zeman	M	Graduated	Adam Vojtěch	M	Graduated
18	LITHUANIA	Europe	Gitanas Nausėda	M	PhD	Aurelijus Veryga	M	PhD
19	NORWAY	Europe	Erna Solberg	F	Graduated	Bent Hoie	M	Graduated
20	ESTONIA	Europe	Kersti Kaljulaid	F	Specialist	Riina Sikkut	F	Master

Chart 4: Basic profile of the 20 benchmark countries concerning Head and Ministry of Health background

Source: Author (2020)

Fourth) when was analyzed the evolution of Fatality Total Case of each 20 finalist country over the time (60, 70, 80, 90, 100, 120, 150, and 180 days) to identify the three most outstanding nations, it was learned that: a) Vietnam was the number one, with no death reported since the beginning; b) Taiwan and

Thailand were the second and third outstanding countries because they changed these positions over the time. Other considerations can be done when analyzing the evolution of other countries by Chart 5.

RANK	FTI60	FTI70	FTI80	FTI90	FTI100	FTI120	FTI150	FTI180
1	VIETNAM	VIETNAM	VIETNAM	VIETNAM	VIETNAM	VIETNAM	VIETNAM	VIETNAM
2	TAIWAN	THAILAND	THAILAND	TAIWAN	TAIWAN	TAIWAN	TAIWAN	TAIWAN
3	AUSTRALIA	TAIWAN	TAIWAN	THAILAND	THAILAND	THAILAND	THAILAND	THAILAND
4	NEW ZELAND	HONG KONG	HONG KONG	HONG KONG	HONG KONG	HONG KONG	CHINA	CHINA
5	HONG KONG	AUSTRALIA	SINGAPORE	SINGAPORE	CHINA	CHINA	HONG KONG	MALAYSIA
6	JAPAN	UAE	JAPAN	CHINA	SINGAPORE	MALAYSIA	MALAYSIA	SINGAPORE
7	MALAYSIA	JAPAN	CHINA	MALAYSIA	MALAYSIA	SINGAPORE	AUSTRALIA	SOUTH KOREA
8	CHINA	CHINA	AUSTRALIA	AUSTRALIA	AUSTRALIA	AUSTRALIA	SINGAPORE	NEW ZELAND
9	SOUTH KOREA	MALAYSIA	MALAYSIA	JAPAN	NEW ZELAND	NEW ZELAND	SOUTH KOREA	AUSTRALIA
10	CANADA	QATAR	QATAR	NEW ZELAND	SOUTH KOREA	SOUTH KOREA	NEW ZELAND	JAPAN
11	FINLAND	SOUTH KOREA	UAE	QATAR	JAPAN	CYPRUS	CYPRUS	HONG KONG
12	QATAR	NEW ZELAND	NEW ZELAND	SOUTH KOREA	CYPRUS	UAE	GREECE	CYPRUS
13	USA	CYPRUS	SOUTH KOREA	CYPRUS	QATAR	ICELAND	LATVIA	GREECE
14	GERMANY	FINLAND	CYPRUS	UAE	LATVIA	LATVIA	UAE	LATVIA
15	CYPRUS	LATVIA	LATVIA	LATVIA	ICELAND	GREECE	ICELAND	ICELAND
16	LATVIA	CHILE	MALTA	ICELAND	MALTA	CZECH REP	CZECH REP	UAE
17	CHILE	MALTA	ICELAND	MALTA	CZECH REP	ISRAEL	LITHUANIA	CZECH REP
18	MALTA	ICELAND	CHILE	CZECH REP	UAE	QATAR	MALTA	LITHUANIA
19	ICELAND	CANADA	GREECE	NORWAY	NORWAY	MALTA	JAPAN	NORWAY
20	LITHUANIA	ISRAEL	ISRAEL	GREECE	GREECE	JAPAN	ISRAEL	ESTONIA

Chart 5: Evolution of the 20 benchmark countries position (FTI) over the time

Source: Author (2020)

