Data sources for national COVID-19 responses in the WHO African Region

10/07/2020

Produced by the TIBA COVID-19 Pandemic Response Unit
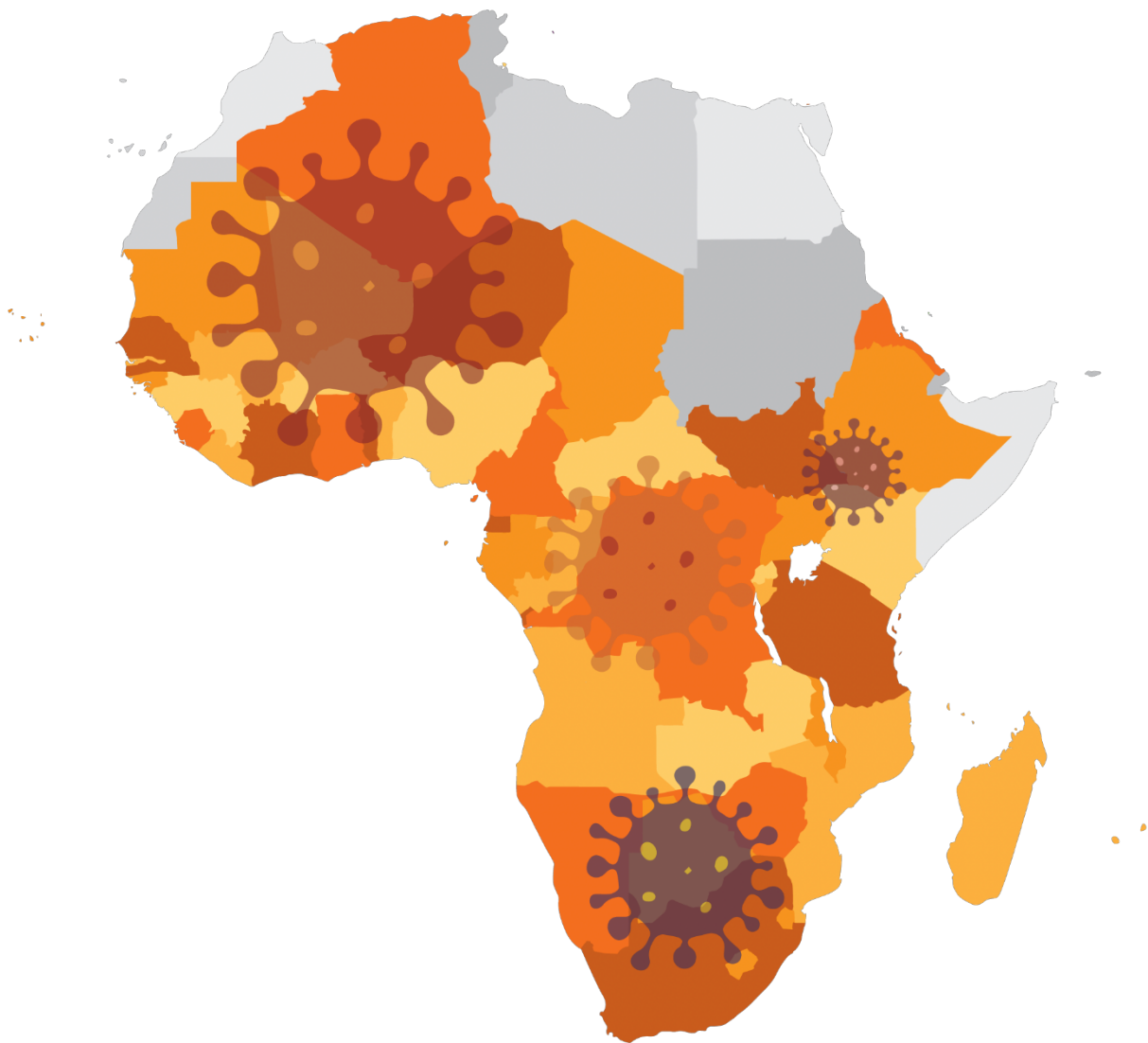
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Foreword

This briefing note describes some of the data sources that may be used for epidemiological analyses of the COVID-19 pandemic in the WHO African Region.

Data on cases and deaths are published by the WHO Regional Office for Africa. Here we consider the available data on testing, on non-pharmaceutical interventions, and on behavioural change.

