



AN IAS VIRTUAL CONFERENCE | 10 - 11 JULY 2020

Pivoting the Covid-19 Prevention Paradigm: *From Anxiety to Self-efficacy*

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Chair: Ministerial Advisory Group on Covid-19

Member: Africa Task Force for Coronavirus

Director: CAPRISA – Centre for the AIDS Program of Research in South Africa

CAPRISA Professor in Global Health: Columbia University

Adjunct Professor of Immunology and Infectious Diseases: Harvard University

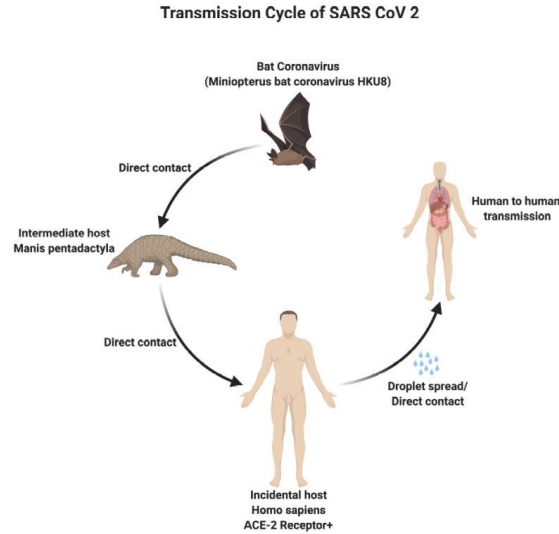
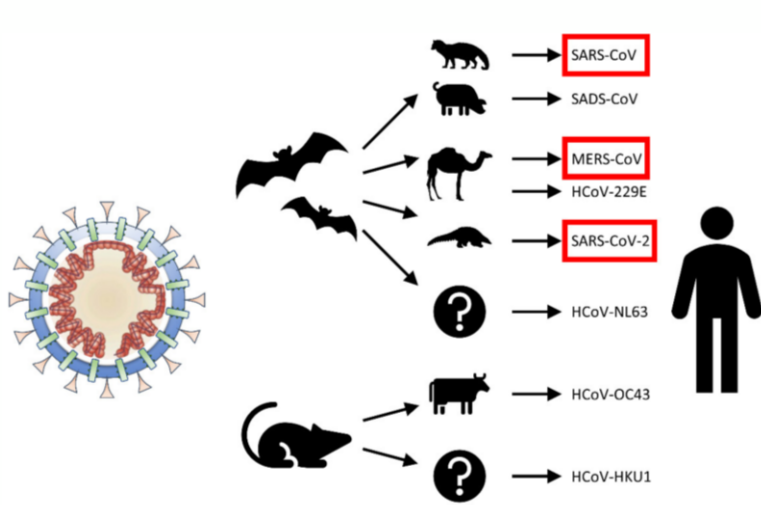
Adjunct Professor of Medicine: Cornell University

Pro Vice-Chancellor (Research): University of KwaZulu-Natal

Disclosure slide

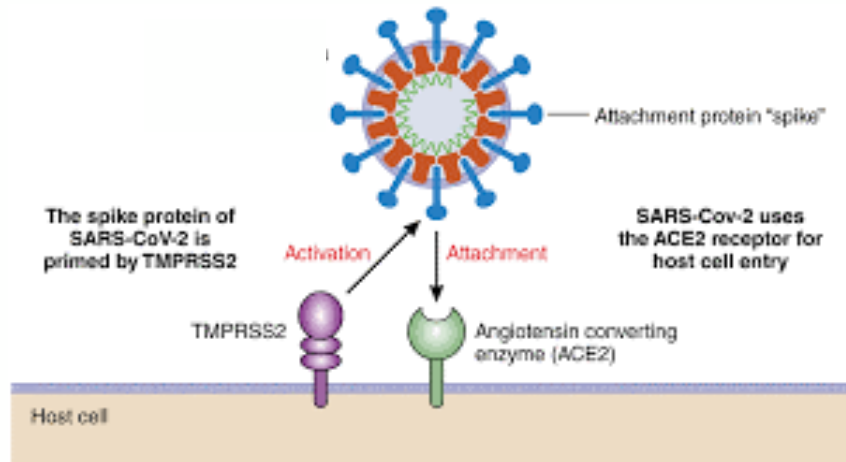
I do not have a conflict of interest to report

How it began: Origins of SARS-CoV-2



Wuhan seafood market

Sources: Rabi FA. Pathogens 2020 & Wallis AC, et al. Cell 2020; Clerkin KJ, et al. Circulation 2020



- Bats original host
- ? Pangolins in Wuhan market - intermediate host
- Spike protein with high affinity for the ACE2 receptor

The Covid-19 pandemic

30 Dec 2019

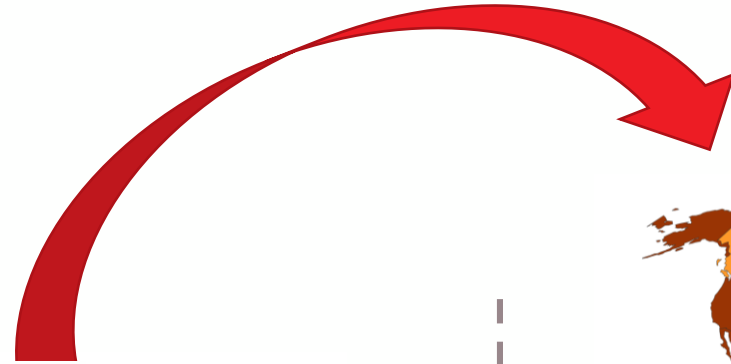


Published Date: 2019-12-30 23:59:00

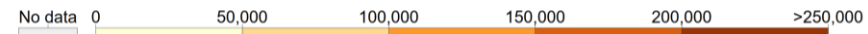
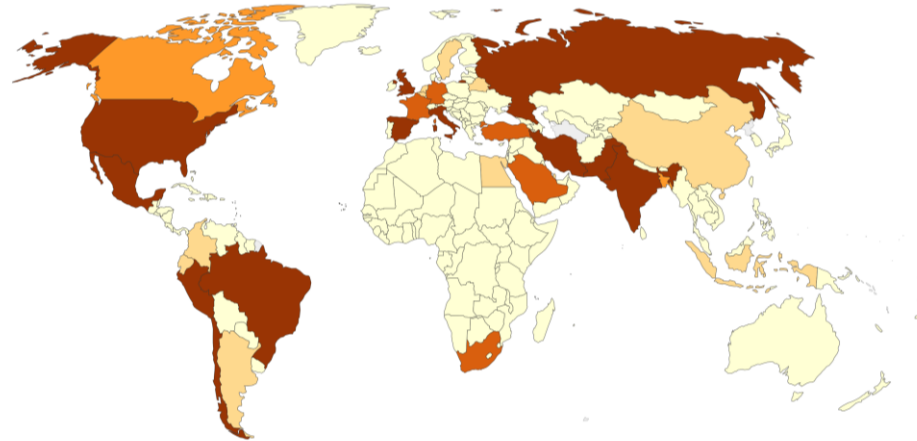
Subject: PRO/AH/EDR> Undiagnosed pneumonia - China (HU): RFI

