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The Paradoxes of the Pandemic and World Inequalities

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Abstract: While causing over 150,000 deaths in Africa, the spread of the COVID-19 virus did not produce the expected hecatomb. Clearly, the crisis is not over and with the emergence of new variants, the death toll could increase significantly. So far, however, COVID-19 has caused fewer African victims than elsewhere. Explaining this reality remains difficult and speculative. It appears, however, that a major reason might be the continent's very young population and the fact that it enjoys relatively low levels of obesity. These two factors have played a significant role in the high COVID-19 mortality rate in the most affected industrialized countries. In addition, many African countries have learned how to deal with health emergencies from their past experiences with other major pandemics. A final and more controversial explanation of the low death rate in the region is that in their fight against malaria, Africans have used hydroxychloroquine—a medicine that has allegedly curbed the effects of COVID-19—on a mass scale and for generations. COVID-19 has also had crippling consequences for the continent's already debilitated economies and raised poverty to alarming levels. The pandemic has also highlighted the persistence of narrow nationalistic interests, as well as the massive inequalities of wealth and power that structure the global system. This is evident in the very uneven worldwide distribution of the COVID-19 vaccines.

Keywords: Africa; COVID-19; inequalities; lockdowns; youth

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1. Introduction

On 31 December 2019, the World Health Organization (WHO) announced that China had suffered "cases of pneumonia of unknown etiology ... detected in Wuhan City".[1] Most governments reacted to the news as if the spread of what would be known as the COVID-19 virus would create a minor and ephemeral crisis akin to nothing more than a severe seasonal flu. This was no irrational reaction, as WHO stated two weeks later that the "evidence is highly suggestive that the outbreak is associated with exposures in one seafood market in Wuhan" and reassured the world that the market had been closed on 1 January 2020. At "this stage, there is no infection among healthcare workers, and no clear evidence of human to human transmission", WHO concluded. Moreover, WHO did "not recommend any specific health measures for travelers" and "advised against the application of any travel or trade restrictions on China based on the information currently available on this event".[2]

Two weeks later, when WHO declared COVID-19 a "public health emergency of international concern",[3] on January 30, little changed. By mid-February, however, public authorities began to take COVID-19 more seriously and by late March the situation was dramatically different. Some scientists and modelers voiced apocalyptic warnings of massive deaths that would match those of the 1918 H1N1 influenza pandemic that killed some 50 million people.[4] A report from the British Imperial College under the direction of Neil M. Ferguson predicted that without mitigation policies there would be "approximately 510,000 deaths in GB and 2.2 million in the US, not accounting for the potential negative effects of health systems being overwhelmed on mortality".[5] Under optimistic mitigation conditions, the report contended that there "would still be in the order of 250,000 deaths in GB, and 1.1–1.2 million in the US".[6] That such human hecatomb would be predicted

for wealthy, industrialized societies enjoying sophisticated health infrastructure and an effective state capacity to mount "lockdowns", "tracking" and "social distancing", bode poorly for the global south.[7] Not surprisingly, most observers argued that African nations in particular would suffer a calamity because they generally lacked the institutional framework for imposing such massive protective measures. In March 2020, Mike Davis warned that "covid-19 might take a different and deadlier path in the dense, sickly slums of Africa and South Asia".[8] *Science* put it succinctly: Africa is "a ticking time-bomb".[9] In mid-April, the U.N. Economic Commission for Africa (UNECA) estimated that without lockdowns and other protective measures, "over 1.2 billion Africans would be infected and 3.3 million would die this year". The Commission determined that even in "its best-case scenario . . . Africa would see 122.8 million infections, 2.3 million hospitalisations and 300,000 deaths".[10]

By late August 2021, after a "new winter surge" and what WHO described as several new and more transmissible COVID-19 "variants of concern",[11] particularly the Delta variant,[12] and after unprecedented worldwide border closures, restrictions on movement, lockdowns and quarantines, global deaths from COVID-19 numbered 4,478,480 with 214,858,536 testing positive for the virus.[13] And yet, while the death toll is high, it remains to be seen whether COVID-19 will ultimately kill more people per million than the pandemics of 1957 and 1968,[14] with each causing over a million deaths and generating nothing like the worldwide panic, lockdowns and economic crisis provoked by COVID-19. Moreover, there is hope that the rapid development and approval of a number of COVID-19 vaccines in late 2020 will begin to stop the ravages of the pandemic.[15] In addition, the very uneven and unequal global distribution of the vaccines[16] may not have the devastating consequences that many expected as the poorest regions of the Global South, particularly sub-Saharan Africa, registered significantly lower rates of death per million than the wealthy areas of Western Europe and North America.

In general, it appears that social distancing, lockdowns (strictly enforced or not) and the wearing of masks have helped limit the number of deaths.[17] While some African societies were able to impose rather repressive lockdowns, they have had a hard time using methods of mitigation and suppression because large segments of their populations are concentrated in slums and mega-slums and involved in the informal sector on a daily basis. Moreover, most regions in the Global South tend to have fragile and ill-equipped health facilities and in some instances their citizens do not have ready access to clean water and soap. However, to date, these countries have suffered a relatively low number of deaths. For instance, by late August 2021, the WHO African Region reported 5,498,085 cases and 132,690 deaths in the continent;[18] while an extremely poor nation like Haiti recorded 20,803 cases and just 584 deaths.[19] It is true that statistics in these Global South regions are often unreliable and may underestimate the real count.[20] In fact, most African countries do not have a universal death registration system and are thus incapable of accounting for "excess deaths" which would allow for more robust data on COVID-19 fatalities. Given that the eight countries in the continent "counting" their deaths had relatively high rates of excess deaths, it is plausible to assume that COVID-19's total death toll in Africa is under-reported.[21] Moreover, the so-called new "South African" "Brazilian" and "Indian" variants[22] of COVID-19 that crystallized in the winter of 2021 appeared to be more contagious and perhaps more deadly than the original strain. Therefore, we still do not know enough about the virus and its mutations to argue that the lower death rates in Africa represent an irreversible trend.[23] With this major caveat in mind, we should nevertheless attempt to take stock of the paradox that Africa has fared far better in this pandemic than its wealthier neighbors, with all their resources and technological advantages.