We describe the sources of these data and their strengths and their weaknesses. We hope this information will be useful both for auditing national responses to the pandemic and for the analysis of epidemic time lines.

This work was carried out by the TIBA COVID-19 Pandemic Response Unit. For details of other COVID-19 activities being carried out by the TIBA partnership please see our website: http://tiba-partnership.org/covid-19-activities

Yours,

Mark Woolhouse (Director)

Section 1. Brief summary of COVID-19 testing data in the WHO African Region

1. COVID-19 tests

On 29 June 2020 when this analysis was conducted, only 38 out of the 47 countries in the WHO African Region (i.e. 81%) reported the number of nationwide COVID-19 testing (see Appendix to Section 1). Testing data for 37 of these countries has been compiled on the website Our World in Data (OWiD)[1]. Run by a team of economists and other social scientists at the University of Oxford, OWiD draws mostly on government websites (health ministries and public health institutes) to obtain COVID-19 testing data[2]. Testing data for 15 countries has also been provided by the United Nations Economic Commission for Africa (UNECA). The remaining countries of the WHO African Region for which we have found testing data, publish them either on their websites or on their social media feeds. Lastly, no testing data could be found for 9 countries (19%) in the WHO African Region.

In terms of quality, COVID-19 testing data remains basic or not available for 41 countries (87%)[3]. They are often published irregularly, lack clarity on whether or not they count tested samples or tested people, do not state what the share of positive and negative tests has been, whether tests with pending results count as completed, or what the breakdown of tests by region, laboratory, gender or age may be.

2. Population estimates

To establish a test per population ratio, we combine the testing data above with population data from the World Bank[4]. The Bank's dataset is very widely used and updated at least annually.

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[1] OWiD (2020) *Coronavirus (COVID-19) Testing*. Available at: https://ourworldindata.org/coronavirus-testing (all websites in Section 1 accessed on 29 June 2020); OWiD currently does not list Botswana, Eswatini, Gambia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Zambia

[2] OWiD (2020) *Source Information country-by-country.* Available at: https://ourworldindata.org/coronavirus-testing#source-information-country-by-country

[3] Data quality has been qualified into "**No data**" (viz. no data from official sources), "**Basic data**" (data that is published irregularly, or that does not distinguish between people tested and tests conducted), "**Satisfactory data**" (data that has none of the shortcomings of "basic data") and "**Good data**" (data that goes beyond daily numbers of tests or people tested. It may provide information on the positivity rate of tests, and on which tests were routine surveillance or linked to contact tracing for example. It may distinguish in which laboratory tests have been conducted, or provide additional information on the gender or age or regional origin of people tested).

[4] The World Bank (2020) *Population Total.* Available at: https://data.worldbank.org/indicator/SP.POP.TOTL
The Bank gets its population data by drawing on six sources: 1. The World Population Prospects data by the United Nations Population Division 2. Census reports and other statistical publications from unspecified national statistical offices 3. Demographic statistics by Eurostat 4. Population and vital statistics reports by the United Nations Statistical Division 5. Demographic data from the U.S. Census Bureau's International Database 6. Unspecified data from the Statistics and Demography Programme of the Secretariat of an NGO known as The Pacific Community. The Bank's population data ends in 2018 (while the dataset of the UN Population Division makes projections up to 2020).