Archive Number: 20191230.6864153

**Possible first infected person:
a Hubei resident aged 55 on
17 Nov 2019**



July 2020



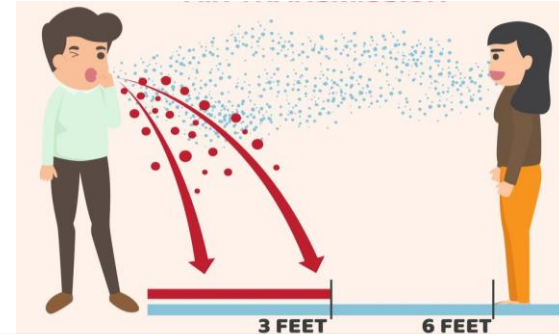
Source: European CDC – Situation Update Worldwide - Data last updated 1st Jul, 11:33 (GMT+02:00), European CDC – Situation Update Worldwide CC BY

Countries reporting cases: 188
Total confirmed cases: >10 million
Deaths: >500,000

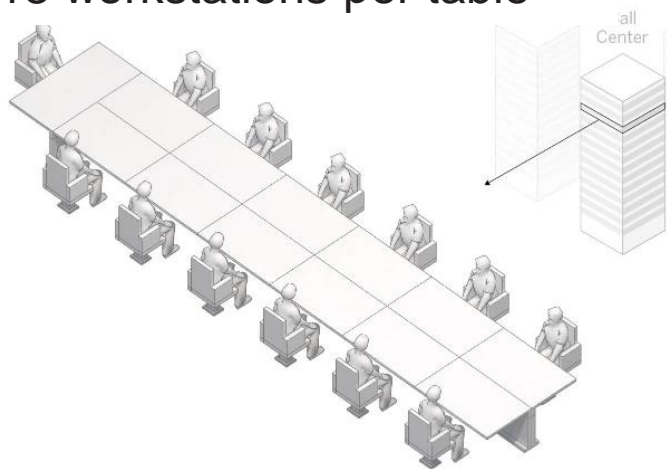


1. Person-to-person contact and droplets

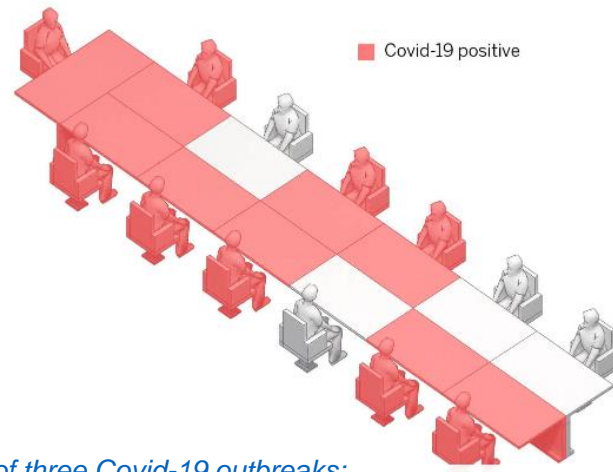
Virus from the respiratory tract goes into the air and onto nearby people when an infected person talks, coughs, sneezes or simply exhales



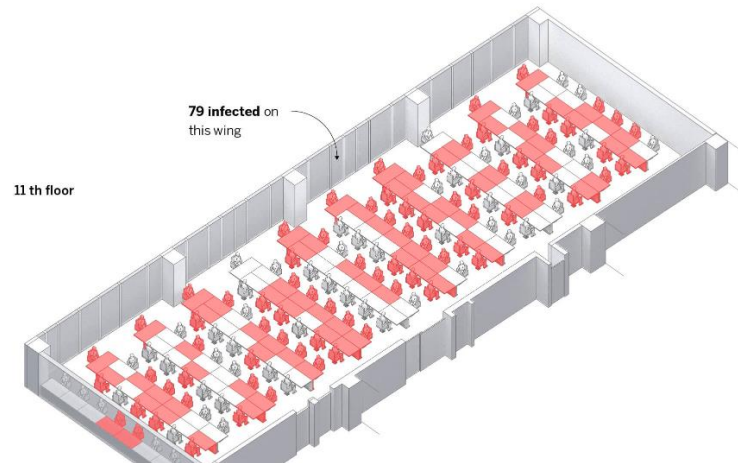
South Korean call centre -
13 workstations per table



9/13 employees tested positive
on one desk



79/137 employees (58%) tested
positive. Prolonged close
contact played a crucial role

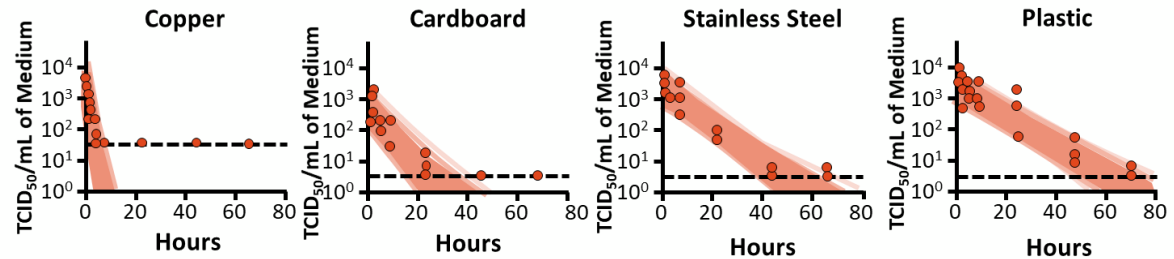


2. Infected droplets contaminating surfaces

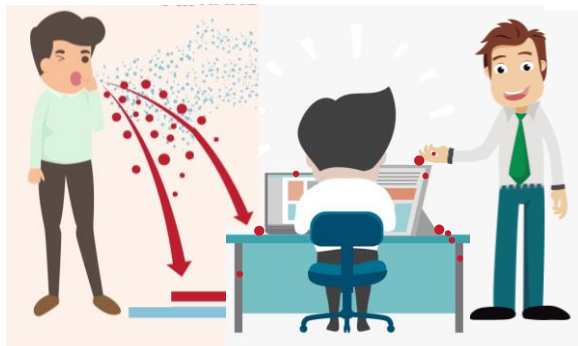


Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1
van Doremalen N *et al.*

Predicted Decay of SARS-CoV-2 Titer



Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient



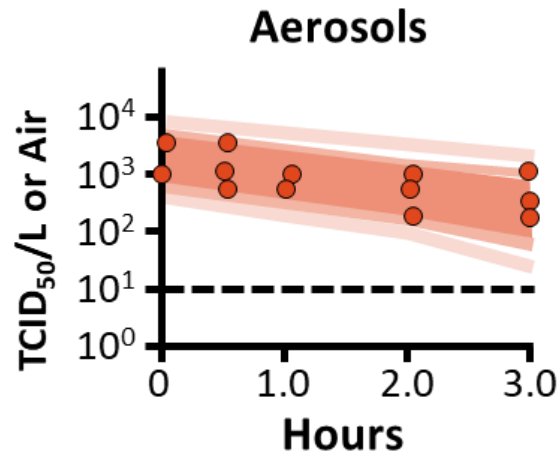
Sites	+ve samples
Bed rail	1/1
Chair	1/1
Light switches behind bed	1/1
Stethoscope	1/1
Air outlet fan	2/3
Door handle	1/1
Toilet bowl surface	1/1

