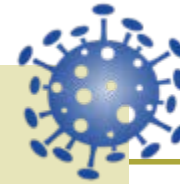


# Taiwan's experience in the fight with COVID-19



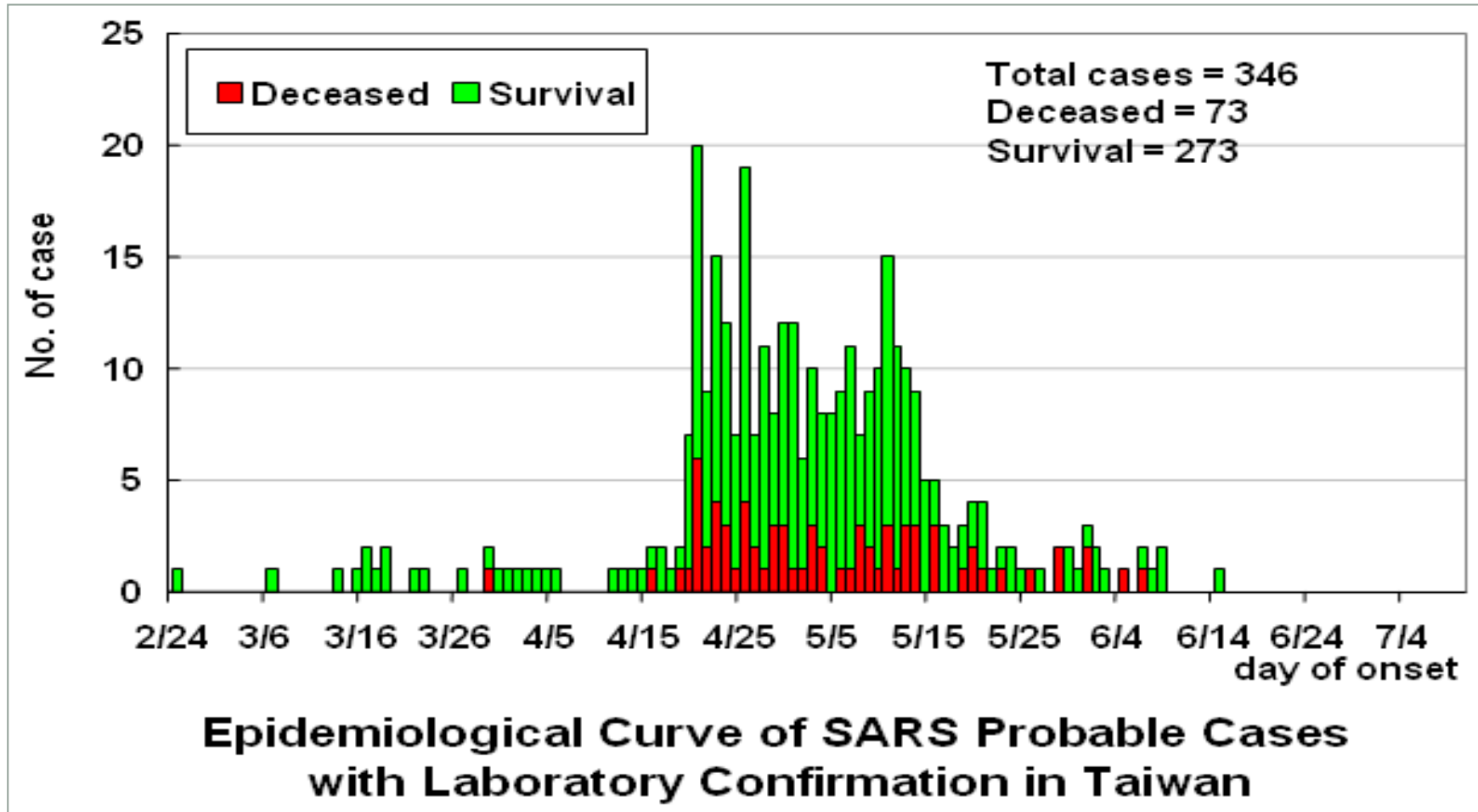
## Lessons Learned from COVID-19 Pandemic

**Chin-Hui Yang, MD, PhD**

Division of Acute Infectious Disease  
Taiwan Centers for Disease Control



# SARS Epidemic in Taiwan (2003)



**Economic impact → Property lost 800~1300 million US dollars**

# Lessons from SARS

- Amendment of **Communicable Disease Control Act** as the legal basis for preparedness and response for public health emergency
- Establish **Centralized commanding system**
  - Establish [Central Epidemic Control Center\(CECC\)](#) during any public health emergency to promote the cross-department cooperation
- Develop **National Influenza Pandemic Preparedness Plan**
  - Develop [guidelines for Nonpharmaceutical public health interventions\(NPI\)](#)
  - [Stockpile of antivirals and personal protective equipment \(PPE\)](#)
- Set up “**Communicable Disease Control Medical Network**” for health care system preparedness

# Wuhan pneumonia cluster, 2019-20

A timeline, dates based on local reports

**31 Dec** (Hong Kong [HK]; 30th United States [US])

Wuhan Municipal Health Commission (WMHC)

- Medical experts arrived to examine "SARS" outbreak
- 27 viral pneumonia cases isolated, 7 critically ill
- No human-to-human (h2h) transmission
- All believed to have visited Huanan Seafood Market
  - Market also sells non-aquatic animals including birds

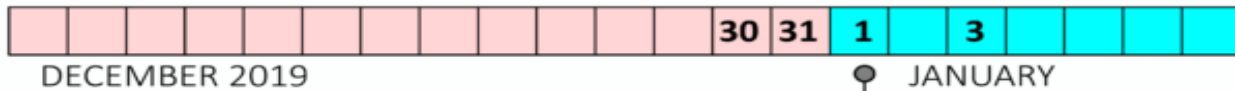
**03 Jan**

- HK Govt to provide daily updates
- WMHC update
  - 44 cases, 11 critical
  - non h2h



Jan 1, 2020, Wuhan closed Huanan Seafood Market

PNEUMONIA CASES PRESENTING TO HOSPITALS



**1 Jan**

- Wuhan University researcher (sina.com.cn) quote
  - likely not SARS coronavirus (CoV)
  - testing found <4% homology to SARS-CoV
- Seafood market closed



Jan 23, 2020, Wuhan Lockdown

Prepared by Ian M. Mackay, PhD

virologydownunder.com

Dates and information based on WMHC and media reports; not always verified by official sources

My thanks to FluTrackers.com for their excellent tracking of reports

Version 2

Last updated 03JAN2019 AEST

# Taiwan's Model: Evolving COVID-19 Response

## Interruption of transmission (Vaccine unavailable)

With the goal of preventing the virus from entering the community and spreading, Taiwan has achieved a record of "zero domestic confirmed cases" for 252 days in 2020

