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PROJECT TITLE: COVID 19 CASES ANALYSIS

PROBLEM STATEMENT:

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention.

ABSTRUCT :

This paper focuses on innovation in development and humanitarian efforts in the context of the coronavirus (COVID-19) .Following an exploration of the overall role of innovation in the COVID-19 response, it examines innovation efforts underway in international development and humanitarian responses to the pandemic, how well these efforts are working, and how they might need to be enhanced to address pressing health, social and economic challenges, as well as to secure societies' long-term resilience

INTRODUCTION :

- Recently, the world gained rapid progression in technology and it shows an important role in the developed countries. Nowadays all daily life sectors such as education, business, marketing, militaries,

and communications, engineering, and health sectors are dependent on the new technology applications.

Innovation for development: what did we learn pre -pandemic?

- In the past decade, innovation for development has gained traction as a means of achieving development and humanitarian goals in more novel and creative ways that can generate more impact for more people.
- Lowering the cost of and access to vaccines and medicines in the poorest countries.
- Using mobile money and microfinance to drive financial inclusion and small business development.
- Using community-based approaches to tackle malnutrition and sanitation.
- Using cash transfers to enhance food security.
- Using insurance and other adaptation measures to enhance resilience to disasters and climate change.

A development and humanitarian overview:

- In low and middle-income settings that are the target of ODA investments, where capacity and resources are more limited, the need for innovation is, according to the United Nations, "more critical than ever… all relevant actors should work together to fund, design and deliver solutions".
- Given the novel and unknown nature of the virus and its resulting impacts, innovation has played a role in informing appropriate responses to the pandemic from medical, public health and socio-economic perspectives, and also for effective recovery measures.

Innovation for development efforts have been more narrowly focused on improvements to products and process :

- As noted above, the pandemic has placed considerable demands on development and humanitarian organisations, which can also be seen as presenting a range of opportunities for innovation.
- Most organisations have put in place processes and mechanisms that have enabled them to 'stick to the basics': sustaining and re-emphasising existing business models and approaches, rather than questioning and reforming them.

Coronavirus(Covid 19) innovation : what is happening?

- The nature of the innovation processes that have been deployed is also notable.

- In the six months since the outbreak began, the US Food and Drug Administration (FDA) has approved almost 100 COVID-19 tests, in contrast to the three months the FDA took to approve the first Ebola test during the 2014 West Africa outbreak.

- The first COVID-19 vaccine entered into human trials within a record-breaking 69 days of identifying the causative agent of the outbreak[1] – a remarkable achievement, considering that it took 25 months for the first vaccine to reach the human trial stage during the previous global coronavirus outbreak.

- This means product development has happened without addressing a number of basic scientific and operational questions, which can create downstream risks.

- For example, because a number of the most advanced vaccine candidates are based on novel technologies, there is still limited understanding of the next steps, with questions yet to be answered about the scope for manufacturing scale-up, long-term patient safety and appropriateness.

OECD OPSI facets of public innovation :

- Enhancement-oriented innovation
- Adaptive innovation
- Anticipatory innovation
- Mission-driven innovation

1. Mission-driven innovation :

- The most obvious example here is the development of a COVID-19 vaccine, and related arrangements for fair and widespread distribution.
- Also in this category are the much-publicised efforts to develop ventilators for managing acute COVID-19 cases. While the bulk of these innovation efforts are not focused on developing countries, there have been notable exceptions.

2. Enhancement-oriented innovation :

- Many of the efforts in COVID-19 infection control and management fit into this area. For instance, the approach being taken around the world to tracking, tracing, quarantining and shielding vulnerable groups builds on lessons learned from previous epidemic responses, with adjustments made for the specific epidemiology of COVID-19.
- Some of these have seen novel processes, which upend the traditional development model of global North–South transfer noted above.

