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A Systems Thinking Perspective on Vietnam's Response to COVID-19

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- Works at ANSER, a not-for-profit research institute
- B.S. in biology and an M.S. in biohazardous threat agents and emerging infectious diseases from Georgetown University
- Assisted U.S. Centers for Disease Control and Prevention (CDC) World Health Organization with conduct of international public health emergency training and exercises (exercises in Vietnam, Sierra Leone, Guinea)
- Developed pandemic influenza exercises for U.S. National Guard, Michigan, and Guam
- Supported biosurveillance initiatives by U.S. government
- 18+ years experience with disaster preparedness and response systems (United States and global)
- Applies systems thinking to domestic and global problem sets

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Agenda

- Why did some countries respond better to COVID-19?
- Case Study of Vietnam's Response During the First Year
- Key Concepts for Successful Public Health Emergency Response
- Question and Answer Session

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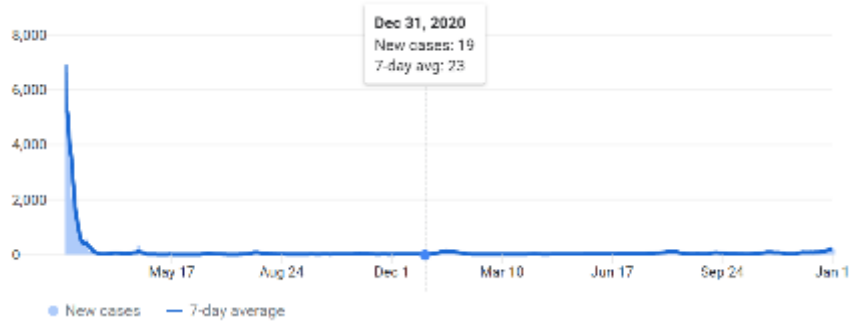
Many Countries, Many Stories

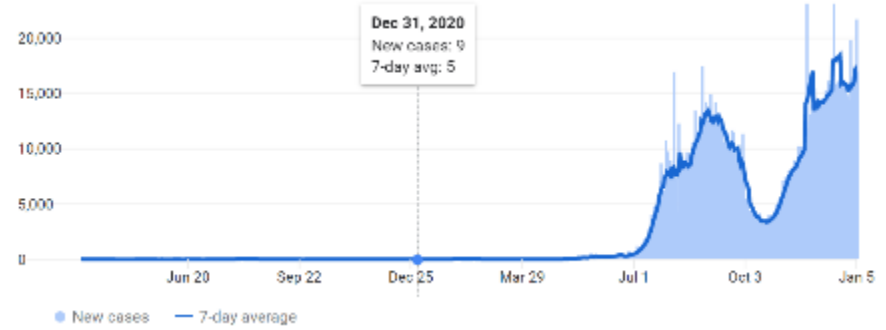
China (pop. 1.4 billion)



The U.S.A. (pop. 330 million)

Italy (pop. 60 million)

Vietnam (pop. 98 million)



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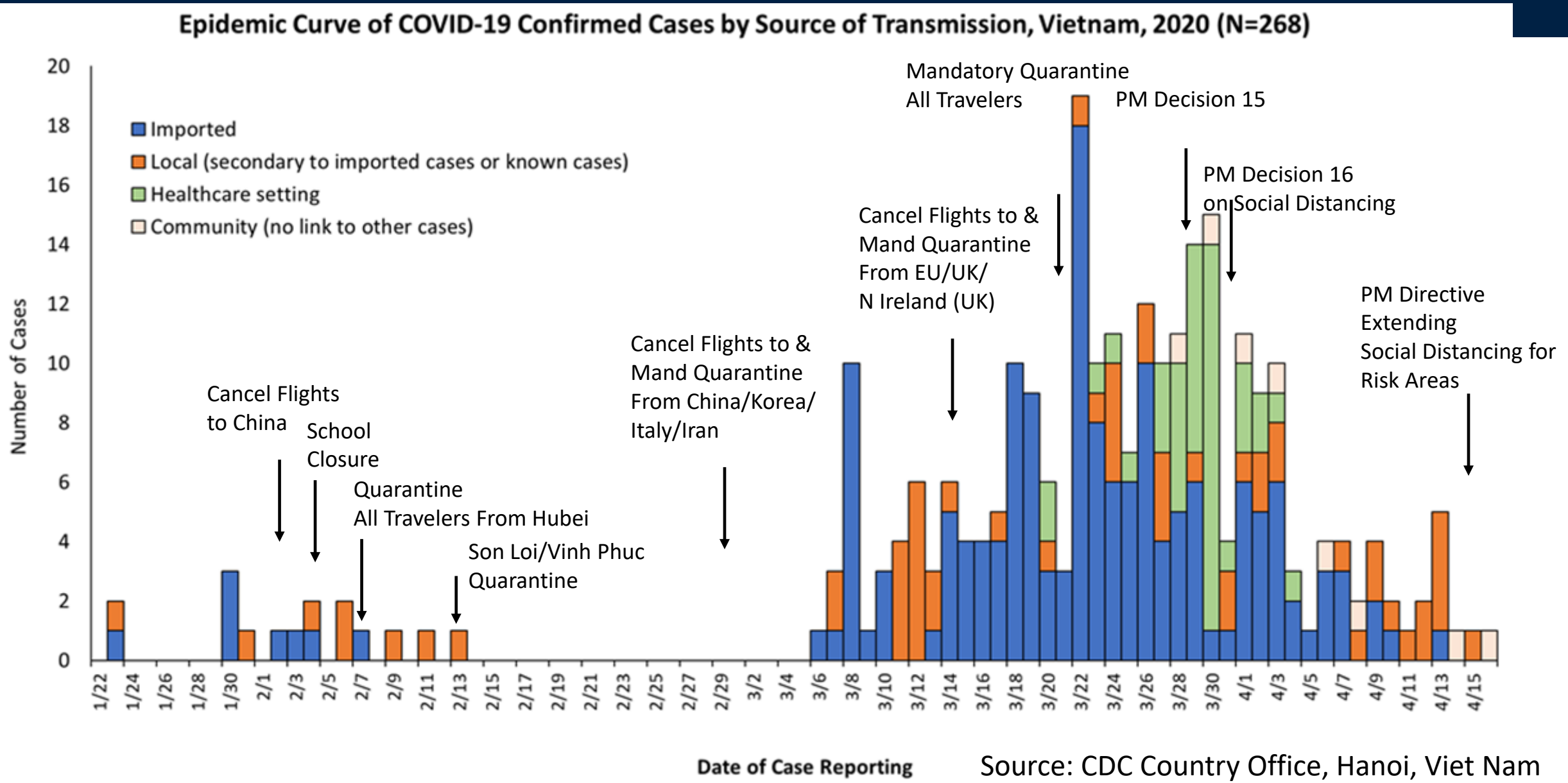
What Explains the Difference?



Source: CDC Country Office, Hanoi, Viet Nam

What Explains the Difference?