## Enhanced Immunization (vaccine available)

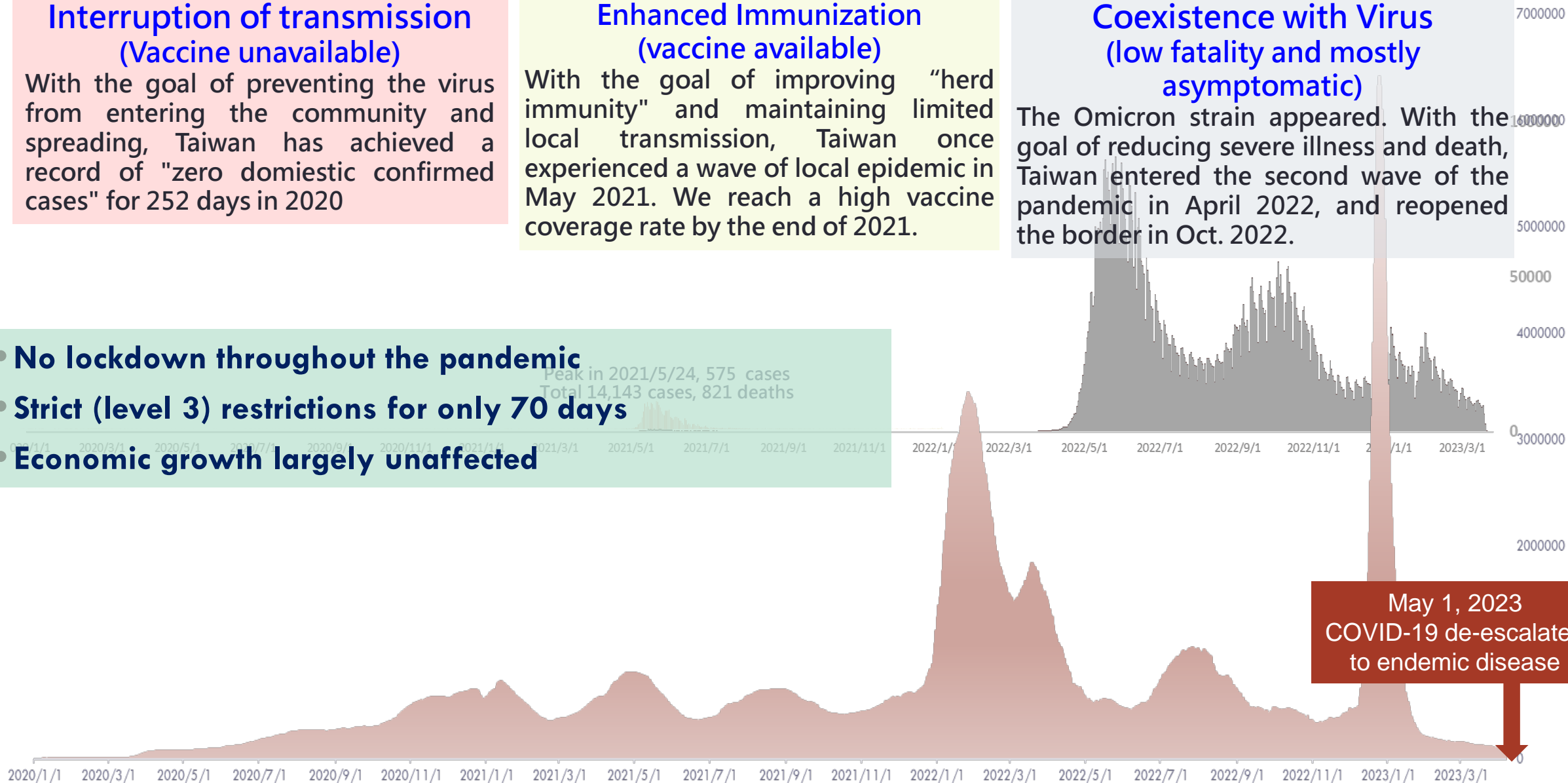
With the goal of improving "herd immunity" and maintaining limited local transmission, Taiwan once experienced a wave of local epidemic in May 2021. We reach a high vaccine coverage rate by the end of 2021.

## Coexistence with Virus (low fatality and mostly asymptomatic)

The Omicron strain appeared. With the goal of reducing severe illness and death, Taiwan entered the second wave of the pandemic in April 2022, and reopened the border in Oct. 2022.

- **No lockdown throughout the pandemic**
- **Strict (level 3) restrictions for only 70 days**
- **Economic growth largely unaffected**

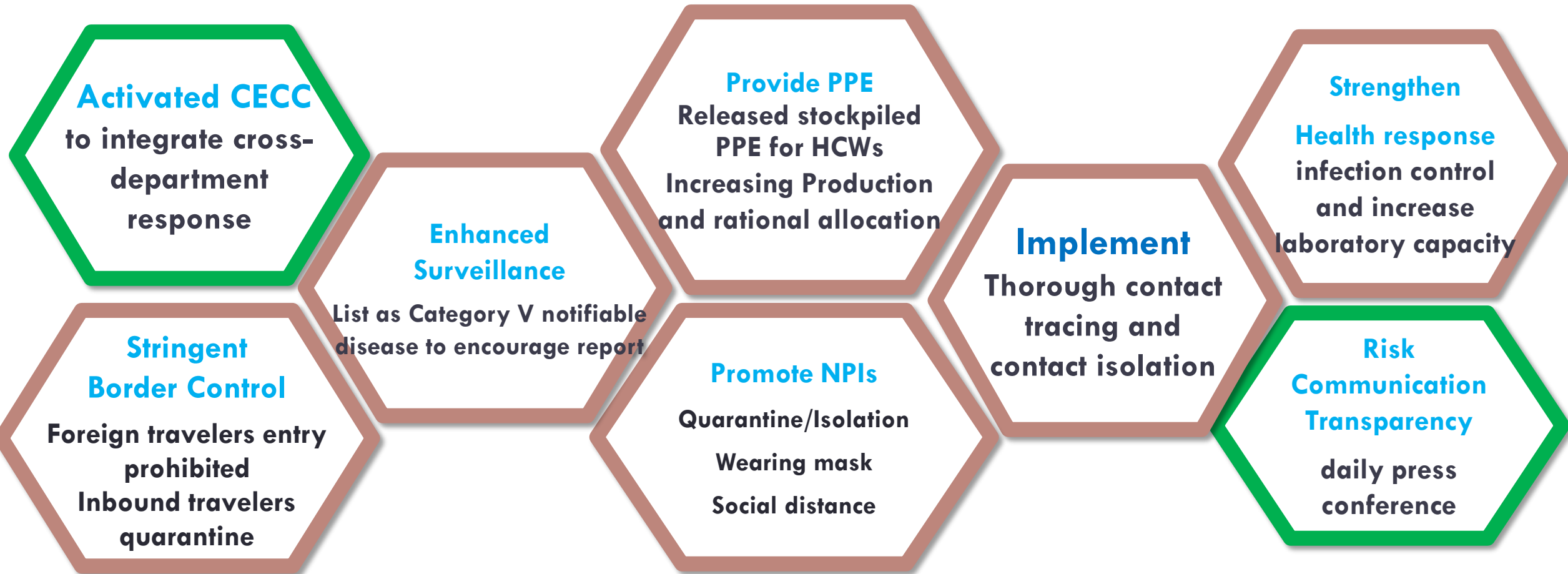
Peak in 2021/5/24, 575 cases  
Total 14,143 cases, 821 deaths



A world map in shades of blue with a network of white lines and circles overlaid, representing global connectivity. The text is centered in the lower half of the image.