3a. Airborne transmission

Particles < 5µm may remain in the air for long periods. Role of airborne transmission not settled



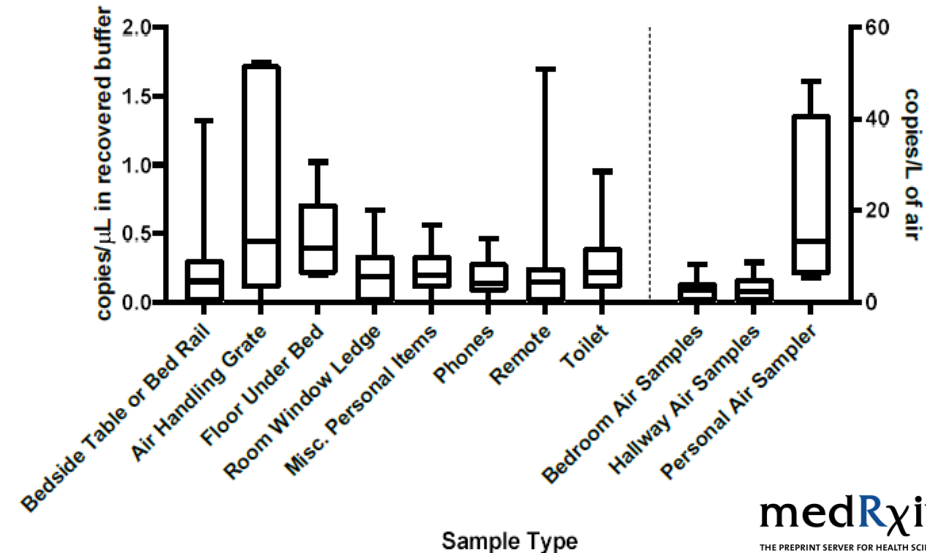
Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1
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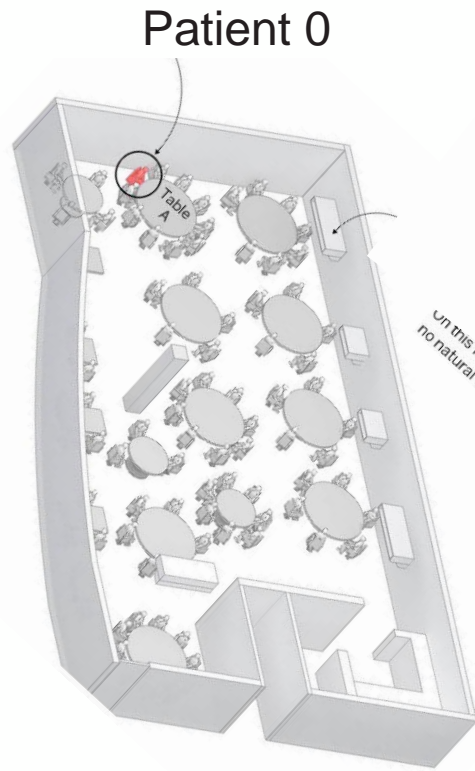
Aerosol and Surface Transmission Potential of SARS-CoV-2

Authors: Joshua L. Santarpia^{1,2*}, Danielle N. Rivera², Vicki L. Herrera¹, M. Jane Morwitzer¹, Hannah M. Creager¹, George W. Santarpia¹, Kevin K. Crown², David M. Brett-Major¹, Elizabeth R. Schnaubelt^{1,3}, M. Jana Broadhurst¹, James V. Lawler^{1,2}, St. Patrick Reid¹, and John J. Lowe^{1,2}

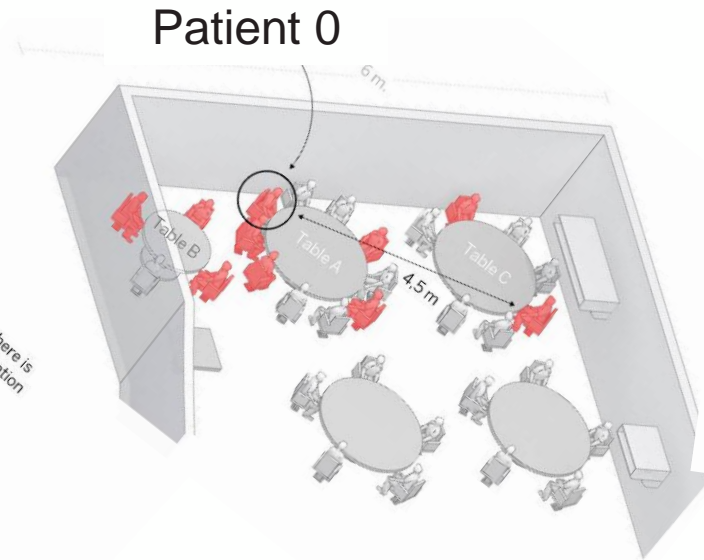
Range of Gene Copies Recovered per Sample Type



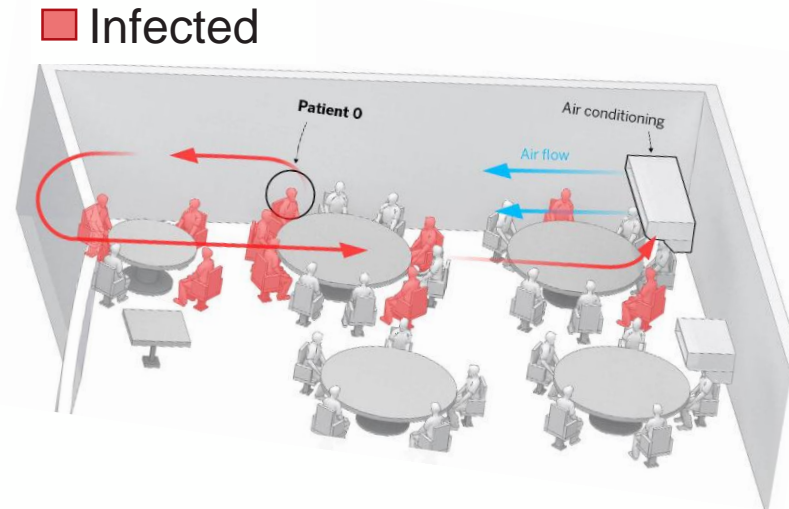
3b. Airborne transmission



Person at table A arrived from Wuhan the day before



9 people tested positive, some were >1m away from patient 0



Air conditioning seems to have played a crucial role, as air was recirculated continuously between the 3 tables

We are still learning how the virus spreads or doesn't spread...