Systems Thinking Can Help

- Views issues and problems as part of a greater whole
- Tries to understand how different actors, factors, and processes interact to drive systemic outcomes
- Offers approaches for managing complexity

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“Just the Tip of the Iceberg”

What we see……

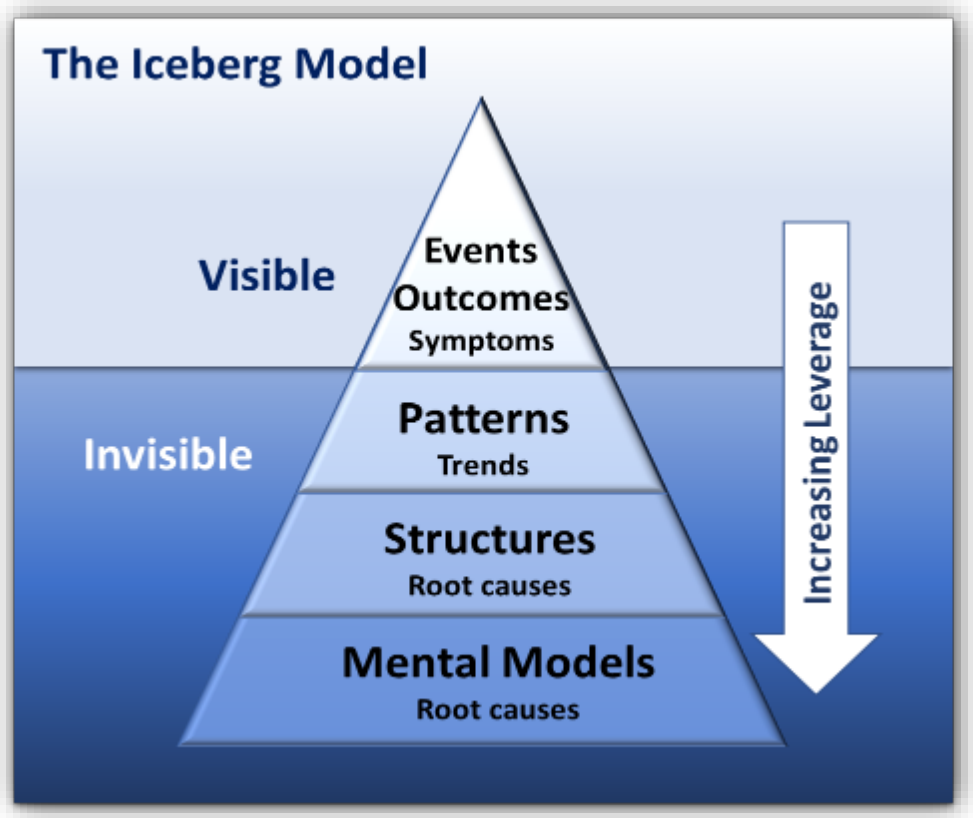
Is the tip of the iceberg

What we don’t see…..

Is everything that pushes the tip up over the water so we can see it

To Understand a System's Behavior, Look at Its Structure

- ***Events/Outcomes:*** *Rate of spread; case counts; deaths*
- ***Behavior Patterns:*** *Mask wearing; hand hygiene; mobility; compliance with public health measures, preparedness*
- ***Structures:*** *Public health system, political environment, geography, economy, media, family and social practices*
- ***Mental Models:*** *Germ theory of disease spread, respect for authority, importance of community vs. individual, civil rights, innovation vs. iterative improvement*
- Traditional way to face problems is to focus on events – but they are just the symptoms
- Better way: look at system structures and mental models that drive behaviors – those are the root causes of problems



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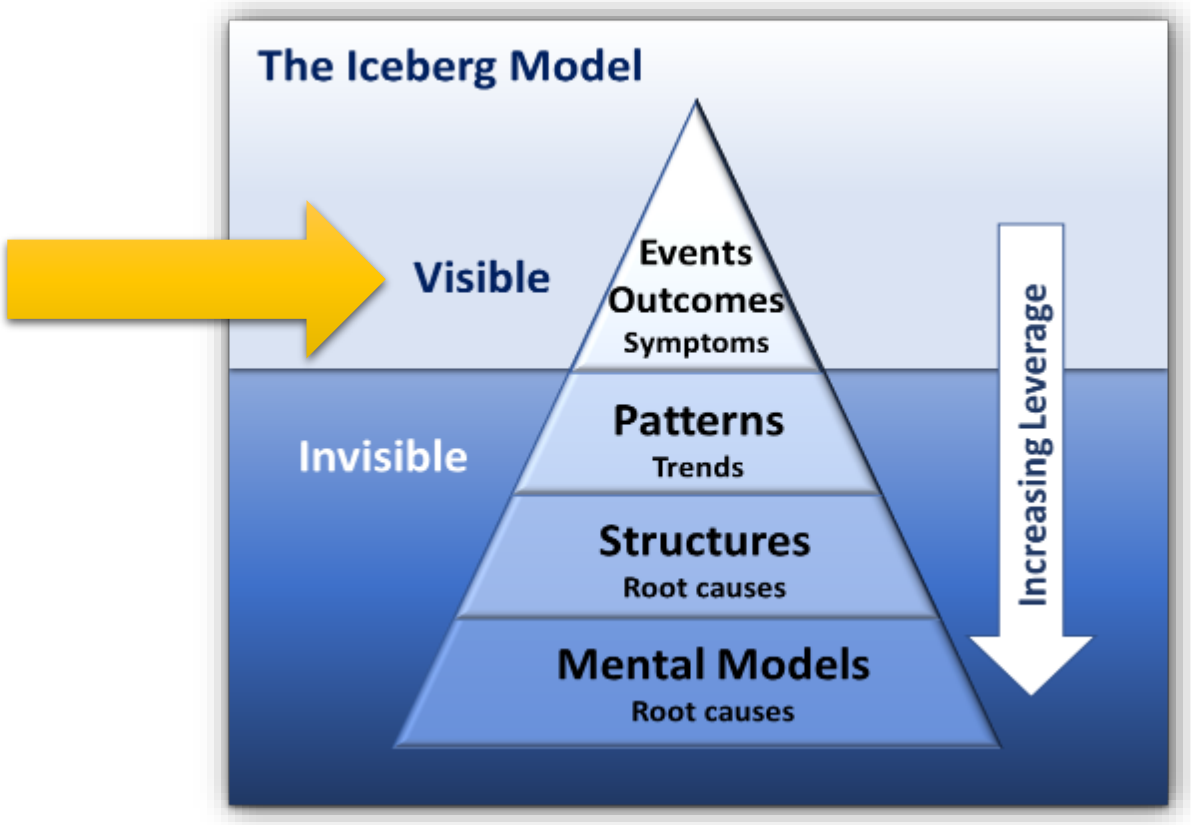
The Iceberg Model of COVID-19 Response

