

# Digital Public Health: How Technology Has Changed the Science of Public Health



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IBM's response to COVID-19 Think Leadership live stream

# IBM's response to COVID-19

To meet the global challenge of COVID-19, the world must come together. IBM has resources to share — like supercomputing power, virus tracking and an AI assistant to answer citizens' questions.

Read a message from IBM 

Watch Think Leadership live on April 7th 

## IBM initiatives

### Accelerate discovery

Accelerate research for the doctors, scientists and organizations working to decode and defeat the COVID-19 virus

### Trusted information

Provide accurate information from reliable sources to help you make better decisions for yourself, your business and your community

### Resiliency and adaptation

Enable resilient models for living, working and conducting business during times of uncertainty and crisis

Let's talk

# Emerge smarter

It's time to rethink how business works. Take action in six key areas to emerge smarter, more resilient and more agile for years to come.

01  
Work safe

02  
Customer experience with Watson

03  
Business continuity

04  
Agility and efficiency with cloud

05  
Cybersecurity

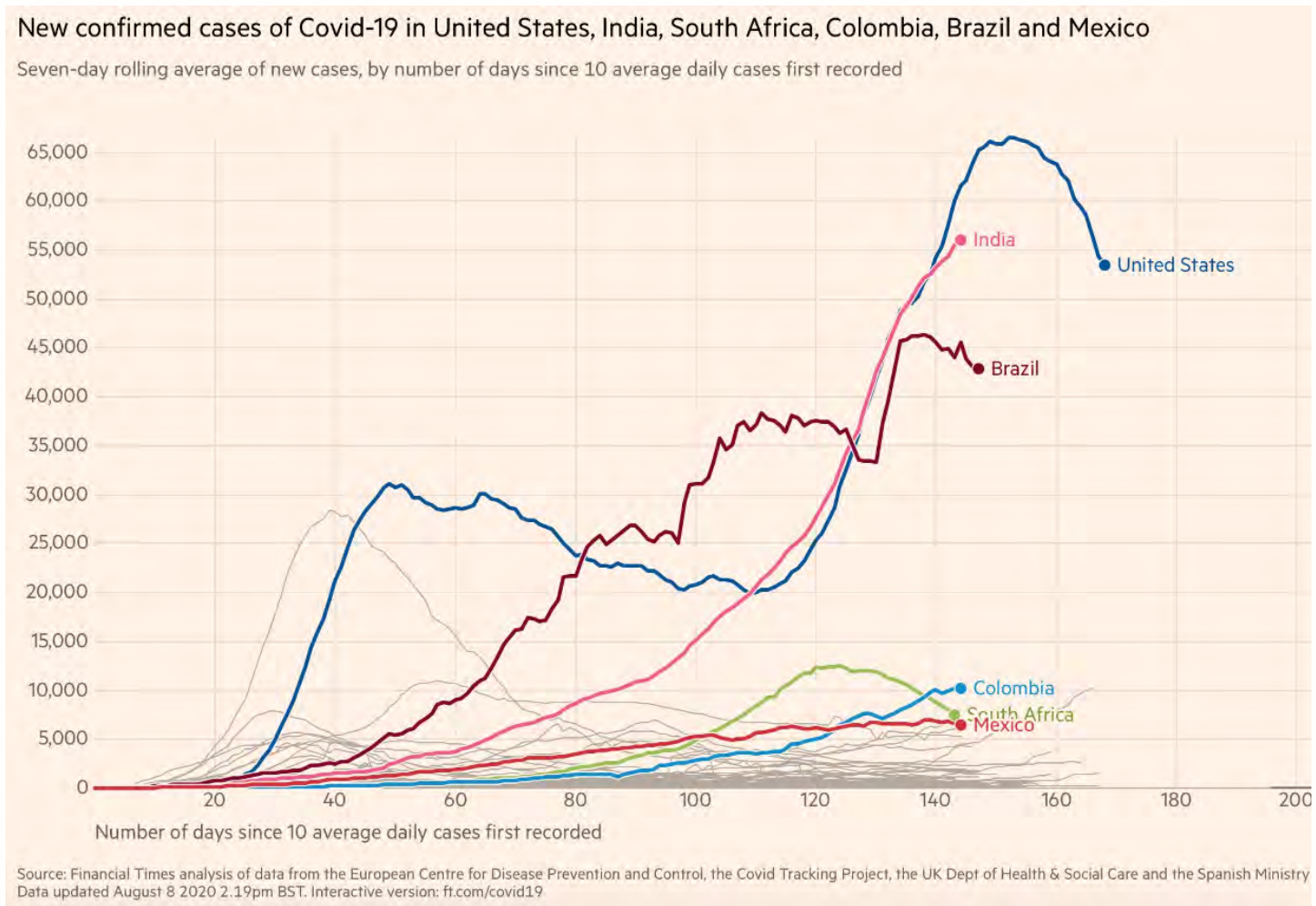
06  
Supply chain

**Work safe and work smart with Watson Works**

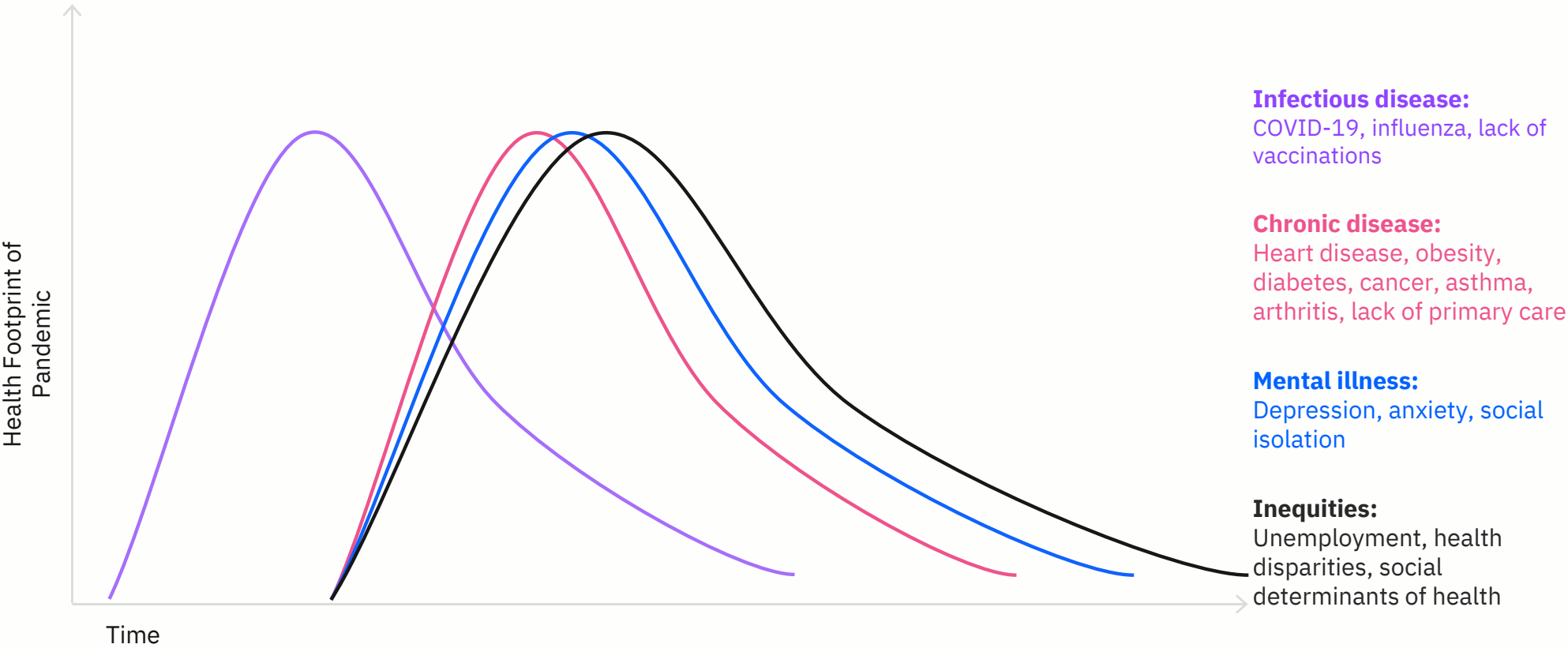