The Economist

Black Lives Matter protests did not cause an uptick in covid-19 cases

the NATIONAL BUREAU of ECONOMIC RESEARCH

Black Lives Matter Protests, Social Distancing, and COVID-19

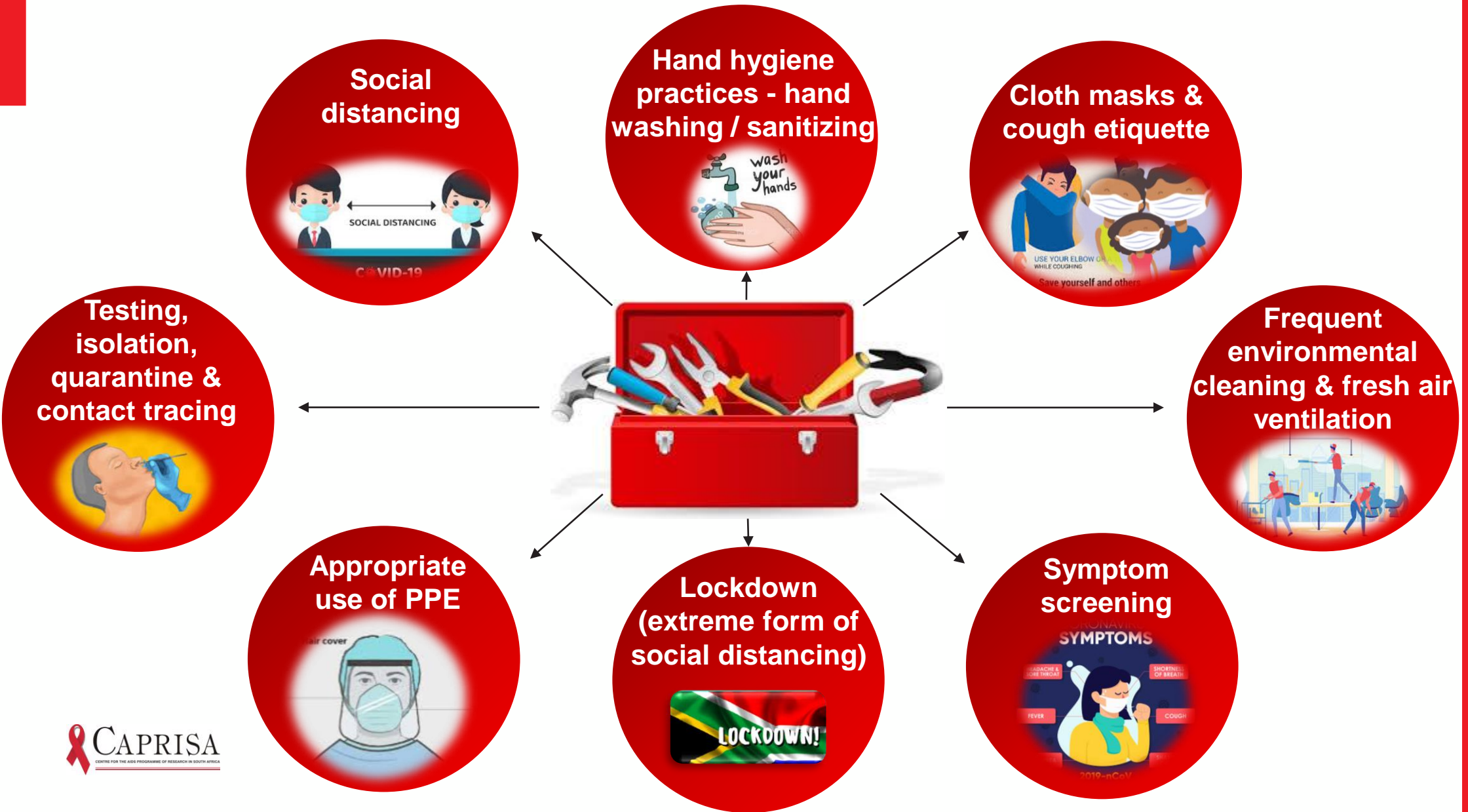
Dhaval M. Dave, Andrew I. Friedson, Kyutaro Matsuzawa, Joseph J. Sabia, Samuel Safford

NBER Working Paper No. 27408
Issued in June 2020



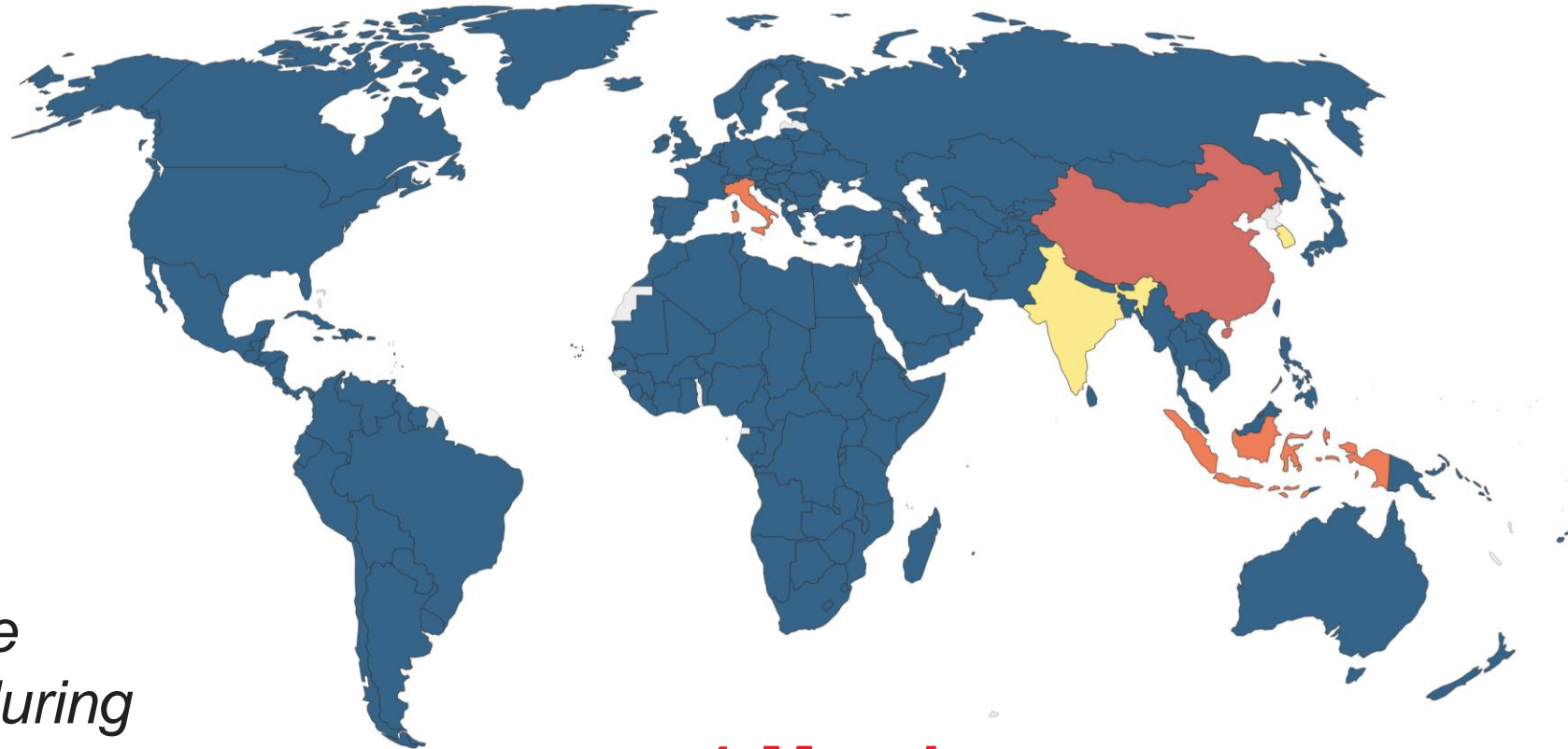
Cities with Black Lives Matter protests
Number of protesters: ● Fewer than 1,000 ● More than 1,000

The coronavirus prevention toolbox...