Outcomes Level



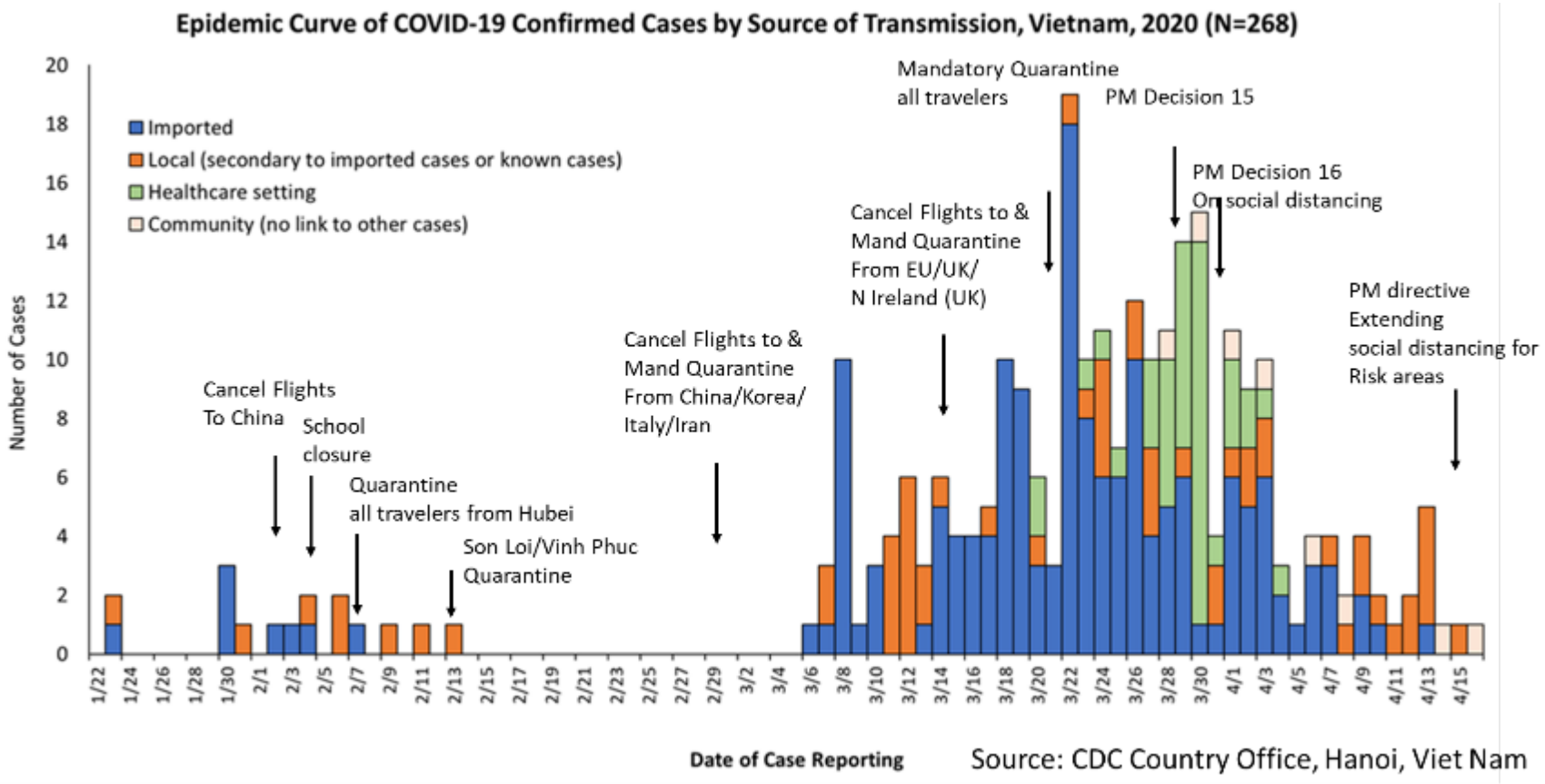
Year One Outcomes

Vietnam

- **First case:** January 23, 2020
- **Vietnam's initial response was relatively effective compared to many other countries.**
- **Prior to Delta surge of summer 2021: 1 in 3,000,000 had died with 2,648 cases (.003% of population).**

COVID-19 Response in Vietnam

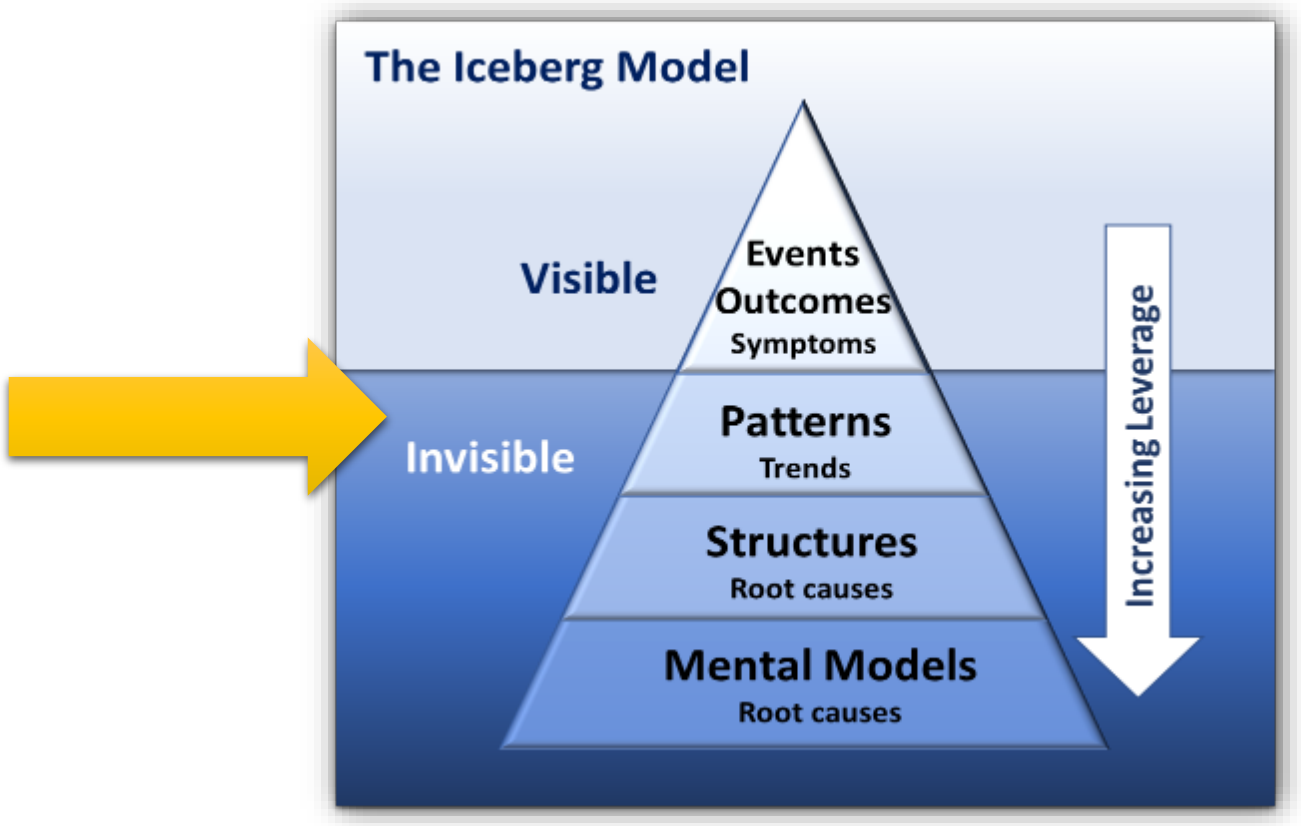
Vietnam Preventive Actions



- Strict health screening at points of entry to PREVENT importation (mid-Jan)
- Cancellation of flights
- Mandatory quarantines
- Early detection via aggressive contact tracing and priority test strategy
- Ring-fencing of the virus to prevent and delay the local transmission

The Iceberg Model of COVID-19 Response

Patterns Level



The Iceberg Model

COVID-19 Response in Vietnam

Vietnam Treatment Strategy

- **Treat all confirmed cases in health care facilities (HCF)**
- **Provide treatment free of charge**
- **Quarantine and closely monitor in HCF: suspected cases and close contacts**
- **Apply patient triage: assess the patient at the health care unit where they are detected**
  - National hospitals: serious and critical patients
  - Provincial and district hospitals: mild patients
  - Community health stations: suspected cases
- **Prepare for community spreading:**
  - Military and other sector hospitals
  - Field hospitals

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COVID-19 Response in Vietnam

Vietnam Public Health Actions

Enhance surveillance to detect every possible case

- Expand suspect case definition: SVP and SARI/ILI
- Aggressive contact tracing: trace as much close contact as possible not only on the close contacts (F1) but also second (F2) and third-tier (F3) close contacts, including those showing no symptoms

Quarantine for 14 days

- Centralized quarantine: suspected cases, F1 and international entries, discharged patients
- Home quarantine applied for F2 and F3 case
- As many as 500,000 under monitoring at any given time; 100,000+ in centralized facilities