Figure 1 Testing data in the WHO African Region
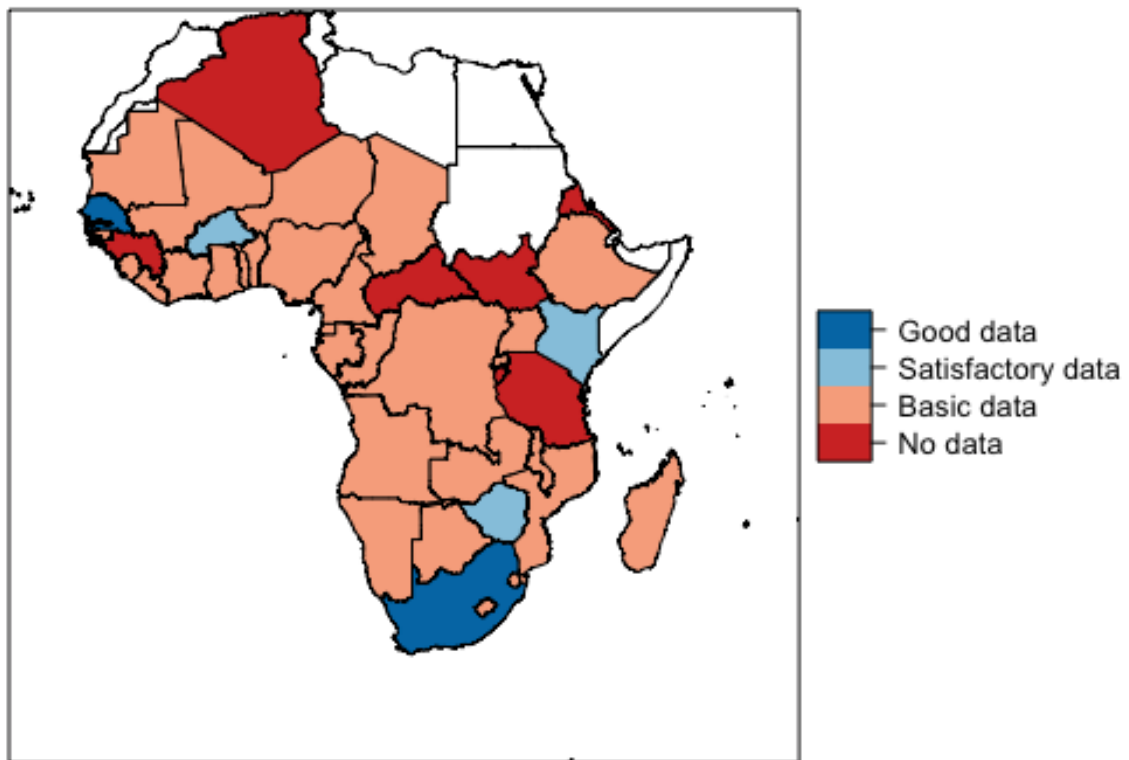
Section 2. Brief summary of governmental response in the WHO African Region

1. Overview

The **Assessment Capacities Project (ACAPS)** #COVID19 Government Measures Dataset documents a timeline of government measures introduced in response to COVID-19.

The **Oxford Coronavirus Government Response Tracker (OxCGRT)** is a dataset which documents a timeline of government measures introduced in response to COVID-19. These measures are classified into: Containment and Closure policies; Economic policies; Health system policies and Miscellaneous policies.

The **African Centres for Disease Control and Prevention (ACDC)** dataset provides real time information on the current lockdown restrictions in place in African countries only.

2. Data Collection Methods

ACAPS: "Data is collected and uploaded real-time by ACAP analysts and volunteers from University of Copenhagen and University of Lund. Data collectors received training on measures taxonomy and dataset structure. Analysts navigate the web looking for information on governments measures, utilising sources from: governments (official sites, embassies), media, United Nations agencies and other organizations. Priority is given to official/governmental sources"[5]. It is updated weekly and includes data up to the previous Thursday.

OxCGRT: "The Oxford COVID-19 Government Response Tracker data is collected from publicly available information by a cross-disciplinary Oxford University team of over one hundred academics, students and alumni from every part of the world. OxCGRT records the original source material so that coding can be checked and substantiated"[6]. It aims to be updated weekly so that it includes data up to one week in the past, but some countries are more up to date than others. It is also subject to retrospective change upon discovery of mistakes.

ACDC: Specific data sources are not listed, but "include official government communications, embassy alerts and press searches"[7]. The data is released weekly in the ACDC's "*COVID-19 Scientific and Public Health Policy Update*". It is unclear how regularly the data is updated. It is stated in the report as being inclusive to between nine and

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[5] ACAPS (2020) *COVID-19 Government Measures Dataset ReadMe.* Available at: https://www.acaps.org/sites/acaps/files/key-documents/files/acaps_-_covid-19_government_measures_dataset_readme.pdf (Accessed 19 June 2020)

[6] Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira (2020) *Oxford COVID-19 Government Response Tracker, Blavatnik School of Government.* Available at: https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker (Accessed 19 June 2020)

[7] African Centres for Disease Prevention and Control (2020) *COVID-19 Scientific and Public Health Policy Update.* Available at: https://africacdc.org/download/covid-19-scientific-and-public-health-policy-update-16-june-2020/ (Accessed 29 June 2020)

two days prior to the report being released. The raw data attached to the report, however, indicates it was last updated between mid-April and mid-May. For the purposes of this report we have taken the dates stated in the attached raw data as accurate, meaning the included data is significantly out of date, and the dataset is not updated regularly.