# **Crucial Strategies for Combating Pandemic in Taiwan**

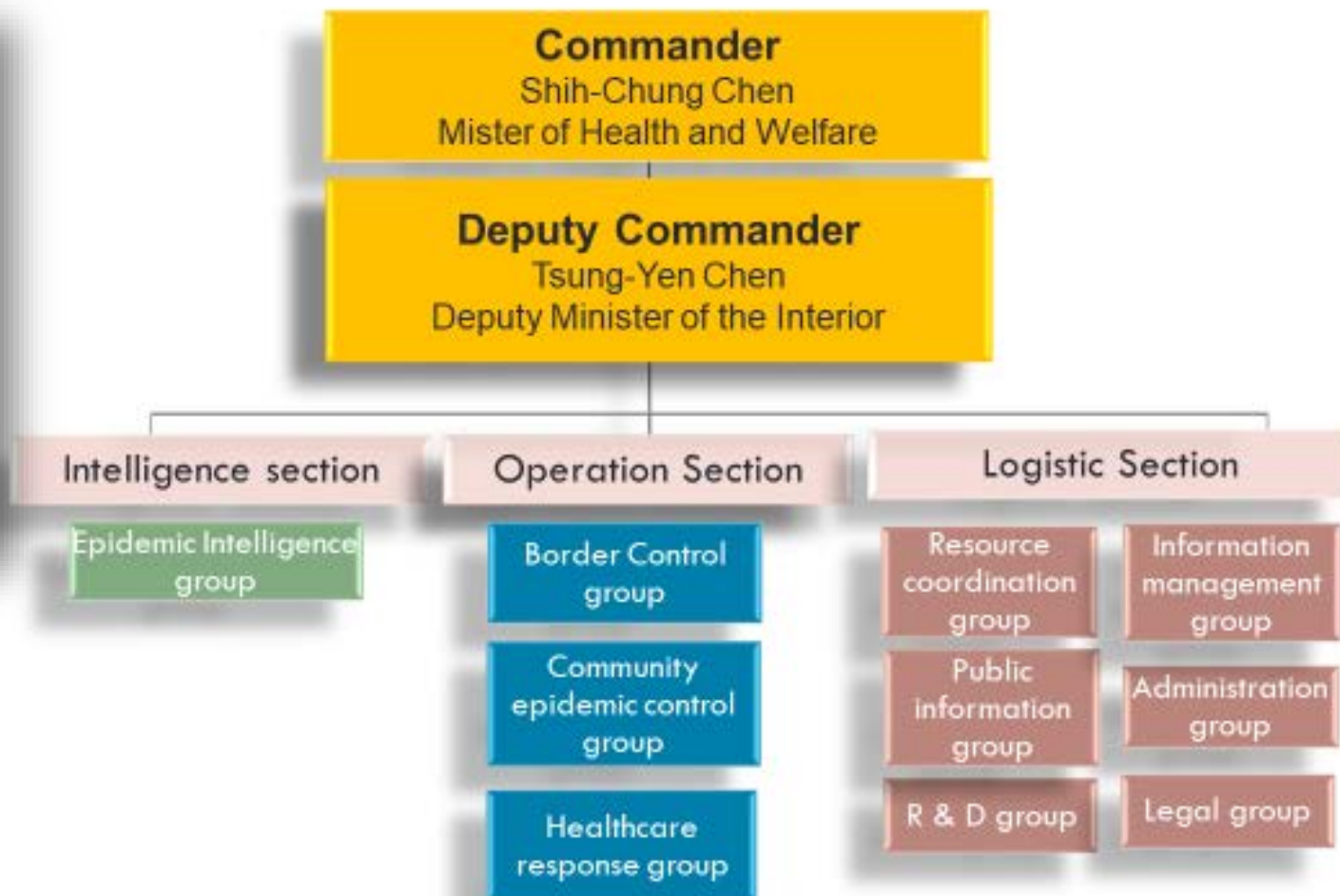
# Lessons from SARS: allow us to response quickly