Prioritized testing strategy

- RT-PCR test: suspected cases, close contacts, people in centralized quarantine facilities and isolation areas
- Antibody quick tests conducted in the high-risk areas

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COVID-19 Response in Vietnam

Vietnam Community Containment Measures

- Targeted Isolation and lockdown for 28 days after last reported case
- Other strict containment measures were gradually adopted
- Schools closed January 23 to May 11, 2020
- Public events (>20 people) canceled from early February 2020
- Enforcing wearing of masks at public venues from early March
- Requiring hand sanitizers at entry in public areas, residential, and workspaces
- Lockdown: from high-risk areas, with scale-up to whole country

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COVID-19 Response in Vietnam

Vietnam Communication Strategy

- A step-forward strategy: real-time information provided quickly
- Transparent information: communication about the virus and the nation's policy to contain pandemic was transparent
- Utilize all the potentials channels such as: TV, radio, mobile, website, social networks, hotlines, loudspeaker system: symptoms, protective measures, testing sites, official information sources…
- Engage the grassroot authorities/social organizations (village, street…) in public health communication and access the household/individual
- Assign police, communication, technology sector to monitor, survey and detect false information as soon as possible
- Penalize/arrest/publish name of people who provide mis/disinformation

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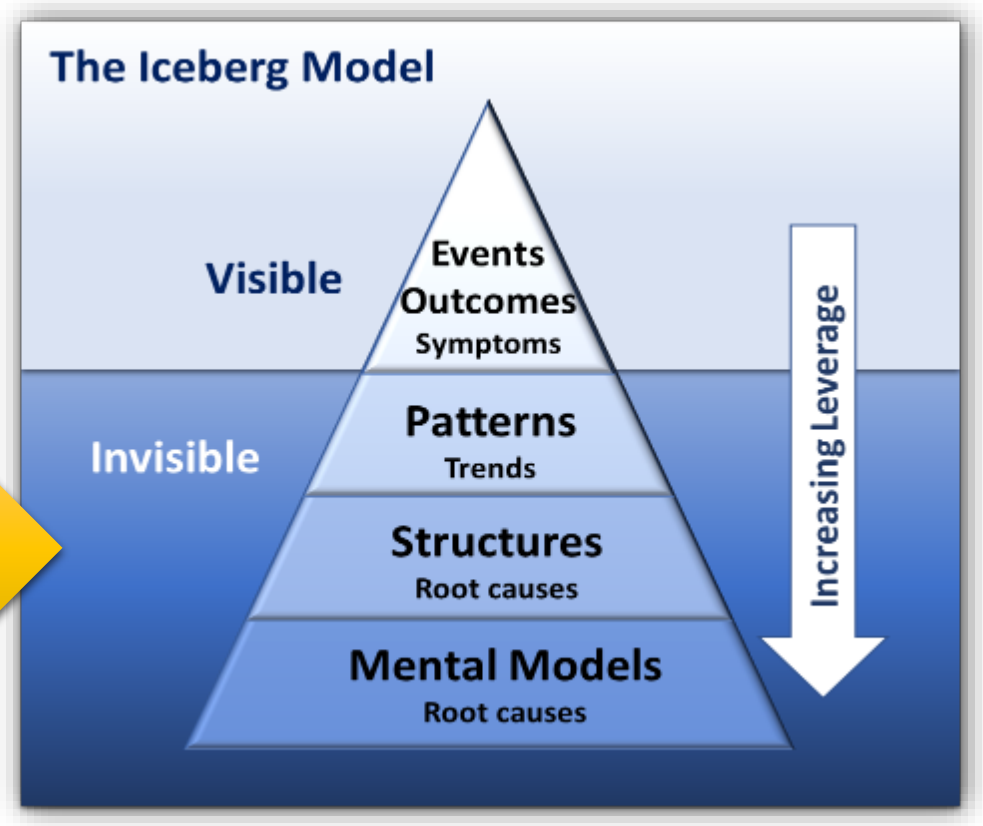
The Iceberg Model of COVID-19 Response

Root Causes of Success: Underlying Structures



Key Structures

- Political System
- Legal Frameworks
- Public Health and Healthcare System
- Local and National Economies

Why Do Structures Matter?

- **Political System**

Elements of Effective Health Emergency Response

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Why Do Structures Matter?

Elements of Effective Health Emergency Response

- **Legal Frameworks**

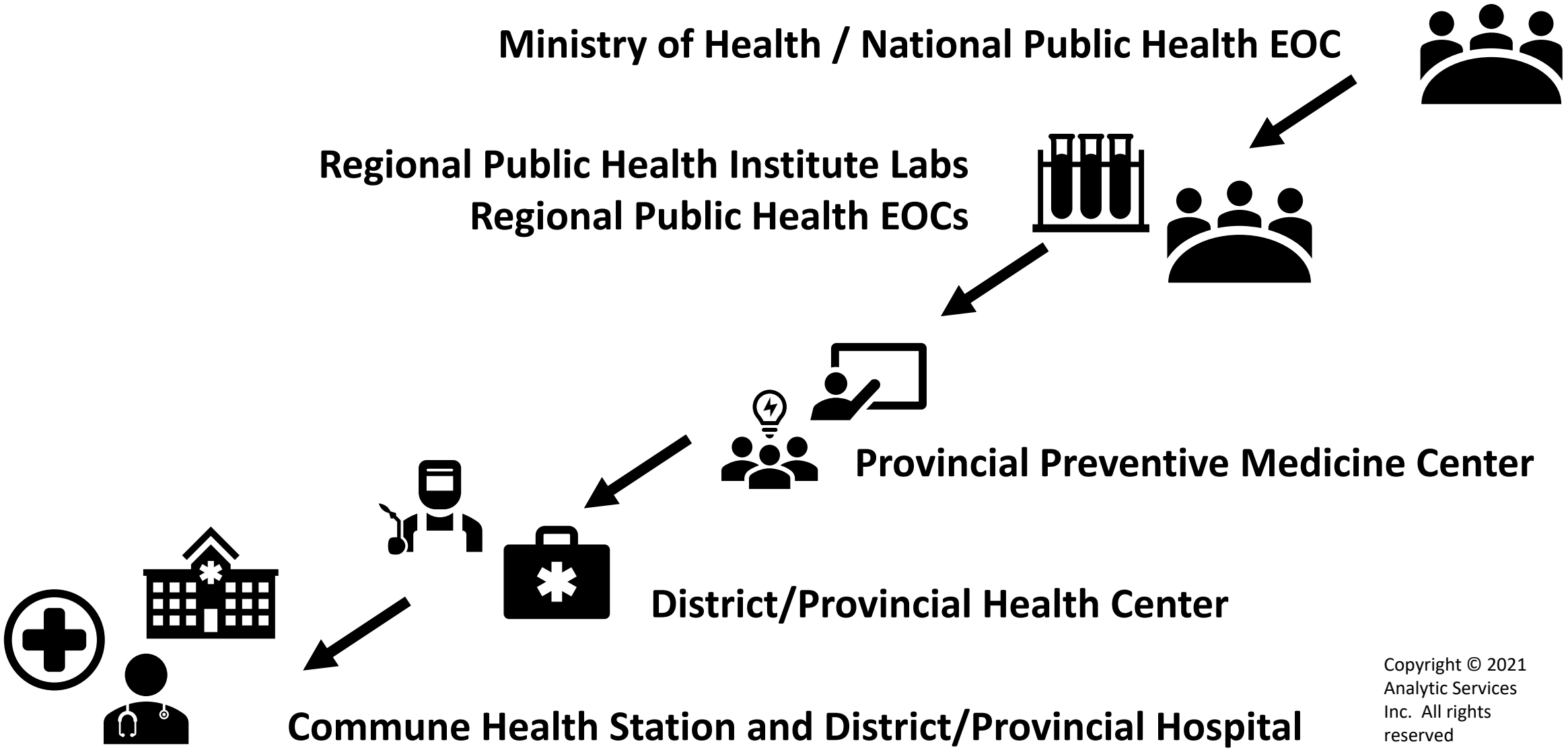
Article 15: "Citizens' rights are inseparable from citizens' duties"
Article 14: Restrictions on human rights and citizens' rights allowed for "community well-being"

Why Do Structures Matter?