It is difficult to explain this lopsided pattern of lethality even if many regions of Africa have benefited from their past experiences with cholera, malaria and Ebola. The harsh reality is that African countries lack the infrastructure and bureaucratic capacity to deploy effective public policies across their territories. The demographic makeup of the continent may offer more realistic and scientific answers to the puzzle. The median

age for most African countries is in the 20s. This youthfulness could partially explain the low death rates as COVID-19 has killed a disproportionately high number of older people worldwide.[24] Some 70 percent of all COVID-19 deaths befall people aged 70 or above.[25] An additional factor that may have contributed to lower death numbers in Sub-Saharan Africa is that the region's population is not afflicted by a high prevalence of obesity.[26] Indeed, recent studies have shown a significant correlation between obesity and severe risks of COVID-19 infection, hospitalization and death. According to the U.S. Centers for Disease Control and Prevention, "about 78% of people who have been hospitalized, needed a ventilator or died from COVID-19 have been overweight".[27] The contrast between a relatively less corpulent Sub-Saharan Africa and an obese Western world thus partly explains the significant difference in the incidence of death. Another plausible explanation is that the virus may have mutated in its spread across Africa. In the process, it may have lost some of its lethality. Moreover, some scientists have argued that "herd immunity" may be achieved at levels of infection far lower than originally assumed although the evidence on this matter is admittedly sketchy. Optimistic estimates place herd immunity at a mere 20% of the population, a level that may have already materialized in Africa.[28]

An additional but very tentative thesis is that people living in Sub-Saharan Africa may also have had more exposure to distinct and earlier types of the corona viruses and, thus, developed stronger defenses against COVID-19. Similarly, the high prevalence of malaria or other infectious diseases may have enhanced people's immunity and helped protect them from the virus. This resilience may be tied in part to people's long-term use of chloroquine and/or hydroxychloroquine to combat malaria. In the context of the COVID-19 pandemic, however, the potential benefit of these drugs became highly controversial. When French Doctor Didier Raoult advocated hydroxychloroquine as a cheap, safe and effective treatment for Covid, it became the object of a divisive world polemic. The medicine was initially recommended by most health organizations as a treatment for the pandemic, but it was soon deemed dangerous for causing serious side effects and even death in what were later shown to be fraudulent studies. As a result, WHO banned hydroxychloroquine as a treatment for Covid, only to re-approve it soon afterwards. Hydroxychloroquine's strange saga was intimately related to a pervasive liberal aversion to President Trump's management of the health crisis which his detractors deemed "anti-science". Hydroxychloroquine became known as "Trump's medicine" because the American President's defined it as a "game changing" weapon in the war against "the plague".[29] Whatever may or may not be the merits of hydroxychloroquine, Africans have used it on a mass scale and for generations.[30] We need to acknowledge that some of the poorest zones of the Global South are faring better than the wealthy north and maintain an open mind when exploring why this is the case. At this point, the possible variables contributing to the sharp divergence in the lethality of COVID-19 in the two hemispheres are largely conjectural. More research needs to be done to discover whether and to what extent, any of the aforementioned factors have been determinative. In any event, the economic consequences of COVID-19, may reverse drastically this early diagnostic.[31]

In this chapter, I will first leave the science to the scientists. My objective is to place the COVID-19 pandemic in perspective and explain the unprecedented world reaction to its spread. In other words, is COVID-19 a unique or more lethal type of pandemic than those of the past? I will then try to elucidate why certain political and economic factors have enabled sub-Saharan Africa, one of the poorest and most deprived regions of the world, to avoid the much higher rates of deaths recorded in North America and Europe. Finally, while COVID-19 may not have caused the African health catastrophe that many experts expected, it may have had indirect but devastating economic and social consequences for the immediate and mid-term well-being of the continent's population.

2. COVID-19 in Perspective

Relative to population size, COVID-19 may not match the death rate caused by the pandemics of 1957 and 1968, let alone that of 1918. The 1918 influenza, "by far, the most

lethal" modern pandemic with a case-fatality ratio of about 2.5%[32], killed "no less than 50 million and perhaps as many as 100 million people".[33] As Joseph Chamie put it, these "numbers of death represent a staggering 3 and 5 percent, respectively, of the world's population at that time".[34] The pandemics of 1957 caused between one to two million deaths while that of 1968 caused more than a million deaths, at a time when the world had 2.8 and 3.5 billon inhabitants.[35] With a world population of 7.8 billion, the casualties of COVID-19 amounted to about 4.5 million in late August 2021.[36] Moreover, COVID-19's infection fatality rate is estimated at "less than 0.20% and with appropriate, precise non-pharmacological measures that selectively try to protect high-risk vulnerable populations and settings, the infection fatality rate may be brought even lower".[37] These cold numbers are not meant to minimize the human toll or immense suffering inflicted by the worst pandemic in half a century, but simply to point out that the widespread panic as well as the governmental policy responses it has generated, are unprecedented.

Focusing on the United States, Joshua R. Goldstein and Ronald D. Lee have put COVID-19 in demographic perspective:

> With a hypothetical 1 million COVID-19 deaths, it is possible to portray the epidemic as unimaginably large—the biggest killer in American history—or small, reducing our remaining life by less than 1 part in 1000. However, when the loss of life is put into a comparative perspective, we can see that the scale of an epidemic with 1 million deaths would be as large as that of the recent opioid and HIV crises, but much smaller than that of the Spanish flu. The 1918 epidemic killed more people relative to population size and it also caused a much greater loss of remaining life expectancy because those who died were so young.[38]

A comparison of this kind between, on the one hand, the COVID-19 pandemic and, on the other hand, those of 1957 and 1968, would show that the human toll of the former is very similar to that of the latter. Bluntly put, in the very recent past, the world has suffered as dark a time as experienced in 2020/21; and yet, the global response to our current health crisis has been systematically distinct. Have the lockdowns, economic shutdowns, travel bans, border closings, daily counts of cases and deaths, as well as uninterrupted, repetitive, and doom-laden media coverage generated an exaggerated sense of fear about COVID-19? As Clark Whelton explains in his anecdotical reminiscences of 1957: "More than 100,000 died in the U.S. alone. And yet, to the best of my knowledge, governors did not call out the National Guard, and political panic-mongers did not blame it all on President Eisenhower. College sports events were not cancelled, planes and trains continued to run, and Americans did not regard one another with fear and suspicion, touching elbows instead of hands. We took the Asian flu in stride. We said our prayers and took our chances".[39]

Why is it that in 2020 governments across the globe did not "say their prayers and take their chances?" The obvious first response is that COVID-19 was a new, infectious, and deadly virus that possibly had the potential to kill millions and overwhelm the health infrastructure of most nations. In addition, the increasing fear of pandemics that seized the West and the United States in the aftermath of "9/11" and the Chinese Severe Acute Respiratory Syndrome (SARS) generated national and global plans to fight them. One of the best known plans was President George Bush's *National Strategy for Pandemic Influenza*[40] announced in November 2005 and eventually formulated in May 2006 with the publication of the *Implementation Plan for the National Strategy for Pandemic Influenza*.[41] These documents called for a panoply of public interventions into the normal workings of society to curb or prohibit travels within and across borders, to enforce quarantines, social distancing and the lockdown of schools, universities and business. As the *National Strategy* stated: "Preparing for a pandemic requires the leveraging of all instruments of national power, and coordinated action by all segments of government and society".[42] In addition, the effectiveness of such measures has been questioned by health institutions and experts.

