

COVID-19 PANDEMIC AS EXISTENTIAL PUBLIC HEALTH EMERGENCY/THREAT IN NIGERIA REMAINS UNPROVEN: A *viewpoint*

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University of Ilorin, Nigeria & University of Georgia, USA on

THE CHALLENGES OF COVID-19

WEDNESDAY 19 MAY 2021

BACKGROUND

Ongoing vaccination campaign aims to cover $\geq 70\%$ of Nigeria population by 2022 to optimally protect everyone within from severe illness /death when infected with SARS-CoV-2

CAVEAT

This presentation could therefore seem contradictory

&

It is not about *vaccine hesitancy* or *conspiratory theory*

CAVEAT

Our viewpoint derives from data by national authorities
authentically reproduced by global statistical platforms
including *World Health Organization (WHO)*

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COVID-19: HOPE AND A THOUGHT EXPERIMENT

Presentable: Scholars elsewhere are networking and working remotely to quickly develop ideas/products/services in the fight against COVID-19 pandemic beginning with their home population. Academic union here is on strike though have distributed *hand sanitizers* and given public *health* talks as others have done but has no organized link to join the current national efforts. Hence we have come together to put down our thoughts as a first step and encourage others to do same in their own way.

The evidence thus far indicates:

1. A westward drift of COVID-19 epicenters from China with Africa still reporting far fewer cases comparatively.
2. This could signal incomplete data given testing limitations that makes it difficult to know the full extent of community infection in real time.
3. The most important tool any country has to tract the impact of COVID-19 infection remains the numbers of deaths in test-positive cases.
4. Therefore, even without the capacity to test over 200 million people, it seems unlikely daily deaths of the magnitude currently reported elsewhere can occur without being known.
5. According to the results of one natural experiment about to be published, the virus appears highly contagious but seems less deadly compared to Ebola, Lassa fever, Yellow fever, etc. in parts of Africa.
6. And there is no certainty its disease behavior will be the same or manifest to the same extent in Nigeria population as described in the global north.
7. As at yesterday (06 April, 2020) public data from Lagos, Nigeria's current "epicenter" raises the possibility of on-going *person-to-person* and *community* transmission with very early signs of "*flattening of the curve*" which may well apply to other parts of the country. Or simply represent

a glitch as in WHO trends data of low numbers often representing the *calm before the storm* as repeatedly observed elsewhere.

8. This notwithstanding we have reasons to align with the interpretation of the data by Lagos State but for reasons not entirely linked to current public health measures like hand washing, etc.
9. Consequently, if #1-7 hold true as expected, then the upsurge and intensity of new cases/related deaths may not materialize to the full extent as elsewhere nor as devastating as predicted.
10. Either way this pandemic too will abate as previous ones when *herd immunity* reaches protective levels.
11. Current interventions (e.g. R) can mute the rise of this *herd immunity* so as not to overwhelm the health system which in the *worst case scenario* is unlikely to cope despite current emergency health spending and upgrade.
12. A community based anti-body testing currently unavailable but being developed could easily test the hypothesis implied in #8 as to whether or not the novel virus or closely related ones would show up through cross-reactivity and by extension indicate some pre-existing *herd immunity* predating announcements in January 2020.

CRIBS

- a. Nothing above should be interpreted as advocating dismantling neither existing public health measures nor their intensification.
- b. Managers of COVID-19 in Nigeria may wish to re-visit the evidence the Ethiopians are seeing that has kept their national airline flying when others are grounded (Remember - Ethiopia remains the only country in Africa never colonized!).
- c. The plan of NCDC and FMCH to configure existing Gene X -TB machine to scale up COVID-19 testing shows quick thinking that is commendable, and more information can still be generated with less if *quickly* and *creative mathematical methods* are explored.

- d. We think Professor E.A. Adebayo (Lagos State Commissioner for Health), Lagos State Government, the leaderships of FMCH & NCDC and to some extent Kogi State Government have all done well within the constraint of the present system Nigeria operates.
- e. We note with pride how a 200 level engineering students and some faculty in Gombe State University have risen to the occasion indicating that when Nigerian university system is ready to work for the good of Nigeria and its people as in earlier generations of scholars, it will quickly find funding (money) as the least of its problems.
- f. WHO has its short comings like other multilateral agencies but with this pandemic, has provided exemplary global leadership far commendable compared with the last Ebola outbreak in Africa.

Conclusion

This pandemic is still evolving and our submission may well be completely off the mark thus is a risk we are willing to take.


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submissions to the
Technical Team managing
Nigeria National Response
to COVID-19 pandemic
between 14 April & 19
June 2020

In response to the question “**HOW**
WILL IT PLAYOUT IN NIGERIA COMPARED
TO THE EPICENTRES NOW (THEN)?” we



formulated to guide our thought
experiments using insider knowledge of
how Nigeria health system works
especially at its commanding heights
where universities are in charge