3.Adaptive innovation:

- This refers to original, simple, locally generated ideas that enable results that would not otherwise be attainable. These grassroots innovations have emerged in environments where scarcity of resources compels human ingenuity.
- Some of these highly localised efforts are based on specific aspects of COVID-19 responses, such as low-cost and frugal production of effective PPE (e.g. the M-19 Initiative in India).

4 .Anticipatory innovation:

- In the COVID-19 context, governments around the world are trying to rethink how the post-pandemic world should look.

- These include efforts focusing on a comprehensive ‘global reset’ of the international economic system that created such dramatic vulnerabilities to the pandemic, and on ensuring a ‘green recovery’.

A development and humanitarian overview :

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- Given the novel and unknown nature of the virus and its resulting impacts, innovation has played a role in informing appropriate responses to the pandemic from medical, public health and socio-economic perspectives, and also for effective recovery measures.

- For many development actors on the ground, the need for creative approaches was clearly apparent from the outset of the pandemic. There have been ongoing challenges around mobility of staff, communications, partner engagement, access and delivery of services, which have continued to affect the response.

- This has created a rich environment for many donors and partners to adapt and adopt new approaches, form partnerships with new actors, and test new approaches.

Type of innovation	Incremental	Mission	Adaptive	Anticipatory
Example	Track and trace or social protection through digital technologies	Challenge funds, development of diagnostics or vaccines	Maker collectives for PPE, community-based disease management	Green recovery, Build back better, 'Global reset'
Approach	Top-down and bottom-up, high certainty	Top-down, moderate certainty	Bottom-up, moderate certainty	Top-down and bottom-up, high uncertainty
Benefit	Can be readily and easily approved and generate quick wins Less likely to get negative reactions No challenge to the status quo	Can drive transformational results Often demands multi-stakeholder collaboration	Builds on front-line practitioner perspectives and resources Meet localised needs and opportunities	Helps to navigate multiple uncertain futures Can be a platform for large-scale change
Risks	By building upon what exists, can neglect those who are currently not benefitting or who have unmet needs	Can deprioritise other important agendas and lead to narrow focus Can antagonise or mobilise those who have different values or beliefs	Can move too fast for engagement Poses threat to existing vested interests and established expertise base Can often be untested and weak on evidence	Can be highly contested and contentious Generates political and institutional 'bad will' Can be source of instability in the short term

Innovation for development efforts in COVID-19: examples across the facets with benefits and risks

How well is innovation for development ?

1 : Innovation for development efforts have been more narrowly focused on improvements to products and processes:

- As noted above, the pandemic has placed considerable demands on development and humanitarian organisations, which can also be seen as presenting a range of opportunities for innovation.
- However, for the most part, this opportunity has not been capitalised upon. Most organisations have put in place processes and mechanisms that have enabled them to 'stick to the basics'.
- Sustaining and re-emphasising existing business models and approaches, rather than questioning and reforming them.

2: A broader systems-based and transformational perspective is essential:

- The incremental focus of current innovation efforts is often underpinned by a misplaced set of ideas about how innovations works in reality.
- Even those innovations that are 'single point' – in the sense that they focus on a narrow challenge and involve a technical solution – need to take into account a systemic perspective.

3: Innovation in development and humanitarian responses have focused more on mission-driven and enhancement-oriented innovation, and less on adaptive and anticipatory innovation

- While enumerating the investments in each of the four areas in financial terms is beyond the scope of this report, it was clear from publicly announced investments, interviews and facilitated discussions that two areas – mission-driven innovation and

enhancement-oriented improvements – have been getting the majority of attention and investment.

- While there have been examples of adaptive and anticipatory innovation, these have tended to be supported by actors outside of the 'usual suspects' of development and humanitarian work, such as foundations, philanthropies and the like.