## TAIWAN MODEL

# Prudent Action, Rapid Response and Early Implementation

## Framework of Level 1 COVID-19 Central Epidemic Command Center





# From gate to home/hotel, a journey to 14d-Quarantine

Quarantine Hotels



**Pre-Boarding registration and booking**



Onboard Inspection

**Onboard Inspection/Announcement**

**Home Quarantine Notice**



Smartphone-based Quarantine System for passengers

**Fever Screening Symptom-based Testing**



Fever Screening Infrared thermometer

**Quarantine Taxi Services**



Inbound Travelers not allowed to take public transportation

**Home/Hotel Quarantine for 14 Days**

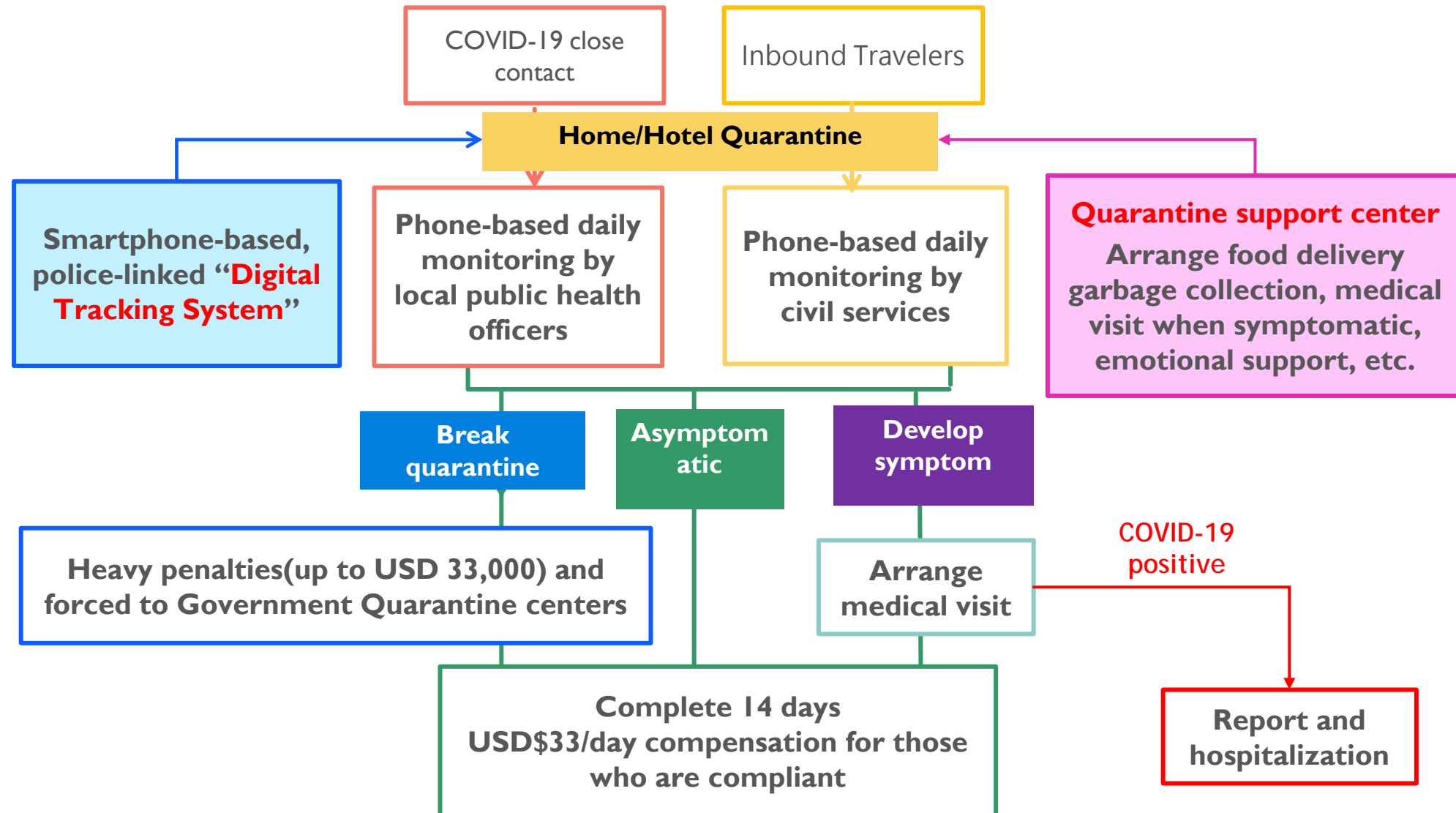


Home Quarantine Care Package Smartphone tracking system

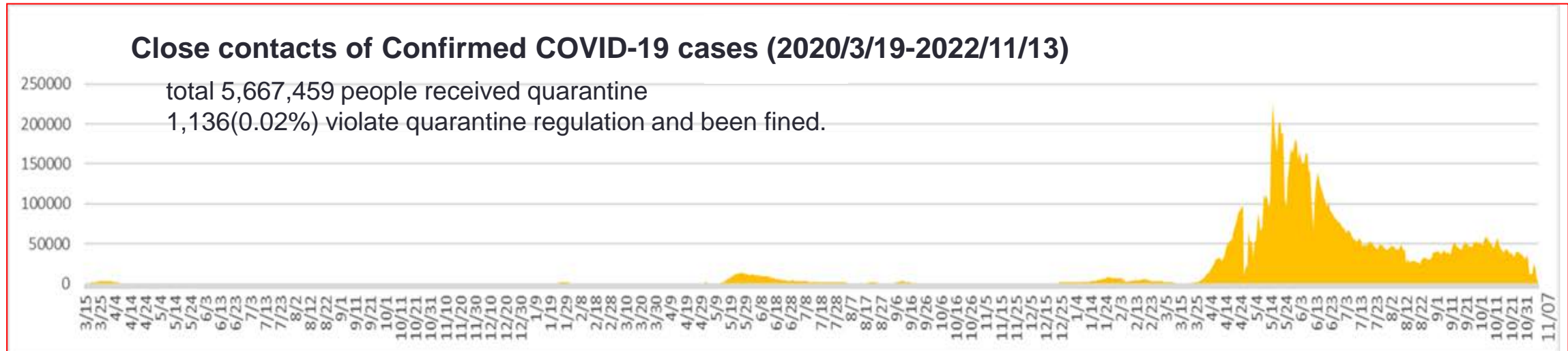
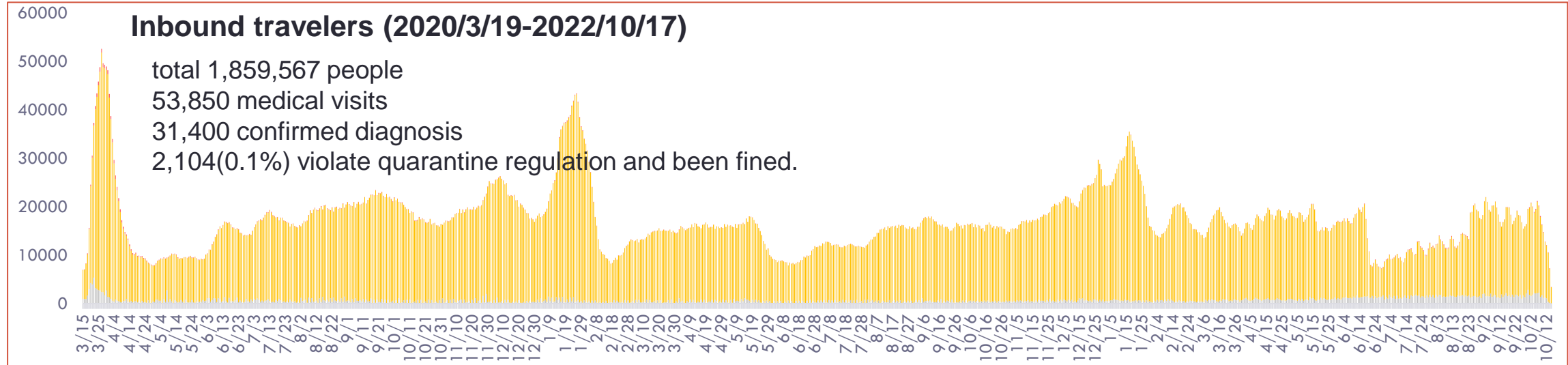
Photo: Liberty Times Net

# Taiwan's Home/hotel Quarantine System

Implemented from Mar 2020 to Oct 2022



# Results of Home Quarantine Management



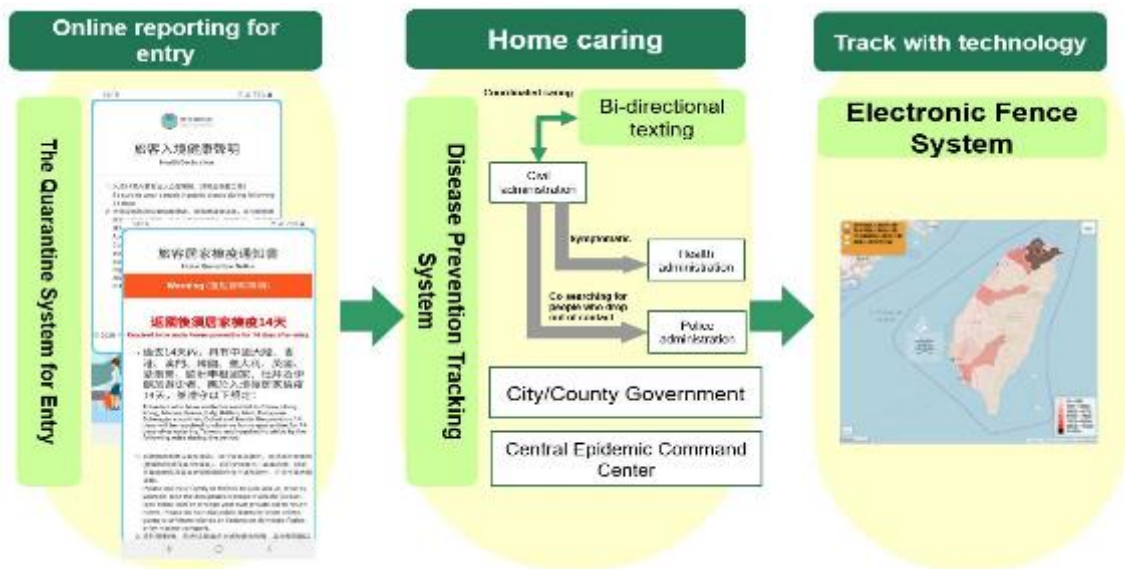
# Quarantine/Isolation policy and multisectoral support

- **Quarantine** separate and restrict the movement of people who were exposed to a contagious disease to see if they become sick.
- **Isolation** separates sick people with a contagious disease from people who are not sick.
  - Taiwan had relevant **legislation** in place after SARS, it's the key for effective implementation
  - **Places :**
    - Single room with private bathroom is the best quarantine/isolation places, but is not easy to achieve during pandemic.
    - Taiwan government recruits dormitories from public units to establish group quarantine places, and further cooperated with the hotel industry to establish **quarantine hotels**. **Unfortunately, several outbreaks occurred in quarantine hotels due to poor ventilation.**
  - **Monitoring and support :** Access to **essential needs**, supportive living environments, emotional support, and community engagement were required to adhere to restrictions.