Specifically, as at 10 April

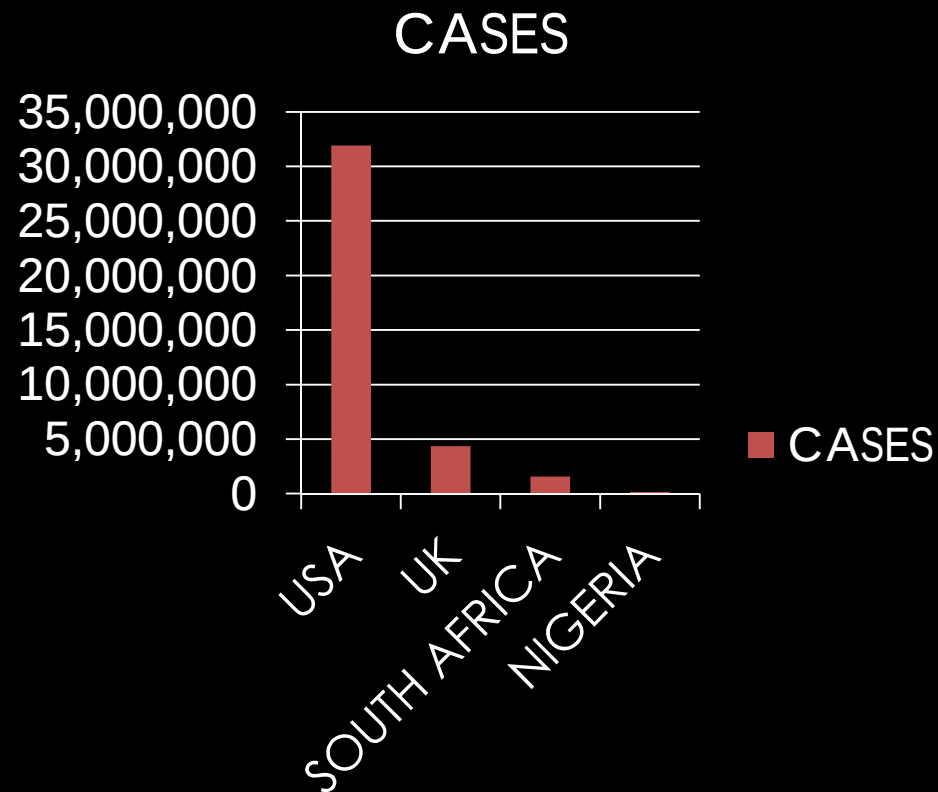
2021 , Nigeria recorded

163,779 and South Africa

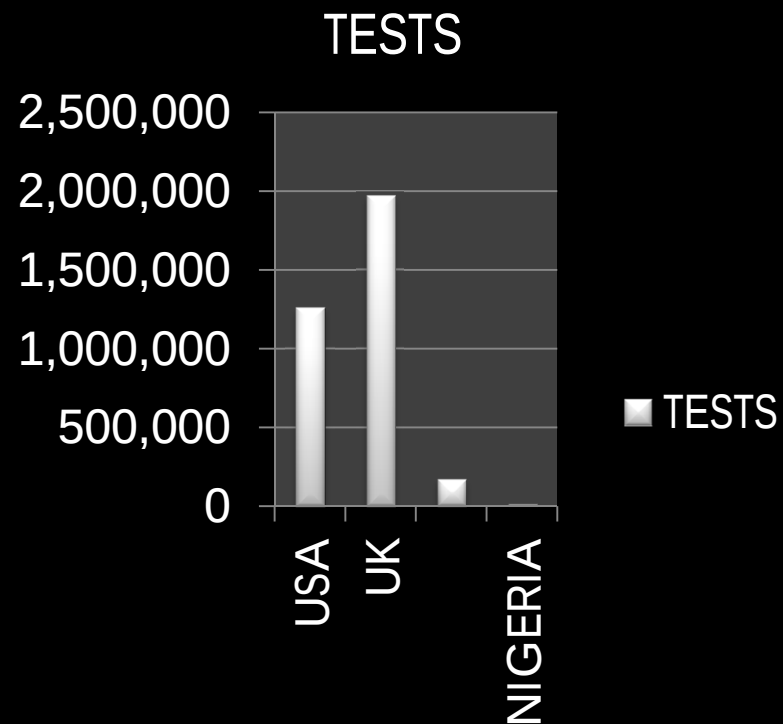
1,558,459 cases versus US &

UK with > 31 & > 4 million

cases respectively



TESTS/million



Less testing however occur in Nigeria so cases reported may not always reflect the full extent of community infection as in countries indicated here

COVID-19 DEATHS

Even so, death remains an effective measure of COVID-19 severity

And many deaths in a short time is difficult to conceal in Nigeria even in *hard to reach places* given the *vibrant local press/social media* []

COVID -19 MORTALITY BY COUNTRY AS AT APRIL 10,2021

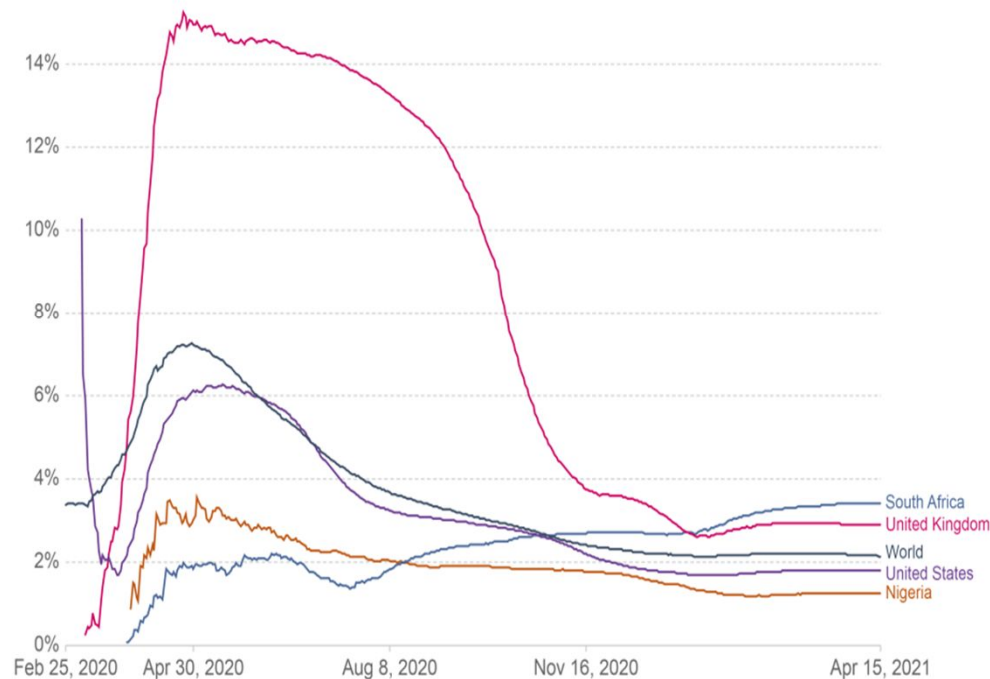
COUNTRY	DEATHS	POPULATION
USA	575,829	332,510,877
UK	127,087	68,163,171
SOUTH AFRICA	53,322	59,888,210
NIGERIA	2,060	210,078,731

These differences in COVID-19 mortality by jurisdiction could indicate underlying variability in disease severity in different populations

DEATHS RELATIVE TO CASES (CFR) OVER TIME

Case fatality rate of the ongoing COVID-19 pandemic

The Case Fatality Rate (CFR) is the ratio between confirmed deaths and confirmed cases.
During an outbreak of a pandemic the CFR is a poor measure of the mortality risk of the disease. We explain this in detail at [OurWorldInData.org/Coronavirus](https://ourworldindata.org/coronavirus)



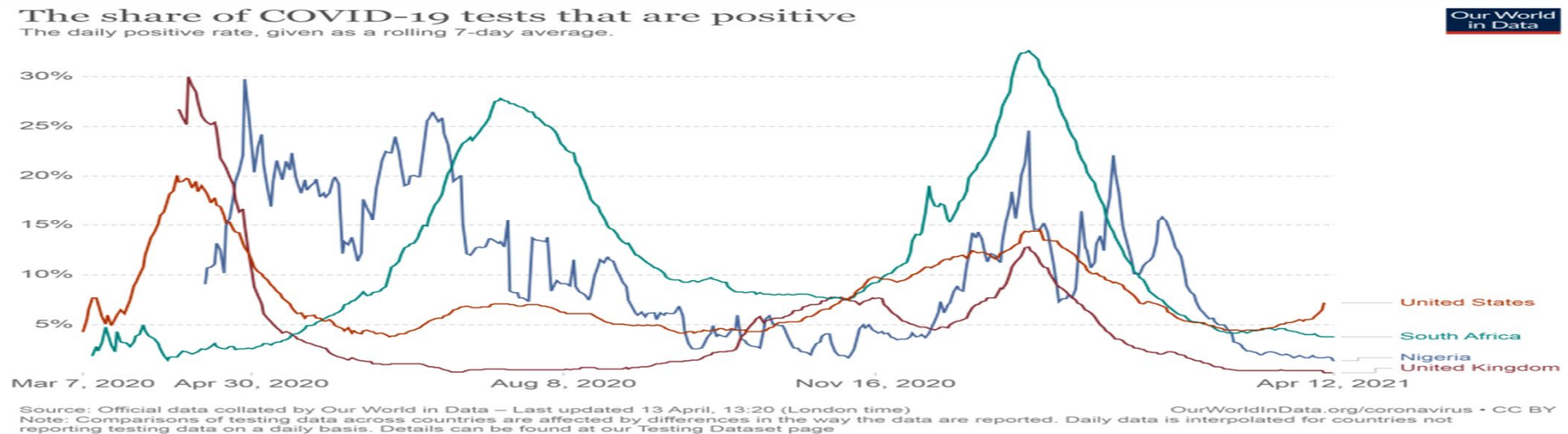
Source: Johns Hopkins University CSSE COVID-19 Data – Last updated 16 April, 10:03 (London time)
Note: Only countries with more than 100 confirmed cases are included. Only countries with more than 100 confirmed cases are included.