3. Coverage

ACAPS: This dataset includes data for all countries of the WHO African Region.

OxCGRT: This dataset is missing data for Comoros, Guinea Bissau, Equatorial Guinea and Sao Tome and Principe. It includes data for all other countries of the WHO African Region.

ACDC: This dataset includes data for all countries of the WHO African Region.

4. Assessment of Dataset Accuracy [8]

Methods

We took a random sample of African countries included in the datasets, and then manually verified the accuracy of all three datasets. For a few countries, it is difficult to establish a narrative from official sources. For example, Algeria's ACAPS data had real-time government embassy sources for historic events that have since been updated, and records could not be found using the web archive or alternative government communications. Additionally, many events had multiple corroborating media sources indicating their occurrence, but again no accessible government source. However, the vast majority of events checked against the three datasets were backed up by government sources.

African countries included in the datasets were split into four groups of low, medium, high and very high Human Development Index (HDI), and one country was selected at random from each group using Pandas' DataFrame.sample(n=1, random_state=0) function. We postulate that countries with a higher HDI will have better healthcare and government reporting systems in place, and vice versa. Taking a random sample with a variety of HDI's allowed us to do a rudimentary investigation into a link between HDI and the quality of data available.

Selected countries were Algeria (HDI = 0.759, 82/189), South Africa (HDI = 0.705, 113/189), Nigeria (HDI = 0.534, 158/189) and Senegal (HDI = 0.514, 166/189).

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[8] In a linked spreadsheet (available on request), binary flags indicate whether we determined the dataset to be accurate. Accuracy for ACAPS and OxCGRT datasets was defined as the correct measures being included on the correct date +/- one day to allow for discrepancies between announcements and subsequent implementation. As the date when the data was last updated varied for each country and measure, accuracy for the ACDC dataset was defined as whether its indication of the presence or absence of a measure was correct at the time it was last updated.

Results

ACAPS: While errors are still present, the ACAPS dataset is generally more accurate and a better data source. The dataset is however in free text format except for the following:

- Introducing vs relaxing measures
- Broad categorisation into measure category (e.g. Movement restriction)
- Sub-categorisation into actual measure (e.g. Border Closure)
- Targeted population group (Yes/No)
- Non-compliance punishment (e.g. Fines, Detention)

This dataset would be difficult to use comparatively without significant manual effort, as specific details of measures and their strictness are only recorded in free-text fields. It includes events where a possible change in measures is referenced/mentioned, but not implemented. For example, ACAPS' data for Senegal included "Multiple calls for religious authorities to support the Government with the adopted measures" as an event when no change in current measures had been implemented.

OxCGRT: This dataset seems to omit any changes where non-governmental media reports are the main source. However, it also had a significant amount of missing data which can be found from government sources. While not a common occurrence, several times the ACAPS dataset was used as the sole source for the indication of measures being implemented. Often measures are recorded as being implemented later than they were, and occasionally never recorded in their full degree. The dataset is however extensively coded in a useful format that requires minimal manual effort for comparison and produces several standardised indexes for each country.

ACDC: This dataset had very few mistakes for the time period and subset of countries that it covered. However, it is not up to date, and does not record any timeline of historical measures, meaning it is of limited use for gaining insight into which measures had been implemented as of any one specific date. Several of the indicators collected in the dataset are very broad, such as "National Lockdown", and all the data is recorded in simple "Yes/No" format, meaning no further detail of any measures can be gained. Other indicators, however, are specific and consistently accurate as of the date they were last updated.

Conclusions

Optimal data quality could be achieved by applying the OxCGRT's codebook to the ACAPS dataset, and confirming details relating to African countries with the ACDC dataset. However, the manual check indicates errors could still occur.

Section 3. Brief summary of Google mobility data in the WHO African Region

1. Overview

Google mobility data, as a proxy measure for social distancing, help public health workers understand changes in mobility patterns in response to various non-pharmaceutical intervention policies during the COVID-19 pandemic. These include bans on large gatherings, school and university closures, domestic mobility restrictions and physical isolation etc. This anonymized, aggregated dataset is publicly accessible[9]. It provides information on the percentage change of movement over time compared to a baseline defined by geography (either by country or by sub-region), as well as by a number of specific categories including retail and recreation, groceries and pharmacies, parks, transit stations, workplaces, and residential settings. The baseline is the median value, for the corresponding day of the week, during the 5 week period of 3 January – 6 February 2020. Each high-level category contains many types of places, some of which might not be obvious (Table 1).

