



Impact of COVID-19 in Africa: A scenario analysis to 2030 (July 2020)

Three Covid-19 Scenarios

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The growth forecast released by the IMF in October 2019 serves as the basis for a pre-COVID-19 Reference scenario against which alternative pathways can be measured. The IMF forecast an average of 2.6% growth for Africa in 2020. Initialising from this rate, the forecast from IFs was for Africa to experience an average of 3.8% growth from 2020 to 2030.

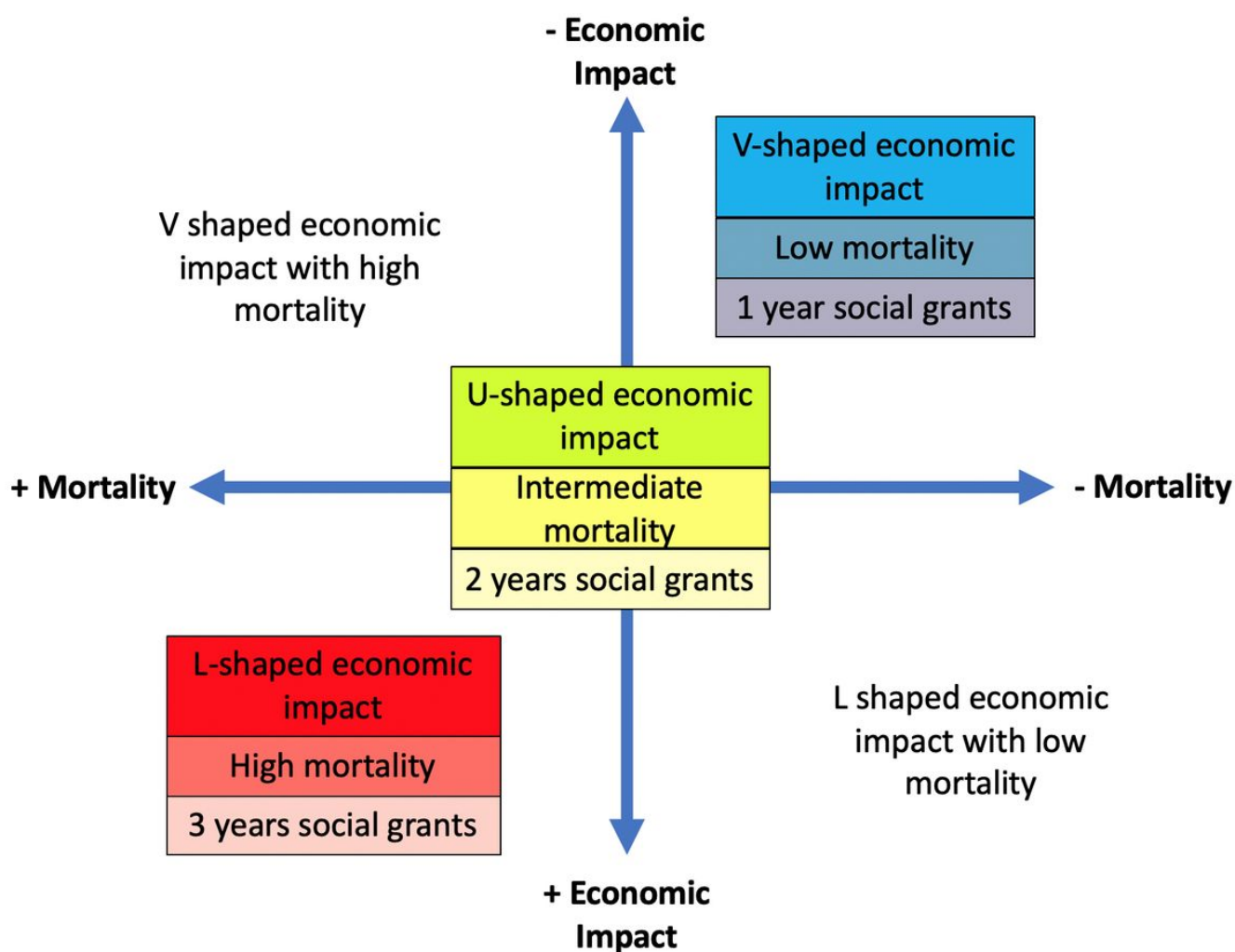
Chart 2: Project notes

- **Where numbers and ratios are used without an explicit reference, the reader should assume that the data is taken from IFs.**
- Libya has been removed from all averages and forecasts so the large fluctuations in its growth forecast do not skew the averages. In the remainder of this report all data that relates to Africa excludes Libya.
- We use the 2020-2021 World Bank country income groups that were released on 1 July 2020.

The conceptual framing that informed the choice of scenarios is presented in Chart 1. Importantly, the three COVID-19 scenarios developed for the project do not purport to present possible extreme outcomes, but rather consist of three reasonable alternatives — namely V-, U- and L-shaped scenarios, using the letter in the alphabet that most closely resembles the anticipated shape of the GDP growth curve. Each scenario consists of a set of three interventions in the IFs forecasting system that relate to economic growth, additional mortality and additional social grants.

The interventions are made in 2020 for the V scenario, in 2020 and 2021 in the U scenario and from 2020 to 2022 in the L scenario. The subsequent forecasts are generated by IFs.

Chart 3: Framing of scenarios



The adjustments made within IFs for each scenario are summarised in Chart 4 and detailed in Annex C.

Chart 4: Interventions and assumptions

Scenario	Economic growth	Additional mortality due to respiratory infections	Additional social transfers
Reference scenario	IMF global growth forecast released in October 2019. Global growth forecast at 1.4% in 2020.	None	None
V	IMF growth forecast released in April and June 2020. Includes sharp downturn in 2020 and rapid recovery in 2021.	344 000 additional respiratory communicable disease deaths in 2020.	For 2020 only. Country data where available, continental average for rest.