# Adoption of Digital Technology

## ➤ Integration of quarantine and isolation platforms

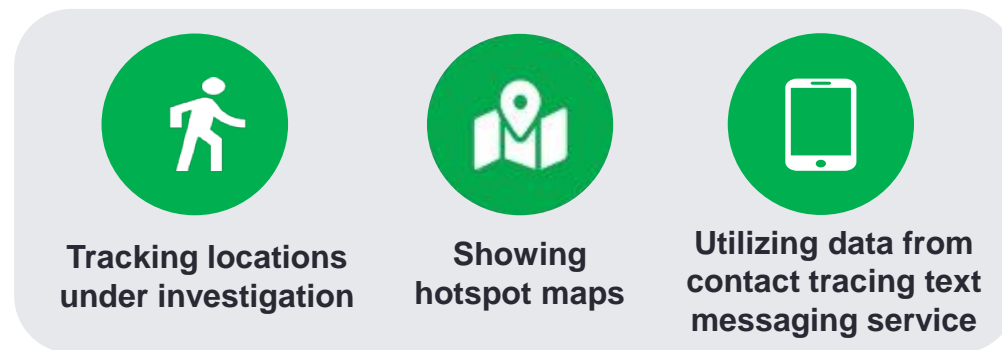


## ➤ Application of NHI platform

- Notification of Quarantine Status & TOCC
- Name-Based Mask Distribution System
- Zero-Contact Telemedicine



## ➤ Epidemiological Investigation Assistance Platform



- LINE chatbot Disease Control Butler
- Contact tracing text messaging service
- Taiwan Social Distancing App
- Digital COVID-19 Certificate



LINE@



All agencies are required to comply with regulations on the collection, processing, and use of personal data for epidemic prevention

# Multiple Surveillance Platforms



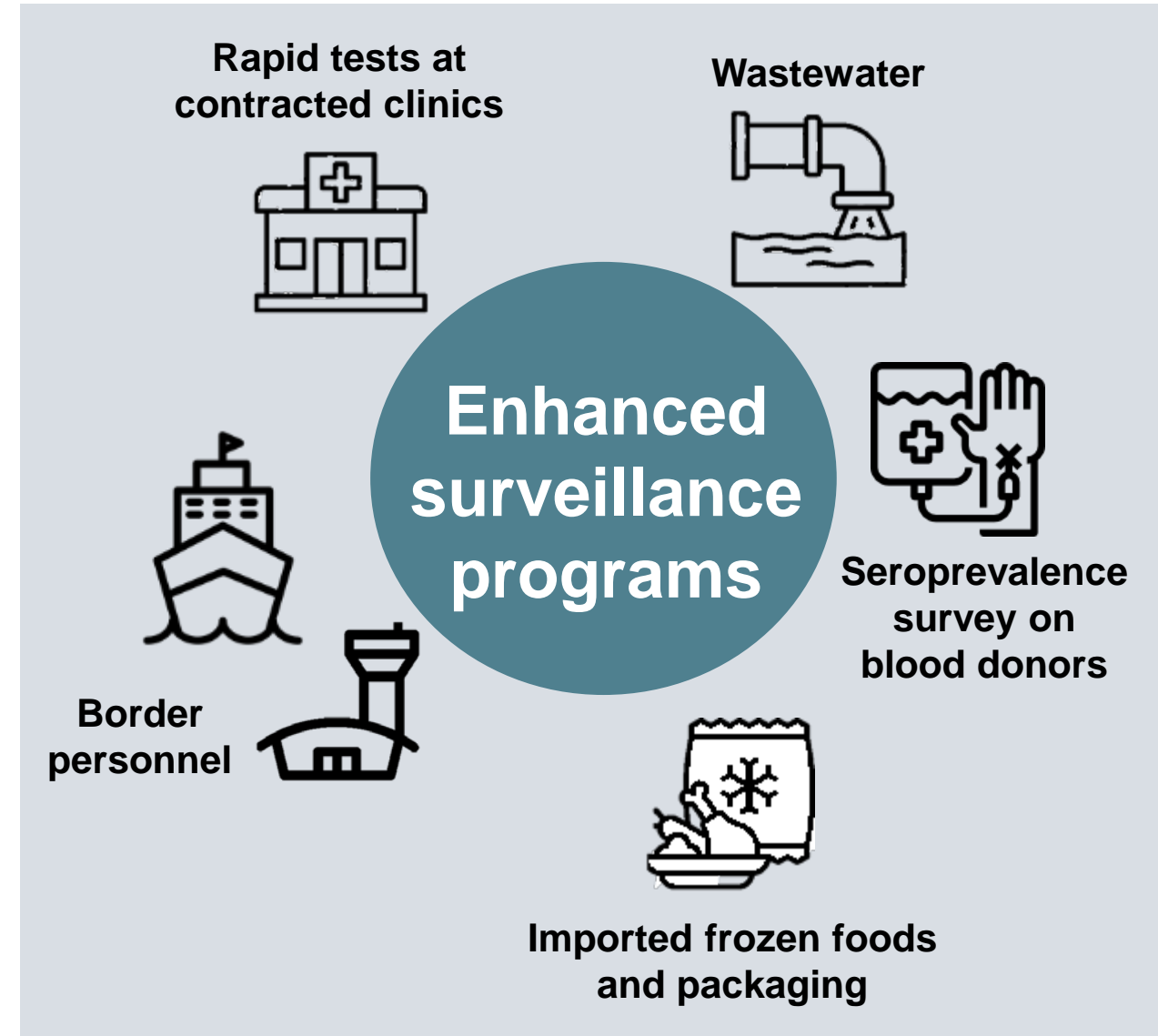
**Established Nationwide Testing Network**



**Set up Community Hotspot Screening Sites**



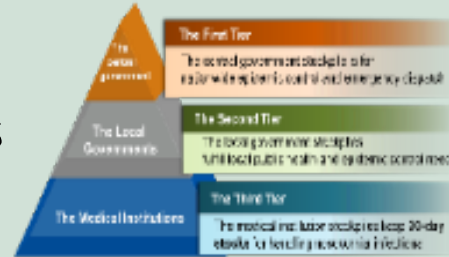
**Adopted visitor testing at hospitals and long-term care facilities**



# PPE Allocation and Increasing Production

## Release Stockpile

- Taiwan CDC
- Local health authorities
- Hospitals



## Increased Production

- Ban on export of medical masks **from January 24 to May 31**
- The government also requisitioned all domestically manufactured medical face masks and helped manufacturers expand production capacity: **1.9 million/day** in January to **19 million/day** in May

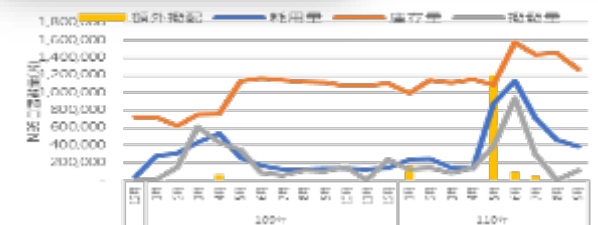


## Rational Distribution

- Priority: healthcare workers, public health workers
- Name-based distribution system for general public to purchase masks.



醫療N95口罩庫存、耗用及拾得量



# Nonpharmaceutical public health interventions

## ■ Social Distancing measures

- Decrease occupancy limits
- Advance collection of event participants' contact information
- **Keeping physical distance:** 1.5m indoors, 1m outdoors
- **Wearing masks while taking public transportations or in crowded/enclosed areas.**

## ■ Entryway temperature screening

## ■ Hand sanitizer and disinfectants widely placed in public spaces

## ■ Frequent disinfection at public facilities and high touched surfaces



Lengthening the distance between people waiting in line.