Table 1 Location categories in each data set

Data set	Places
Retail & recreation	Restaurants, cafes, shopping centers, theme parks, museums, libraries, movie theaters
Grocery & pharmacy	Grocery markets, food warehouses, farmers' markets, specialty food shops, drug stores, pharmacies
Parks*	National parks, public beaches, marinas, dog parks, plazas, public gardens, castles, national forest, camping grounds, observation decks
Transit stations	Public transport hubs such as subways, bus and train stations, taxi stands, highway stops, sea ports, car rental agencies
Workplaces	Places of work
Residential	Places of residence

*Typically meaning official national parks and not the general outdoors found in rural areas

At the time of writing (29 June 2020) Google mobility data is provided on a daily basis, covering more than 130 countries over the period between 15 February 2020 and 23 June 2020.

2. Google mobility data in the WHO African Region

As of 29 June 2020, 25 out of 47 countries of the WHO African Region have mobility data (Figure 2). They are mostly concentrated in the Southern and Western part of the region.

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[9] Google *COVID-19 Community Mobility Report*. Available at: https://www.google.com/covid19/mobility/ (Accessed 17 June 2020)

Figure 3 shows the percentage change in visits to the six place categories in South Africa. There is a sudden change of mobility in the week starting on 23 March, due to a couple of measures implemented around that time, including public school closures from 18 March to 13 April, cancellation of gatherings of more than 100 people, and national lockdown from midnight of 26 March 2020[10].

Figure 2 Google Mobility data availability in the WHO African Region

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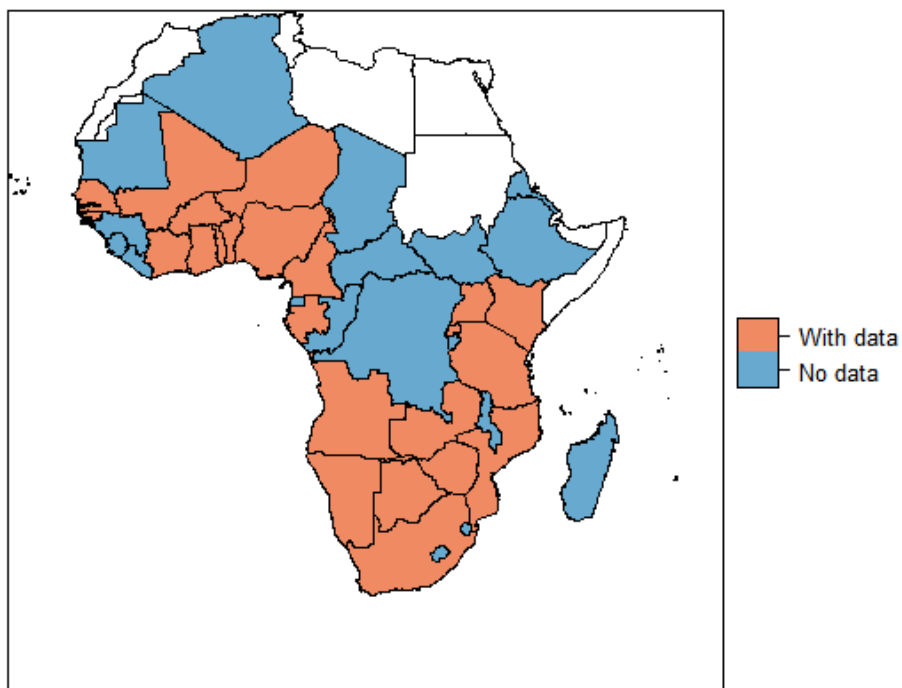
[10] ACAPS *COVID-19 Government Response Measures dataset*. Available at: https://www.acaps.org/covid19-government-measures-dataset (Accessed 29 June 2020)