4. Collaboration in innovation investments and associated learning processes must be improved, especially across the global North–South divide

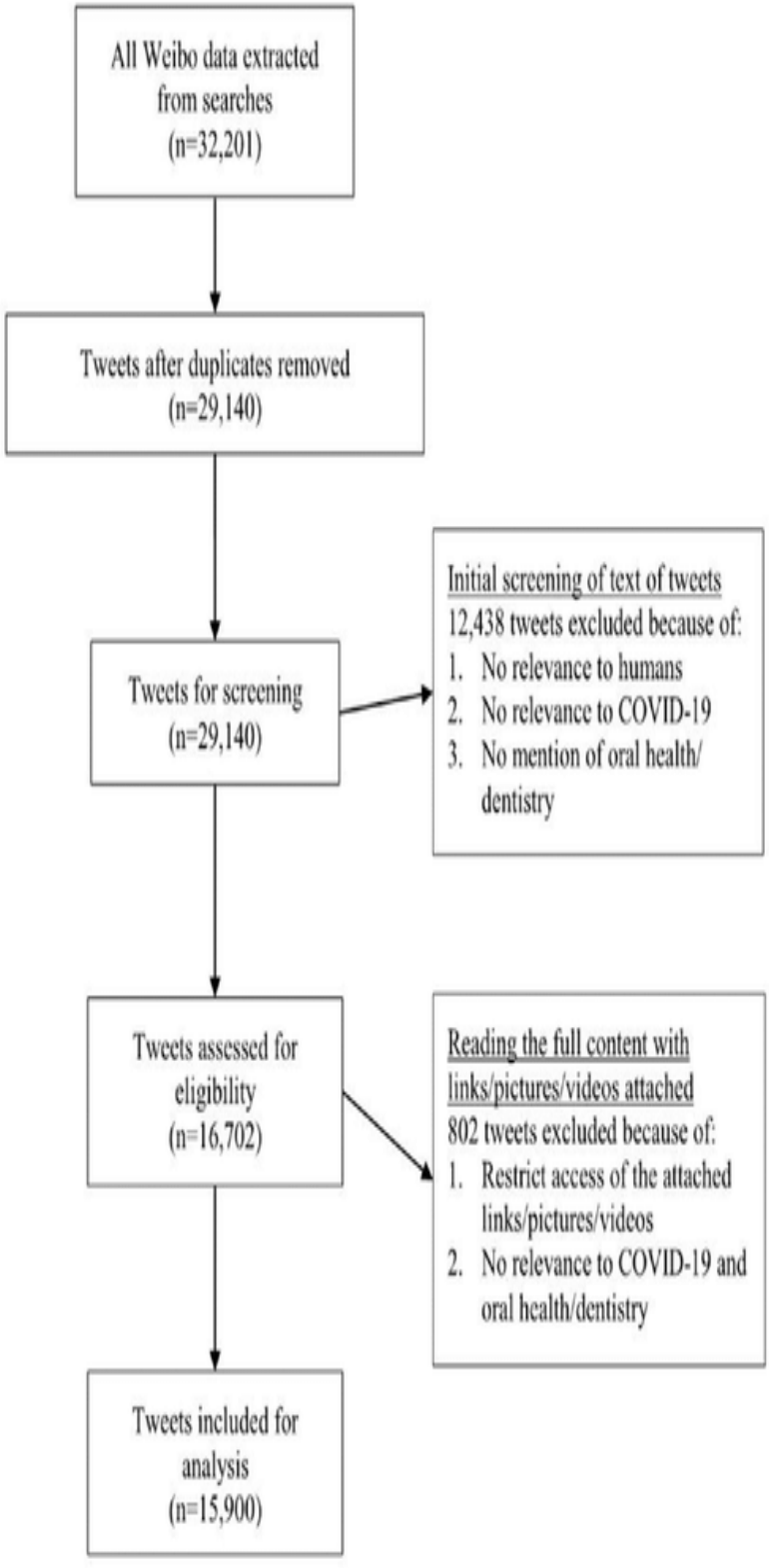
- Efforts within the DAC and the wider development community aim to improve the tracking of donor-funded innovations, including the work of the Global Innovation Exchange.
- This provides information on innovations in a wide range of sectors to incentivise funding from social entrepreneurs.
- While this has the potential to become a common tool for information management in relation to COVID-19 innovations, the emphasis is on learning and collaboration for innovation processes that are already underway.
- However, experience suggests that once an innovation process has been launched, especially with donor funds, it can be hard to maintain openness and flexibility.