# COVID-19 in Taiwan — Week 1, 2020 – Week 20, 2021 (n = 6,205)



## Taiwan's tea shops become a COVID-19 breeding ground

2021-5-12

• The outbreak likely began after spilling over from cargo plane crews. However, the bulk of the surge has been traced back to two sources: a local Lions Club International gathering, and tea houses in the red-light district of Taipei's Wanhua neighborhood. The two clusters were at first thought to be



unrelated—until a former mayor that he had visited one of the the civic leader in his 60s, nicknamed "The Lion King," showed contacts while potentially in

It's not hard to see how COVID-19 would ricochet easily through such an environment. The shops are often poorly ventilated and dimly lit. It's also common for patrons to "bar-hop" from shop to shop and mingle with multiple hostesses and other patrons. "There is no way that you can wear masks in the tea houses, no matter if it is with sex workers or a just normal tea houses because you are eating food, you are drinking tea and you are singing, and so on," says Lim, the legislator for the area.



Combine that with customers who aren't eager to tell contact tracers—or their own families—that they visited such an infamous area, along with marginalized workers who may be hesitant to come forward, and the red-light district in Wanhua has become the catalyst for more than 1,000 of the infections reported across Taiwan.

<https://time.com/6050316/taiwan-covid-19-outbreak-lead/>

CECC raises epidemic warning to **Level 2** and implements related restrictions effective from **May 11** to June 8, in response to increased risk of commu

1. Members of the public should avoid crowded venues and to wear a mask at places of infection and transmission. **Those who do not wear face masks may be fined.**
2. In principle, organizers **should cancel outdoor activities of more than 500 people of more than 100 people.**

3. Organizers of outdoor activities should be reminded to take measures such as wearing, maintaining a safe distance, and avoiding crowded environments. Organizers should adopt the following measures and restrictions introduced across Taiwan to reduce the risk of infection and transmission.

4. Business owners and organizers of mask-wearing and face mask-wearing at entertainment venues should be reminded to adopt the following measures and restrictions introduced across Taiwan to reduce the risk of infection and transmission.

5. Food and beverage vendors should only offer takeout services. Members of the public should be reminded to adopt the following measures and restrictions.

6. Consumption of alcohol should be restricted. Members of the public should be reminded to adopt the following measures and restrictions.

CECC raises epidemic warning to **Level 3 nationwide from May 11** and implements related measures and restrictions introduced across Taiwan to reduce the risk of infection and transmission.

- A. **Members of the public must wear a mask all the time when outdoors.** If violation of the rule is found, penalties will be imposed without prior warning.
- B. **Leisure and entertainment venues that have been ordered to close.** Strict inspections will be conducted. For those failing to abide by the rule, the owner, staff, customers and participants of the gathering will face a fine or penalty.
- C. **Food and beverage vendors should only offer takeout services.** Supermarkets and supermarkets should bolster crowd control measures. Members of the public are urged to reduce the frequency of visiting supermarkets/hypermarkets and buy more groceries at one go.
- D. **Suspension of wedding receptions and public memorial ceremonies.**
- E. **A halt to all religious gatherings or events; places of worship are temporarily not open to the public.**



Taipei city is now empty. Screen capture from 去照天

TAIPEI 台北 TIMES

Front Page Taiwan News Business Editorials Sports World News

Home / Taiwan News

Wed, May 15, 2021 page 03

### COVID-19: Schools suspend in-person teaching

**ONLINE LEARNING:** Parents who need to care for a child under the age of 12 or with a disability can apply for 'disease prevention childcare leave,' the Ministry of Education said

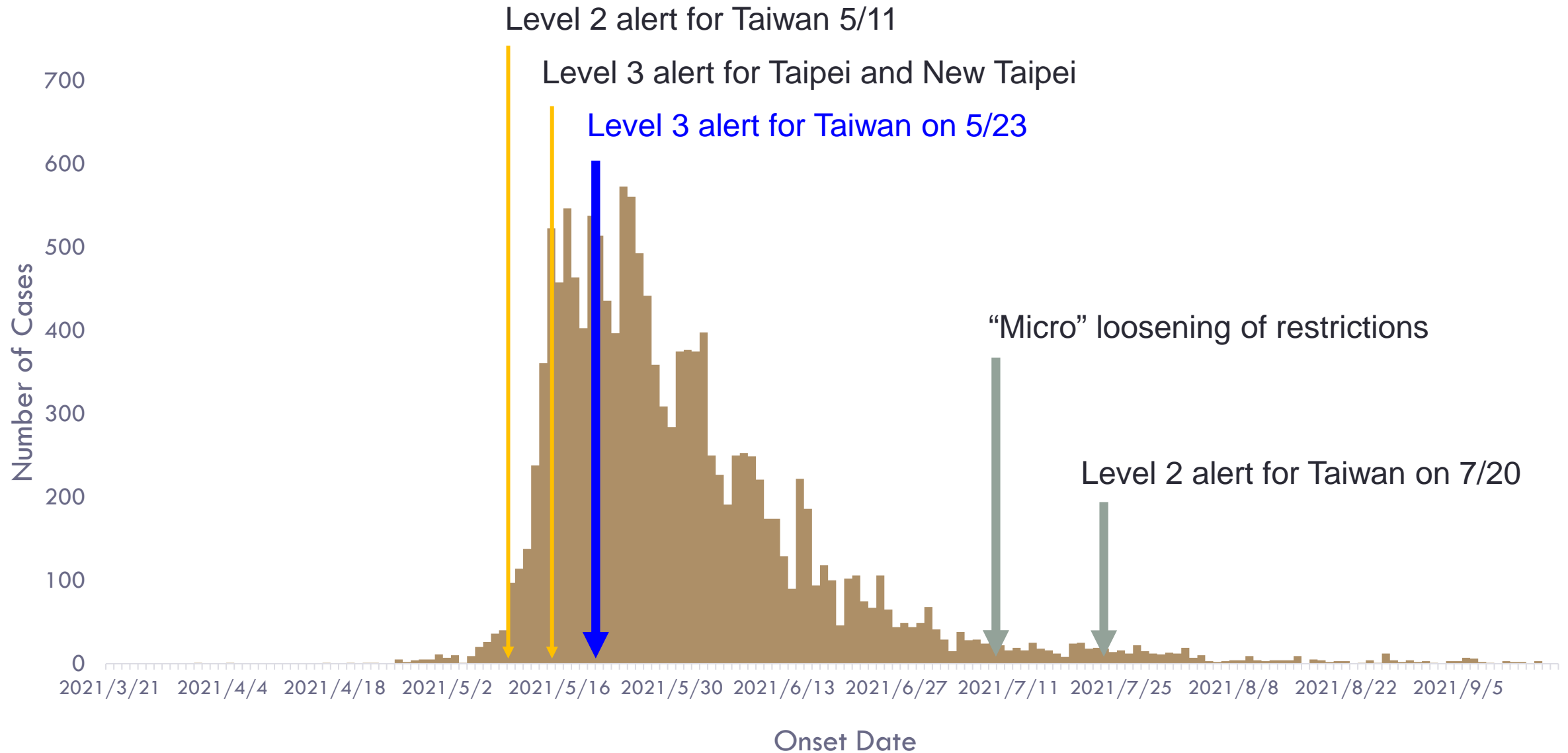
By Sherry Hsiao / Staff reporter

All schools nationwide, including public and private kindergartens, are to suspend in-person instruction from today until Friday next week, the Ministry of Education announced yesterday.