Powered by ourworldindata.org

Significantly, CFR has declined almost globally & in Nigeria to **1.26 %** (15 April 2021) from all-time high of **3.45%** in April 2020- below the global average of **7.17%** at the time -

Thereby suggesting **diminishing lethality** of confirmed infections despite widespread reports of “**waves/surges**”

COMPARATIVE TEST POSITIVITY OVER TIME

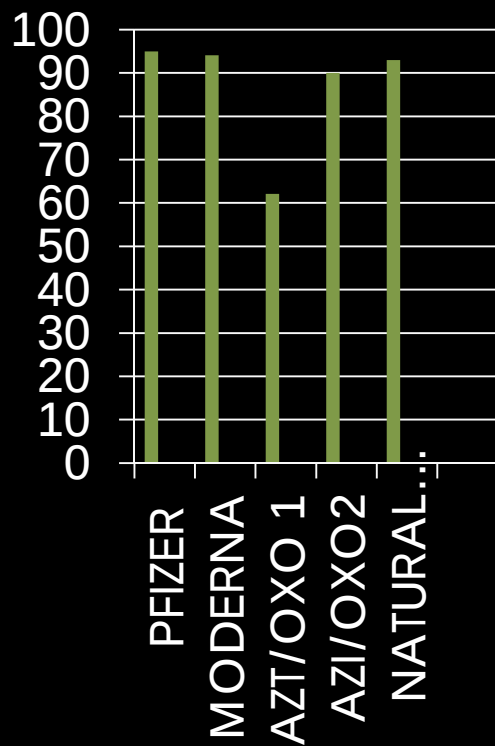


Besides, test-positivity approximating 25% at the *peak of epidemic* (April/May 2020) has steadily declined to $< 2\%$ (April 14, 2021) even with spikes of 16.29%

Around Christmas/New year festivities thus raising
the possibility of a fading disease transmission

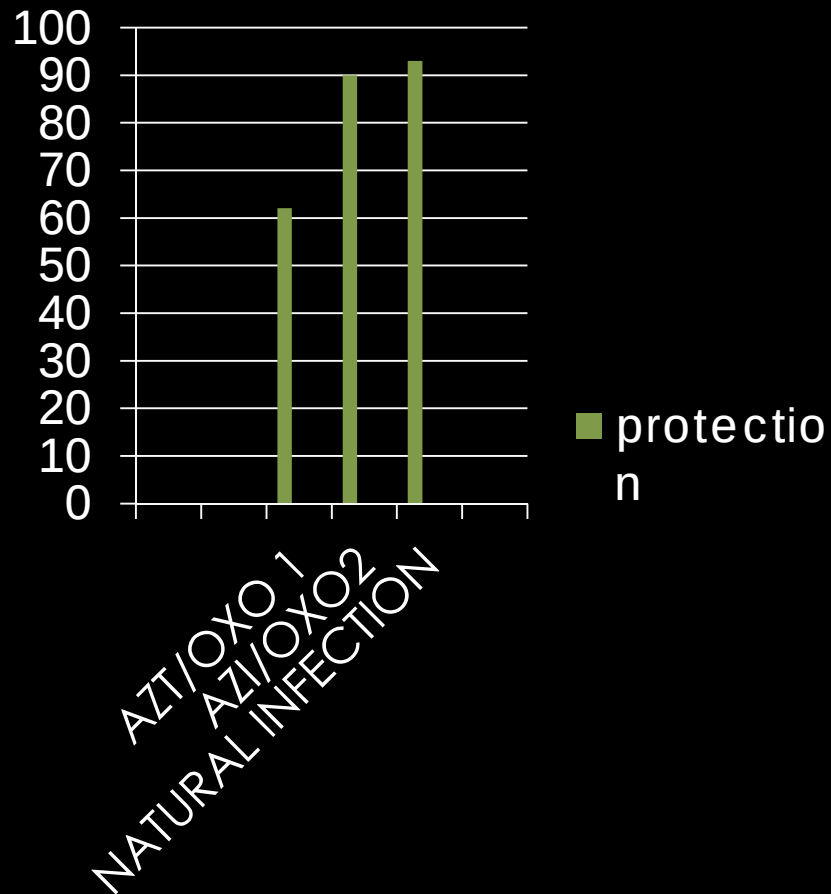
These **differences** between Nigeria & these richer countries in **measures of COVID-19 severity** though striking is not fully understood

However, some intriguing observations have emerged

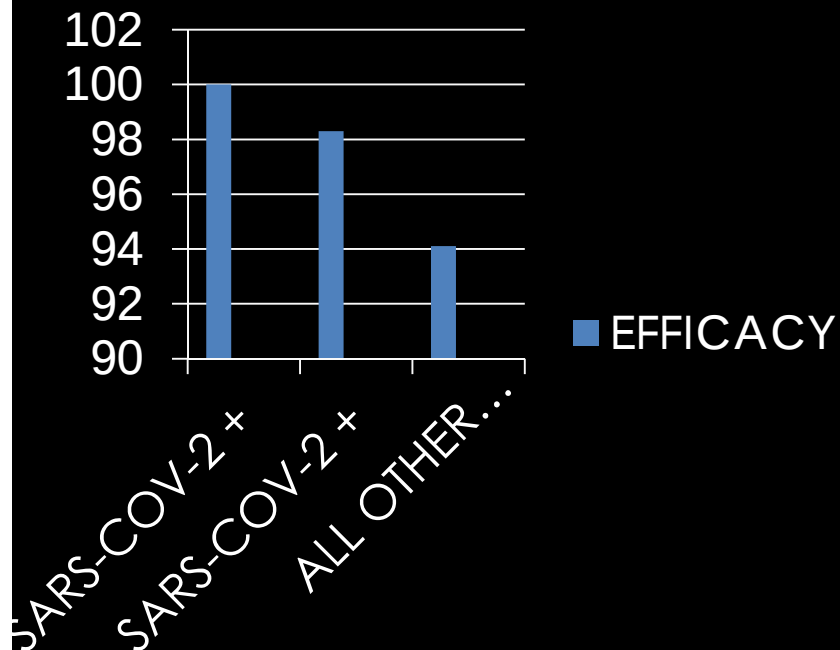


■ protection

First, COVID-19 vaccines are incredibly effective (>90%) in preventing severe disease/death from SARS-CoV-2 infection as natural immunity (*SARS-CoV-2 antibody positivity from infection*) seems sometimes more so []

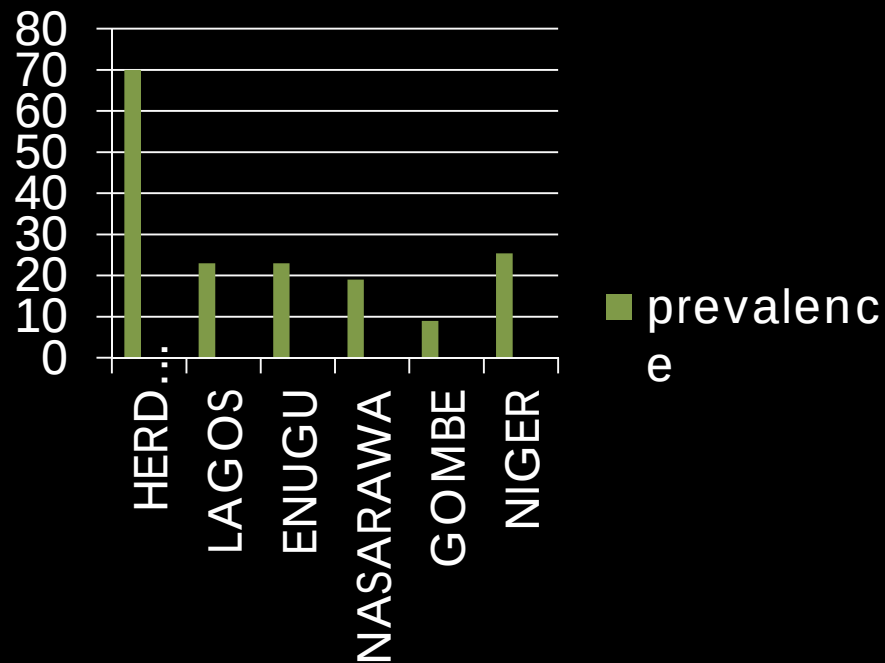


Such greater protection from natural immunity aligns with immunogenic responses against many viral structures /mucosal surfaces unlike vaccines which target the spike protein