5: Access to innovation is as much of a challenge as innovation itself:

- As well as designing and delivering technical innovations, it is vitally important to ensure access to these innovations for those who are hardest to reach: the extremely poor; those who miss out because of their gender, ethnic group or sexuality; and those living in remote areas.

Proposals for progress:

- Moving beyond ‘single point’ product-based interventions to look at processes and paradigms, using a systems-based and transformational lens.
- Seeking to balance ‘innovation for development’ portfolios with more emphasis on forward looking anticipatory innovation and bottom-up adaptive innovation, including innovation from the South.
- Investing in more strategic and focused collaboration, especially with local and national actors.
- Ensuring and sustaining a focus on the poorest and leaving no one behind.



covid-19 diseases.

Pronunciation	
speciality	Infection disease
symptoms	Fever , cough ,fatigue ,shortness of breath ,vomiting ,loss of taste or smell ,some cases asymptomatic
Complications	ARDS, long COVID
Usual onset	2–14 days (typically 5) after infection
Duration	5 days to chronic
Causes	SARS cov-20
Prevention	Vaccination, face coverings, ventilation, hand washing
Treatment	Symptomatic and supportive
Frequency	771,150,460 confirmed cases
Deaths	• 6,960,770 (reported) • 17.6–31.4 million[1] (estimated)

COVID-19 •

- The symptoms of COVID-19 are variable but often include fever, cough, headache, fatigue, breathing difficulties, loss of smell, and loss of taste. Symptoms may begin one to fourteen days after exposure to the virus. At least a third of people who are infected do not develop noticeable symptoms.
- Of those who develop symptoms noticeable enough to be classified as patients, most (81%) develop mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms , hypoxia, or more than 50% lung involvement on imaging), and 5% develop critical symptoms (respiratory failure, shock, or multiorgan dysfunction).
- Older people are at a higher risk of developing severe symptoms. Some people continue to experience a range of effects (long COVID) for years after infection, and damage to organs has been observed. Multi-year studies are underway to further investigate the long-term effects of the disease.
- COVID-19 transmits when infectious particles are breathed in or come into contact with the eyes, nose, or mouth. The risk is highest when people are in close proximity, but small airborne particles containing the virus can remain suspended in the air and travel over longer distances, particularly indoors.
- Transmission can also occur when people touch their eyes, nose or mouth after touching surfaces or objects that have been contaminated by the virus. People remain contagious for up to 20 days and can spread the virus even if they do not develop symptoms.

Nomenclature

Main article: COVID-19 naming

- During the initial outbreak in Wuhan, the virus and disease were commonly referred to as "coronavirus" and "Wuhan coronavirus" with the disease sometimes called "Wuhan pneumonia".
- In the past, many diseases have been named after geographical locations, such as the ,Middle East respiratory syndrome, and Zika virus.
- In January 2020, the World Health Organization (WHO) recommended 2019-nCoVand 2019-nCoV acute respiratory

diseases as interim names for the virus and disease per 2015 guidance and international guidelines against using geographical locations or groups of people in disease and virus names to prevent social stigma.

- The official names COVID-19 and SARS-CoV-2 were issued by the WHO on 11 February 2020 with COVID-19 being shorthand for "coronavirus disease 2019". The WHO additionally uses "the COVID-19 virus" and "the virus responsible for COVID-19" in public communications.

Symptoms and signs

- *Main article: Symptoms of COVID-19*

- Symptoms of COVID-19

- The symptoms of COVID-19 are variable depending on the type of variant contracted, ranging from mild symptoms to a potentially fatal illness.