- Public Health and Health Care System

Elements of Effective Health Emergency Response

Vietnam Public Health Response Structure



Why Do Structures Matter?

- Public Health and Health Care System

Elements of Effective Health Emergency Response

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- Local and National Economies

Elements of Effective Health Emergency Response

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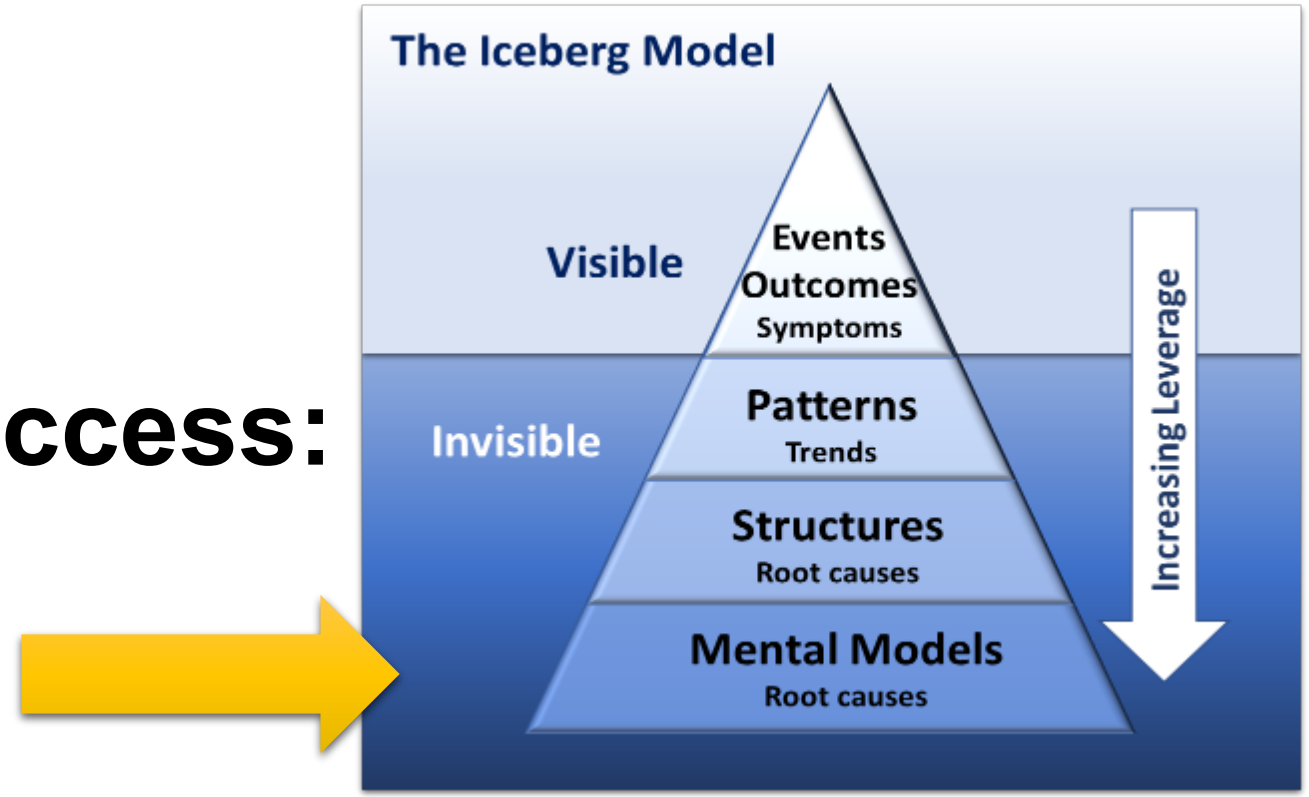
The Iceberg Model of COVID-19 Response

Root Causes of Success: Mental Models



How Do Mental Models Affect Behavior?

A Mental Model is a simplified version of some aspect of reality that you keep in your head.

- The world is complex, and if we had to experience everything anew, we'd be quickly overwhelmed.
- We rely on these simple mental models to reflect our values and the way we think the world works.
- We often assume others share our mental models.
- Externalizing mental models that drive behavior helps us examine why we do what we do.

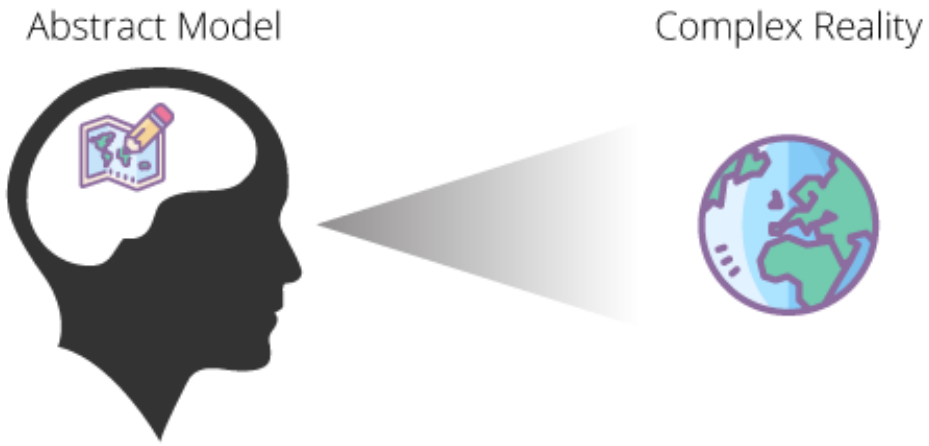


Image Source:
[Learning how to think clearly](#) **by** [David Urbansky](#)
https://gohighbrow.com/mental-models/

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How Do Mental Models Affect Behavior?

Should I Wear a Mask?

Mental Models Leading to YES	Mental Models Leading to NO
It is courteous to use a mask to prevent disease spread.	*Infectious diseases are not a big deal.*
The government has the authority to make people wear masks, even if they don't want to.	*Governments should not have the authority to make people wear masks.*
Wearing a mask is normal.	*Wearing a mask is not normal.*