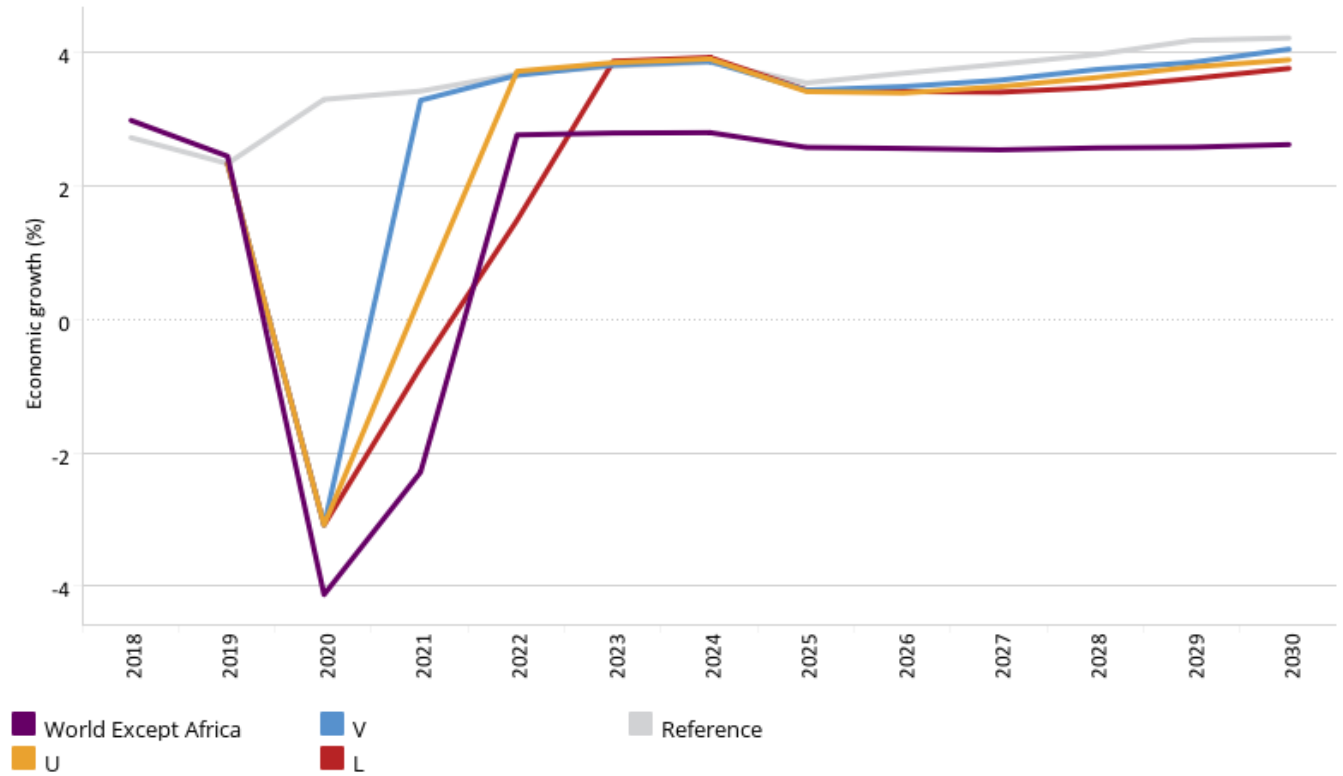
	Global growth forecast at -4.9% in 2020.	From Imperial College best-case suppression scenario.	
U	Same as V but recovery in 2022. See Annex C for growth rates per country for 2021.	897 000 additional respiratory communicable disease deaths in 2020 and 468 000 in 2021.	2020 same as in V. Half of that in 2021. None in 2022.
L	Same as V but recovery in 2023. See Annex C for growth rates per country for 2021 and 2022.	1 450 000 additional respiratory communicable disease deaths in 2020, 886 000 in 2021 and 518 000 in 2022. The 2020 number is the Imperial College worst-case suppression scenario.	2020 same as in V. Two-thirds in 2021 and one-third in 2022. None in 2023.

Economic growth rates

The IMF has twice updated its October 2019 growth forecasts. The first was in April 2020 and the second was at the end of June 2020. We use these updates as the basis for the V scenario. The V scenario is for an average growth rate of 3.1% for Africa to 2030 in the IFs forecasting platform, instead of the 3.8% reflected in the Reference or pre-COVID growth scenario. It includes a rapid economic recovery in 2021.

In the U scenario, Africa is only expected to recover by 2022; whereas in the L scenario recovery occurs in 2023, with significant long-term consequences discussed below. Chart 3 presents a comparison of the growth rates for each of the four scenarios as well as the anticipated average growth rate in the rest of the world. [1]