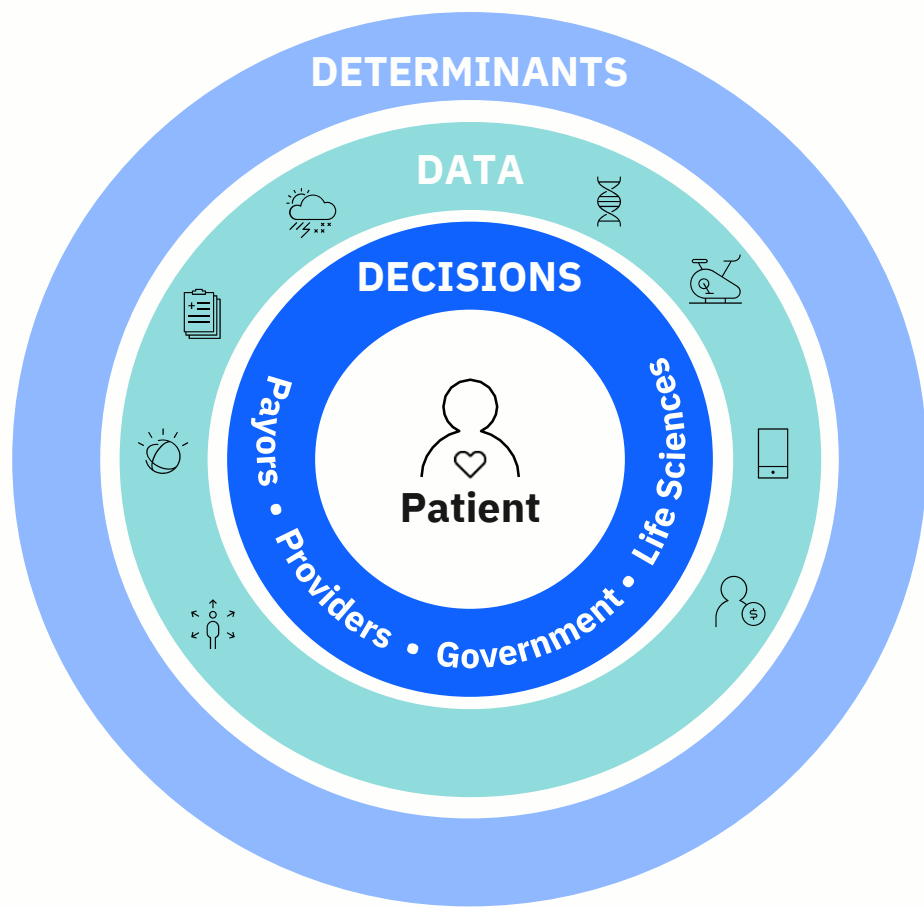


## GLOBAL Comparison of COVID-19 Curves



We must FLATTEN the 4 curves of COVID-19





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## Leveraging TECHNOLOGY from Benchside to Curbside



Benchside



Bedside



Curbside

# Emergence of Drift Variants That May Affect COVID-19 Vaccine Development and Antibody Treatment

| Koyama T et al. *Pathogens*. 2020;9(5).



With no established treatments for COVID-19, research to develop a vaccine for the novel SARS-CoV-2 coronavirus is progressing rapidly. Understanding viral genetic drift could provide insight critical to vaccine development.

Researchers analyzed

# 615

variant data files to determine variants from predicted epitopes

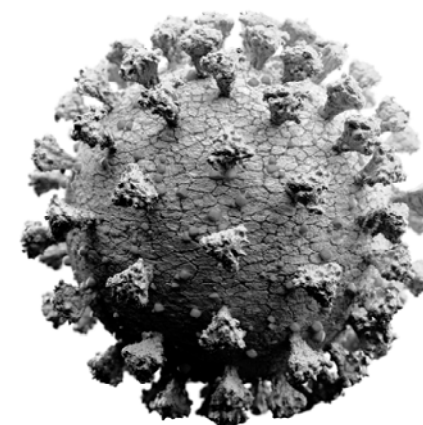
B-cell  
epitopes

12  
variants

T-cell  
epitopes

21  
variants

The 23403A>G (p.D614G) variant in spike protein B-cell epitope was observed frequently in some European countries, which may lead to antigenic drift and result in vaccine mismatches that offer little protection to affected patients.



Consideration of antigenic drift in the sub-strains of SARS-CoV-2, such as epitope variants discussed in this paper, is critical in the development of a vaccine approach that offers broad protection against the COVID-19 pandemic.



## Digital Public Health in the Middle East



### Clinical Transformation

- 300+ workflows redesigned
- **35+ systems integrated**

### Cognitive Enterprise for Health Regulation

- 50% fully automated services
- 93% services processed in 24 hours
- **21% increase in customer satisfaction**

### Patient Wellness and Engagement

- **9% reduction in high risk pregnancy**

### Public Health and Disease Surveillance

- **80% reduction in mass immunization time**
- Infectious disease surveillance management
- Centralized COVID-19 response platform



### Design and Build

- **EMR Transformation with 160 integrations**
- Infrastructure configuration, set-up, operations and data center management

### Run

- Infrastructure, service desk, NOC and security management and support services
- **Clinical and business application support**

### Innovation

- Customized patient portal and mobile app
- **Patient and caregiver virtual assistant**
- **Journey mapping to a cognitive hospital**



### Public Health and Disease Surveillance

- Phased roll out across all Kingdom of Saudi Arabia (KSA) regions
- **Managing disease surveillance across KSA inclusive of COVID-19 processing**
- Increase response for public health officials to better detect, respond, predict and control disease outbreaks

## Scottish Social Security Agency



Scottish Government  
Riaghaltas na h-Alba  
gov.scot

An executive agency of the Scottish Government established in 2018 to deliver the social security benefits being devolved to Scotland from the UK Government.