Figure 3 Percentage change in visits over time to six place categories in South Africa
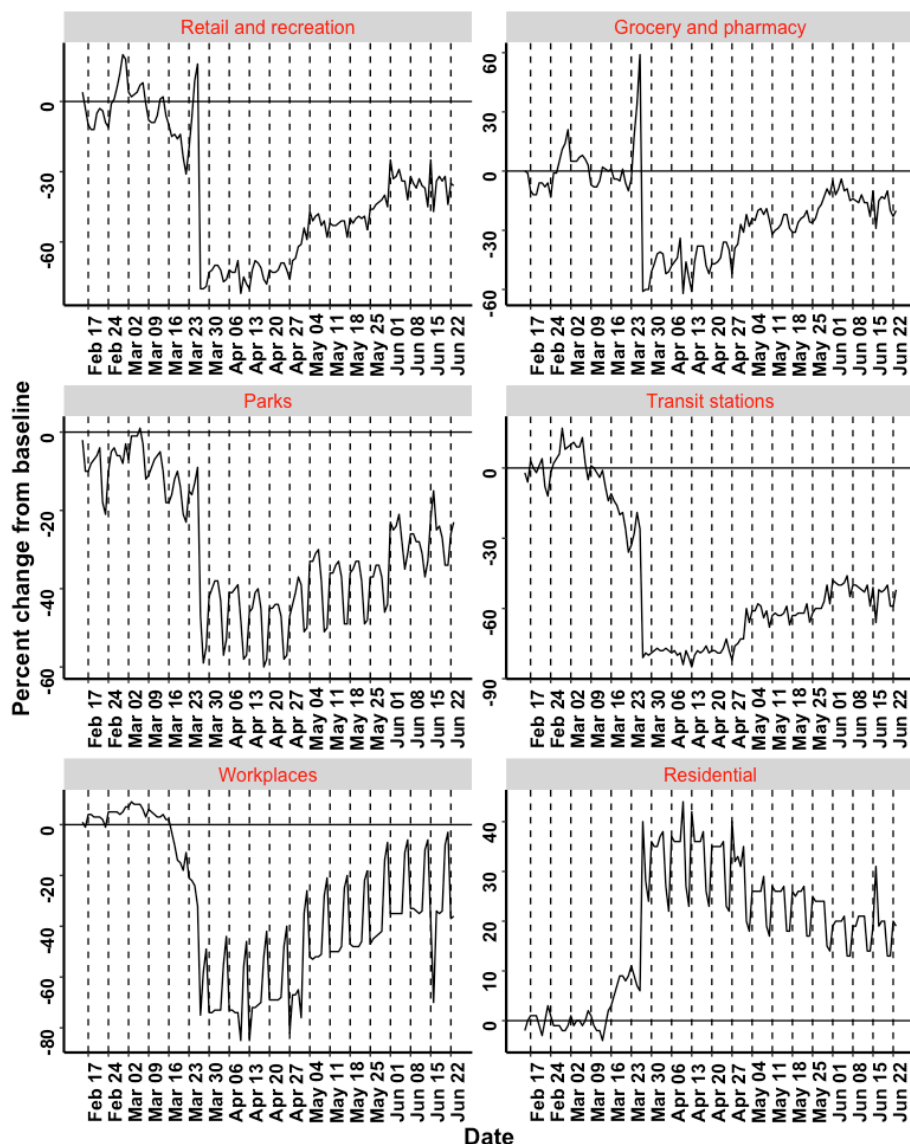
3. Caveats for data use (according to Google[11])

- Location accuracy and the understanding of categorized places varies across regions, so it is not recommended to use this data to compare changes between countries, or between regions with different characteristics (e.g. rural versus urban areas).

- The change in the "Residential" category should not be compared with other categories because they have different units of measurement.

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[11] Google 2020. *COVID-19 Community Mobility Report*. Available at: https://www.google.com/covid19/mobility/ (Accessed 17 June 2020)

- Google mobility data are based on data from users who have opted-in to sharing their location history for their Google account, so the data represents a sample of Google Maps users. As with all samples, this may or may not represent the exact behaviour of the wider population.

- For each regional category, the baseline is not a single value—it is 7 individual values. The same number of visitors on 2 different days of the week results in different percentage changes. So it is not recommended to infer that larger changes mean more visitors or smaller changes mean fewer visitors. Comparing day-to-day changes should also be avoided, especially comparing weekends with weekdays. One more thing to note is that not everyone works Monday to Friday, with some regional differences in workweeks and some people working on weekends.

- There are data gaps for some categories in certain regions. These gaps are intentional and happen because the data does not meet quality and privacy thresholds as there is not enough data to ensure anonymity.