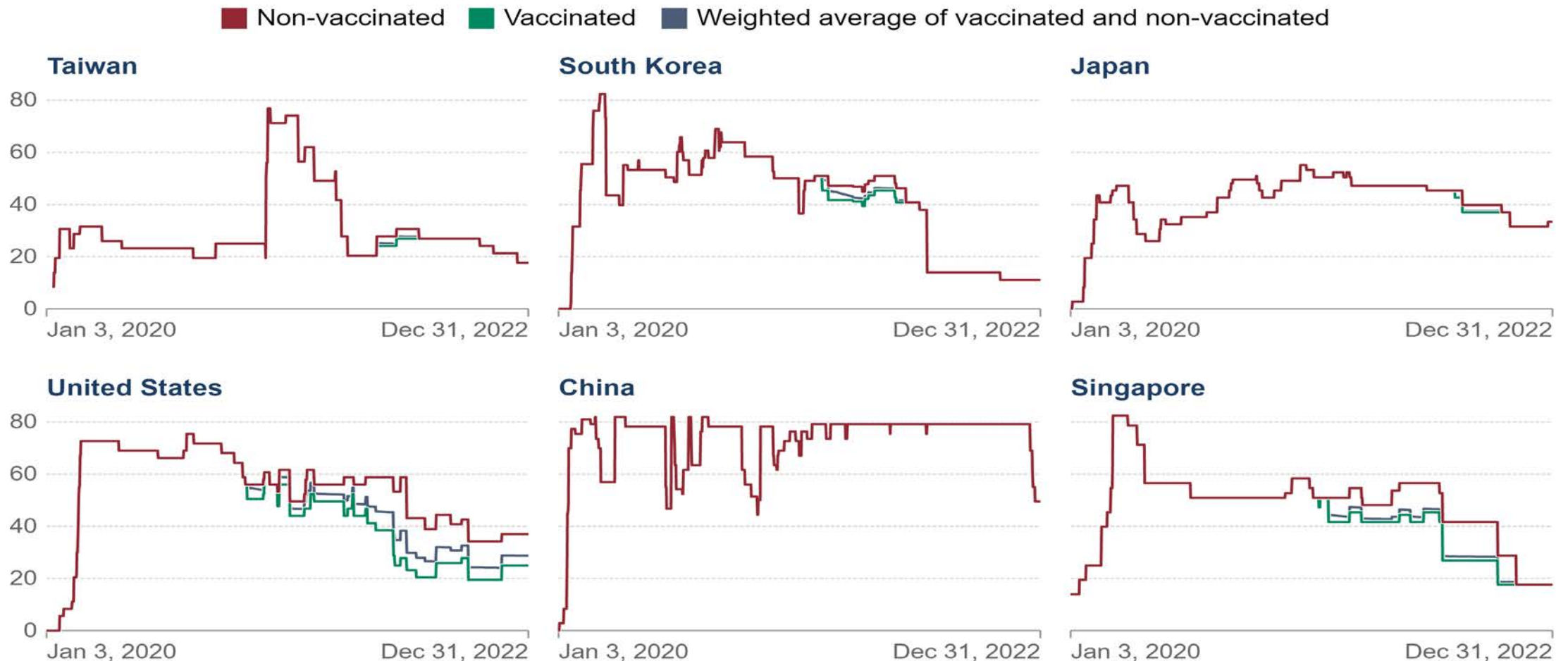
The measure is being taken to reduce the risk of COVID-19 cluster infections, the ministry said in a statement.

Centers providing after-school childcare services, cram schools and other educational institutions must also suspend classes during that period, it said.

# Locally-acquired cases — Mar 21–Sep 17, 2021 (n = 14,498)



# Less stringent controls used for a shorter period



Our World Data, Source from The [Oxford Coronavirus Government Response Tracker \(OxCGRT\)](#) project. The Stringency Index is a composite measure of nine of the response including school closures, workplace closures, international travel controls, etc. The index on any given day is calculated as the mean score of the nine metrics, each taking a value between 0 and 100.

# Human tolerance for lifestyle changes is limited

## Incentives can change behavior. Social norms can enforce it.

- Most people endured restrictions in daily life and social interactions, including taking extra precautions like wearing masks, minimizing interactions and modifying lifestyles. But **patience ran out gradually** and policymakers need to recognize the limitation of human perseverance and prepare accordingly.

<https://www.nytimes.com/2023/05/11/opinion/covid-pandemic-lessons.html>

- **Clear messages** on public health and social measures are important for sustaining and enhancing adherence at the community level through engagement of the community and the highest-level leadership.



During the first wave of outbreak in the community in May 2021, COVID cases crush strains Health care system.



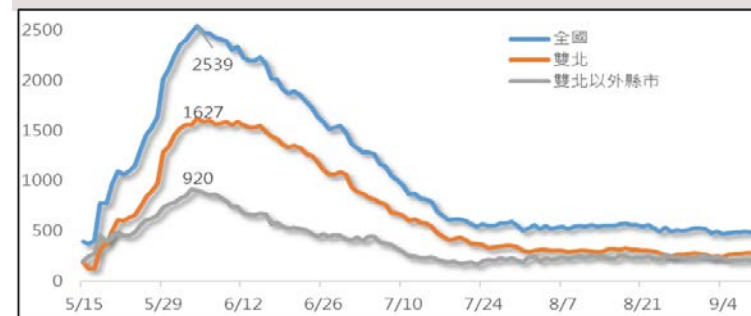
COVID crush strains Taipei City Hospital system



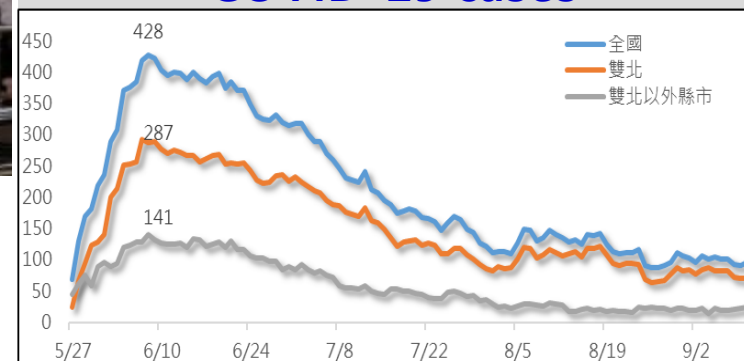
5 hospitals in Taiwan report internal COVID infections