Writing in the immediate aftermath of the publication of the Bush documents, Inglesby, Nuzzo, O'Toole and Henderson contended:

> There are no historical observations or scientific studies that support the confinement by quarantine of groups of possibly infected people for extended periods in order to slow the spread of influenza. A World Health Organization (WHO) Writing Group . . . concluded that "forced isolation and quarantine are ineffective and impractical".
>
> The interest in quarantine reflects the views and conditions prevalent more than 50 years ago, when much less was known about the epidemiology of infectious diseases and when there was far less international and domestic travel in a less densely populated world. It is difficult to identify circumstances in the past half-century when large-scale quarantine has been effectively used in the control of any disease. The negative consequences of large-scale quarantine are so extreme (forced confinement of sick people with the well; complete restriction of movement of large populations; difficulty in getting critical supplies, medicines and food to people inside the quarantine zone) that this mitigation measure should be eliminated from serious consideration.[43]

Despite this assessment, most governments decided to impose large-scale lockdowns and distinct types of quarantines to stop the ravages of COVID-19. They defended their decision by arguing that without such massive and continuous state interventions, the death toll would be higher, as would unknown medical morbidities for those surviving the virus' wrath. The goal of public policy was and remains, minimizing deaths, stopping COVID-19 infections, protecting health infrastructures, developing effective therapeutics to fight the disease, and producing vaccines to immunize the population. To achieve these goals, governments have had to use rather draconian measures that are not very different from the typical authoritarian measures imposed under a state of "exception".[44] In addition, citizens have tended to comply not merely because they fear a catastrophe, but because they seek to advance the common good. As Anastasia Berg argues,

> [T]hose of us who have, with heavy hearts, embraced the restrictions on our freedoms, are not merely aiming at our own biological survival. We have welcomed the various institutional limitations on our lives . . . and we have urged our friends and family . . . to do the same, not to ward off "the danger of getting sick", not for the sake of our bare life, and indeed not for the sake of the bare life of others, but out of an ethical imperative: to exercise the tremendous powers of society to protect the vulnerable, be they our loved ones or someone else's . . . . [We] are not making sacrifices for the sake of anyone's mere survival. We sacrifice because sharing our joys and pains, efforts and leisure, with our loved ones—young and old, sick and healthy—is the very substance of these so-called "normal conditions of life".[45]

3. "Normal Conditions of Life" and the Privileges of Wealth: African Realities

Preserving Berg's "normal conditions of life" with lockdowns and other restrictive policies may in fact be the privilege of a minority capable of sustaining its material and emotional survival in the comfortable gated confines of computerized homes. Those who cannot afford to live in such sequestered, technological spaces or forgo daily outings to secure basic necessities, or abandon their work in the informal economy, are left outside the community of the saints. The conditions of precarity and scarcity defining the life chances of large numbers of people in the Global South, particularly in Sub-Saharan Africa, preclude them from fulfilling the alleged "ethical imperative". As Howard and Han have pointed out: "More than half (52 percent) of Africans have to go outside their compound to get water. This is true for majorities in 20 of the 34 surveyed countries, including for more than eight out of 10 citizens in Uganda (87 percent), Niger (84 percent), Malawi (82 percent), and Tanzania (81 percent)".[46] Sub-Saharan Africa was thoroughly unprepared

for the lockdowns and social distancing promoted by wealthy countries. As a 2020 report from the United Nations University World Institute for Development Economics Research acknowledged: "High levels of economic informality and urban un(der)employment mean that many families live on a hand-to-mouth basis, with limited savings and are unable to work from home. These challenges are particularly stringent in poor and high-density urban neighbourhoods . . . . [Less] than two in ten urban households and less than one in ten rural households across [Sub Saharan Africa] are fully ready for a prolonged lockdown".[47]

While it is true that 46 African countries officially imposed curfews, banned international travels, closed borders, enforced weak or stringent lockdowns and limited individual movements as well as the size of public gatherings, the efficacy of such measures remains doubtful.[48] The measures may have helped initially, but ultimately the living conditions across much of the continent have made the restrictions unsustainable. Moreover, implementing them with "stringency", occasioned the deployment of military force and police brutality against understandably recalcitrant populations.[49] Philosopher Giorgio Agamben argues that the media and political authorities have done their "utmost to create a climate of panic", in order to implant "an authentic state of exception . . . **as a normal governing paradigm**".[50] One need not accept this extreme contention to admit that unpopular regimes have used the pandemic to reassert their authority and rule by authoritarian decree and force. In the name of containing COVID-19, politics has tended to become militarized and with very limited benefits for public health.[51]

South Africa's lockdown, which was the most stringent on the continent, illustrates the failures and collateral damage done by imposing shutdowns on populations engaged in large informal economies, lacking adequate social safety nets and experiencing extensive "slumification".[52] The South African lockdown had profoundly negative consequences for the health and economic well-being of the underprivileged and those suffering from non-COVID-19 morbidities. While the pandemic may affect society as a whole, its effects are felt very unequally. The following post-lockdown statistics from South Africa are broadly indicative of the situation throughout Sub-Saharan Africa:

- The net number of South Africans in the workforce dropped by 5.2 million during the second quarter of 2020.
- The poorest 50% of workers—those who live hand-to-mouth—were affected ten times worse than the richest.
- GDP dropped by 16.4% between the first and second quarter, leading to an annualized growth rate of −51%.
- In April, 47% of respondents in a national survey indicated that they had no money for food by the end of the month.
- Businesses all over South Africa closed their doors for good, as lockdown restrictions made operations impossible, forcing them into bankruptcy.[53]

COVID-19 and its lockdowns have, thus, provoked a serious economic crisis not only in many parts of Sub-Saharan Africa, but also worldwide with the most devastating effects experienced in the continent's poorest nations such as Sierra Leone, Togo, or Malawi.[54] Rates of growth are expected to decline significantly across the region and not surprisingly, poverty is set to increase. According to World Bank estimates, real economic growth will fall to −5.1 percent in Sub-Saharan Africa.[55] The likely outcome is what is now called "long-term scarring—the permanent loss of productive capacity".[56] Moreover, as IMF Managing Director Kristalina Georgieva has pointed out, in spite of "abundant liquidity and low interest rates . . . not a single country in Sub-Saharan Africa has issued external debt since March"[57] This lack of external financing to Sub-Saharan Africa during the COVID-19 crisis has, thus, aggravated the region's "scarring". There is little new in this extensive downturn which has bedeviled poor areas in the aftermath of plagues. Daniel Gurara, Stefania Fabrizio, and Johannes Wiegand, explain:

> Scarring has been the legacy of past pandemics: mortality; worse health and education outcomes that depress future earnings; the depletion of savings and assets that force firm closures—especially of small enterprises that lack access to credit—and cause irrecoverable production disruptions; and debt overhangs that depress lending to the private sector. For example, in the aftermath of the 2013 Ebola pandemic, Sierra Leone's economy never recovered to its pre-crisis growth path.[58]

Moreover, Sub-Saharan Africa has suffered from revenue shortages provoked by COVID-19-induced disruptions in key sectors like tourism and the commodity exports. Scarring has also been worsened by the decline in remittances from the region's migrants.[59] African migrants have seen their income diminish and/or lost altogether because of rising unemployment in the wealthy industrialized world where they have relocated. In 2020, according to the World Bank, "remittance flows to LMICs [Low-and Middle-Income Countries] are expected to decline by around 20 percent, marking the sharpest decline in recent history . . . . The decline in remittance flows is expected to be sharpest in Europe and Central Asia, South Asia, and Sub-Saharan Africa". [60]

Not surprisingly, the World Bank projected that the pandemic would cause a "truly unprecedented increase" in the levels of extreme poverty; with some 124 million new people falling into extreme poverty in 2021.[61] In fact, "the impacts of the coronavirus pandemic . . . are pulling new demographic groups into extreme poverty. Before the pandemic, those living in extreme poverty tended to be rural, undereducated, young, and working in agriculture. But the pandemic is pushing poverty upon people in congested urban areas, with higher levels of education, and who work in industries such as informal services, construction and manufacturing".[62] COVID-19's most severe effects are in Africa where some 40 million people will be added to the 440 million already living in extreme poverty. In short, before long 42% of the continent's population will be living on less than $1.90 a day.[63]

The lockdowns have contributed significantly to this plunge into poverty, but most governments and international organizations recognized this deleterious impact too late. After calling for their imposition, WHO backflipped and implored governments cease using lockdowns as the "primary control method" against Covid. As WHO's Dr. David Nabarro bluntly stated, "Lockdowns just have one consequence that you must never ever belittle and that is making poor people an awful lot poorer".[64] Lockdowns have not only inflicted massive economic damage, but they have also meant significant health losses. COVID-19 caused its own horrible deaths, but its attempted prevention has paradoxically victimized those suffering from other diseases. For example, *The Conversation* reports that in South Africa, in 2020 there was a 57% reduction in HIV testing, "from 1.6 million in March to 590,000 in April as travel restrictions put strains on community testing. As a result of interruptions to testing and to the availability of chronic medications, deaths from HIV and tuberculosis are projected to increase by 10% and 20% respectively over 5 years. That's 63,000 excess TB deaths, alone, exceeding any reasonable estimate of lives saved by the ineffective lockdown".[65] Ironically, these harmful unintended consequences materialized even though the lockdowns were never even effectively enforced. In most African countries, a majority of the citizens was and still is "hard-pressed to comply with many of the public health interventions used, especially lockdowns".[66]

The African context is simply not conducive to the strategies adopted in the industrialized and technologically advanced areas of the world.[67] It is worth emphasizing again the fundamental demographic realities influencing the spread of COVID-19 and how different Africa is from the core nations of the capitalist world economy in this regard. As Alex Broadbent observes: "By far the biggest risk factor for serious, critical or fatal COVID-19 is age. Worldometer estimates the case fatality rate in the 10 to 30 age category at 0.2%. Under the age of 10, it's 0.0%. A recent paper in The Lancet estimated a 0.32% fatality rate in its study population of people aged 60 [and] under, and 6.4% death rate for people over

the age of 60". Broadbent continues, without a little chagrin: "In South Africa, the average male dies before the age of 60, and 3% of the population is over 65. The median age in Africa is 18. In Europe, it's 42. Africa is the world's youngest continent, by far . . . Despite the strikingly different cost-benefit analysis for the African region, we're doing the same thing here as everywhere else, or trying to: we're locking down".[68]

The infeasibilities of confinement policies are not the only reasons why Africa will have problems stemming the effects of Covid. Some African leaders refused to take the virus seriously and failed to develop any public policy to fight it. The recently deceased Tanzanian President John Magufuli[69] exhibited the most extreme version of this kind of behavior, claiming that COVID-19 was a hoax, or if it were not, that God had exempted Tanzania from its devastation.[70] This utter lack of civic responsibility should not mask, however, that assembling effective health programs is a massive challenge for most African governments. In fact, Afrobarometer reported that in the 34 countries it surveyed, over 25% of the population had "poor state health care services". These citizens had either no contact "with a government clinic or hospital in the previous 12 months", or, if they did, they "experienced difficulties receiving assistance from medical staff, encountered long waiting times (or never received help), or had to pay a bribe to receive services"[71]. Poor access to healthcare was symptomatic of larger structural inadequacies and a lack of public resources that were reflected in the inability of most African states to test their population for the virus. By mid-October 2020, only 12 countries had reached a key threshold of "doing at least 10 tests for every positive case"[72] as recommended by the Africa Center for Disease Control and Prevention. To put things in comparative perspective, by 13 October 2020, while the United States and the United Kingdom had conducted 381 and 349 tests per 1000 respectively, South Africa had done just over 74 and Nigeria had carried out only 2.7.[73] In addition, while Senegal had "significantly boosted its testing capacity . . . [it was] testing 14 times less than the Netherlands".[74]

In addition, as we emphasized above, the total number of COVID-19 deaths in Africa has remained relatively low. The African country suffering the highest death toll was the most economically advanced and the one with the most stringent lockdown—South Africa recorded 80,826 deaths by late August 2021.[75] The way South Africa has fared should not come as a total surprise; for in 2019, both WHO and The Indigo Wellness Index designated South Africa "the unhealthiest country in the world".[76] A key factor in this designation is the country's elevated obesity rate afflicting nearly 30% of its population—a critical morbidity linked to high Covid-death numbers as I noted above.

In light of the obscene global inequalities in wealth and health outlined in the previous section, we are prompted to ask: has COVID-19 paralyzed the world because of where and whom it kills most? In other words, has the disease caused worldwide panic and states of emergency because it victimized the well-off or relatively well-off, segments of humanity? In Broadbent's provocative words, "Do not be tempted to retort that COVID-19 will kill more people in total. By far the most dangerous disease in human history is malaria, preventable with mosquito nets. Almost nobody dies from childbirth in developed countries, and few children die of pneumonia. But in developing countries, according to Unicef, five million children die each year from pneumonia, malaria, and childbirth complications . . . . That adds up fast. We don't care about COVID-19 because of how many it kills, but whom".[77]

The evidence indicates that grossly unequal global and national structures create a de-facto hierarchy on the value of human life. Nevertheless, international health agencies, humanitarian organizations and many other bodies sought to assist the worldwide efforts to prevent massive numbers of COVID-19 deaths in the Third World. While these efforts have been insufficient and have largely bypassed Africa, there is no reason to oppose them, on the contrary they should be expanded everywhere. However, we must be aware of Covid's Janus-faced effects. For example, on the one hand, the financial "rescue packages"[78] it has generated in both the Global North and South have accentuated and consolidated

existing patterns of inequalities in those countries. On the other hand, the inequitable distribution of these very packages, as well as the extreme disparities in health care access, have fomented popular discontent, protests, and demands for alternatives to the status quo. In addition, the lockdowns have produced high levels of unemployment while aggravating the exploitation of, and the risks faced by "first responders". Conversely, lockdowns have also created new forms of labor that are potentially liberating and have transformed the Universal Basic Income from a utopian dream into a quite feasible public policy. Thus, COVID-19 has unleashed a variety of contradictory social tendencies. These contradictions are exceedingly apparent in the global distribution of COVID-19 vaccines.