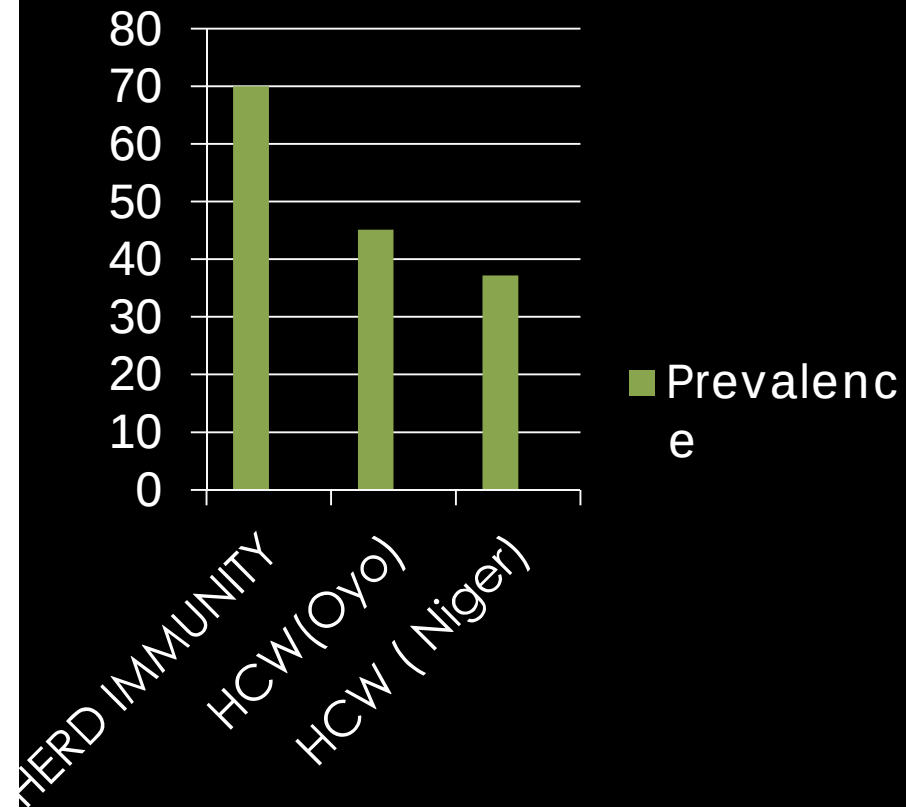
Phase 3 trial of one mRNA vaccine showed 100% efficacy in preventing disease/death in individuals previously infected with SARS-CoV-2 vaccinated & 98.3% efficacy in seropositive subjects unvaccinated (**placebo**) versus 94.1% protection in vaccinated people without previous infection (**SARS-CoV-2 antibody negative**)

SARS-CoV-2 ANTIBODIES SEROPREVALENCE IN SOME NIGERIAN STATES AS AT 2020

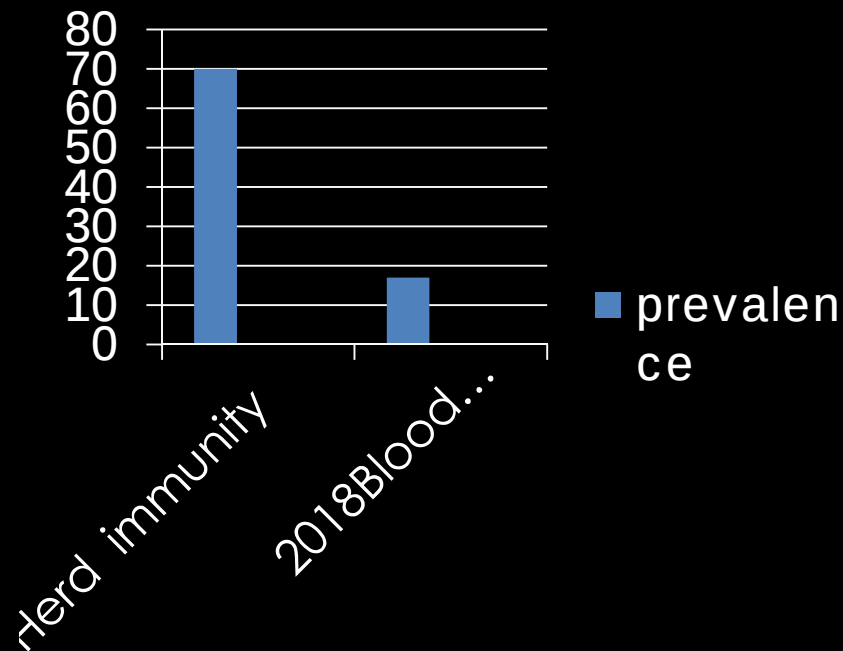


Curiously, survey data of blood samples collected 3-7 months into the pandemic locally indicated almost **1 in 5** people tested were SARS-CoV-2 seropositive

SARS-CoV-2 antibodies positivity among frontline health care workers (HCW) in Nigeria



And much higher figures (34.5-45.2%) among HCWs in Oyo and Niger States during same periods



Surprisingly, **blood samples**

from 2018 tested in 2020

revealed 17 % cross-reactivity
to SARS-CoV-2.

What this can indicate is

That antibodies of same/similar activity against SARS-CoV-2 has been circulating in Nigeria population prior to 2019 declaration of COVID-19 pandemic and the first local case documented in February 2020

Further , these observations suggest :

First, >20% anti -SARS-CoV-2 seropositivity locally within 3-7 months of the pandemic though striking probably underestimates the full extent of community infection at the time , as those exposed earlier are less likely to still have detectable antibodies which can fade over time

Second , >20% seropositivity to SARS-CoV-2 along with comparatively low mortality compared to 1.5%, 5% and 10.5% in hotspots/epicentres of Romania, Spain and Switzerland at a time of alarmingly high COVID-19 death numbers is difficult to dismiss as completely irrelevant

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FEDERAL MINISTRY OF HEALTH
NATIONAL PRIMARY HEALTH CARE
DEVELOPMENT AGENCY
COVID-19 Vaccination Card

Part 1:
Basic Information

Card No.: 095/24

State: Kwara LGA: Ilorin East
Ward: Mambila-Aps Settlement: UUT
Health Facility: UUT
Name of Vaccinator:
Phone No. of LGA DSNO: 08032094332

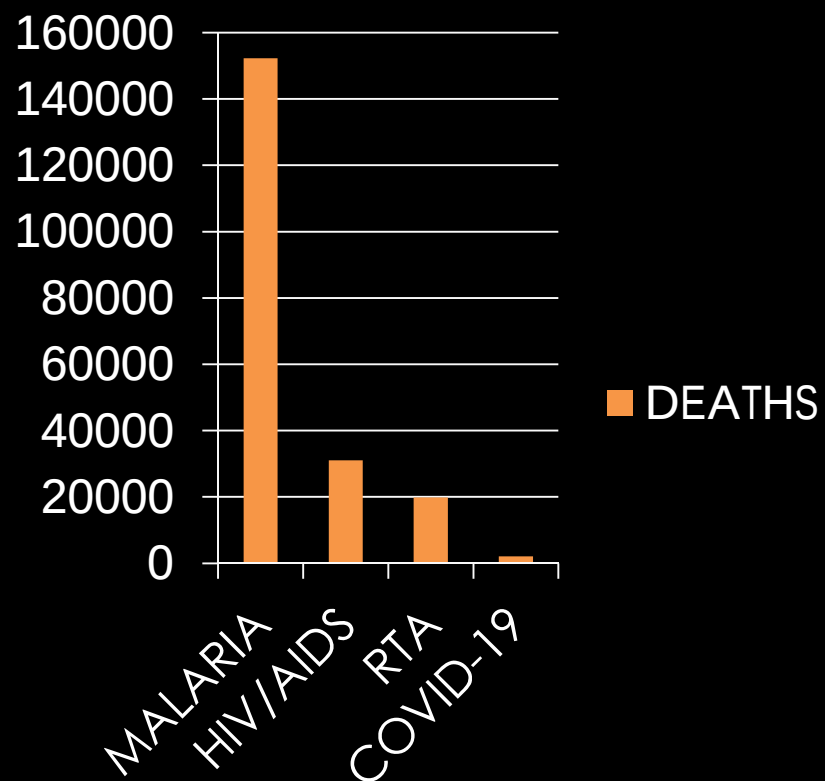


More so, when *population / herd immunity* protective of everyone is defined as $\geq 70\%$ anti-SARS-CoV-2 antibodies prevalence through *natural infection or vaccination* as also applicable to the notion of