Appendix to Section 1. Testing data in detail

	Member of the WHO African Region	Data quality	Description/sources	Updating frequency	Last update	Source
1	Algeria	**No data**	No data from official sources found by OWiD by 29 June 2020.	N/A	N/A	OWiD
2	Angola	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
3	Benin	**Basic data**	Government COVID-19 website provides number of cumulative tests carried out since 3 May 2020 No data from official sources found by OWiD by 29 June 2020	Daily	28 June 2020	Government of Benin COVID-19 website OWiD
4	Botswana	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
5	Burkina Faso	**Satis-factory data**	Ministry of Health dashboard with details of the number of samples analysed, number of tests, number of controls, daily[12].	Daily	26 June 2020	Ministry of Health website OWiD

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[12] Dates with no testing data: 2/4/2020, 9/4/2020, 23/4/2020, 22/5/2020, 30/5/2020, 3/6/2020

			No data from official sources found by OWiD by 29 June 2020			
6	Burundi	**No data**[13]	No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD
7	Cabo Verde	**Basic data**	Press releases posted to the Government COVID-19 Website daily[14] No data from official sources found by OWiD by 29 June 2020	Daily	29 June 2020	Official COVID-19 website OWiD
8	Cameroon	**Basic data**	Ministry of Public Health publish samples tested per day and cumulative testing data inconsistently No data from official sources found by OWiD by 29 June 2020	Not published regularly	23 June 2020[15]	Ministry of Public Health OWiD
9	Central African Republic	**No data**	No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD
10	Chad	**Basic data**	Published daily numbers of samples tested to the Ministry of Public Health website & Facebook account. From 14 April- 11 May data was published	Daily	28 June 2020	Chad Ministry of Public Health Facebook account Chad Ministry of Public

[13] Burundi's government ordered the expulsion of WHO experts on 12 May 2020 https://www.theguardian.com/world/2020/may/14/burundi-expels-who-coronavirus-team-as-election-approaches

[14] Dates with no testing data: 20/6/2020, 21/6/2020

[15] Cumulative number of tests performed last updated on 11/6/2020, daily samples tested last updated 23/6/2020

			inconsistently.[16] No data from official sources found by OWiD by 29 June 2020			Health website OWiD
11	Comoros	**No data**	WHO officials arrived on 4 June so maybe there will be data in the future No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD Stop Covid-19 Comores
12	Congo	**Basic data**	The Ministry of Scientific Research and Technological Innovation published a cumulative number of tests carried out. No data from official sources found by OWiD by 29 June 2020	Not published regularly	12 May	OWiD SISTRE N°38
13	Côte d'Ivoire	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	N/A	5 May 2020	OWiD UNECA
14	Democratic Republic of the Congo	**Basic data**	Ministry of Health publishes press releases daily of number of samples tested[17] No data from official sources found by	Daily	28 June 2020	Ministry of health daily COVID-19 bulletins OWiD

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[16] Dates with no testing data: 15/4/2020, 16/4/2020, 18/4/2020, 19/4/2020, 20/4/2020, 21/4/2020, 23/4/2020, 24/4/2020, 26/4/2020, 29/4/2020, 1/5/2020, 3/5/2020, 4/5/2020, 6/5/2020, 10/5/2020 and 11/5/2020.

[17] Dates with no testing data: 12/4/2020, 30/4/2020, 3/5/2020, 5/5/2020, 9/5/2020, 10/5/2020, 17/5/2020, 18/5/2020, 19/5/2020, 20/5/2020, 22/5/2020, 25/5/2020, 31/5/2020, 1/6/2020, 7/6/2020, 8/6/2020, 14/6/2020, 19/6/2020 and 22/6/2020

			OWiD by 29 June 2020			
15	Equatorial Guinea	**Basic data**	Government Website published cumulative number of samples tested No data from official sources found by OWiD by 29 June 2020	Not published regularly	15 June 2020	Government announcing end of lockdown OWiD
16	Eritrea	**No data**	Random and extensive testing is occurring[18], but test numbers are not being released. No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD
17	Eswatini	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
18	Ethiopia	**Basic data**	In spite of high publishing frequency, it is not clear whether figures refer to the number of samples tested or the number of people tested and whether reported figures include tests with pending results. OWiD drawing on Ethiopian Public Health Institute COVID-19 Situational Update	Daily	28 June 2020	Ethiopian Public Health institute OWiD

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[18] http://www.shabait.com/news/local-news/30578-statement-on-random-testing