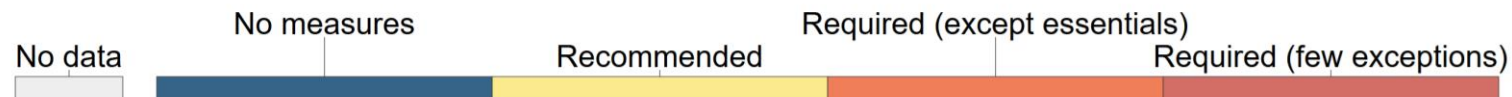
How our world changed....

1 March



*Stay-at-home
restrictions during
Covid-19 pandemic*

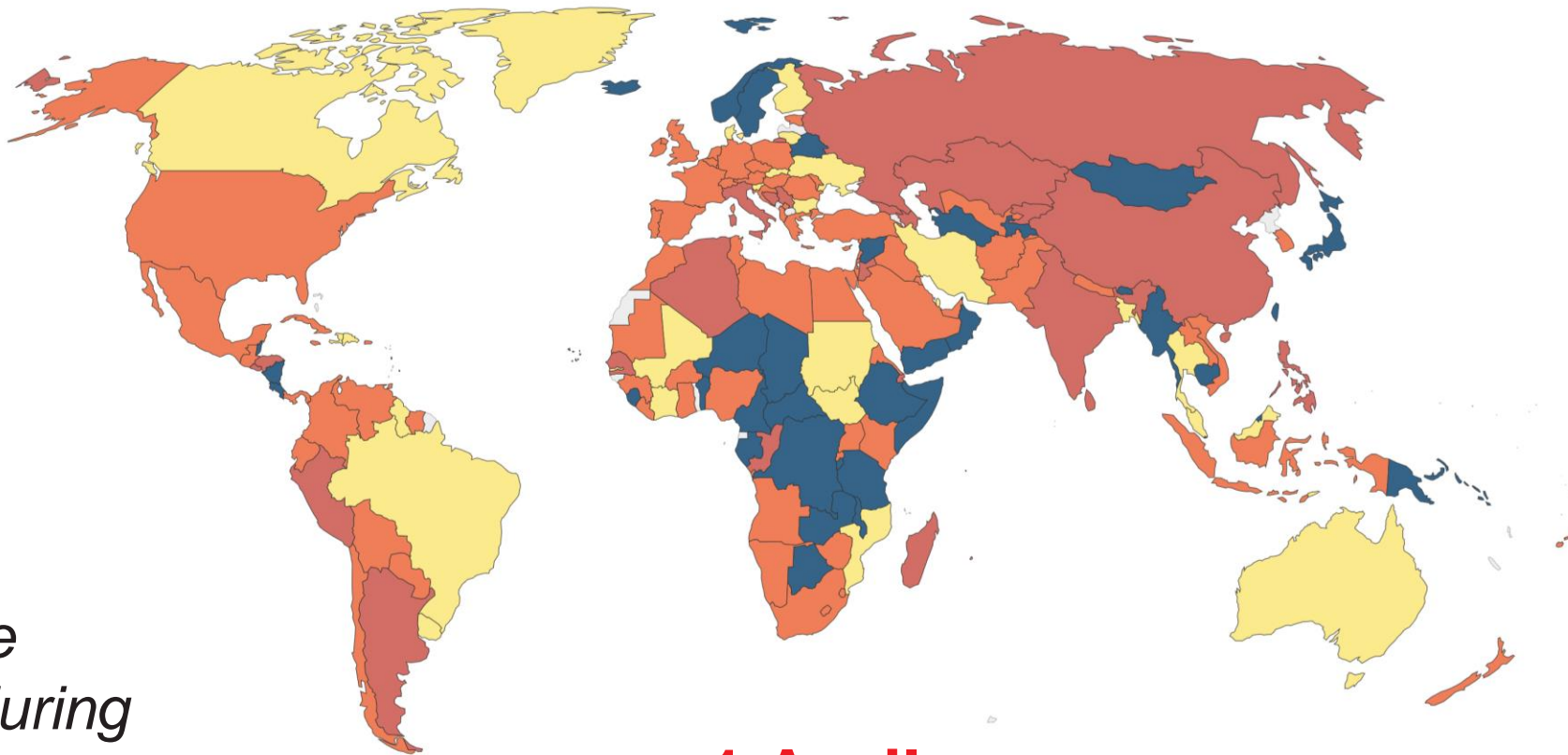
1 March



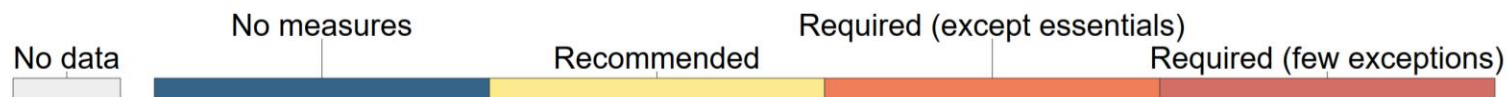
How our world changed....