Chart 5: Growth rates: Africa under different scenarios vs rest of the world

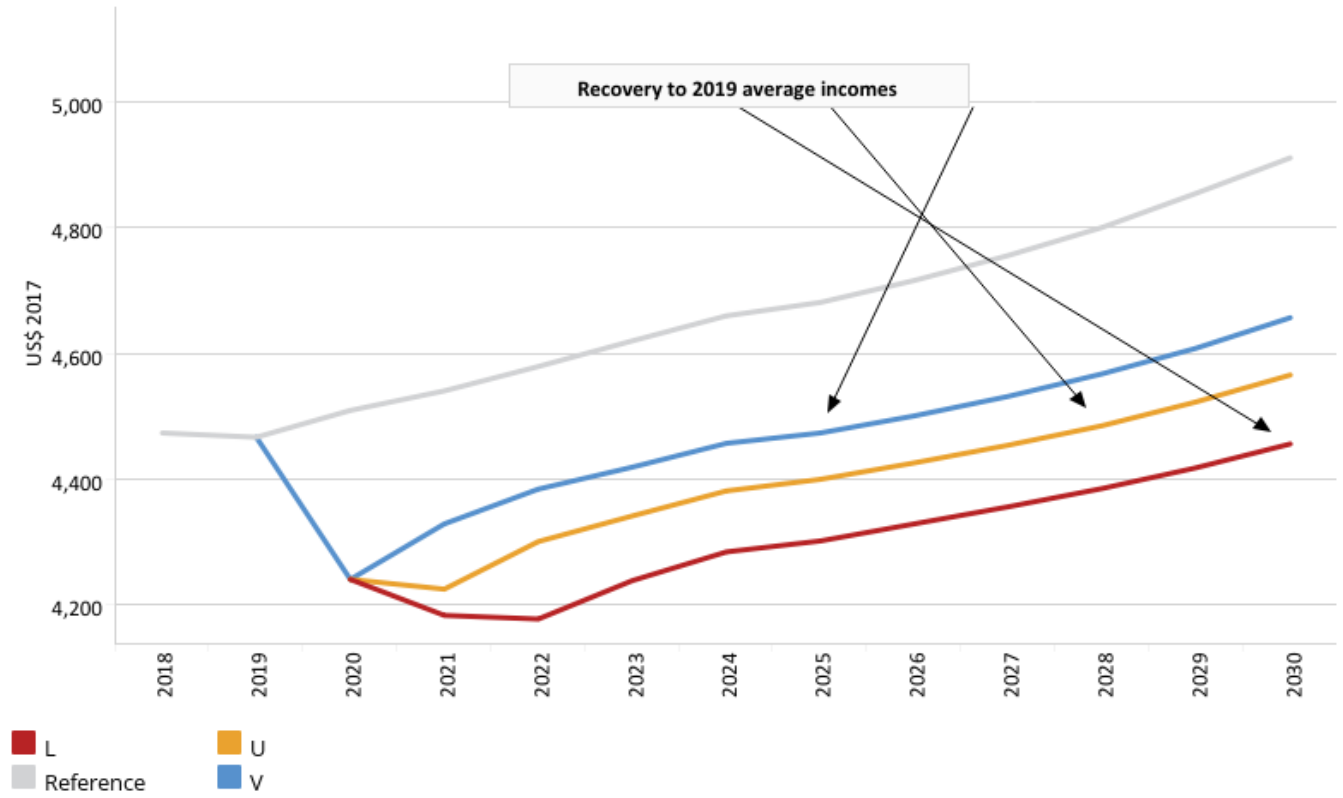


Source: IFs version 7.45 initialising from International Monetary Fund April 2020 growth forecasts

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The economic contraction results in a large decline in GDP per capita, which can be used as a proximate measure for average incomes in Africa and is presented in Chart 6. From 2019 to 2020, GDP per capita in Africa, with its population of 1.3 billion, is expected to decline by about US\$255 per person. In the V scenario, GDP per capita in Africa will recover to 2019 levels (US\$4 466 per person) in 2024. In the L scenario that does not occur until 2030.

Chart 6: GDP per capita under different scenarios

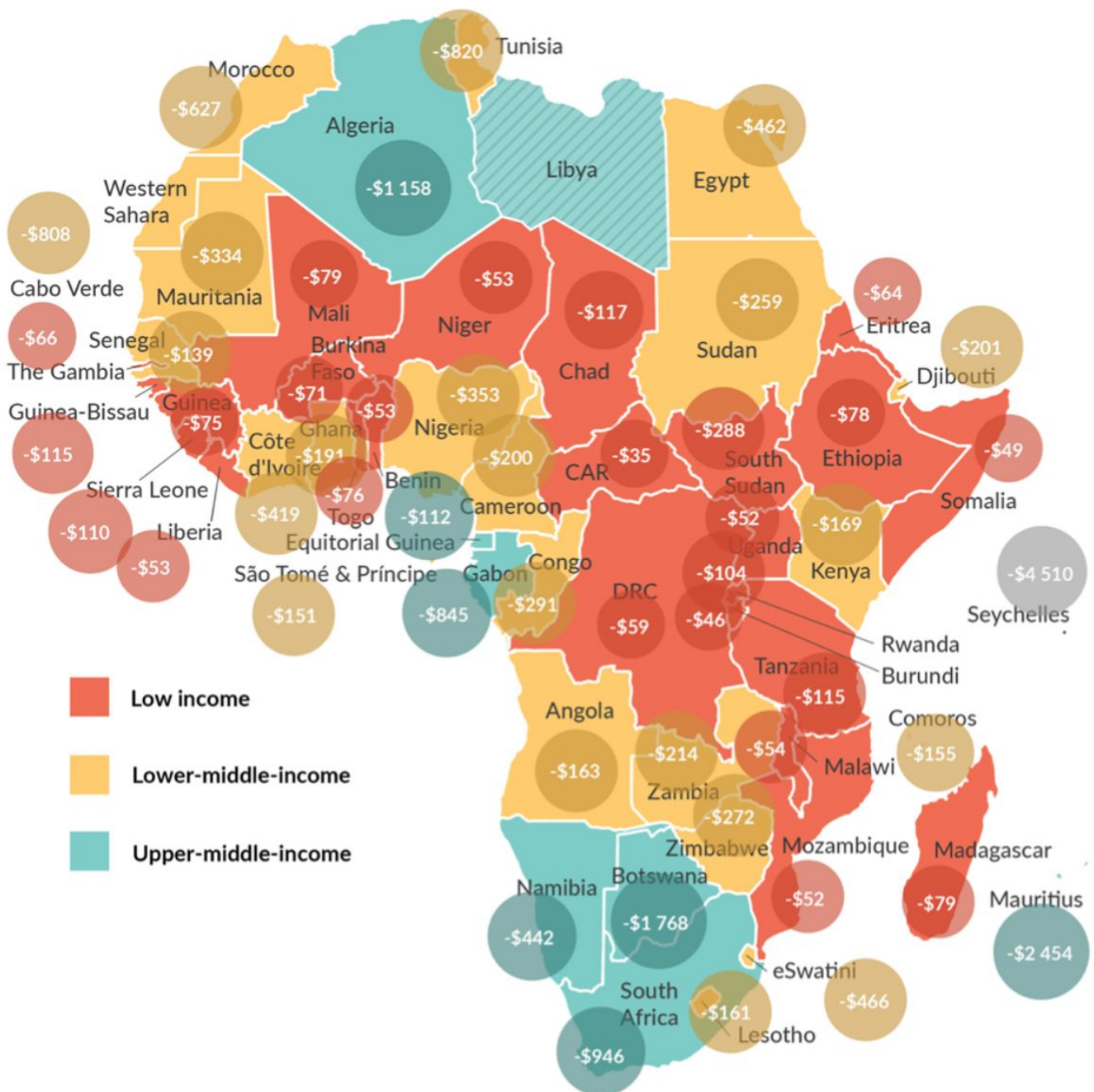


Source: IFs version 7.45 initialising from International Monetary Fund

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The 2020 contraction will be particularly severely felt in Africa’s six upper middle-income countries (excluding Libya) with a decline of US\$1 115 from 2019 averages. For lower middle-income countries the average reduction is US\$334 and for Africa’s 23 low-income countries the reduction is at US\$48. Chart 7 presents the difference in GDP per capita in 2020 compared to 2019 for all African countries excluding Libya.