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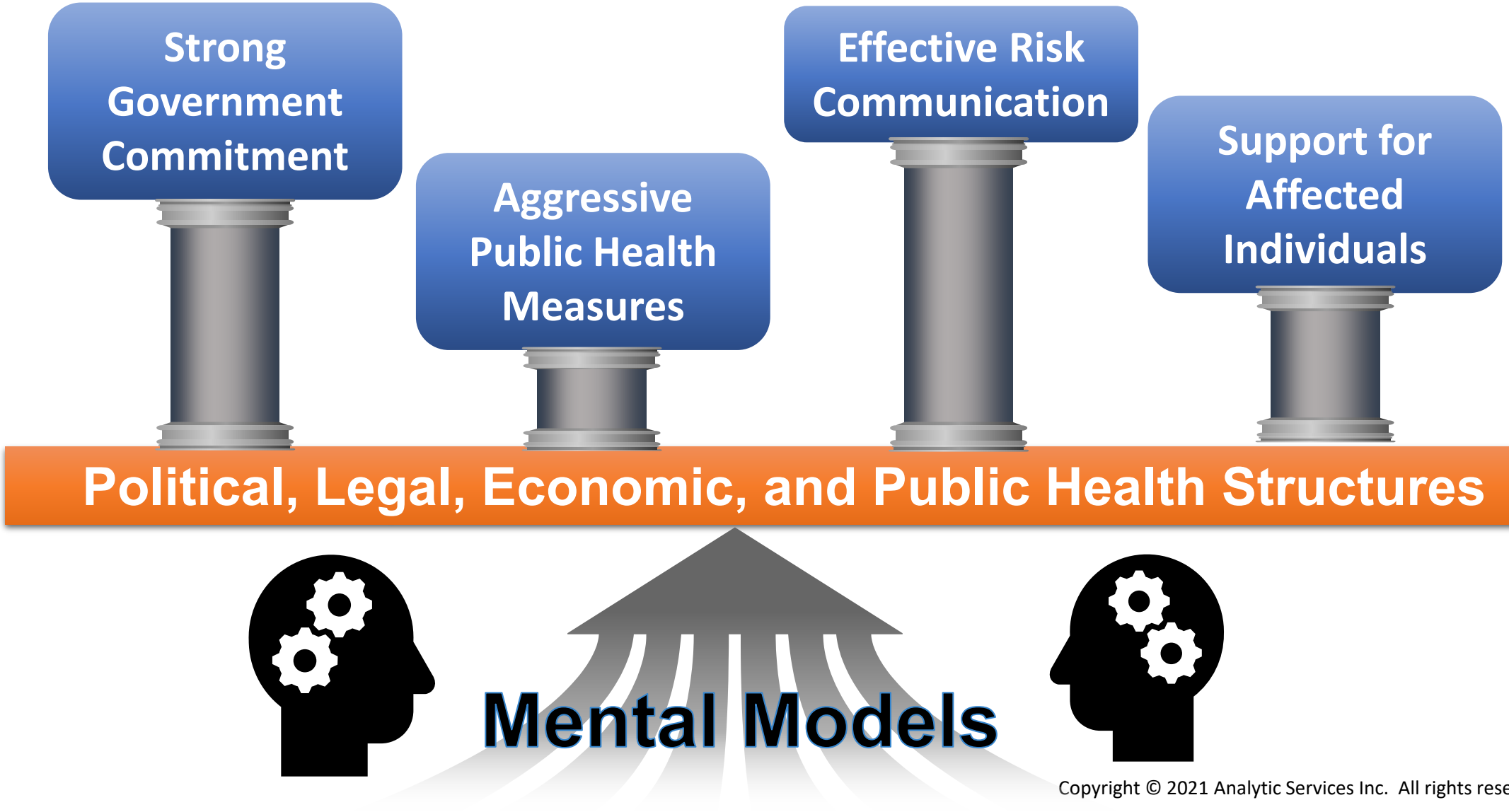
How Do Mental Models Support Response?



Supporting Mental Models

- **Strong Government Commitment:** Vietnam has cited their experiences with SARS and other outbreaks as critical to their successful response. Strong government commitment was facilitated by the political structures we reviewed and was supported by helpful mental models that emphasize prevention.

Mental Models That Facilitate Behavior

- *Public health emergencies are serious.*
- *Prevention is cost-effective.*
- *Better to overreact than underreact.*
- *Harms (to economy, mental health) are worth the cost.*

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Supporting Mental Models

- **Aggressive Public Health Measures:** Hundreds of thousands of people, including travelers and close contacts, placed in quarantine centers run by the government, greatly reducing transmission at household and community levels. Hot spots with community transmission locked down immediately.

Mental Models That Facilitate Behavior

- *Home-based care endangers families.*
- *Saving lives is worth limits on individuals' freedom.*
- *Quarantine in state-run facilities works better than monitoring people in their homes.*

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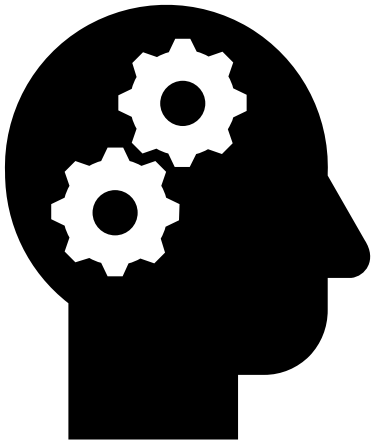
Supporting Mental Models

- **Effective Risk Communication:** The government communicated frequently with citizens to keep them informed and involved in the public health response and actively countered misinformation and disinformation with strict penalties.



Mental Models That Facilitate Behavior

- *The public is our partner in response.*
- *Transparency in communication, even when we are delivering bad news, builds trust.*
- *Mis/disinformation is a serious threat and warrants severe punishment.*
- *Government has authority to control what people say.*

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Supporting Mental Models

- **Support for Affected Individuals:** Robust, Whole of Society approach, including provision of free isolation facilities, healthcare, rice, and other necessities, involved all citizens.

Mental Models That Facilitate Behavior

- *People who don't appear sick can still spread disease.*
- *People who have been exposed should be kept away from others.*
- *Compliance will be better if people are not worried about putting food on the table.*
- *The government's proper role is to provide significant support and services for the people.*

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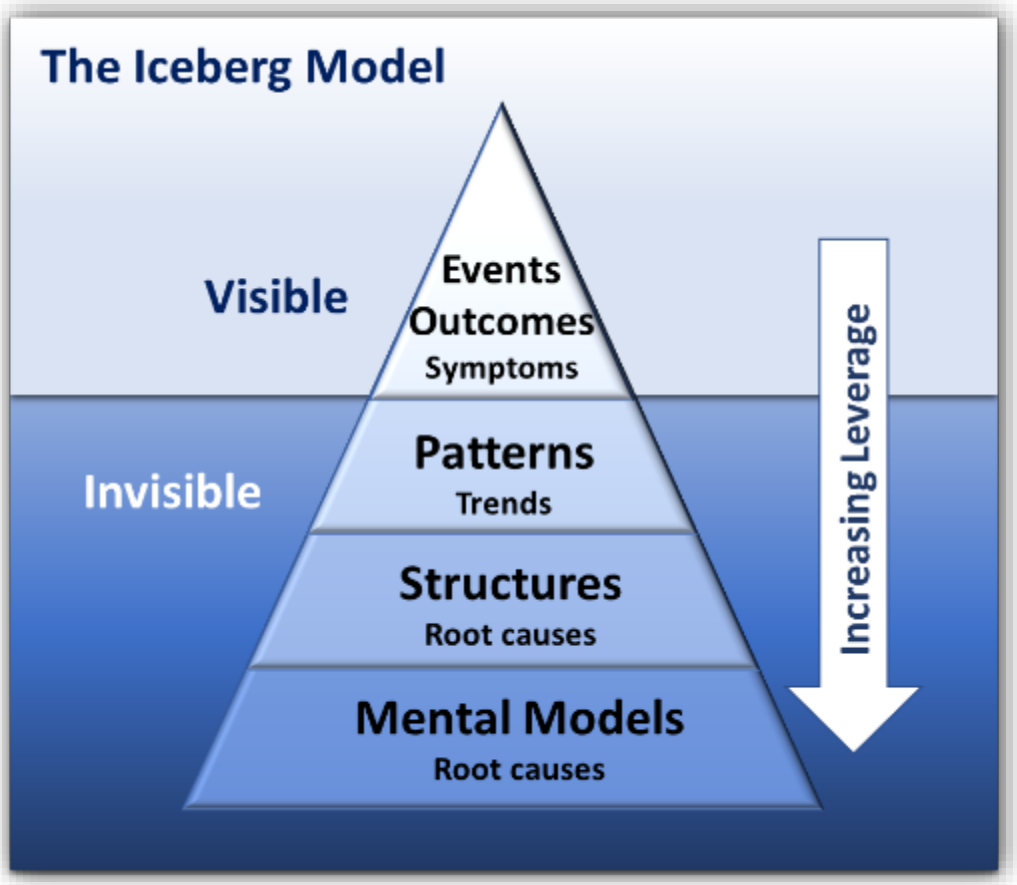
Key Concepts for Effective Public Health Response