When was analyzed the performance of the of all 44 semifinalist by population density, it was observed (Table 7) that:

a) Singapore (7915.73 hab/km2), Hong Kong (7039.71 hab/Km2), Malta = (1454 hab/Km2), Taiwan (673 hab/Km2), South Korea (527.97 hab/Km2), Netherlands (508.54 hab/Km2), Israel (402,61 hab/Km2), Japan (347,78 hab/Km2), Belgium (315, 56 hab/Km2), and Vietnam (308.13 hab/Km2) are the ten nations with the highest level of population density;

Table 7: The ten countries with the highest density population (PD20) among all 44 semifinalist

RANK	COUNTRIES	CONTINENT	P2020 (Mil)	PD20	AGE>65(20)	DTFC180	TFC180	FTI180
1	SINGAPORE	Asia	5,90	7915,73	13,40	20/07/20	27	0,0268
2	HONG KONG	Asia	7,50	7039,71	18,20	20/08/20	73	0,1081
3	MALTA	Europe	0,44	1454,04	21,30	02/09/20	13	0,3275
4	TAIWAN	Asia	23,81	673,00	3,27	18/07/20	7	0,0033
5	SOUTH KOREA	Asia	51,30	527,97	15,80	17/07/20	293	0,0324
6	NETHERLANDS	Europe	17,13	508,54	20,00	24/08/20	6202	2,0391
7	ISRAEL	Asia	8,70	402,61	12,40	18/08/20	708	0,8444
8	JAPAN	Asia	126,51	347,78	28,40	13/07/20	982	0,0473
9	BELGIUM	Europe	11,60	315,56	19,30	01/08/20	9841	4,8917
10	VIETNAM	Asia	97,30	308,13	7,90	20/07/20	0	0,0000

Source: Author (2020)

b) among the these countries, Taiwan showed the best performance, since it is the fourth country with the highest population density, but the second country (Table 5) with the lowest Fatal Total Index

(0,0033), which demonstrate a high ability of this nation government to protect millions of people living very closely;

c) also Singapore (FTI=0.268; 6th place), South Korea (FTI=0.0324; 7th place); Japan (FTI=0.0473; 10th place; and Vietnam (FTI=0,000; 1st place) are the best performers (among the 10 top finalist with the lowest FTI).

When was analyzed the performance of the of all 44 semifinalist by the percentage of people over 65 years old (Table 8), it was observed that:

a) most (90%) of ten countries with the highest percentage of people over 65 years old are from Europe;

b) Japan (28.40%), Italy (23.3%), Portugal (22.8%), Finland (22.6), Greece (22.3%), Germany (21.7%), Malta (21.3%), France (20.8%), Latvia (20.7%), and Slovenia (20.7%) are leaders;

c) among these ten countries, only Japan was able to be on the top ten best finalist with the lowest FTI (0,0473), which indicate that Japan is the country with the highest level of ability to protect older people.

Table 8: The ten countries with the highest percentage of people over 65 (AGE>65) among all 44 semifinalist

RANK	COUNTRIES	CONTINENT	P2020 (Mil)	PD20	AGE>65(20)	DTFC180	TFC180	FTI180
1	JAPAN	Asia	126,51	347,78	28,40	13/07/20	982	0,0473
2	ITALY	Europe	60,50	205,86	23,30	28/07/20	35277	9,1976
3	PORTUGAL	Europe	10,20	112,37	22,80	28/08/20	1815	1,0215
4	FINLAND	Europe	5,54	18,14	22,60	26/07/20	329	0,3558
5	GREECE	Europe	10,43	83,48	22,30	23/08/20	242	0,1481
6	GERMANY	Europe	83,80	237,01	21,70	24/07/20	9201	0,6352
7	MALTA	Europe	0,44	1454,04	21,30	02/09/20	13	0,3275
8	FRANCE	Europe	65,30	122,58	20,80	21/07/20	30165	4,4812
9	SLOVENIA	Europe	2,10	102,62	20,70	30/08/20	133	0,5665
10	LATVIA	Europe	1,90	31,21	20,70	28/08/20	34	0,1807

Source: Author (2020)