Chart 7: Decline in GDP per capita: 2020 compared to 2019



Source: IFs v7.45 initialising from World Development Indicators update 2018

Infections and mortality

Forecasting rates of infection are particularly fraught for two reasons. Firstly, the low level of testing in Africa, in part due to initial problems with obtaining sufficient testing kits, undermined the availability of data. Africa has conducted about 1 700 tests per million people, compared to 37 000 tests per million in Italy and 30 000 per million in Britain. [2]

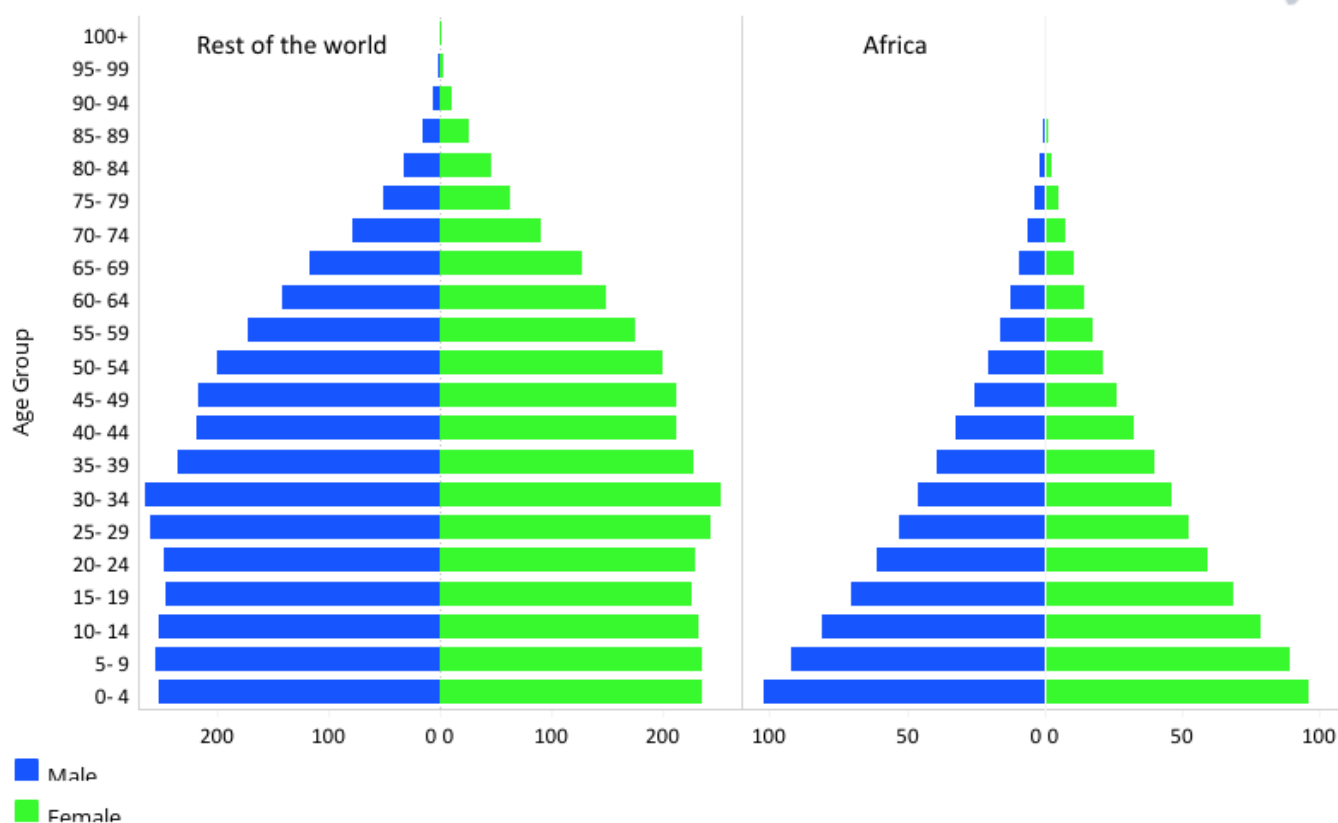
Efforts are being made to scale up testing, and data is improving, but uncertainty remains about the actual rates of infection in many African countries. At the start of the outbreak only two countries in Africa could test for COVID-19. By the end of June 2020, all African countries had however developed laboratory capacity to test for the coronavirus. [3]

Secondly, many young people display no or limited symptoms when infected, effectively carrying on with their lives, including going to work. As a result we consider that the impact on labour productivity and hence on economic growth is likely to be limited. This is because a large proportion of Africans are engaged in subsistence farming and the low-productivity service sector in the informal sector, which produce livelihoods but contribute little to national economic productivity.

Although Africa is at an early stage in the unfolding pandemic and data are incomplete, the continent is so far reporting very low mortality rates from COVID-19 infections. The most likely explanation seems to be that, at a median age below 20 years, the continent has a much younger population. This is a notable advantage since COVID-19 affects older people much more severely.

See Chart 8 for the population pyramid by age structure for Africa vs the rest of the world, where the median age is 34 years. There may be other explanations, such as cross-protection (limited immunity) conferred by exposure to other viruses with the result that when people get infected, they experience relatively mild symptoms. [4]

Chart 8: Population age structure: Africa vs rest of the world



Source: IFs version 7.45 initialising from UN Population Division data

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The most comprehensive forecast to date of the potential impact of COVID-19 is from Imperial College in London. Its March 2020 report, The Global Impact of COVID-19 and Strategies for Mitigation and Suppression, presents a number of scenarios ranging from no intervention to aggressive mitigation and suppression. In its best-case mitigation scenario it forecasts 122 million infections and 344 145 deaths in Africa, and in the worst case 515 million infections and 1 449 940 deaths.

On 7 May 2020 the WHO released its worst-case COVID-19 forecast of mortality in Africa. It noted that a relatively modest number of between 83 000 and 190 000 people in the WHO region of Africa [5] could die of COVID-19. It estimated that 29 million to 44 million could get infected in the first year of the pandemic if containment measures fail. [6]

By comparison, about 700 000 Africans die annually from Aids and slightly fewer from malaria. COVID-19 is thus expected to have a relatively low mortality impact compared to these diseases.

Africa's youthful advantage may, however, be undermined by two factors, both mentioned but not modelled in the Imperial College report. The first is its high levels of comorbidity, i.e. the extent to which Africans also suffer from other diseases or conditions such as diabetes, cardiovascular-related illnesses like hypertension, chronic kidney disease, HIV/Aids and tuberculosis. [7] The second is the lower capacity of health systems in Africa compared to elsewhere.