- **Events/Outcomes:** Early, aggressive action is crucial to infectious disease response.
- **Patterns:** Governments can't stop infectious diseases through willpower alone; the public is THE key partner in collective behavior change that will bring infections under control.
- **Structures:** A system's existing structures facilitate or limit response; it's hard to build these structures in the middle of an epidemic—and many of them lie outside of the public health and healthcare realm.
- **Mental Models:** You can't separate effective response to public health threats from politics and culture.

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Interested in More?

Did Lessons Learned from SARS Save Us from COVID-19?

A Systems Thinking Perspective on International Case Studies

A new publication of ANSER and the International Institute for Global Resilience (IIGR)

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Thank You!

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Q&A

Thank You!

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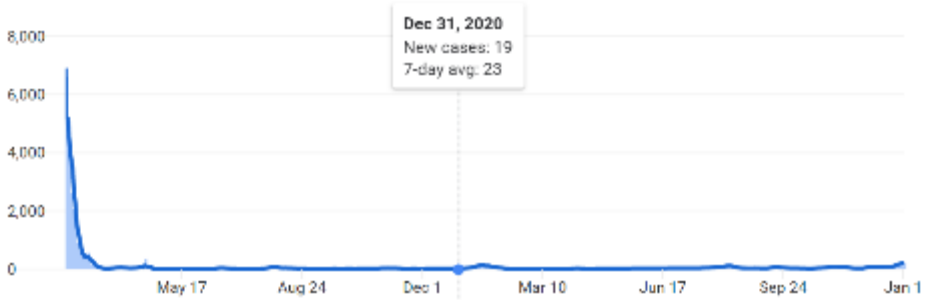
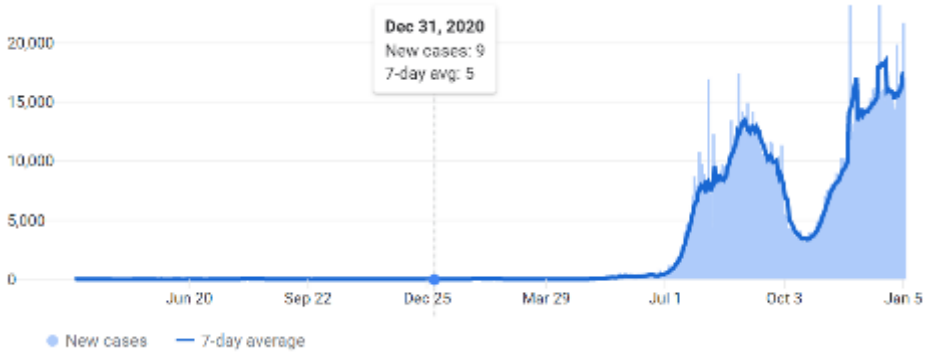
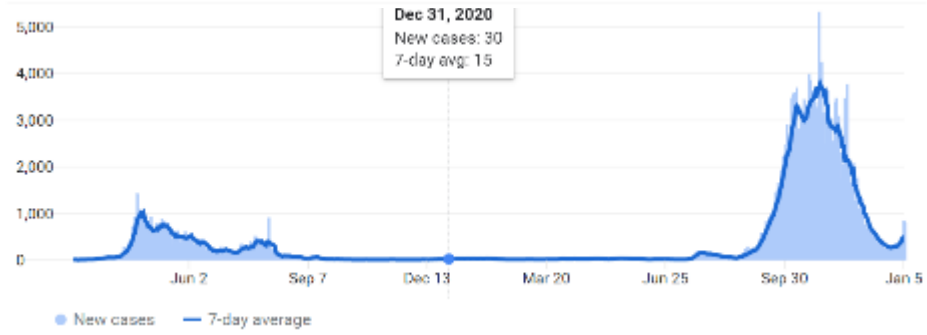
Different Countries, Different Outcomes







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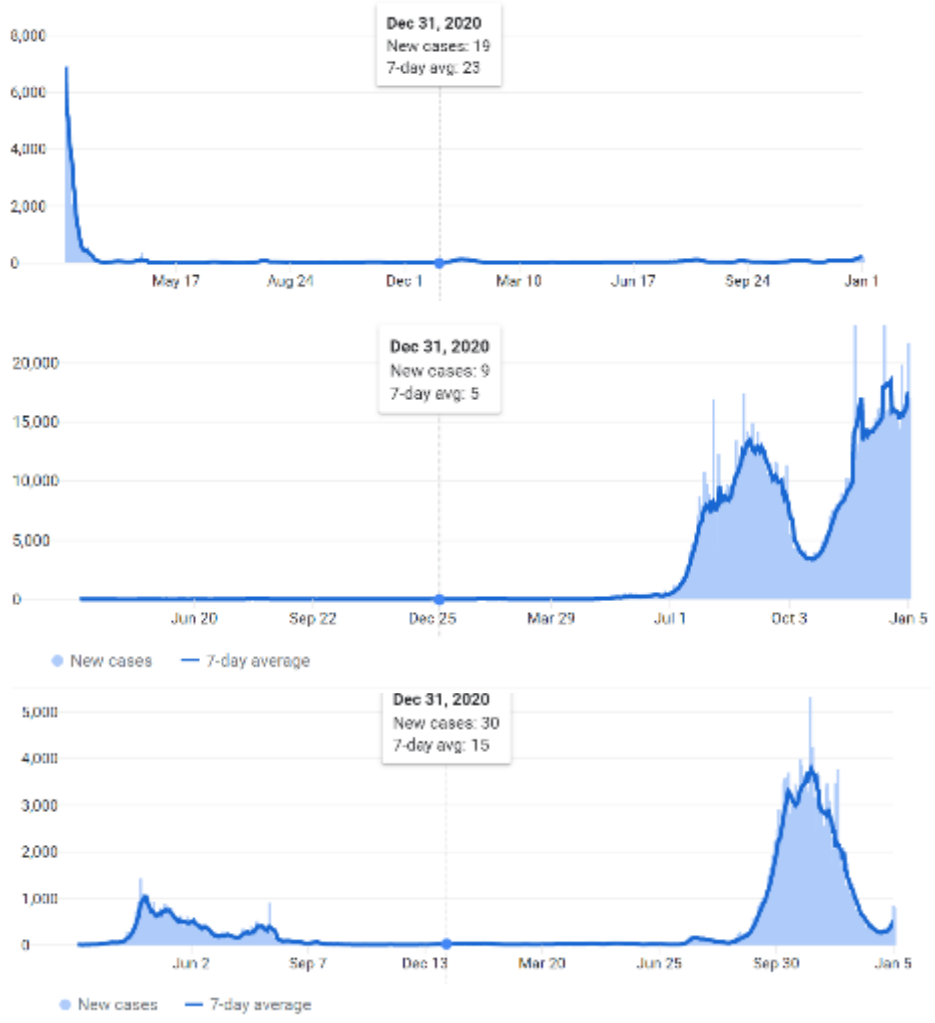