4. Vaccines, Inequalities and Diplomacy

The rich, industrialized countries have hoarded the overwhelming majority of available vaccines and left the poorest regions of the world, particularly Sub-Saharan Africa, in a serious bind.[79] The problem, however, goes beyond the great powers' rejection of any equitable distribution of vaccines. It is also rooted in the wealthy countries' limited production capacity, which prevents them from satisfying the immediate needs of their own population, let alone those of distant foreigners. In fact, the great powers are now engaged in a "vaccine war" with significant geopolitical ramifications. As Matthew Lynn puts it: "the vaccine is turning into the weapon of choice in a new version of the Great Game, an intense rivalry between competing powers, played on multiple different levels, between many different players and with different weapons".[80] The most powerful pharmaceutical companies of the United States, Europe, Great Britain, Russia, China and India have all sought the scientific validation of their respective COVID-19 vaccines. The delay in securing such validation has contributed to a global scarcity of vaccines affecting especially poor regions like Sub-Saharan Africa.

The Global South has come to depend on the COVAX Advance Market Commitments (AMC) initiative to obtain the vaccines. The initiative which is an alliance of multilateral agencies, rich and poor countries and private philanthropy is supposed to distribute those vaccines that have received WHO's "emergency use" designation to lower and middle income nations. As of May 2021, Pfizer, Moderna, Johnson & Johnson's Janssen, AstraZeneca-Oxford and China's Sinopharm were officially on this emergency listing, although Russia's Sputnik V had independently claimed success for its vaccine which was approved by some 60 countries. In 2021, COVAX was planning to distribute up to 1.1bn doses of the AstraZeneca-Oxford vaccine,[81] which would cover only 3.3% of the total populations of the world's lower and middle income countries. The allocation of these vaccines would depend on a country's infrastructural ability to deliver them, which rendered most poor countries essentially ineligible.[82] Clearly, the COVAX initiative is utterly insufficient to meet the vast needs of the Global South.[83]

While WHO announced in December 2020, that it had raised $2.4 billion for 1.3 billion vaccine doses for low income countries, this would barely cover 20% of their total population by the end of 2021.[84] However, laudable, the effort would not assure anything like "herd immunity" which is the ultimate goal and requires the vaccination of at least half a society's population. In fact, Africa alone would need "1.5bn vaccine doses to immunise 60% of its 1.3bn inhabitants, costing between $7bn and $10bn". The African Centers for Disease Control and Prevention (CDC) estimated that under optimal conditions the completion of the roll-out will take two years.[85] The cost of the most widely produced and efficacious vaccines such as Pfizer's and Moderna's ranges from about $15 to $25 per dose, though AstraZeneca's may be available for as little as $2.50. Yet even the latter is beyond the reach of many African countries. The other major issue complicating the delivery of vaccines to Africa is that some of them require an infrastructure with ultra-cold storage capacity, which is lacking in most of the continent. As Uwagbale Edward-Ekpu has pointed out, only "about 22 African countries can be said to have a working cold-chain system for routine vaccines stored at the regular 2 °C to 8 °C temperature".[86] That is totally

inadequate for delivering the Pfizer or Moderna vaccines which must be kept at −57 °C and −29 °C, respectively.[87]

This simple "Antarctica reality" is bound to impose stringent limitations on any rapid or broad vaccine coverage for Africa.[88] The research, production and distribution of an immunizing vaccine have exposed the stark inequalities structuring the global system. They have also demonstrated the persistence of narrow. nationalistic interests over any genuinely cosmopolitan policy. As WHO's Director-General Tedros Adhanom Ghebreyesu argues: "The pandemic has exposed and exploited the inequalities of our world . . . There is now the real danger that the very tools that could help to end the pandemic—the vaccines—may exacerbate those same inequalities . . . Vaccine nationalism will only prolong the pandemic, the restrictions needed to contain it, and human and economic suffering"[89].

It is no surprise that African nations have sought alternatives to the COVAX initiative and engaged in a diplomatic scramble for a broader, more accessible, and affordable delivery of immunizations. They have appealed to China, Russia, and India for larger and cheaper stocks of vaccines which had yet to receive WHO's full official approval. Knowing that this would buy them strategic and political gains in the region, Russia and China in particular, have responded very favorably to this appeal.[90] In addition, Russia's Sputnik V and China's Sinopharm vaccines are better suited for African conditions; unlike their Western competitors Pfizer's or Moderna's, they do not require ultra-cold-chain systems and can be safely stored in a refrigerator.[91] As Marie Toulemonde has pointed out: "China and Russia have once again shown themselves to be particularly attentive to the continent's needs. As early as June [2020], China's premier, Xi Jinping, expressed his "generosity" at the China–Africa summit by promising African countries that they would benefit from advantageous conditions during the massive distribution of Chinese vaccines".[92]

It seems clear that the initial doubts about the Sputnik V vaccine were unfounded and may have been the result of the Russophobic coverage of the western press.[93] Ultimately, in the interim analysis of its phase 3 trial, Sputnik V "showed 91.6% efficacy against COVID-19 and was well tolerated in a large cohort".[94] These results were quite similar to those obtained by Pfizer and Moderna. The Russian vaccine may thus be a very attractive supplement to the COVAX initiative since "1.4bn [Sputnik V] shots were expected to be produced" in 2021, which could inoculate "at least 700 million people".[95]

While the entrance of Russia and China into the restricted global circle of purveyors of anti-COVID-19 vaccines will alleviate the critical shortages besieging the poorest regions of the world, it will not address the structural inequalities of the world economy which are at the root of these very shortages. In fact, the contradictions of the global biomedical chain of production highlight these inequalities. For instance, while South Africa, which is at the epicenter of the continent's COVID-19 crisis, will be manufacturing millions of anti-COVID-19 vials daily, its own population will not have access to them. These vials are all reserved for export to northern industrialized countries and South Africans will have to wait until mid 2021 to receive "the first trickle of doses".[96] What is more alarming is that COVAX allocations themselves, which were allegedly reserved for low and middle income countries, had been preemptively raided by wealthy nations. As Jomo Kwame Sundaram explains:

> Advance COVID-19 vaccine purchases by many rich country governments are not only greatly in excess of their population requirements, but also not made in a transparent manner conducive to improving equity.
>
> Unsure of the efficacy and effectiveness of the often still experimental vaccines, some booked, paid for and now demand far more than needed by their populations. Thus, COVAX has been subverted by rich country government actions.[97]

For instance, Canada, which had the financial means to engage in COVAX's advance purchases, became a vaccine beneficiary. Other countries, like New Zealand and Singapore will soon get their supply.[98] The COVID-19 pandemic has thus, shown that the dominant powers are bent on maintaining the world system's inequities, even when the well-being

of their own population might be dependent on extending the benefits of a basic vaccine to the poorest segments of humankind.[99] It is indeed clear that the vaccine must have a universal reach if the COVID-19 crisis is to end. Monopolizing and hoarding vials based on purchasing capacity, narrow national interests and big pharma's profits, are all symptomatic of the lack of solidarity structuring the global "community". In mid-March 2021, the Biden administration, which supposedly abandoned Trump's "America first" ideology, had "bought enough doses of vaccines from Moderna, Pfizer and Johnson & Johnson to vaccinate 500 million people—nearly the entire eligible population twice over".[100] Moreover, it will accumulate an estimated "surplus of 300 million doses of five vaccines by the end of 2021, even after assuming all adults and children over 5 years old are vaccinated".[101] Such behavior has led to what is aptly called "vaccine apartheid"[102] because it has simply bypassed large segments of humanity. "Nearly 80% of the vaccines so far have been administered in just 10 countries, according to WHO . . . [and] 2.5 billion people hadn't received a single shot as of [late February 2021]".[103] According to the BBC, barely 4% of the world population has been vaccinated.[104]

Given such obdurate limitations to developing a modicum of equity, what is to be done? The best hope is compelling pharmaceutical giants to accept a temporary waiver of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) regulating the production of COVID-19 vaccines. The waiver, which has the support of over 100 countries would grant intellectual property (IP) exemption to potential producers until a majority of the world's population had been immunized against Covid.[105] In December 2020, wealthy nations hosting "big pharma" companies pressured the World Trade Organization (WTO to reject the waiver that South Africa and India had proposed. The waiver would allow countries like India, South Africa, Thailand, Bangladesh and Brazil to manufacture the vaccines themselves, thereby increasing global production and satisfying the unmet needs of the Global South.[106] As of February 2021, "only 43 per cent of reported COVID-19 vaccine production capacity [was] being used for the approved vaccines. According to the People's Vaccine campaign, the three biggest manufacturers in the world [were] only producing vaccines for about 1.5 per cent of the global population—much less than their total capacity if patents did not stand in the way".[107] Unless the IP waiver is granted, there is a danger that "it will take seven years for enough of the world to be vaccinated to prevent further transmission".[108]

On 5 May 2021, the Biden administration offered some hope; it reversed its earlier policy on intellectual property rules regulating the production of COVID-19 vaccines. In a press release announcing the administration's support for the "COVID-19 trips waiver", Katherine Tai, the United States Trade Representative, stated: "This is a global health crisis and the extraordinary circumstances of the COVID-19 pandemic call for extraordinary measures. The Administration believes strongly in intellectual property protections, but in service of ending this pandemic, supports the waiver of those protections for COVID-19 vaccines".[109] While many hailed the new policy, it had serious limitations. As David Sirota, Walker Bragman and Andrew Perez pointed out, the policy "was narrow: it only mentioned COVID vaccines and avoided endorsing . . . [the] broad waiver proposed by India and South Africa which would cover "diagnostic kits, vaccines, medicines, personal protective equipment and ventilators".[110] Moreover, its adoption by the WTO faces significant obstacles. As Tai, herself, acknowledged, the "text-based negotiations at the . . . WTO [that are] needed to make that happen . . . will take time given the consensus-based nature of the institution and the complexity of the issues involved".[111] This consensus-based process is likely to further dilute the content of the waiver, if not kill it altogether.

The effort to waive intellectual property protections for COVID-19 vaccines will face not only the unmitigated opposition of Big Pharma, but also the softer resistance of powerful western countries. So far, the Biden proposal has failed to impress America's key European allies. European Commission President Ursula von der Leyen rejected it in scathing terms: "Waivers would not bring a single dose of vaccine in the short and

medium term", she asserted.[112] The German government opposed the idea of a waiver, maintaining that "the protection of intellectual property is a source of innovation and must remain so".[113] In addition, Chancellor Angela Merkel bluntly stated: "I don't believe that releasing patents is the solution to provide vaccines for more people".[114] For most major European countries, the concern was not waiving patents, but finding ways to boost vaccine production in and export from, vaccine-producing nations themselves—the only ones seen to have the necessary technology and capacity. French President Emmanuel Macron summarized the European position: "What is the problem right now? It isn't really intellectual property protection. Can we really entrust laboratories that don't know how to produce [these vaccines] with this intellectual property and expect them to be producing tomorrow?"[115] Moreover, he described Washington's policy as self-serving and prevaricated: "Today 100% of the vaccines produced in the United States of America go to the American market", insinuating that Europeans "are the most generous" in their worldwide distribution.[116] In short, the current conjuncture bodes poorly for a rapid and full waiving of intellectual property protections for COVID-19 vaccines.

5. COVID: The Continuous Absence of Global Solidarity

Thus, after more than a year since it exploded, the COVID-19 crisis is far from over; while it did not produce an expected African hecatomb, it scarred the continent with thousands of deaths, crippling already debilitated economies and raising poverty to alarming levels. The pandemic has also highlighted the persistence of narrow nationalistic interests as well as the massive inequalities of wealth and power that structure the global system. Nothing indicates that dominant institutions, classes, and nations have any serious intentions to fix the manifest inadequacies of current social and political arrangements. That a pandemic endangering the global commons has not enlarged the vision of the powers that be is a measure of the difficulties in effecting change, let alone radical change.

This paper has also argued that the existing evidence suggests that age, obesity and comorbidities such as diabetes and heart disease play a critical role in COVID-19's deadly effects. Not surprisingly, African societies with younger populations and significantly lower rates of obesity have fared much better in terms of per-capita deaths than older, wealthy, and overfed industrialized nations. On the other hand, COVID-19 mutations may alter this reality and unleash a wave of deaths on the continent. Currently, it is prudent to assume that the scientific evidence is too uncertain to make conclusive statements.

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Notes

1 (World Health Organization 2020b).