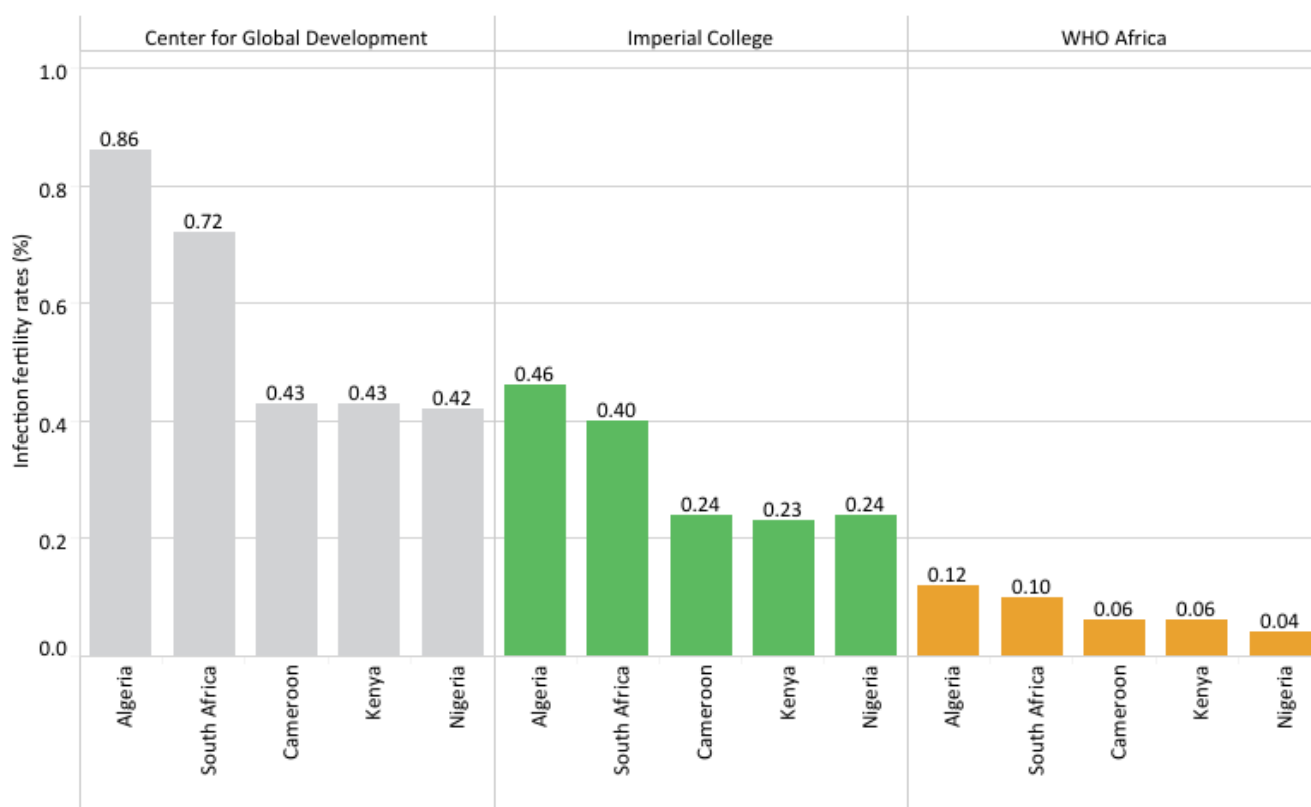
A recent study by the Center for Global Development found that once the rate at which infected people die from COVID-19 (the infection fatality rate or IFR) is adjusted for Africa's high burden of comorbidity and low health system capacity, it 'greatly diminishes, but does not entirely erase, the demographic-based advantage predicted in the lowest income setting.' [8]

Significantly, whereas comorbidities are concentrated among the elderly in rich countries, in some developing countries such as South Africa a higher share is found among middle-aged people. [9]

The WHO worst-case forecast of 190 000 deaths in 2020 is therefore significantly more optimistic than that from Imperial College which is, in turn, much more optimistic than the most recent study by the Center for Global Development, although the latter only compares ratios and does not provide absolute numbers. [10]

These three studies provide a range of best- to worst-case infections and mortality. xBy way of illustration, Chart 9 is taken from an accompanying blog done by the Center for Global Development and compares the predicted COVID-19 infection fatality rates for five African countries across the three studies.

Chart 9: Comparing predicted COVID-19 infection fatality rates (IFR) for selected African countries across three studies



Source: Center for Global Development, <https://www.cgdev.org/blog/predicting-covid-19-infection-fatality-rates-around-world>

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For the purposes of this study, we adopt the best- and worst-case suppression scenario numbers from Imperial College as a basis for our mortality forecast. It is important to recognise that these are modelled forecasts, none of which have factored in the potential impact of new medicines (such as dexamethasone) or new treatments.

Whereas the growth forecasts for the various scenarios are done at a country level, the mortality forecast from Imperial College is applied as an intervention at the continental level, relying on the IFs system to allocate the mortality to individual countries through its data preprocessor. [11]

The modelling done by Imperial College estimates that the 344 145 additional deaths from COVID-19 (used in the V scenario) would imply 122 million infected people and that the 1 449 940 additional deaths (used in the L scenario) would imply 515 million infected people, i.e. almost half of Africa's total population. Given Africa's large population, the mortality numbers, while serious, have a negligible impact on labour productivity and hence on GDP growth.

The vast majority of infected people would show no or light symptoms and as such we have not sought to forecast the impact on GDP growth. By contrast, UNECA, in its COVID-19 modelling released in April 2020, attributes substantial importance to reduced labour productivity as a key driver of economic growth, resulting in growth forecasts for 2020 of 1.8%, 0.1% and -2.6%. [12] Our average 2020 growth rate for Africa, taken from the IMF, is at -3%.

In Guinea, Liberia and Sierra Leone more people died as a result of the indirect impact of Ebola from 2014 to 2016 than the combined official death toll of 11 325. [13] Given the economic impact of COVID-19, it initially appeared reasonable to expect that the indirect mortality effects of the pandemic would also outpace direct deaths from the disease, as was the

case with Ebola.

Among the many reasons for the larger size of indirect mortality with Ebola is that it had the effect of channelling resources away from other government services and basic healthcare, resulting in an increase in malaria, HIV/Aids and tuberculosis, and other diseases. Maternal mortality rates typically increased by 75% as the number of women giving birth in hospitals and health clinics dropped. [14]

Chart 10: Learning from Ebola to combat COVID-19 in the Eastern DR Congo

'Yet in some ways, Goma is more prepared than many other places in the world. Due to the Ebola crisis, the city is dotted with checkpoints where everybody is subjected to a temperature check — performed with handheld infrared thermometers — and required to wash their hands at chlorinated water stations before being allowed to pass. The city's airport has an isolation chamber that was built for people displaying symptoms of Ebola but will now also be used for COVID-19. Now a modern laboratory is being constructed in central Goma to analyse coronavirus test samples from across eastern Congo.'