4. Conclusions and recommendations

Based on the use of the proposed methodology it was possible to reach the following conclusions and recommendations:

a) the fifteen phases of the methodology, far from perfect, shows that among 108 well-evaluated countries, the top six benchmark nations are from Asia (1. Vietnam; 2. Taiwan; 3. Thailand; 4. China; 5. Malaysia; 6. Singapore), which suffered from fatal cases from the first SARS-CoV in 2002/2003, followed by 7. South Korea; 8. New Zealand; 9. Australia; 10. Japan; 11. Hong Kong; 12. Cyprus; 13. Greece; 14. Latvia; 15. Iceland; 16. United Arab Emirates; 17. Czech; 18. Lithuania; 19. Norway; and 20. Estonia. This research did not focus on the measures, projects, innovations, and cultural aspects that were adopted by each country over time, reason by which further research should be done to identify, and disseminate them;

b) most (11=55%) twenty benchmark countries are from Asia, while seven (35%) are from Europe, two from Oceania (10%), and no one from North America or South America. This result indicates that

Asian countries are more prepared because have learned the lessons from the past SARS 2003, much more than countries from North America and South America. Further research could be done to investigate the investment made over time by the best benchmark countries to improve the health care system, as well as other structures necessary to monitor, prevent, and face pandemics.

c) among the 44 semifinalists, in terms of population density, it was learned that Taiwan showed the best performance, since it is the fourth country with the highest population density, but the second country with the lowest Fatality Total Index (0,0033), which may demonstrate a high ability of this nation government to protect millions of people living very closely. Also Singapore, South Korea, Japan, and Vietnam are the best performers, because they were among the 10 top finalist with the lowest FTI. So, further research should be done to investigate the main polity measures adopted by these countries to prevent and protect people living very closely;

d) among the 44 semifinalist, when was analyzed each country by the percentage of people over 65 years old, it was observed that, only Japan with a high percentage of people over 65, was able to be on the top ten best finalist with the lowest Fatality Total Index, which indicate that Japan is the country with the highest level of ability to protect older people. Further research should be done to identify the best Japanese management practices in the Health Care System for older citizen;

e) although most benchmark countries are governed by man, it is necessary to stimulate and increase the participation of woman in political life, since leaders from Taiwan, New Zealand, Hong Kong, Greece, Norway; and Estonia are real cases that point out that competency and success is not a privilege of man in the power. In this sense, further research should be done to investigate the leadership by example developed by the leaders of each country, to disseminate the good practices;

f) due to the limitation of space, the study did no explain in detail the calculation and methods adopted by the 13 international rankings. However, policymakers and government leaders could gain a holistic knowledge by studying most of the ranking described, to better serve their nation over time. Further research should be done in the 13 international rankings to identify, in each benchmark country, the improvements necessary to solve gaps found in health, innovation, sustainability, image, and competitiveness. For example, during the first 180 days, Vietnam was considered the best country to save people lives against Covid-19, however, it was in the 132nd place in Ranking 1 (Health-related SGD2017), in 141st place in Ranking 8 (Environment Performance Index 2020), in 95th place in Ranking 9 (Corruption Perception Index 2019), in 67th place in Ranking 13 (GCI 4.0 Index 2019), which provide huge space for improvements;

g) when was analyzed the evolution of FTI of each 20 finalist over the time it was learned that: a) Vietnam was the best country with no death reported since the beginning; b) Taiwan and Thailand were the second and third countries because they changed these positions over the time; c) Iceland is a good performer, from the 19th place in the 60th day, it showed improvements, going to 15th place in the 180th day; d) on the other hand, Australia was not able to keep constant, dropping from the third place in 60th day to 9th place in 180th day. These result may show that the three top countries are more able to keep the pace over the time, while others face more difficulties to maintain the higher position, such as Qatar, USA, and Canada (10th position in FTI60, drop to 34th position in FTI180). Since this research focus on the analysis of 180 days, it will continue to collect and update the date for the next semesters.

