COVID-19 Webinar Series

Harnessing Big Data, Tracking Covid-19: Technological Panacea or Digital Pandora's Box?

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Webinar Outline

- Webinar presents the intensifying ways in which Big Data approaches are being applied to track and identify **Covid-19** infections across the globe as the pandemic continues;

  - *What are some of the ways Big Data is used to track Covid-19;*
  - *How are these practices being applied?*
  - *Where are these technologies being applied?*
  - *What are the implications of the use of these new technologies during outbreaks?*

- The webinar today engages with a key broader research question: **what happens when we digitise and dataify global health security practices?**

- Aim for interaction during webinar…how do **we** as **LSE Health Policy MSc** candidates/future policy makers/leaders/researchers engage with this expanding health policy challenge.

Pandemics in an era of 'Big Data'

- Past two decades has witnessed rise of the era of 'Big Data' and use of these new data sources to produce insights and forecasts across a broad spectrum of fields from policing and counterterrorism, to markets and the financial sector, to the judicial system....and within **global health security** practices of **infectious disease surveillance**

- Precise definition of **Big Data** varies but includes common defining features:

- **Big Data as data sources**-→ sources of Big Data include: range of data collected from phone towers, mobile phone apps, Bluetooth connections, surveillance videos, drones, social media, smart thermometers, credit card records, wearables etc. (Gasser et al. 2020)

- **Big Data as technologies/infrastructures which process data**-→ digital algorithms, data warehouses, cloud computing, machine learning, AI-associated technologies (Amoore and Piotukh, 2016)

- **Big Data as ideology**--→ Big Data prophets, idea that big data analysis represents a break from previous systems of knowledge generation, a new scientific paradigm for anticipating and understanding...hailed as a revolution that will transform how we live, work and think (Cukier and Mayer-Schonberger, 2013; van Dijk, 2014).

Pandemics in an era of 'Big Data'

- Past decade declaration of <u>6 PHEICs:</u> 2009 H1N1 flu pandemic; the 2014 resurgence of polio; 2014 West African Ebola epidemic; the 2015/16 Zika virus epidemic; and the **Covid-19 pandemic**

- With each new unfolding public health emergency, states and intergovernmental organisations have demonstrated intensifying interests in harnessing new data sources to 'get ahead of the epidemic curve'

- Recent WHO report which states 'the era of big data holds enormous potential for the future of public health surveillance…following significant advanced in the capacity to collect and share data from previously unimagined sources, such as social media data and geospatial mobile phone data' (WHO, 2018: 12-16).

25 Years + of Digital Disease Surveillance

Key takeaway: while the ongoing Covid-19 pandemic has brought new data-driven practices of infectious disease surveillance to the forefront, initiatives to harness expanding 'Big Data' sources for the accelerated detection of public health emergencies are <u>not</u> novel, nor have they only sprung forward in the contexts of Covid-19

- **1995**-→ **ProMed-mail** issues an advanced alert of an outbreak of the Ebola virus in Kikwit, Zaïre (now DRC);
- **2002**-→ **GPHIN**, an early online surveillance system provides advanced detection of an *atypical pneumonia* in Guangdong, China.
- **2009**-→ **Google Flu Trends** claims to predict patterns of seasonal influenza more rapidly than CDC and traditional health authorities;

Harnessing Big Data, Tracking Covid-19

- **Covid-19 pandemic --→** Intensification of an evolving and ongoing project at digitising and dataifying infectious disease surveillance practices

- **Hallmark of this pandemic---→** merging of 'Big Tech' and 'Big Data' to assist states and governments in tracking and identifying infection rates and affected populations across states with a diversity of governance structures and healthcare systems.

  - 'The world has faced pandemics before, but this time we have a **new superpower**: the ability to gather and share data for good' -Facebook CEO Mark Zuckerberg

Harnessing Big Data, Tracking Covid-19

- **Use of big data sources and technologies are being used to support <u>3</u> primary functions of pandemic management for Covid-19:**

  - **Contact-tracing apps** (Singapore, Switzerland, Australia, Qatar, the UK (**maybe**?) plus many more;
  - **Symptom checking/analysis** (Spain's *CoronaMadrid* and WHO system in development);
  - **Quarantine control/monitoring** (South Korea, Taiwan's *Electric Fence Programme)*

Big Data Disasters?

- Big data-driven surveillance initiatives across the world to track infections amid a highly **securitized** global pandemic has also brought forward heightened concern regarding:

  - role **of dual-use technologies** for disease surveillance with implications for human rights/privacy, surveillance creep;
    - Iran--→ Covid-19 symptom checker app scandal
    - Russia→ installation of thousands of street-cameras enabled with facial recognition technology in cities
    - Israel-→ use of contact-tracing app with counter-terrorist software
    - China-→ Hanvon Technology Ltd's ability to use facial recognition to identify individuals with facemasks

  - UK/EU contexts the increasing stake of **Big Tech** corporations in assisting healthcare systems/governments with responses to public health emergencies;
    - UK NHSX datastore-→ involving Google + **Palantir** Technologies
    - Contact-tracing app-→ **centralised** v. **decentralised** design
    - EU member state pushback against Apple/Google contact-tracing *need for *digital soveriengty*

Big Data Dilemmas?

Assessing the 'digital' turn of infectious disease surveillance

PROS

- Easy access to innovation and advancements as offered by tech providers/infrastructure?

- Increased coverage, increased communication, and increased connectivity during outbreaks?

- Cost-effective support and rapid interventions for resource constrained healthcare systems?

CONS

- Inability to extricate corporate interests from public good?

- Expansion of the permanent 'surveillance state'+ inability to resist power?

- Ongoing issues with opacity, accountability and traceability of intentions, objectives, outcomes and impacts due to complex technological networks/ecologies…many of us simply do not know the whole story

What do you think?

- Can we successfully respond to emergent epidemics/pandemics **<u>without</u>** resorting to Big Data/Big Tech?

- How can citizens and states work to regulate the place and impacts of Big Tech during public health emergencies?

- After Covid-19 can we prevent future epidemics/pandemics by harnessing more Big Data?

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