<https://pulitzercenter.org/reporting/african-city-has-endured-war-and-ebola-now-comes-coronavirus>

Early in May, the WHO and the Joint United Nations Programme on HIV/Aids together issued a statement [15] expressing their concern that the number of deaths from Aids-related illnesses in sub-Saharan Africa could double if the provision of healthcare to people living with HIV was interrupted as a result of supply chain disruption, or health services being overwhelmed by the COVID-19 pandemic.

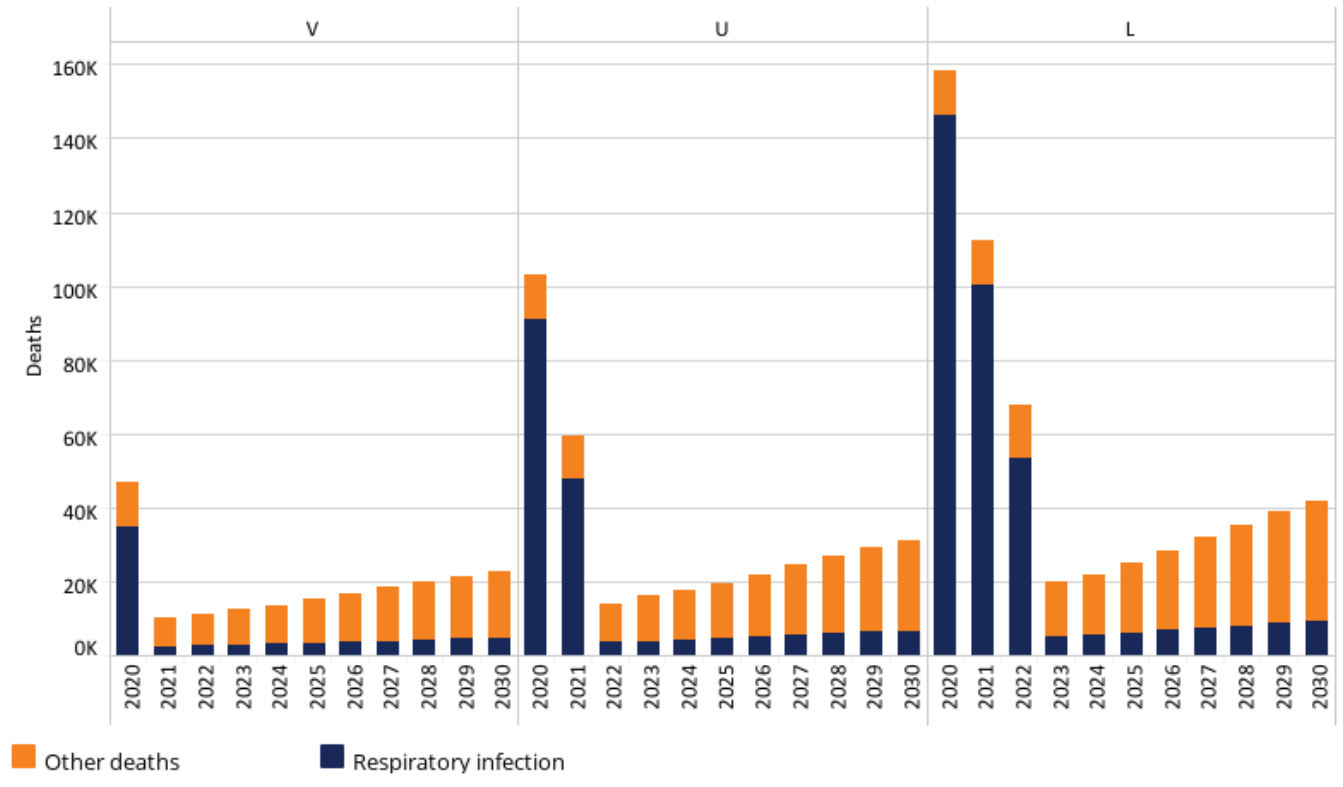
They noted that a six-month disruption of antiretroviral therapy due to the pandemic could lead to more than 500 000 extra deaths in the region in 2020-2021. The two agencies noted that in 2018 an estimated 470 000 people died of Aids-related deaths in sub-Saharan Africa.

Our findings, based on the mortality numbers from Imperial College, indicate a likely different pattern with COVID-19 to that with Ebola.

The additional mortality associated with each scenario compared to the Reference scenario is presented on a common scale in Chart 11. The bar graph makes a distinction between additional respiratory deaths (that include COVID-19 deaths) and additional mortality from other communicable diseases, malaria and other non-communicable diseases.

Beyond 2020 (V scenario), 2021 (U scenario) and 2022 (L scenario) all additional mortality should be viewed as a function of the reduction in health expenditure discussed in the next section, and not directly from COVID-19.

Chart 11: Mortality associated with COVID-19



Source: IFs version 7.45 initialising from the Global Burden of Disease from the Institute of Health Metrics and Evaluation

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Source: IFs v7.45 initialising from the Global Burden of Disease from the Institute of Health Metrics and Evaluation. Within the IFs forecasting system we model the increases in mortality due to COVID-19 as the result of respiratory infections.

Note: The intervention applied in IFs and based on that done by Imperial College is as follows: V – 350 000 additional deaths in 2020; U – 900 000 additional deaths in 2020 and 470 000 in 2021; L – 1 450 000 deaths in 2020, 990 000 in 2021 and 520 000 in 2021.

Contrary to the experience with Ebola, Chart 11 would indicate that the direct mortality impact of COVID-19 from 2020 to 2030 (as estimated by Imperial College) would exceed the indirect mortality impact in the V scenario, that they are roughly equivalent in the U scenario and that, in the L scenario, direct mortality exceeds indirect mortality. [16]

On the basis of that logic, and to avert a worst-case scenario, it would appear that decisions by most African governments to institute various measures related to lockdown, travel restrictions and social distancing, were appropriate. Effective treatments such as the recent findings relating to the steroid dexamethasone were not considered by Imperial College and would, of course, impact upon these forecasts.