5. Acknowledgments

My gratitude to:

a) family, parents and friends in Brazil that are encouraging the author during his research in United Kingdom;

b) Brazilian Amazon Federal University (UFAM) to authorize my post-doctorate abroad;

c) the team of The Manchester University, specially from MIOIR/Alliance Business School of Manchester for their wonderful structure and staff;

d) Mr. Leo because he welcomed the author into his home in UK, his daily ideas are nice;

e) the teams of CopySpyder, Mybib, Edraw Max, Libre Office, PhotoScape, International Ranking, CMMID at the London School of Hygiene & Tropical Medicine The London, Typeform, which sites, packages, programs, reports and statistics are useful for this and next research;

f) the Editor and blind reviewers for their attention and contributions;

g) all technical, nurses, doctors, professors, researchers, infectologists, drivers, cookers, janitors, donors, public and private managers, volunteers that are bravely fighting the Covid-19, God Bless You.

6. Appendix A – Continuation of Chart 3

R	COUNTRY	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	NP13R
31	Dominican	114	91	85	76	106	87	73	74	48	-	87	-	78	1
32	Ecuador	76	45	63	26	74	99	46	57	93	-	62	-	90	3
33	Egypt	125	87	111	88	86	92	83	94	106	39	67	-	93	1
34	Estonia	44	29	55	20	35	24	10	30	18	-	36	27	31	11
35	Finland	10	10	26	10	24	6	3	7	3	4	10	8	11	13
36	France	37	11	16	5	60	16	4	5	23	21	16	25	15	12
37	Georgia	83	42	90	85	39	48	55	102	44	-	119	-	74	4
38	Germany	19	14	12	17	2	9	5	10	9	19	1	11	7	13
39	Greece	73	37	33	67	34	41	43	25	60	22	42	40	59	9
40	Greenland	123	-	-	-	49	-	--	-	-	-	-	-	-	1
41	Grenada	50	-	-	-	107	-	--	96	51	38	-	-	-	2
42	Guatemala	117	125	98	35	170	107	120	149	146	-	125	-	98	1
43	Hong Kong	-	-	6	42	13	13	--	-	16	-	12	15	3	8
44	Hungary	49	35	52	87	18	33	29	33	70	-	31	45	47	9
45	Iceland	12	58	7	43	22	20	26	17	11	-	40	7	26	11
46	India	150	57	109	38	56	52	117	168	80	36	44	59	68	3
47	Indonesia	135	30	97	55	97	85	101	116	85	33	46	40	50	5
48	Ireland	16	23	20	80	38	12	14	16	18	10	29	18	24	12
49	Israel	4	54	11	19	3	10	40	29	35	42	37	19	20	12
50	Italy	34	31	17	40	53	30	30	22	51	15	19	36	30	11
51	Jamaica	63	147	50	-	141	81	84	66	74	-	113	-	80	1
52	Japan	11	21	2	3	5	15	17	12	20	11	5	35	6	13
53	Jordan	24	80	80	45	89	91	89	48	60	-	84	51	70	3
54	Kazakhstan	87	83	84	86	71	79	65	85	113	-	71	38	55	1
55	Kuwait	32	59	51	68	21	75	112	47	85	-	63	-	46	4
56	Kyrgys Rep	104	47	89	-	108	90	52	105	126	-	108	-	96	1
57	Latvia	77	17	87	50	31	34	24	36	44	-	70	34	41	9
58	Lebanon	119	73	82	48	77	88	95	79	137	-	79	-	88	1
59	Liechtenstein	-	71	-	-	27	-	--	-	-	-	-	-	-	1
60	Lithuania	108	33	92	29	29	38	36	35	35	-	54	28	39	9
61	Luxembourg	41	67	19	-	25	18	44	2	9	-	24	5	18	10
62	Malaysia	57	18	39	34	30	35	60	68	51	27	41	22	27	9
63	Maldives	25	-	-	-	112	-	91	127	130	-	86	-	-	1
64	Malta	9	98	14	33	44	27	32	23	50	-	69	-	38	9
65	Mauritius	30	114	54	-	109	82	108	82	56	-	78	-	52	1
66	Mexico	75	28	37	27	50	56	69	51	130	40	51	60	48	6
67	Moldova	99	-	96	-	82	58	42	-	120	-	116	-	86	1
68	Mongolia	126	46	100	-	76	53	107	147	106	-	130	63	102	1