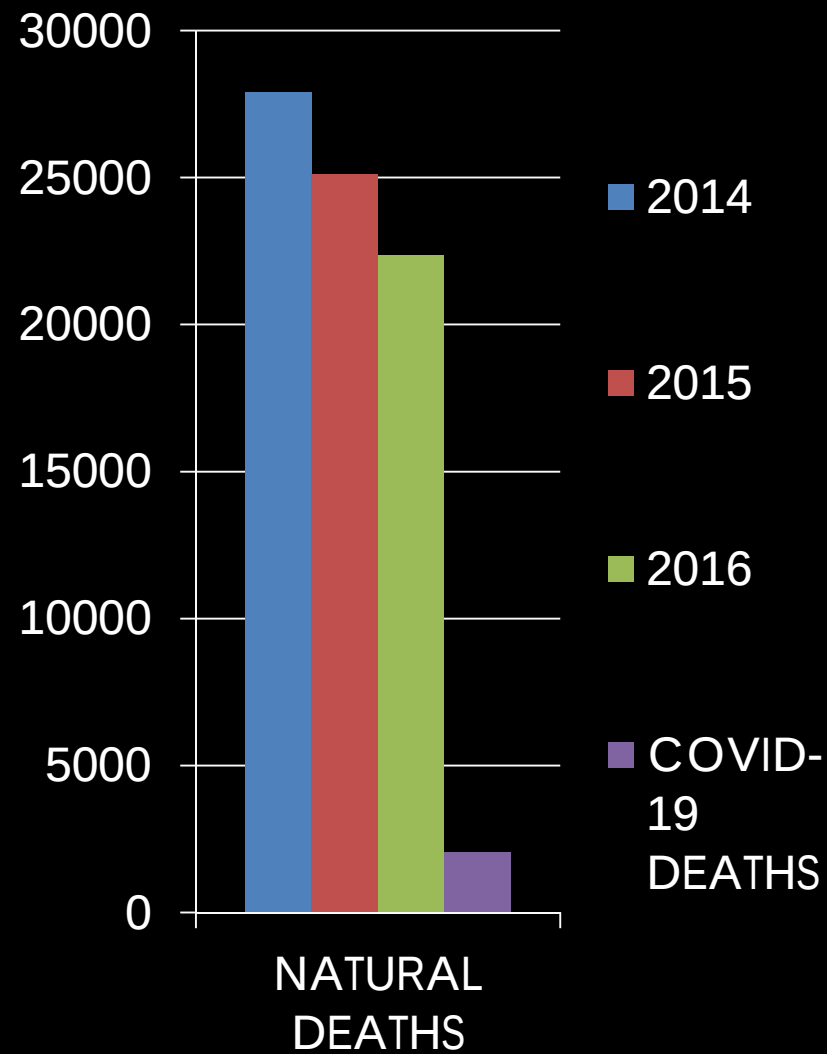
COVID-19 PASSPORT

Contextually therefore, projecting SARS-CoV-2 as **MASS
KILLER OF EXISTENTIAL PUBLIC HEALTH THREAT** based on
2,060 COVID-19 deaths in > 14 months of the **PANDEMIC**
in Nigeria is problematic even after doubling this
comparatively low mortality to correct for any possible
under-counting []

COVID-19 DEATHS VERSUS ANNUAL DEATHS FROM THESE CONDITIONS



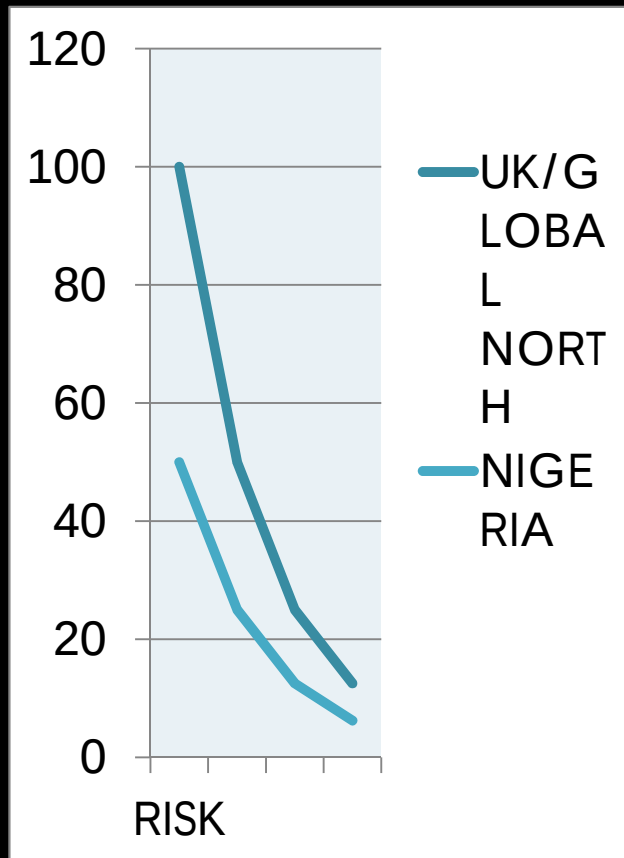
Especially when other public health conditions kill more Nigerians in their country annually



This comparatively low
COVID -19 mortality when
juxtaposed against yearly
natural death numbers []

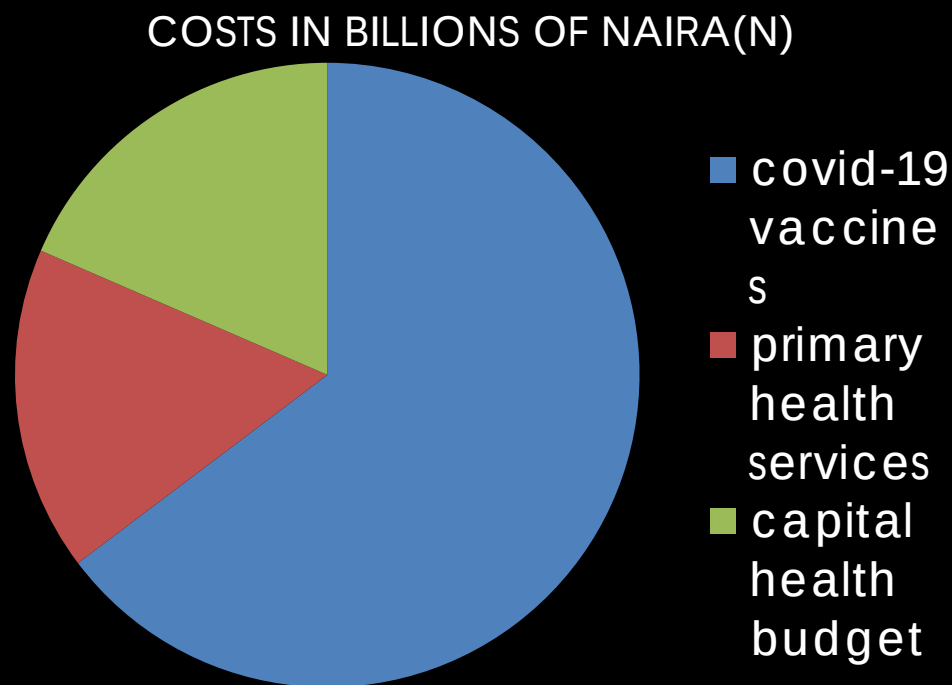
could signal

A dominant disease behavior of SARS-CoV-2 in Nigeria
population less prone to cause mass *casualty* as
previously speculated(See our submission of 14 April 2020)