Given challenges such as very low levels of testing to determine levels of infection, eventually a methodology based on excess deaths would probably yield the most useful insights into the true impact of COVID-19 in Africa. [17]

An example of the problems inherent in reliance on testing to determine infections and mortality has been widely reported in respect of the northern Nigerian city of Kano, the second largest in the country. The state was in lockdown in

April when gravediggers raised concerns that they were burying a higher than usual number of bodies.

Although the state governor issued a statement saying the deaths were unrelated to COVID-19, Nigerian President Muhammadu Buhari sent a team to investigate, as did the WHO. In May 2020 it became clear that the cause was indeed COVID-19 and not hypertension, diabetes, meningitis or acute malaria as claimed by the state government. Kano is just one of a number of emerging COVID-19 hotspots in Africa. Others include Cape Town, Djibouti and Mogadishu. [18]

Excess deaths are typically defined as the difference between the observed number of deaths in specific time periods and the expected number of deaths in the same period. If the data obtained in this manner is sufficiently granular, it may be possible to get to a much more realistic picture of the true impact of COVID-19 that includes direct and indirect deaths. A recent study by EuroMOMO of excess deaths in 24 European countries all of which have more healthcare capacity than African countries suggests that there were about 170 000 excess deaths in a 10-week period from mid-March to the end May 2020. The discrepancy will surely be larger in most African countries. [19]

Revenue reductions and resource constraints

Africa has very limited capacity to respond to COVID-19 for reasons including low tax-to-GDP ratios and high debt levels. UNECA estimates that the continent's response to the pandemic is at a mere 0.5% of GDP (US\$44.7 billion). Half of that came from just two countries — South Africa and Egypt. [20]

When UNECA published its report COVID-19 in Africa: Protecting Lives and Economies, in April 2020, it exposed the continent's limited fiscal capacity. Africa's tax-to-GDP ratio is low and declining. [21] As borders closed and trade slowed in response to the pandemic, governments were collecting significantly less revenue.

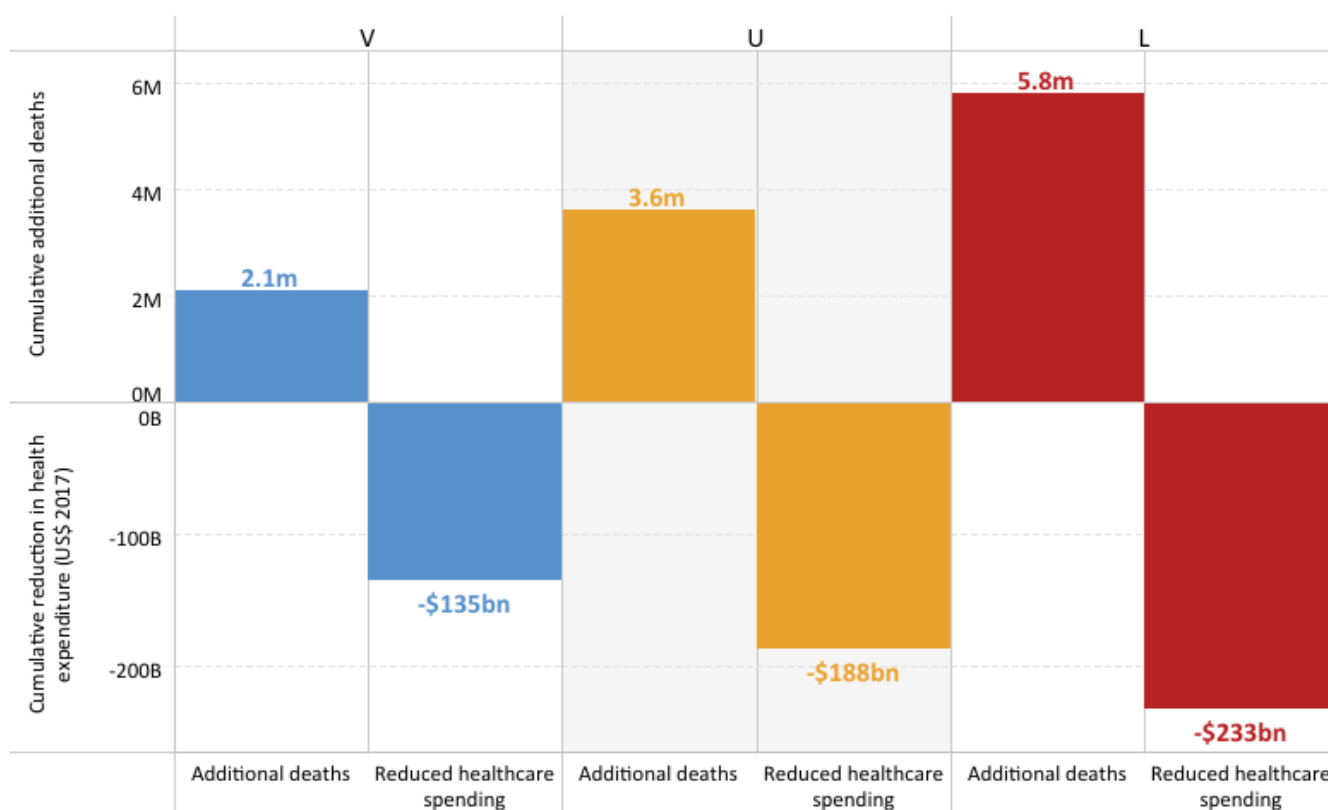
The continent also has a high debt burden, spending roughly US\$40bn annually on servicing its debt, in part because costs of borrowing are extremely high. Finally, the depreciation of many major African currencies since the beginning of 2020 has increased debt costs since bonds are issued in dollars and euros. [22]

Government revenues in Africa in 2020 are estimated at US\$53 billion below the pre-COVID forecast for that year. The calculation from IFs is that public and private health expenditure will decline by US\$4.4 billion in 2020 in all three of our COVID-19 scenarios. Thereafter, the reductions differ in accordance with the annual growth rate for each scenario.

By 2030, the cumulative reduction in health expenditure on the continent is forecast to be US\$135 billion less in the V scenario compared to the Reference scenario, US\$188 billion less in the U scenario and US\$233 billion less in the L scenario. There are, of course, huge variations in how countries are reacting to the pandemic. [23] Some may protect their health spending, reallocating expenditure from other budget lines to health. Even within the health budget funds may be reallocated from other non-communicable disease treatment to measures that respond directly to COVID-19.