Chart 3: Partial view of 108 countries position belonging in at least one of the 13 rankings

Source: Author (2020)

6. Appendix A – Continuation of Chart 3

R	COUNTRY	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	NP13R
69	Montenegro	98	68	91	-	42	45	72	75	66	-	77	-	73	2
70	Netherlands	6	3	9	11	19	4	9	11	8	9	6	9	3	13
71	New Zeland	18	36	22	16	9	25	16	19	1	5	15	17	19	13
72	Nigeria	164	96	162	83	116	114	160	151	146	50	110	-	116	1
73	North Macedonia	74	90	56	65	103	52	62	43	106	-	81	-	82	1
74	Norway	2	16	5	14	14	19	6	9	7	3	21	6	17	13
75	Oman	78	73	61	60	33	57	76	110	56	-	43	-	53	2
76	Panama	35	68	45	57	90	75	81	70	101	-	38	-	66	3
77	Peru	85	49	60	69	96	48	61	90	101	25	83	56	65	3
78	Philippines	124	53	101	36	55	76	99	111	113	35	60	49	64	3
79	Poland	40	32	40	53	28	39	23	37	41	26	28	37	37	12
80	Portugal	31	20	30	23	46	32	25	27	30	16	23	23	34	13
81	Qatar	93	82	48	18	26	65	103	122	30	41	30	26	29	8
82	Romania	109	60	71	73	57	50	38	32	70	43	48	55	51	5
83	Russia	111	63	103	62	61	46	57	58	137	51	75	47	43	3
84	Saint Lucia	55	108	-	-	102	-	--	97	48	-	-	-	-	1
85	Saint Vincent and Gre	64	123	-	-	167	-	--	65	39	-	-	-	-	1
86	Saudi Arab	103	47	68	58	17	68	97	91	51	52	55	29	36	4
87	Serbia	89	41	72	84	54	62	33	45	91	-	65	-	72	3
88	Seychelles	47	133	38	-	135	-	--	38	27	-	-	-	76	4
89	Singapore	1	24	1	25	4	8	93	39	4	17	7	10	1	12
90	Slovak	23	52	43	56	59	37	27	26	59	-	53	57	42	6
91	Slovenia	13	12	32	46	32	31	12	18	35	-	35	31	35	12
92	South Africa	128	34	133	49	69	63	110	98	70	38	33	50	60	5
93	South Korea	26	9	4	2	10	11	20	28	39	31	25	33	13	13
94	Spain	22	15	13	6	45	29	22	14	30	12	17	32	23	13
95	Sri Lanka	72	120	49	21	85	89	94	109	93	-	94	-	84	2
96	Sweden	3	7	15	32	65	2	1	8	4	1	2	3	8	12
97	Switizerland	8	13	3	22	1	1	15	3	4	2	13	1	4	13
98	Taiwan	38	-	31	1	16	-	--	40	28	24	27	20	12	10
99	Thailand	105	6	35	8	47	43	41	80	101	23	32	43	40	10
100	Turkey	60	40	64	28	37	49	70	99	91	44	47	58	61	6
101	UK	5	2	23	13	68	5	13	4	12	18	9	24	9	12
102	Ukraine	130	94	114	78	66	47	47	60	126	-	66	44	85	3
103	Un Arab Em	94	56	47	39	11	36	71	42	21	32	11	30	25	10
104	Uruguay	45	81	34	41	51	62	45	61	21	-	85	-	54	5
105	USA	21	1	59	30	58	3	31	24	23	36	14	12	2	11
106	Uzbekistan	65	116	41	-	121	-	66	88	153	-	99	-	-	1
107	Venezuela	96	176	75	93	184	-	118	59	173	49	142	62	133	1
108	Vietnam	132	50	42	61	20	42	49	141	95	30	39	-	67	7

Chart 3: Partial view of 108 countries position belonging in at least one of the 13 rankings

Source: Author (2020)

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