Indeed, several mathematical models [] indicate black African populations including Nigeria are at $\geq 50\%$ lower risk gradient for adverse outcomes of COVID-19 pandemic unlikely to negatively impact current life expectancy on the continent

INITIAL COVID-19 VACCINATION COST ESTIMATE VERSUS 2020 FEDERAL HEALTH BUDGET



Consequently, the rush to spend 154,000,000,000

Naira (N) on *initial* public vaccination as proposed when 40,000,000,000 (N)

was budgeted

For primary health services throughout the country &
44,000,000,000N for Capital health items including
funding other existing *disease-prevention immunization
programmes* like measles, etc could raise *issues of
priority/effective spending*

IMMUNIZATION COVERAGE & VACCINATION COST

Still by this formula, COVID-19 immunization coverage of $\geq 70\%$ as proposed to protect everyone within from severe illness/death aligns with published R_0 of 2.43 {2.37-2.47} for Nigeria & ϵ = being current COVID-19 vaccine effectiveness of 0.95(95%)

$[1 - 1/R_0] / \epsilon$



However, R_0 seem lower now compared to April/May

2020 and vaccine effectiveness ϵ could be lower

depending on how the virus is mutating in each jurisdiction

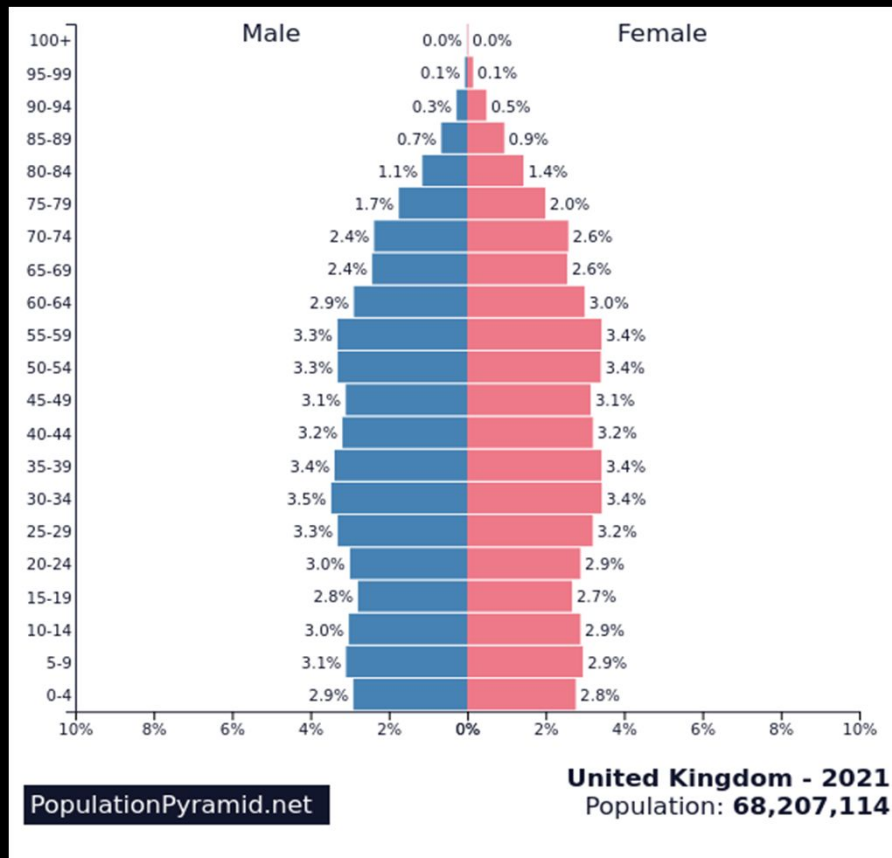
Importantly, the estimate overlooks **heterogeneity** in **disease severity** and **differences** in SARS-CoV-2 antibody positivity across jurisdictions making it less likely vaccination needs to **reach herd immunity** would be the same everywhere

Consequently , framing **ongoing vaccination arrangement** as protecting HCWs, 65+ years, pre-existing conditions, minority ethnic groups , etc against COVID-19 /death

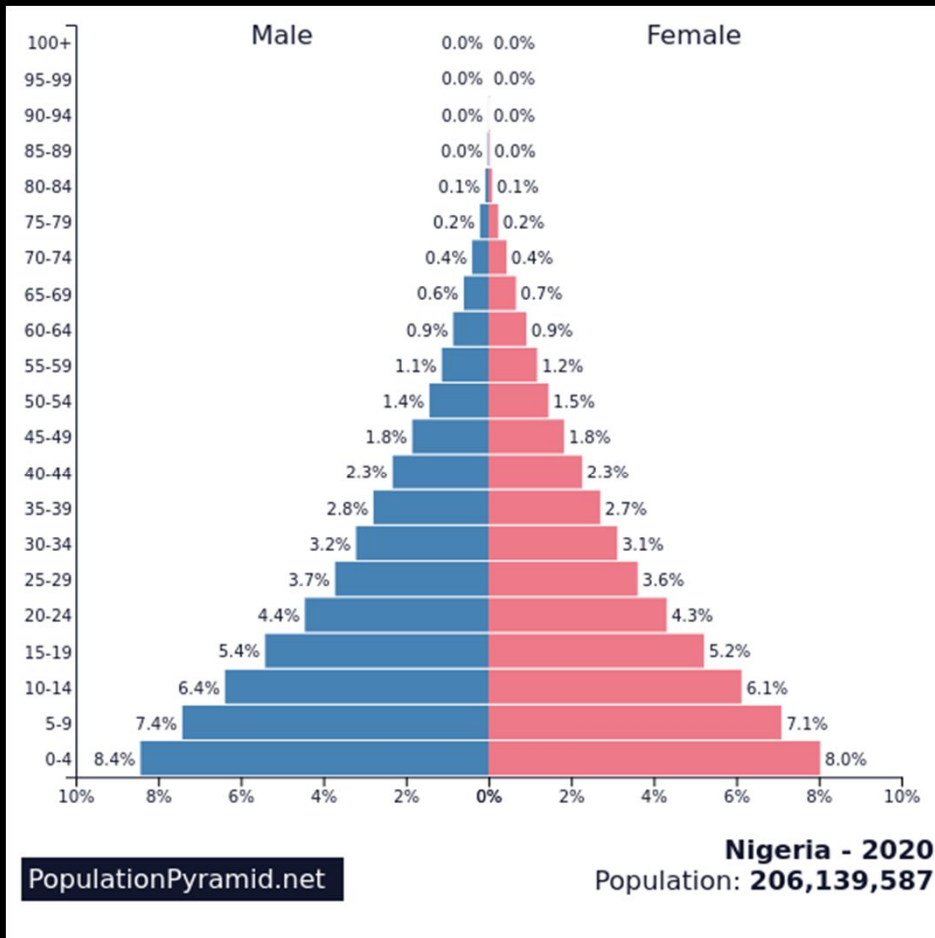
Rather than attaining *population /herd immunity* protective of everyone including the most vulnerable is intriguing



Incidentally , Nigeria has a
“*youth bulge* “ of <40 years
constituting about 80% of the
population who majorly spread
SARS-CoV-2 to others even
without becoming ill themselves
or being aware of doing so



And unlike in the UK with
a median population age
of 40.5 years and 18.8% $\geq$
65 years ;