- Common symptoms include coughing, fever, loss of smell (anosmia) and taste (ageusia), with less common ones including headaches, nasal congestion and runny nose, muscle pain, sore throat, eye irritation, and toes swelling or turning purple, and in moderate to severe cases, breathing difficulties.

- People with the COVID-19 infection may have different symptoms, and their symptoms may change over time. Three common clusters of symptoms have been identified:

- one respiratory symptom cluster with cough, sputum, shortness of breath, and fever; a musculoskeletal symptom cluster with muscle and joint pain, headache, and fatigue; and a cluster of digestive symptoms with abdominal pain, vomiting, and diarrhea.

- In people without prior ear, nose, or throat disorders, loss of taste combined with loss of smell is associated with COVID-19 and is reported in as many as 88% of symptomatic cases.

- Of people who show symptoms, 81% develop only mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (hypoxia, or more than 50% lung involvement on imaging) that require hospitalization, and 5% of patients develop critical symptoms (respiratory failure, septic shock, or multiorgan dysfunction) requiring ICU admission.

- At least a third of the people who are infected with the virus do not develop noticeable symptoms at any point in time.

- These asymptomatic carriers tend not to get tested and can still spread the disease. Other infected people will develop symptoms later (called "pre-symptomatic") or have very mild symptoms and can also spread the virus.

- As is common with infections, there is a delay between the moment a person first becomes infected and the appearance of the first symptoms.
- The median delay for COVID-19 is four to five days possibly being infectious on 1-4 of those days. Most symptomatic people experience symptoms within two to seven days after exposure, and almost all will experience at least one symptom within 12 days
- Most people recover from the acute phase of the disease. However, some people continue to experience a range of effects, such as fatigue, for months, even after recovery.

- This is the result of a condition called long COVID, which can be described as a range of persistent symptoms that continue for weeks or months at a time.

- Long-term damage to organs has also been observed after the onset of COVID-19. Multi-year studies are underway to further investigate the potential long-term effects of the disease.

- The Omicron variant became dominant in the U.S. in December 2021. Symptoms with the Omicron variant are less severe than they are with other variants.
- Complications
- Mechanisms of SARS-CoV-2 cytokine storm and complications.
- Complications may include pneumonia, acute respiratory distress syndrome (ARDS), multi-organ failure, septic shock, and death. Cardiovascular complications may include heart failure, arrhythmias (including atrial fibrillation), heart inflammation, and thrombosis, particularly venous thromboembolism.
- Approximately 20–30% of people who present with COVID-19 have elevated liver enzymes, reflecting liver injury.
- Neurologic manifestations include seizure, stroke, encephalitis, and Guillain–Barré syndrome (which includes loss of motor functions).
- Following the infection, children may develop paediatric multisystem inflammatory syndrome, which has symptoms similar to Kawasaki disease, which can be fatal.
- In very rare cases, acute encephalopathy can occur, and it can be considered in those who have been diagnosed with COVID-19 and have an altered mental status.
- According to the US , pregnant women are at increased risk of becoming seriously ill from COVID-19.
- This is because pregnant women with COVID-19 appear to be more likely to develop respiratory and obstetric complications that can lead to miscarriage, premature delivery and intrauterine growth restriction.[74]

- Fungal infections such as aspergillosis, candidiasis, cryptococcosis and mucormycosis have been recorded in patients recovering from COVID-19

CONCLUSION:

- This study focused on the articles that applied machine-learning applications in COVID-19 disease for various purposes with different algorithms, 14 from 16 articles .

- It's used supervised learning, and only one among them used unsupervised learning another one used both methods supervised and unsupervised learning and both of them shows accurate results.

- The studies used different machine-learning algorithms in different countries and by different authors but all of them related to the COVID-19 pandemic, of these articles used Logistic regression algorithm, and all of them showed promising results in the COVID-19 health care applications and involvement.