1 April

86 countries
on national
or sub
national
lockdown

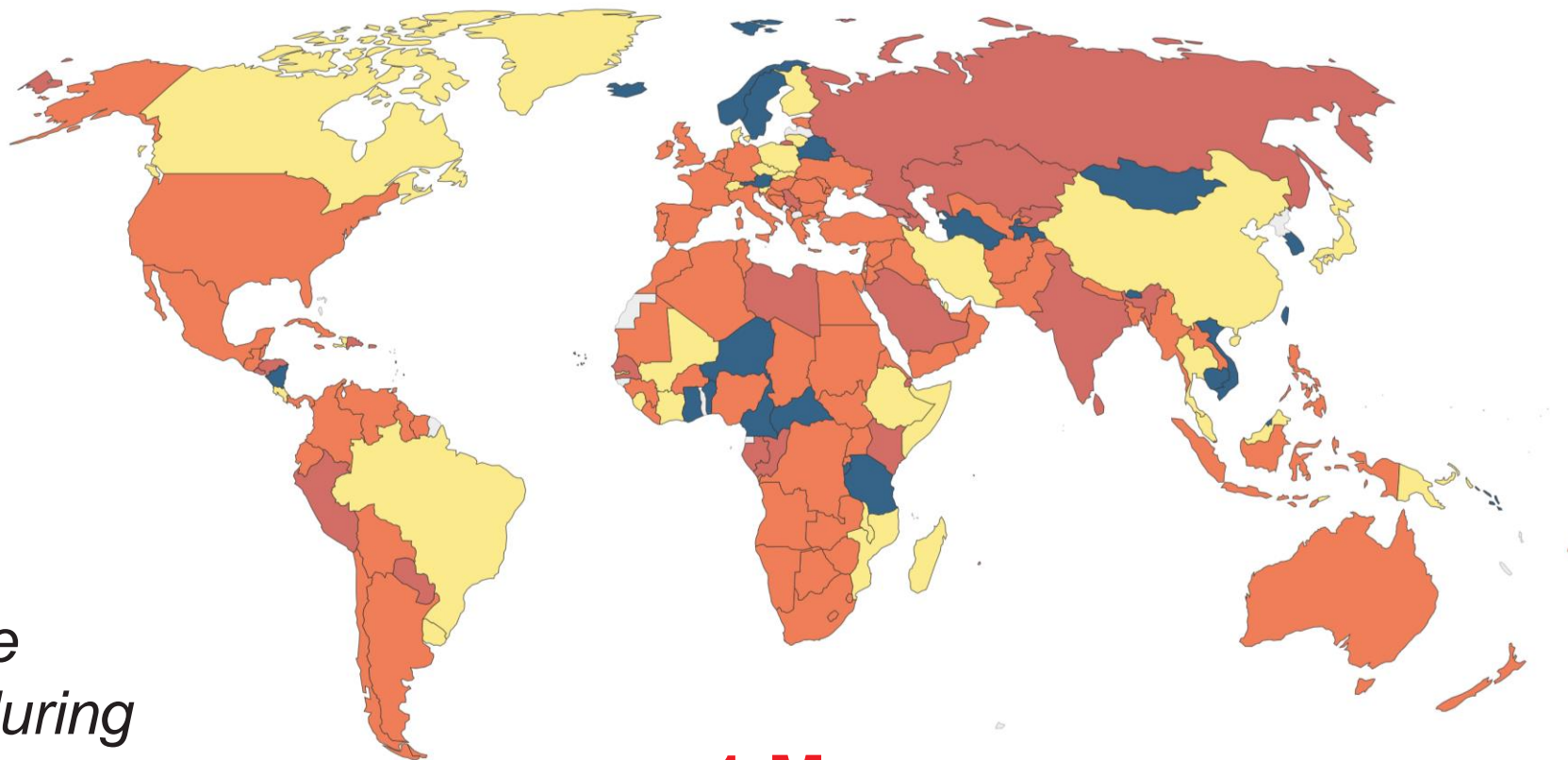


*Stay-at-home
restrictions during
Covid-19 pandemic*



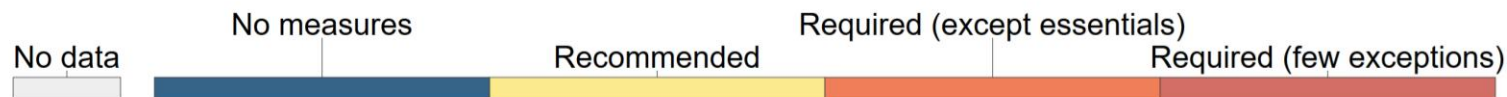
How our world changed....

1 May



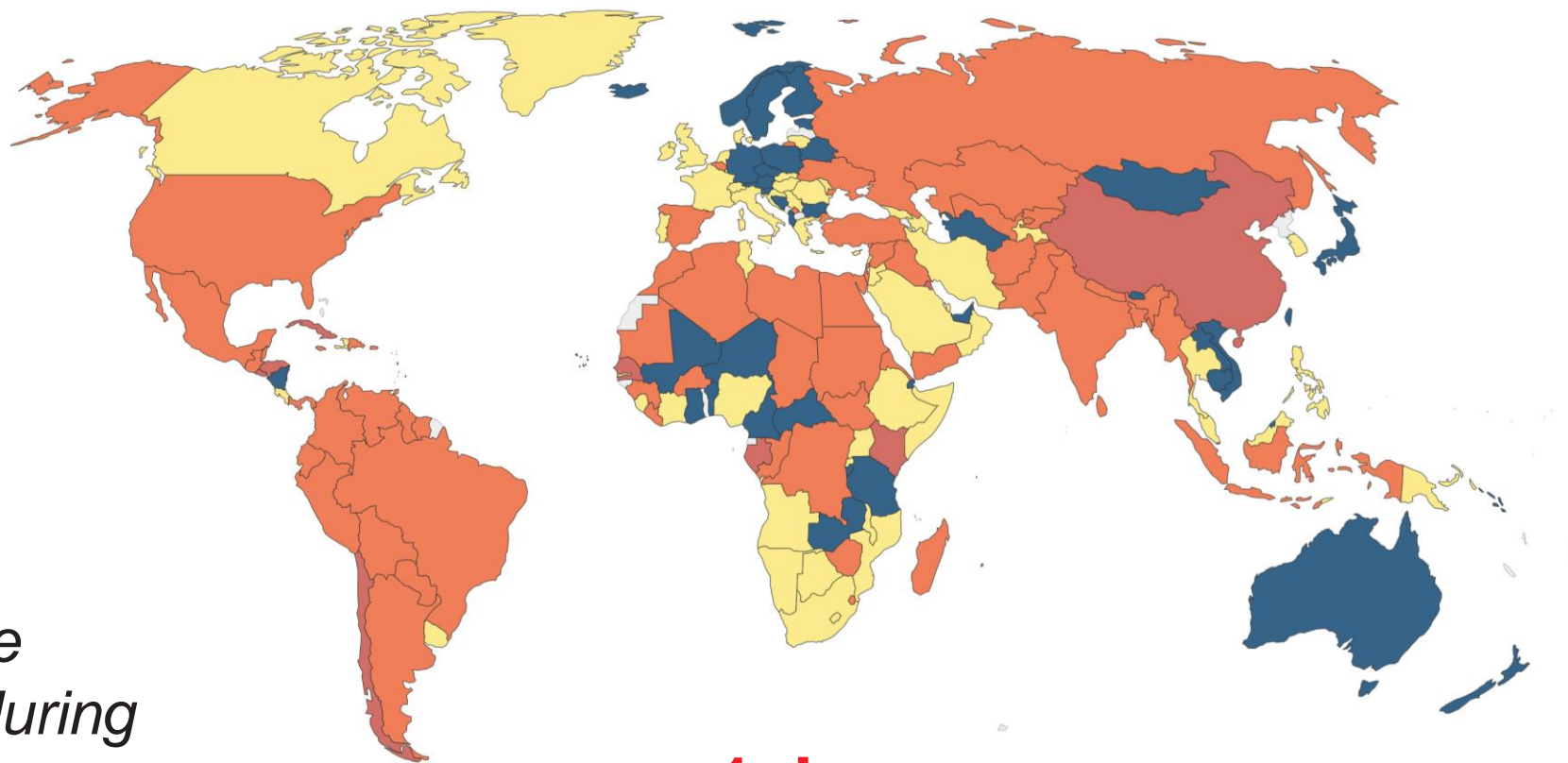
1 May

*Stay-at-home
restrictions during
Covid-19 pandemic*



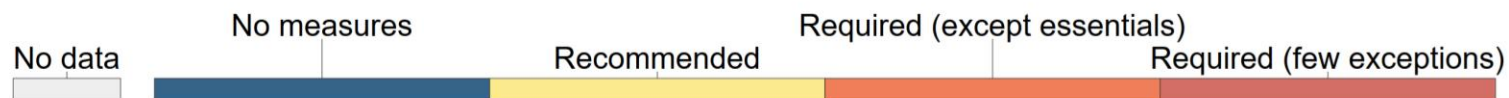
How our world changed....