2 (World Health Organization 2020c). French President Emmanuel Macron and his wife Brigitte exemplified the rather cavalier attitude of political leaders to the virus; on March 6, both went to the theatre to demonstrate that there was nothing to fear from COVID-19. At that time, Macron was opposed to lockdowns which he would ultimately espouse; see: (Lachasse 2020). American President Donald Trump banned noncitizens from entering the country from China on January 31, but in mid-March he compared COVID-19 to the common seasonal flu (see: (Montanaro 2020)).

3 (World Health Organization 2020d).

4 (Davis 2020a).

5 (Imperial College COVID-19 Response Team 2020).

6 (Ibid., p. 16).

7 (Achcar 2020).

8 (Davis 2020b).

9 Cited as quoted in (Ibid).

10 (Bavier 2020).

11 (Reuters 2020); see also, (Zafar 2021).

12 (University of Chicago 2021).

13 (Johns Hopkins Coronavirus Resource Center 2021a).

14 The pandemic of 1957 is estimated to have caused 1.1 million to 2 million deaths worldwide; see: (Sino Biological n.d.; Centers for Disease Control and Prevention 1957). The pandenic of 1968 killed one million people worldwide; see: (Centers for Disease Control and Prevention 1968).

15 According to the Johns Hopkins Coronavirus Resource Center, the timeline for the development of a typical vaccine is 5 to 10 years. In Covid's case it took less than a year. See: (Coronavirus Resource Center 2021).

16 Tedros Adhanom Ghebreyesus, WHO's chief executive expressed fear that "even as vaccines bring hope to some, they become another brick in the wall of inequality between the world's haves and have-nots". See, (UN News 2021); see also, (Apuzzo and Gebrekidan 2020).

17 This is not to say that there should be a fetishism of the mask. Most governments initially discouraged actively its wearing. The scientific evidence for its effectiveness was not overwhelming and public health officials feared that recommending its usage by the general population would lead to a serious and dangerous shortage. As Thomas V. Inglesby and his colleagues pointed out in their analysis of the George Bush administration's strategic plans against a potential influenza pandemic:

> Masks and other personal protective equipment (PPE) are essential for controlling transmission of influenza in hospitals . . . Patients would be advised to wear surgical masks to diminish the number of infectious respiratory particles being dispersed into the air, thereby diminishing the likelihood of further spread . . . But studies have shown that the ordinary surgical mask does little to prevent inhalation of small droplets bearing influenza virus.56 The pores in the mask become blocked by moisture from breathing, and the air stream simply diverts around the mask. There are few data available to support the efficacy of N95 or surgical masks outside a healthcare setting. N95 masks need to be fit-tested to be efficacious and are uncomfortable to wear for more than an hour or two". (Inglesby et al. 2006).

18 (WHO African Region 2021).

19 (Dashboard 2021).

20 (Jerven 2013; Burke 2021a).

21 (Shveda et al. 2021).

22 (Roberts 2021; Reuters 2021; Sample and Davis 2021).

23 The African continent seemed to have experienced in July 2021 an increase in both Covi cases and death; the evidence, however, was not conclusive and may not be as alarming as feared. See, (Mwai 2021).

24 (Davis 2020b).

25 (Goldstein and Lee 2020). See also: (Winning 2020). According to a 2019 United Nations report, "62% of sub-Saharan Africa's population was under 25 and just 3% 65 or over. In the U.N.'s Europe and North America region, 28% were under 25 while 18% were age 65 and up" [(Winning 2020)].

26 (Popkin et al. 2020).

27 (Lovelace 2021).

28 (Nordling 2020).

29 On the controversial use of chloroquine as a therapy to fight Covid see: (Rich 2020; Schaedel 2020; Davey 2020a, 2020b; AFP 2020; Soumaré and Darras 2020; Mehra et al. 2020; Davey and Kirchgaessner 2020).

30 (Flegg et al. 2013). As Flegg and her co-authors explain (p. 857):

> Chloroquine (CQ) was the most frequently used first-line therapy for uncomplicated Plasmodium falciparum (P.f.) malaria from the 1940s through to the 2000s. As a result of its high efficacy, good safety profile, and low cost, CQ was a key part of the 1950s Global Malaria Eradication Program. However, factors including funding constraints, lack of political support, and the emergence and subsequent spread of resistance to CQ and the pesticides used in vector control hampered eradication plans.

31 Eleanor Maeresera and Adrian Chikowore. Oxfam acknowledges the assistance of Helen Bunting, Taurai Chiraerae, Marc Cohen, Nadia Daar, Heidi Fritschel, Joab Okanda, Julie Seghers, and Deborah Simpson, "Will The Cure Bankrupt Us? Official Development Assistance and the COVID-19 Response in Southern African Countries", Oxfam, December 2020, Available online: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621134/bn-aid-covid-19-southern-africa-181220-en.pdf?sequence=1&isAllowed=y (accessed on 3 January 2021).

32 (Inglesby et al. 2006, p. 367).

33 (Chamie 2020).

34 (Ibid).

35 (Sino Biological n.d.; Centers for Disease Control and Prevention 1957; Centers for Disease Control and Prevention 1968).

36 (Johns Hopkins Coronavirus Resource Center 2021a).

37 (Ioannidis 2020).

[38] (Goldstein and Lee 2020, p. 22039).
[39] (Whelton 2020).
[40] (Homeland Security Council 2005).
[41] (Homeland Security Council 2006).
[42] (Homeland Security Council 2005, p. 2).
[43] (Inglesby et al. 2006, p. 6).
[44] See: (Agamben 2020); see also from a British conservative perspective: (Sumption 2020). Sumption writes:

> During the COVID-19 pandemic, the British state has exercised coercive powers over its citizens on a scale never previously attempted. It has taken effective legal control, enforced by the police, over the personal lives of the entire population: where they could go, whom they could meet, what they could do even within their own homes. For three months it placed everybody under a form of house arrest, qualified only by their right to do a limited number of things approved by ministers. All of this has been authorized by ministerial decree with minimal Parliamentary involvement. It has been the most significant interference with personal freedom in the history of our country.

[45] (Berg 2020).

Simon Clarke, from the conservative political spectrum, advanced a similar argument for significant public intervention and against the so-called "herd strategy" that would let the virus infect a very large proportion of the population (What Lockdown Sceptics Get Wrong 2020):

> Why? Because the virus is simply too dangerous to be left unchecked. I don't believe a vaccine is imminent . . . which means, for the foreseeable, we're going to have to "learn to live with this virus", as the dreary phrase goes. So the question is: how can we best do that? One suggestion is that we let the virus work its way through the nation's respiratory tracts so that we reach levels of herd immunity. "is, I'm afraid to say, is a fanciful and dangerous notion.