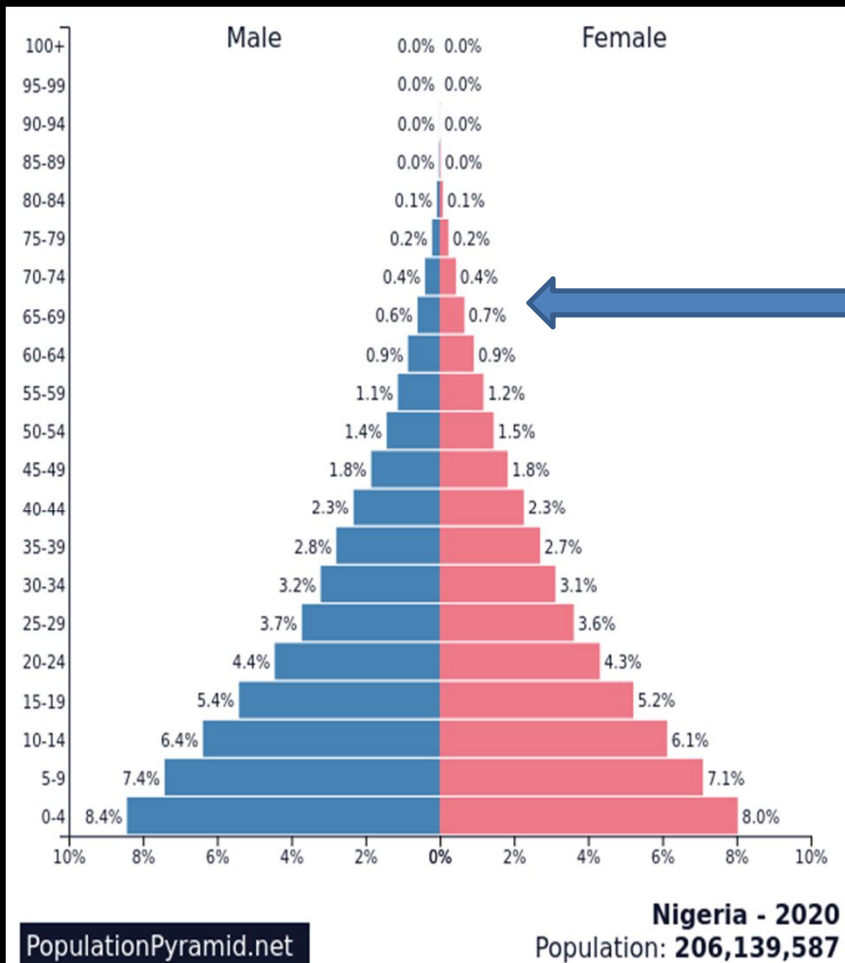


Nigeria's median age is 18.4 years with just 2.7% elderly (≥ 65 years- local retirement age) and 9.7% of the population ≥ 50

This pyramidal age population structure makes immunization coverage $\geq 70\%$ technically unattainable in Nigeria as no vaccine is locally licensed for use in <18 who constitute about 48.4% of the population

Remarkably , the same age bracket is among the least vulnerable for severe disease/death from SARS-CoV-2 infection

In contrast , severe COVID-19 is predominantly a disease of the elderly (≥ 65 years) also likely to have comorbidities which amplifies their risk of ICU admission / death with SARS-CoV-2 infection



Targeting this vulnerable group
with high immunization coverage
(>70%) could mean protecting
everyone **quicker/cheaper** from
the terrifying consequences of
high death toll, hospitalizations
and lockdowns even if the virus
keeps circulating **as endemic**

Vaccinating ≥ 65 years about **3%** rather than **$\geq 70\%$** of the population seem more manageable/ affordable; even if this includes *ring vaccination* where necessary

So too could safety monitoring (**active pharmacovigilance**) be for a novel intervention in the same age group less prone to **blood clots** which has undermined vaccination uptake/roll-out elsewhere

Doing otherwise i. e continuing with $>70\%$ coverage
would seem *wasteful* and unlikely to represent *the best-*
value –for money given available options

Especially if many already have some protection from previous infection as survey data of SARS-CoV-2 antibodies appears to suggest consistent with comparatively low and declining “cases”/death numbers

Specifically , a strategy of *SARS-CoV-2 antibodies pretesting at point of inoculation* could lower further immunization cost by identifying those with pre-existing natural immunity for whom a single injection may act more as *a booster* in the two dose–immunization schedule Nigeria currently operates[]

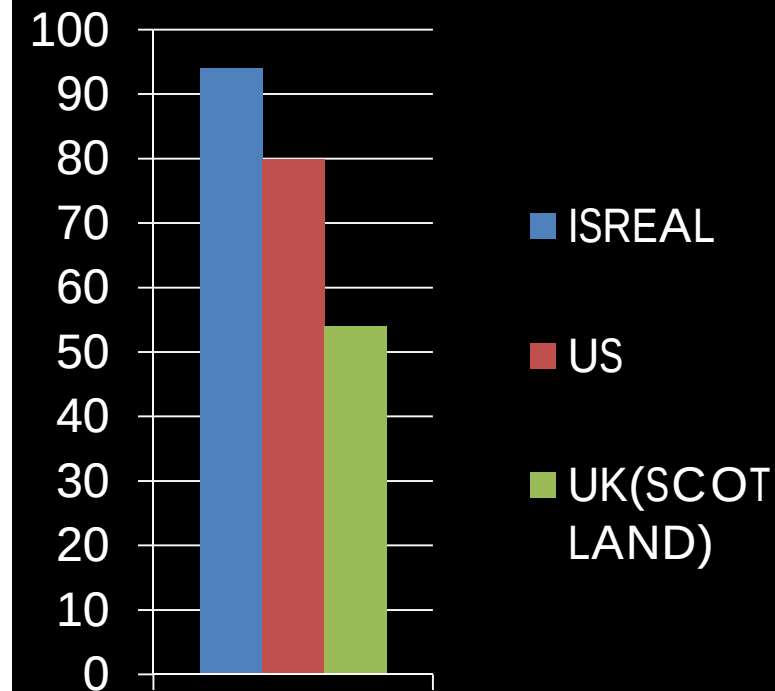
SUMMARY

Our position can be summarized thus:

First, cohort studies mainly overseas, where COVID-19 appears a more severe disease, confirm protection from previous SARS-CoV-2 infection can range between **81-100%** during **5-7 months** follow-up compared to **2/3 months** observation available thus far with vaccines

Second, SARS-CoV-2 antibody positivity of **1 in 5** in the population over 6 months ago probably higher now is striking particularly against a comparatively low COVID-19 deaths and continuing downward trajectory of the pandemic in Nigeria