1 June



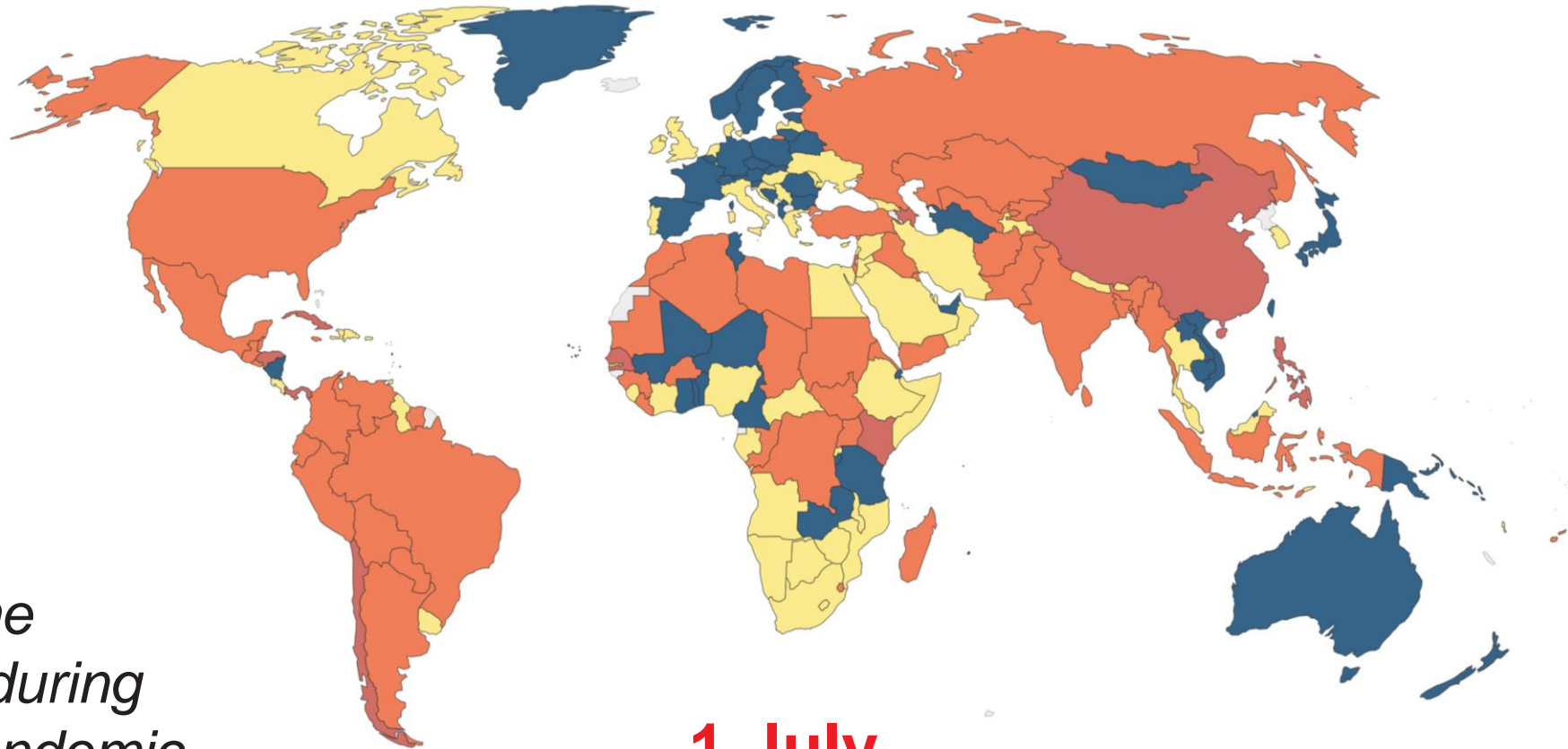
1 June

*Stay-at-home
restrictions during
Covid-19 pandemic*



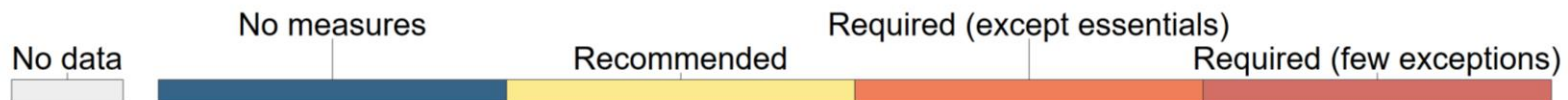
How our world changed....