Once fully operational, Social Security Scotland will administer a total of **14 benefits**, supporting **1.4 million** people and providing approximately **£3.5 billion** in payments every year.

The outcomes so far:



A new agency in  
**12 months**

**7 new benefits**

delivered in the first 2 years

**\$294 million**

of payments made to vulnerable families

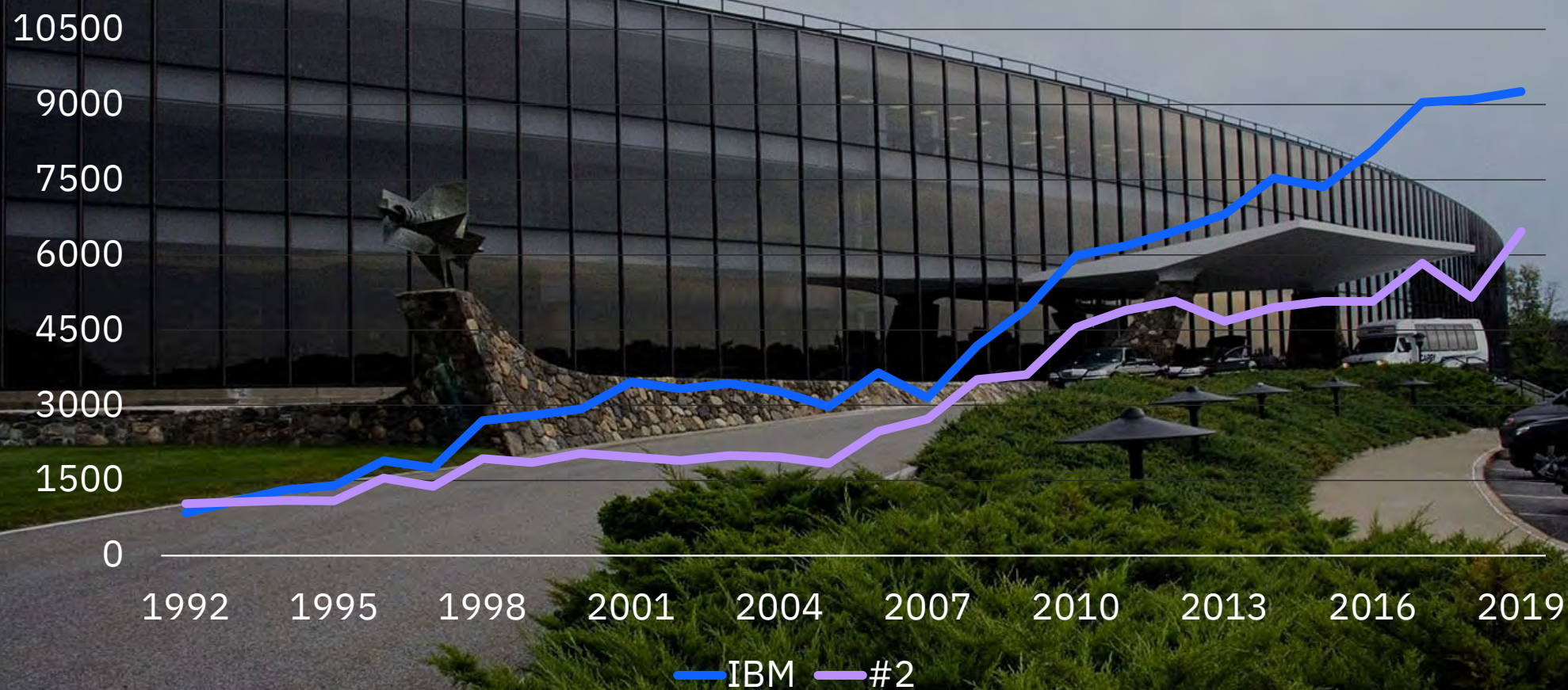
**100 thousand**

households benefiting

A citizen-centric experience where it is  
**simple to claim and efficient to operate**

Build on a **flexible, scalable and secure platform** for the future

# IBM's Commitment to Science



## What do we VALUE in health?

Addressing the 4 curves of COVID-19 and reinventing our global health systems will challenge us to determine what we value:

- *Science*
- *Resiliency*
- *Prevention*
- *Equity*
- *Community*