[46] (Howard and Han 2020); see also: (Howard 2020).
[47] (Egger et al. 2020, pp. 1–13).
[48] (Mattes et al. 2020, p. 1).
[49] (Wild 2020; Kazeem 2020; Aljazeera 2020).
[50] (Agamben 2020, pp. 1–2, emphasis in original); see also, (Owen 2020).
[51] (The International Center for Not-for-Profit Law 2020).
[52] (The Conversation 2020).
[53] (Ibid).
[54] (Kose and Nishio 2021); (Achcar 2020).
[55] (World Bank 2020, p. 4).
[56] (Gurara et al. 2020).
[57] (IMF Managing Director Kristalina Georgieva 2020).
[58] (Gurara et al. 2020).
[59] As the IMF Managing Director, Kristalina Georgieva, has put it (IMF Managing Director Kristalina Georgieva 2020):

> [L]ow-income and fragile states continue to face a precarious situation. They have weaker health systems. They are highly exposed to the most affected sectors, such as tourism and commodity exports. And they are highly dependent on external financing. There is also now the risk of severe economic scarring from job losses, bankruptcies, and the disruption of education. Because of this loss of capacity, we expect global output to remain well below our pre-pandemic projections over the medium term. For almost all countries, this will be a setback to the improvement of living standards.

[60] (World Bank 2020).
[61] (Beaumont 2021).
[62] (Zumbrun 2020).
[63] (Ibid).
[64] (Turner-Cohen 2020).
[65] (The Conversation 2020).
[66] (Mattes et al. 2020, p. 17).
[67] (Broadbent 2020).
[68] (Ibid).
[69] (BBC 2021b).

70 (Tampa 2021); see also, (Burke 2021b).
71 (Mattes et al. 2020), p. 5.
72 (Mwai 2021).
73 (Ibid).
74 (Reliefweb 2020).
75 (Johns Hopkins Coronavirus Resource Center 2021b); see also, (Fink 2020).
76 (Mediclinic 2020).
77 (Broadbent 2020).
78 (African Union 2020, pp. 32–46).
79 By late January 2021, only one country of the world's poorest 29 managed to get some of its people vaccinated. Guinea vaccinated 55 of its citizens with the Russian Sputnik V vaccine which had yet to get WHO's official seal of approval. At that time, just two African countries—Seychelles, and Morocco—had begun to vaccinate their populations. At best, some 20% of Africans can expect to get vaccinated by the summer of 2021. See: (Taylor and Paquette 2021; Horner 2021).
80 (Lynn 2021).
81 This British vaccine was at the center of a European controversy as the European Union recommended that it should not be used on people aged 65 or over. The British government maintained that the AstraZeneca-Oxford vials were entirely safe and had used it on its own population. See, (Oltermann 2021). French President Emmanuel Macron described the Oxford/AstraZeneca jab as "quasi-ineffective", even though the European Medicines Agency approved the vaccine for use in all countries irrespective of age. See, (Belgian regulators advise against giving AstraZeneca Covid vaccine to over-55s 2021).
82 (Coronavirus Live News 2021).
83 As Mariana Mazzucato, Henry Lishi Li and Els Torreele argued in late December 2020 (Designing vaccines for people, not profits 2020):

> While the international purchase and distribution platform COVAX represents a momentous step forward, its impact is being offset by massive bilateral advance-purchase agreements by rich countries that can afford to bet on multiple vaccines. For example, high-income countries have already bought close to 80 per cent of the Pfizer/BioNTech and Moderna vaccine doses that will be available within the first year.
>
> All told, rich countries have laid claim to 3.8 billion doses from different vaccine makers, compared with 3.2 billion (which includes around 700 million doses for COVAX) for the rest of the world combined. In other words, high-income countries have pre-ordered enough doses to cover their populations several times over, leaving the rest of the world with potentially too few to cover even their most at-risk communities.

84 (Edward-Ekpu 2021b); see also, (World Health Organization 2020a).
85 (Burke 2021c).
86 (Edward-Ekpu 2021b).
87 (Simmons-Duffin 2020).
88 (Cormier 2021, p. 4).
89 (NDTV 2021); see also, (Blum 2021).
90 As Selam Gebrekidan and Matt Apuzzo have reported [(Gebrekidan and Apuzzo 2021)]: "Russia and China, meanwhile, have promised to fill the void as part of their vaccine diplomacy. The Gamaleya Institute in Moscow, for example, has entered into partnerships with producers from Kazakhstan to South Korea, according to data from Airfinity, a science analytics company, and UNICEF. Chinese vaccine makers have reached similar deals in the United Arab Emirates, Brazil and Indonesia".
91 On 25 February 2021, the U.S. Food and Drug Administration updated an "alternative temperature for transportation and temporary storage for frozen vials before dilution" that would allow the Pfizer vaccine to be "transported and stored at conventional temperatures commonly found in pharmaceutical freezers for a period of up to two weeks". Nonetheless, it is only an "alternative to the preferred storage of the undiluted vials in an ultra-low temperature freezer between −80 °C to −60 °C (−112 °F to −76 °F)". See, (U.S. Food and Drug Administration 2021).
92 (Toulemonde 2021); see also, (Edward-Ekpu 2021a; Campbell 2021); and (Horner 2021).
93 (Campbell 2020). Campbell claimed that the apparent popularity of Sputnik V in Africa was due to Russian "disinformation" which had misleadingly taunted the efficacy of the vaccine:

> Non-Russian media's support for the Sputnik V vaccine and its clinical trials originates in large part from a targeted Russian disinformation campaign in countries with former and current ties to Russia and the Soviet Union.
>
> Sputnik V seems to be as much about public relations and Russian soft power as about stopping the spread of COVID-19 . . . Sputnik V's popularity in African media is troubling, considering the vaccine has not undergone the same rigorous clinical trials

as other contenders. The success of Russia's disinformation and public relations strategy stems from the Kremlin's ability—and willingness—to disseminate and emphasize its message about Sputnik V's effectiveness.

A more sympathetic and yet condescending tone for Russia's development of Sputnik V is evidenced in an article published in the New Yorker, see: (Yaffa 2021).

94 (Logunov et al. 2021, p. 1).
95 (Grover 2021).
96 (Apuzzo and Gebrekidan 2020).
97 (Sundaram 2021).
98 (BBC News 2021).
99 (Gebrekidan and Apuzzo 2021).
100 (Glenza and Pengelly 2021).
101 (Douglas 2021).
102 (Hassan 2021).
103 (Cheng and Hinnant 2021).
104 (BBC 2021a).
105 (Medecins sans Frontieres 2020).
106 (Ibid)., see also, (Cheng and Hinnant 2021); (Pedrero 2020; Human Rights Watch 2020).
107 (Gallogly-Swan 2021).
108 (Ibid).
109 (Tai 2021).
110 (Sirota et al. 2021).
111 (Tai 2021).
112 (Deutsche Welle (DW) 2021).
113 (BBC 2021c).
114 (Amaro 2021).
115 (Deutsche Welle (DW) 2021).
116 (Amaro 2021).

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