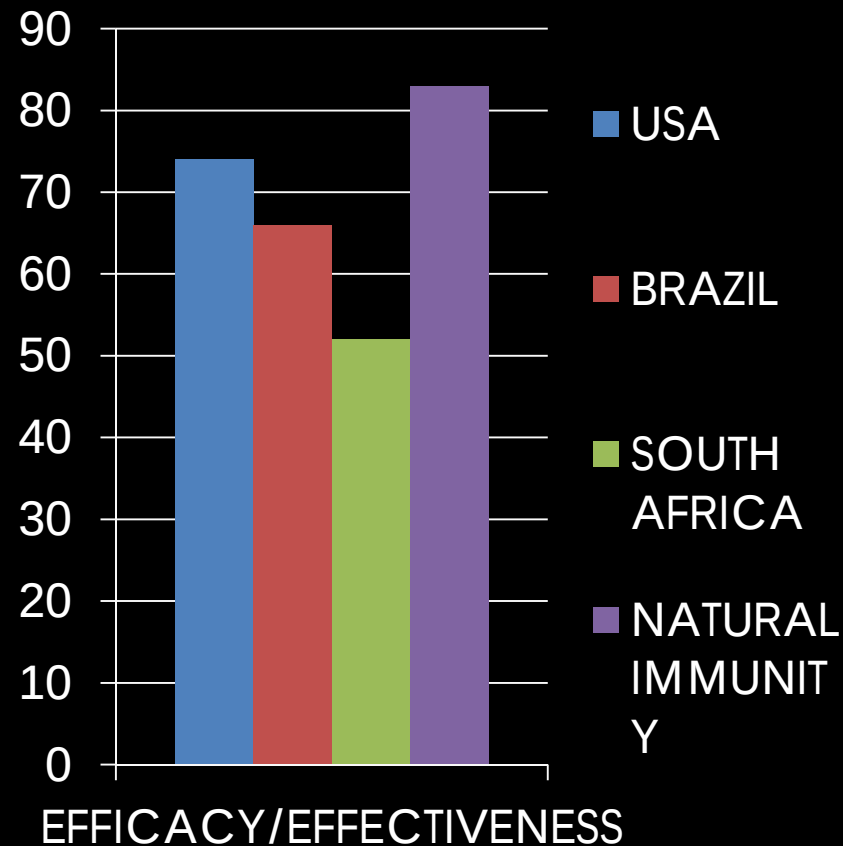
VACCINE EFFECTIVENESS AGAINST ASYMPTOMATIC INFECTION/TRANSMISSION



VACCINE EFFECTIVENESS

Third, Real -World-Evidence from these countries show vaccination lowered (94%, 80% & 54%) the risk of asymptomatic infections mainly responsible for infecting & 74% reduction with J & J vaccines in clinical trials

VACCINE EFFECTIVENESS/EFFICACY VERSUS NATURAL IMMUNITY WHEN MULTIPLE VIRAL STRAINS WERE IN CIRCULATION



But, declining vaccine effectiveness/efficacy to

74% , 66 % & 52% has

emerged in some

jurisdictions vs 83-99% post-

infection

even with **more transmissible strains circulating** thus
suggesting natural immunity could deliver comparable
protection as some licensed vaccines

What these emerging observations suggest is the possibility of **immune escape** already making some patent holders contemplating **vaccine updates** targeting such variants []

Incidentally, *start-stop-and –start again* COVID-19
immunization campaign especially in Sub-Saharan Africa
countries like Nigeria dependent on others for their *disease*
–prevention -immunization -policy could actually

exert selective pressure which accelerates more
resistant strains emerging ultimately resulting in total
immune evasion with catastrophic public health
consequences

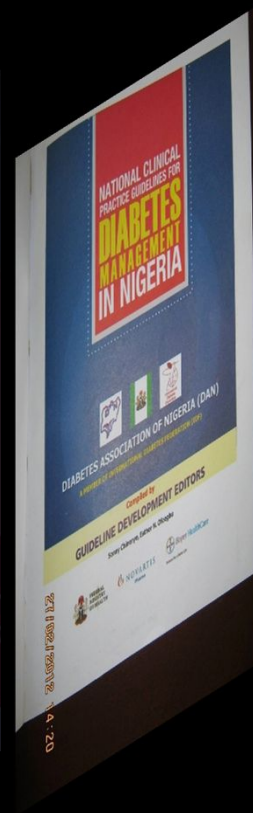
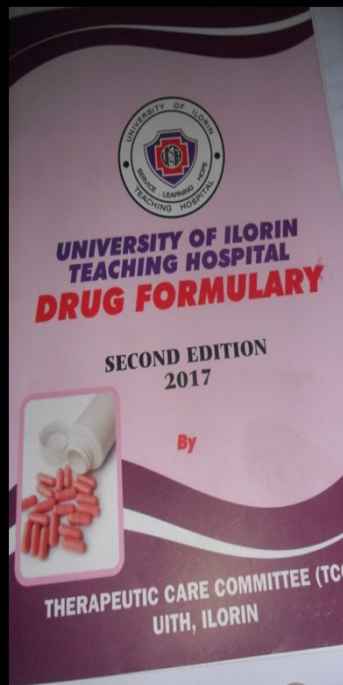
And should SARS-CoV-2 keep mutating requiring periodic vaccines update for effectiveness, vaccination cost could spiral out of control and become unsustainable

Especially with Nigeria population growing exponentially to become the most populous country by 2050 after India & China; dwindling public revenue, donor fatigue and escalating poverty

Luckily, contrary to initial assumption, recent data []
indicate asymptomatic/mild infection ,the type most
prevalent in Nigeria can confer comparable protection as
recovery from more severe disease and existing vaccines

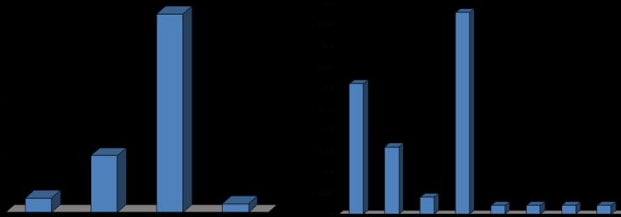
This apparent comparative biologic advantage Nigeria has for less severe disease when carefully harnessed could deliver comparable protection as current vaccines but at a lower economic and social cost

Ironically, Nigeria is increasingly associated with expensive interventions made in the image of other people's need sometimes as in *one size-fits-all-globalization* when *factor endowment* to improve public health at a lower cost is available []



This approach to **national best practice** against **own data & , health laws/policies** is evident in public health conditions like **hypertension, type2 diabetes &**

Inappropriate opiates prescription
control now a raging epidemic of
narcotics abuse propelling
insurgencies/violent crimes and
destroying the lives of generations
of young people []



Even so, attaining *herd immunity* by **vaccinating $\geq 70\%$**
of the global population is about saving lives and return
to a life of normality pre-COVID-19

But it is also about a **US\$ 10,000,000,000 yearly industry** the pandemic has created which has already generated **US\$ 26,000,000,000** for one stakeholder in just 4+ months of 2021

And adopting a *one-size-fits-all immunization coverage* as the only way out of the pandemic would seem inconsistent with differences in SARS-CoV-2 antibodies levels from previous infection in different jurisdictions and growing evidence of natural immunity being comparable to protection by licensed vaccines

Taking into account such differences could mean a global health system that works for everyone without necessarily accumulating toxic debts

Especially for **countries like Nigeria** in the name of preventing mass COVID-19 death and fear of becoming a reservoir of infection that threatens people elsewhere which so far has not materialized

CONCLUSION

The evidence showing COVID-19 as **mass killer and existential national threat** to **Nigeria** warranting urgent intervention and extra-ordinary public expenditure to initially vaccinate $\geq 70\%$ of its 210 million citizens at this stage of the pandemic is simply unavailable

Consequently, there may be some wisdom in waiting to see how things evolve in jurisdictions most at need as this can add value especially as the added pressure of **mass deaths/ overstretched health services** is apparently non-existent

Indeed, the terrifying events unfolding in India and Brazil before now ought to be a cautionary tale, not so much from how the virus is evolving , but more from , the choices being made on how best to overcome it which should be evidence based in each jurisdiction .



Mr. Chairman , Nigeria can do more with the little it has ,without necessarily deepening poverty and expanding national debts, this Sir, is the essence of our presentation but this time in our home university unlike previously[]

DEDICATION

This presentation is to the memory of **AE Davies, PhD**, Professor of Political Sciences, University of Ilorin , for his enduring insights into *state of humanism and medical practice* in Nigeria

And also a salute to the courage of **Andre Tegnell, PhD** –
physician/epidemiologist running Sweden's national
response to COVID-19 for standing apart in charting a
different pathway in the best interest of his compatriots

&

IBRAHIM Abdulmumini, *mni, MB;BS, DA,MSc, MBA,PGDE,*

DSc, immediate past Registrar of Medical & Dental

Council of Nigeria and Visiting Professor in Pharmacology ,

College of Health Sciences, Igbinedion University, Okada,

Nigeria for advancing medical training/practice

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Thanks to my co-authors in this journey, [Drs. Salihu, Azibanigha & AO Giwa, PhD](#), who worked remotely with us from Abraka , Delta State for the sacrifice of time, intellect , money in generating ideas on how things have turned out this far in our country

REFERENCES

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19 May 2021

THANK YOU