19	Gabon	**Basic data**	UNICEF situation reports only provide overall testing data without any breakdown. No data from official sources found by OWiD by 29 June 2020	Bi-weekly	10 June 2020	OWiD UNICEF (listed on Reliefweb)
20	Gambia	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	N/A	5 May 2020	OWiD UNECA
21	Ghana	**Basic data**	The Ghana Health Service website provides total tests, total positive tests, positivity rate, and whether the testing was routine surveillance or contact tracing. The site is linked to major international donors and likely to the Ministry of Health	Daily	28 June 2020	Ghana Health Service COVID-19 Updates OWiD
22	Guinea	**No data**	No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD
23	Guinea-Bissau	**Basic data**	Data seems at times mislabelled COVID-19 Epidemiological report (INASA, COES-GB, Ministry of Health GB)	Not published regularly (no data since April 2020)	15 April 2020	Guinea-Bissau Covid19 bulletins
24	Kenya	**Satis-factory data**	OWiD drawing on Ministry of Health COVID-19 Situation Report	Daily	29 June 2020	Ministry of Health OWiD

25	Lesotho	**Basic data**	Ministry of Health website releases photos of printed press releases No data from official sources found by OWiD by 29 June 2020	Not published regularly	21 June 2020	Ministry of Health press release 21 June OWiD
26	Liberia	**Basic data**	Ministry of Health COVID-19 Situation Report No data from official sources found by OWiD by 29 June 2020	Not published regularly (no data since April 2020)	02 April 2020	Ministry of Health COVID-19 Situation Report website OWiD
27	Madagascar	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
28	Malawi	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
29	Mali	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
30	Mauritania	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
31	Mauritius	**Basic data**	Data from UNECA No data from official	Not published regularly	5 May 2020	OWiD UNECA

			sources found by OWiD by 29 June 2020			
32	Mozam-bique	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
33	Namibia	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
34	Niger	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
35	Nigeria	**Basic data**	NCDC provides daily totals of samples tested plus sporadic regional testing data. OWiD, drawing on Nigerian Centre of Disease Control	Daily	27 June 2020	Nigeria Centre for Disease Control OWiD
36	Rwanda	**Basic data**	OWiD drawing on Rwanda Ministry of Health and Rwanda Biomedical Centre	Daily	28 June 2020	OWiD Rwanda Biomedical Centre
37	São Tomé and Príncipe	**Basic data**	Ministry of Health COVID-19 portal No data from official sources found by OWiD by 29 June 2020	Daily	28 June 2020	Ministry of Health OWiD
38	Senegal	**Good data**	The ministry of health provides daily reports on testing in extensive detail, including daily	Daily	29 June 2020	Ministry for Health and Social Action

			tests, the number of those which are positive, the positivity rate, whether they are contact tracing or community transmissions (including locations). No direct statement of total tests. OWiD drawing on Senegal's Ministry for Health and Social Action			OWiD
39	Seychelles	**No data**	No data from official sources found by OWiD by 29 June 2020	N/A	N/A	OWiD
40	Sierra Leone	**Basic data**	Directorate of Health Security and Emergencies Ministry of Health and Sanitation Situation report No data from official sources found by OWiD by 29 June 2020	Not published regularly (no data since May 2020)	13 May 2020	Ministry of Health Directory of Health Security and Emergencies OWiD
41	South Africa	**Good data**	NICD provides total tests, number of positive tests, number of new tests that day, percentage new tests, whether tests were public or private, as well as passive case findings or community screen and test OWiD drawing on the National Institute for Communicable Diseases	Daily	28 June 2020	National Institute for Communicable Disease (NICD) OWiD
42	South	**No data**	The Ministry of	N/A	N/A	OWiD

	Sudan		Health website seems not to have been updated since 2018 No data from official sources found by OWiD by 29 June 2020			
43	Togo	**Basic data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
44	Uganda	**Basic data**	OWiD drawing on the Ministry of Health of the Republic of Uganda	Daily	29 June 2020	Ministry of Health of the Republic of Uganda OWiD
45	United Republic of Tanzania	**No data**	The government has stopped publishing COVID-19 related data	N/A	N/A	Coronavirus: John Magufuli declares Tanzania free of Covid-19
46	Zambia	**Basic Data**	Data from UNECA No data from official sources found by OWiD by 29 June 2020	Not published regularly	5 May 2020	OWiD UNECA
47	Zimbabwe	**Satis-factory data**	OWiD drawing on Zimbabwe's Ministry of Health and Child Care	Daily	29 June 2020	Ministry of Health and Child Care OWiD