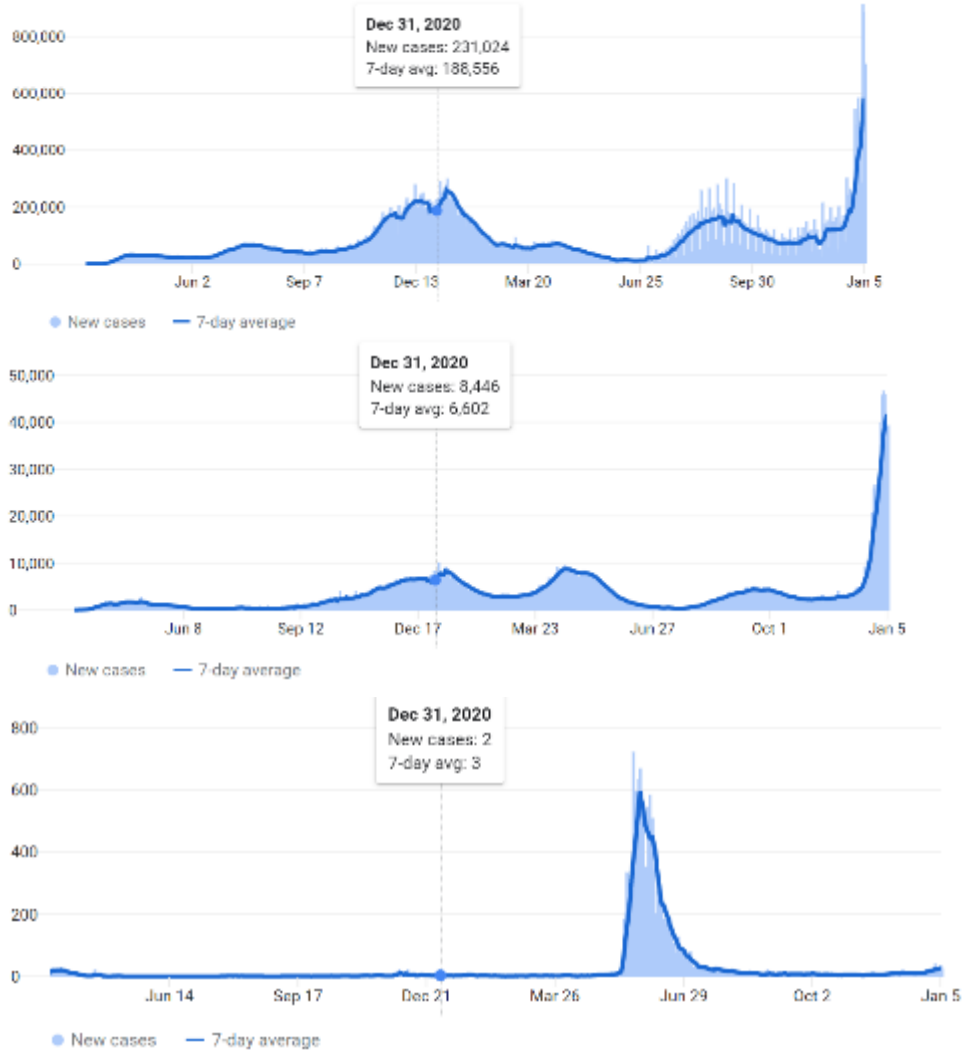

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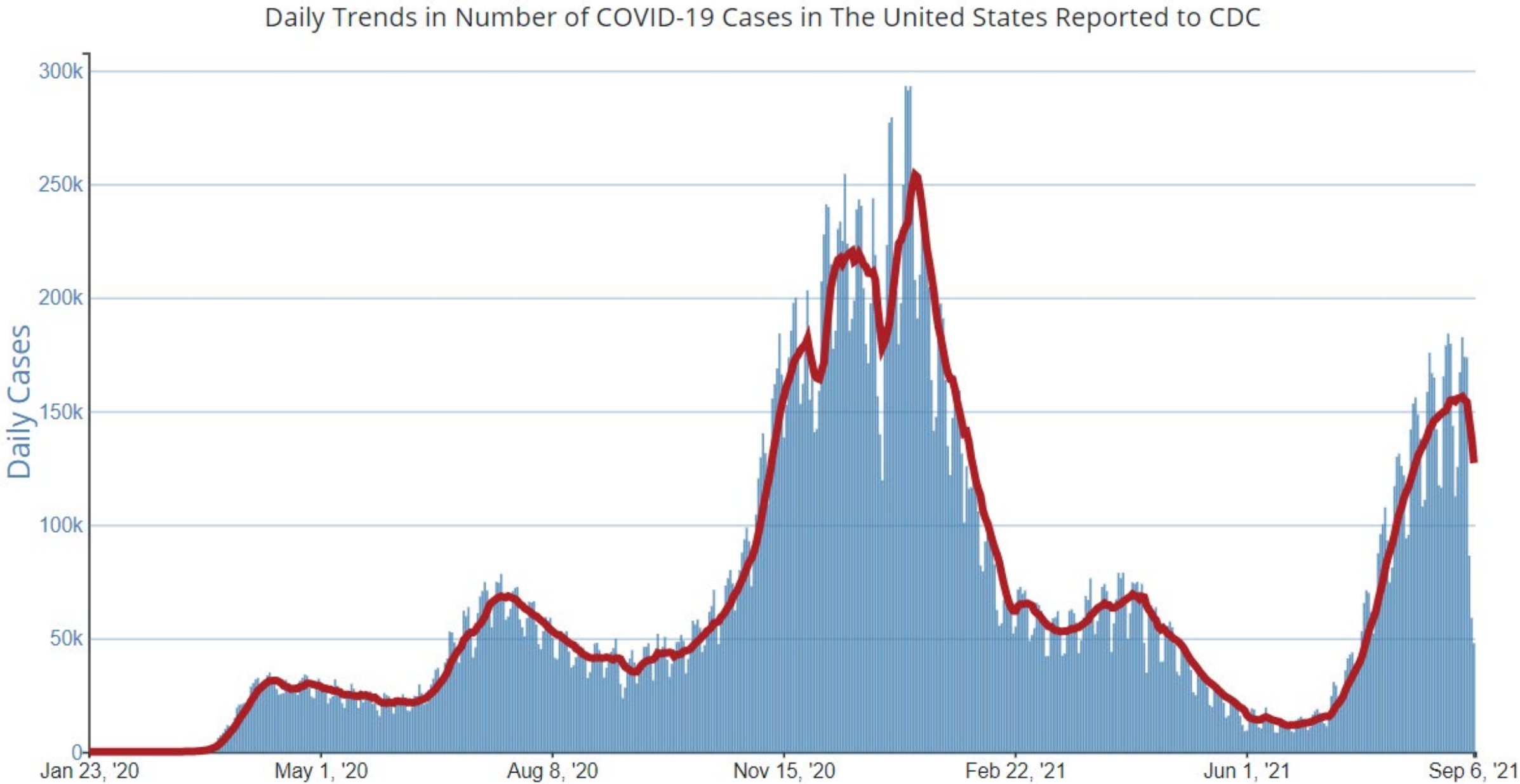
Daily New Cases of COVID-19 in the United States Reported to CDC



Source: https://covid.cdc.gov/covid-data-tracker/#trends_dailytrendscases

Daily New Cases of COVID-19 in Vietnam

Each day shows new cases reported since the previous day · Last Updated: 2 days ago ·
Source: JHU CSSE COVID-19 Data · About this data

Daily New Cases of COVID-19 in Vietnam