1 July

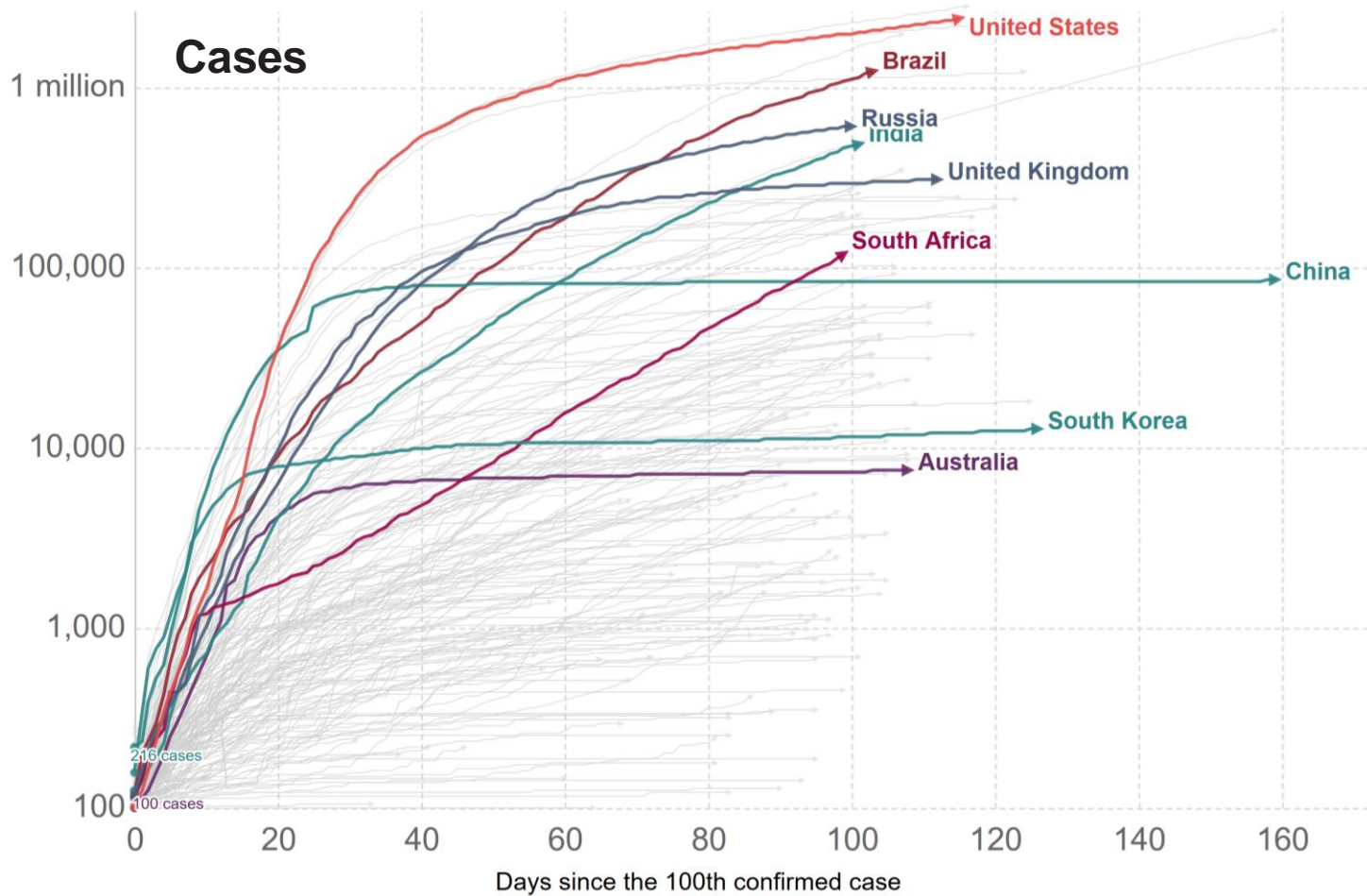


*Stay-at-home
restrictions during
Covid-19 pandemic*

1 July

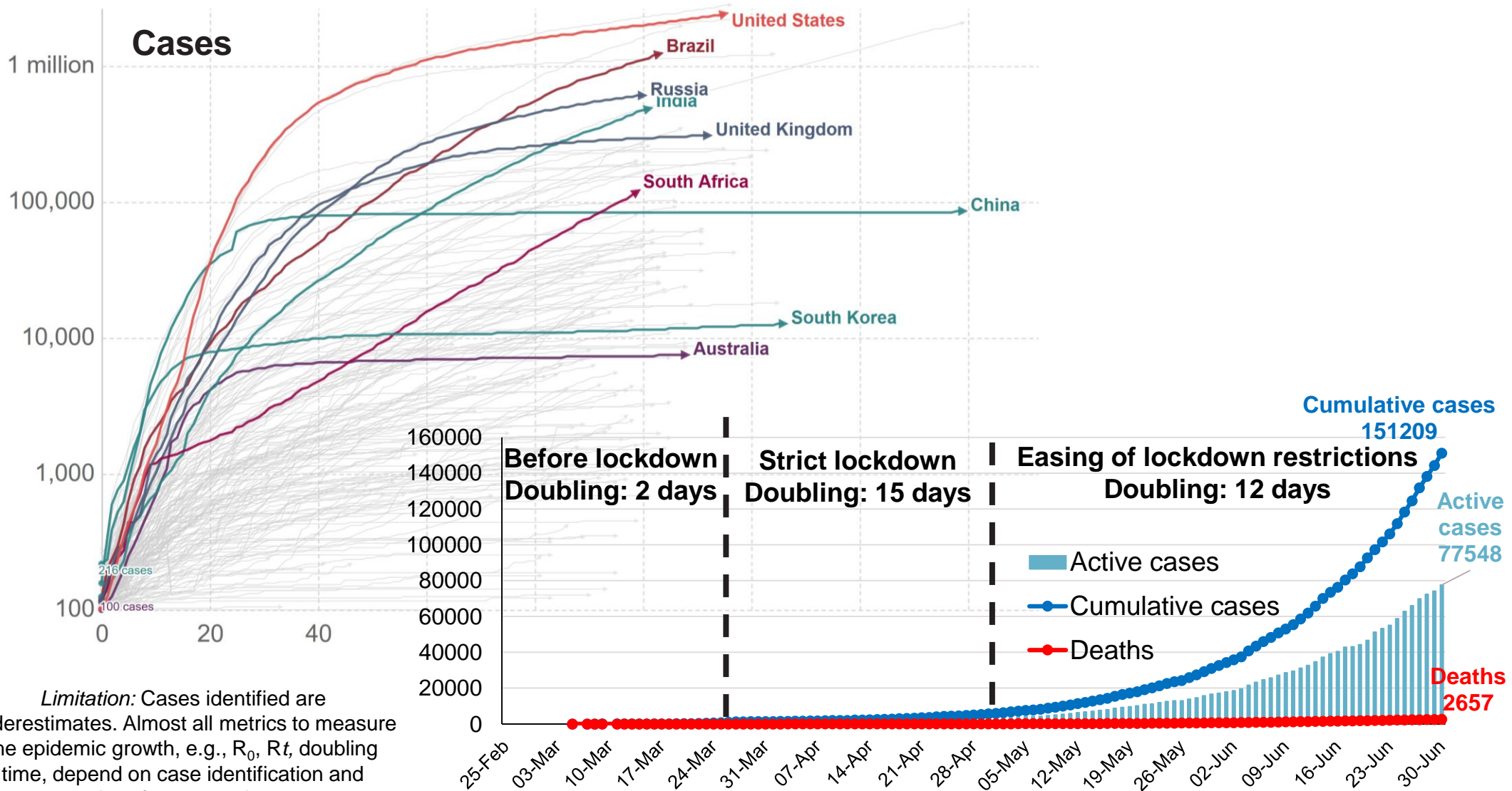


Slowing viral transmission with the lockdown in South Africa



Limitation: Cases identified are underestimates. Almost all metrics to measure the epidemic growth, e.g., R_0 , R_t , doubling time, depend on case identification and therefore on testing

Slowing viral transmission with the lockdown in South Africa



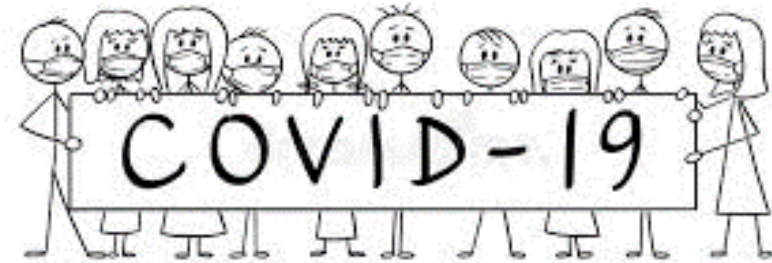
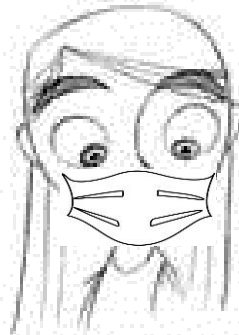
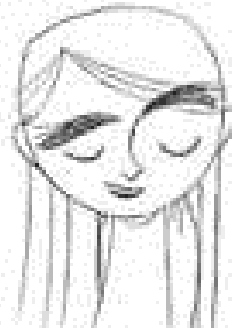
Limitation: Cases identified are underestimates. Almost all metrics to measure the epidemic growth, e.g., R_0 , R_t , doubling time, depend on case identification and therefore on testing

Transitioning from anxiety to self-efficacy

Stay-at-home orders / Lockdown



Living with the virus



Anxiety



Agency



Action



Collective Action

**Institutional
power
over
all**



**Individuals
power
within**



**Motivated
individuals
power for
preventive
action**



**Motivated communities
power for collective action**

**Ubuntu
"I am, because you are"**

Conclusion

- **Effective prevention - address all three modes of transmission**
- **Prevention toolbox is well-stocked, but it needs a vaccine - we are learning more about this coronavirus each day**
- **Lockdowns can slow viral transmission and even achieve temporary containment – but are not sustainable for long periods**
- **As we shift from restrictions to living with the virus, we need to pivot our prevention paradigm from anxiety to self-efficacy**
- **Societies embracing community and individual interdependence are well placed to successfully pivot with the concept of “*Ubuntu*”**