By 2030, COVID-19-related mortality would result in 2.1 million additional deaths in the V scenario, 3.6 million in the U scenario and 5.8 million in the L scenario, including both direct and indirect mortality

Chart 12: Cumulative reduction in health expenditure and cumulative increased mortality



Source: IFs version 7.45

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Additional social grants

A third and final intervention within the IFs forecasting platform relates to efforts by African governments to cushion the economic impact of lockdowns and other COVID-19 containment measures through additional social grants, food parcels and the like.

Here we gathered country-level data where it was available or applied an average in 2020 where we could not find country-level data, and then scaled these amounts back in 2021 (for the U scenario) and to 2022 (in the L scenario).

The impact is that 3.4 million fewer Africans are classified as extremely poor in 2020 than would have been the case without the additional transfers and slightly fewer in 2021 (in the U scenario) and in 2022 (in the L scenario). [24]

Endnotes

1. Note that the IMF October 2019 forecast is out to 2024. The forecast beyond that is from IFs.
2. G Paravicini, [All African countries now have coronavirus lab testing capacity](#) - WHO chief, Reuters, 24 June 2020; African countries move from COVID-19 readiness to response as many confirm cases, WHO
3. WHO, [African countries move from COVID-19 readiness to response as many confirm cases](#)
4. For a summary of thinking in this regard see L Spinney, [Are we underestimating how many people are resistant to Covid-19?](#), The Guardian, 7 June 2020
5. This includes 47 African countries with roughly one billion people, excluding Djibouti, Egypt, Libya, Morocco, Somalia, Sudan and Tunisia.
6. JW Cabore et al, [The potential effects of widespread community transmission of SARS-CoV-2 infection in the World Health Organization African Region: A predictive model](#), BMJ Global Health, 2020.
7. K Alcorn, [People with HIV at greater risk of COVID-19 death in South African study](#), NAMAidsmap, 10 June 2020
8. S Ghisolfi et al, [Predicted COVID-19 Fatality Rates Based on Age, Sex, Comorbidities, and Health System Capacity](#), Center for Global Development, Working Paper 535, 12 June 2020, 2
9. J Sandefur et al, [Predicting COVID-19 Infection Fatality Rates Around the World](#), Center for Global Development, 12 June 2020
10. According to the WHO: 'The new estimates are based on modifying the risk of transmission and disease severity by variables specific to each country in order to adjust for the unique nature of the region. The model predicts the observed slower rate of transmission, lower age of people with severe disease and lower mortality rates compared to what is seen in the most affected countries in the rest of the world. This is largely driven by social and environmental factors slowing the transmission, and a younger population that has benefited from the control of communicable diseases such as HIV and tuberculosis to reduce possible vulnerabilities.' Smaller African countries alongside Algeria, South Africa and Cameroon were at high risk if containment measures were not prioritised, the WHO noted. The WHO study looked at 47 countries in the WHO African Region with a total population of one billion whereas the other studies were on all of Africa. WHO, [New WHO estimates: Up to 190 000 people could die of COVID-19 in Africa if not controlled](#), COVID-19, 7 May 2020
11. Modelling done by a consortium from three universities in South Africa considers a likely total 2020 mortality of between 34 015 and 49 774 in that country by November 2020. L López González, [Read South Africa's national, provincial COVID-19 projections in full](#), Bhekisisa Centre for Health Journalism, 20 May 2020. The additional respiratory infection for South Africa in our modelling for the V scenario is 16 610, in the U scenario it is 43 740 and in the L scenario it is 70 340 for 2020.
12. UNECA, COVID-19 in Africa: [Protecting Lives and Economies in Africa](#), April 2020, 8. UNECA relied on the Imperial College infection and mortality results and modelled three scenarios at the continental level.
13. [2014–2016 Ebola Outbreak in West Africa](#), Centers for Disease Control and Prevention, 8 March 2019
14. S Davies and B Bennett, A Gendered Human Rights Analysis of Ebola and Zika: Locating Gender in Global Health Emergencies, *International Affairs*, 92:5, 2016, 1041–60, reported in J Smith, *Overcoming the Tyranny of the Urgent: Integrating Gender into Disease Outbreak Preparedness and Response*, *Gender & Development*, 27:2.
15. Joint United Nations Programme on HIV/AIDS (UNAIDS), [The cost of inaction: COVID-19-related service disruptions could cause hundreds of thousands of extra deaths from HIV](#), 11 May 2020
16. Total additional mortality for V over the period 2020 to 2030 is 1 834 700 deaths, of which 642 300 are from respiratory infections. The numbers for U are 3 280 800 and 1 757 200. The numbers for L are 5 278 300 and 3 428 500.
17. For an explanation and illustration of the associated methodology, see: US National Center for Health Statistics, [Excess Deaths Associated with COVID-19](#), 2020
18. R Maclean, [Covid-19 outbreak in Nigeria is just one of Africa's alarming hot spots](#), New York Times, 17 May 2020. In 2017, during an evaluation of its capacity to prevent, detect and respond to public health risks, Nigeria had scored poorly in both prevention and response. See S Dixit, Y Ogundeji and O Onwujekwe, [How well has Nigeria responded to COVID-19?](#), 2 July 2020
19. [Tracking covid-19 excess deaths across countries](#), The Economist, 13 June 2020
20. Center for Global Development, [UNECA executive secretary Vera Songwe in conversation with Masood Ahmed](#), 17 June 2020
21. The tax-to-GDP ratio in Africa is the lowest of any region globally at 13.4% in 2018, compared to 14% in Asia, 25% in Europe, and 18% in Latin America.
22. Center for Global Development, [UNECA executive secretary Vera Songwe in conversation with Masood Ahmed](#), 17 June 2020; P Madden, [Figures of the week: Africa's fiscal response to COVID-19](#), 13 May 2020
23. For a summary of country-level responses see: IMF, [Policy Responses to COVID](#)

24. Equivalent to 0.05 percentage points.

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About the authors

Dr Jakkie Cilliers is the ISS's founder and former executive director. He currently serves as chair of the ISS Board of Trustees and head of the African Futures and Innovation (AFI) programme at the Pretoria office of the Institute. His 2017 best-seller *Fate of the Nation* addresses South Africa's futures from political, economic and social perspectives. His three most recent books, *Africa First! Igniting a Growth Revolution* (March 2020), *The Future of Africa: Challenges and Opportunities* (April 2021), and *Africa Tomorrow: Pathways to Prosperity* (June 2022) take a rigorous look at the continent as a whole.

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