Trend of hospitalization of COVID-19 cases

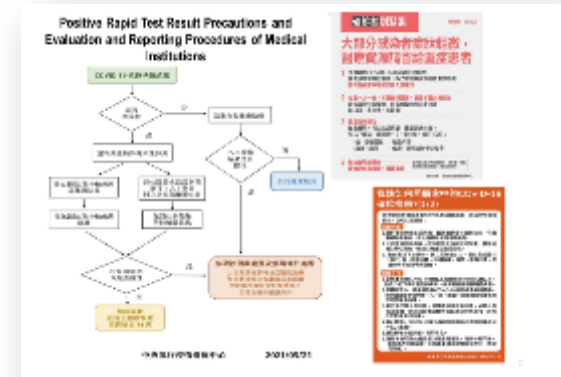


Trend of ICU hospitalization of COVID-19 cases



# Strategy to Maintain Medical Resources

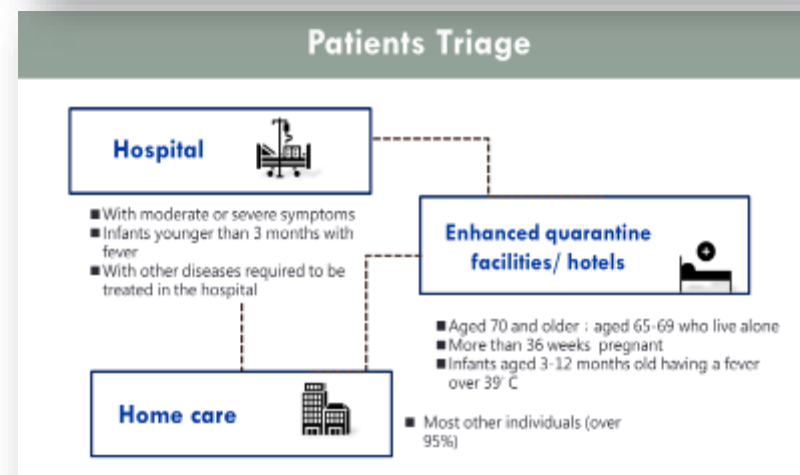
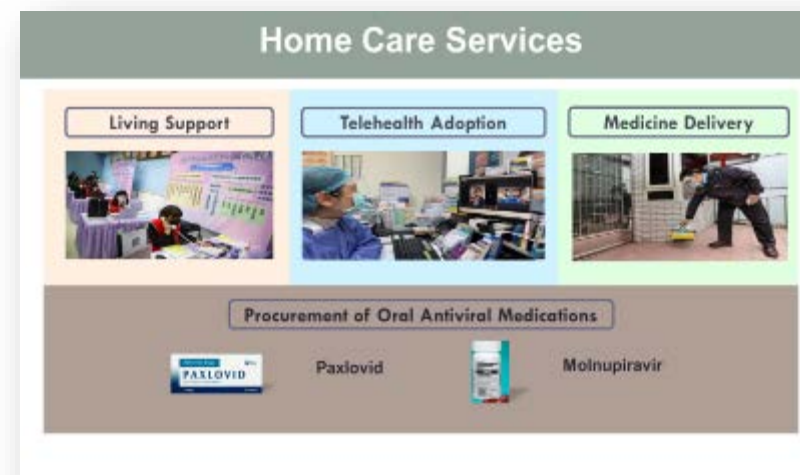
- **Establish more centralized quarantine station to ease the medical burden**
  - A total of 48 centralized quarantine sites were requisitioned, totaling 5,674 rooms was established to treat quarantine/isolation individuals, and treat mild cases if necessary
- **Educate the public about patient triage and how to manage COVID-19 symptoms at home**
  - encourage individuals using home testing kit when symptomatic
  - Issue “Positive Rapid Test Result Precautions and Evaluation and Reporting Procedures of Medical Institutions” and transfer high risk cases for hospitalization
  - Develop “Guideline for home care of COVID-19 cases”
- **Purchase and prepare medications and equipment to reduce disease severity and mortality**
  - Purchase Remdesivir, monoclonal antibodies, Paxlovid, etc.
  - Simplifying prescription process and enhance antiviral agent accessibility (e.g. Increasing medication pickup sites, home delivery service for medications)



# Adaptable health-care system is important for pandemic

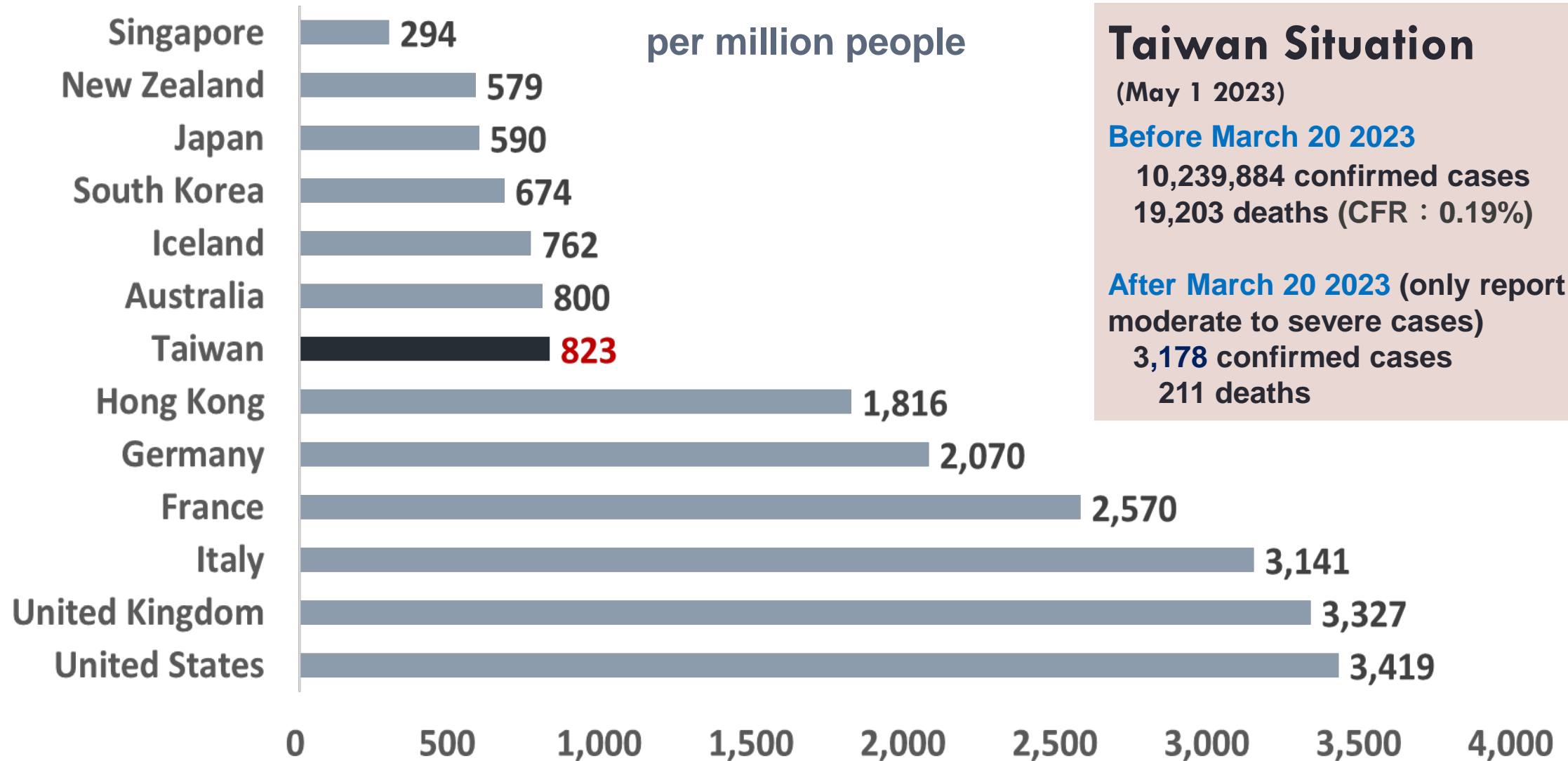
## Community-based and home-based care models supported by primary care providers and telemedicine made important contribution.

- **Home-based care model** of COVID-19 cases, supported by telemedicine consultations and medicine delivery system can be applied in responding to a major surge of patients.
- Effective primary care pathways, **including triage and referral systems** that can guide which patients can be treated at home, which patients need to be admitted for oxygen therapy and which patients need to be put on community treat-and-care facilities (e.g. hotels converted into makeshift hospitals), were critical for clinical management.
- Hospital administration should have flexible approaches to **identifying isolation spaces** in case of a surge in cases of COVID-19 while continuing the essential health services. In addition, **plan for rapidly scale up** isolation spaces is necessary.





# Cumulative Confirmed COVID-19 Deaths



## Taiwan Situation

(May 1 2023)

### Before March 20 2023

10,239,884 confirmed cases

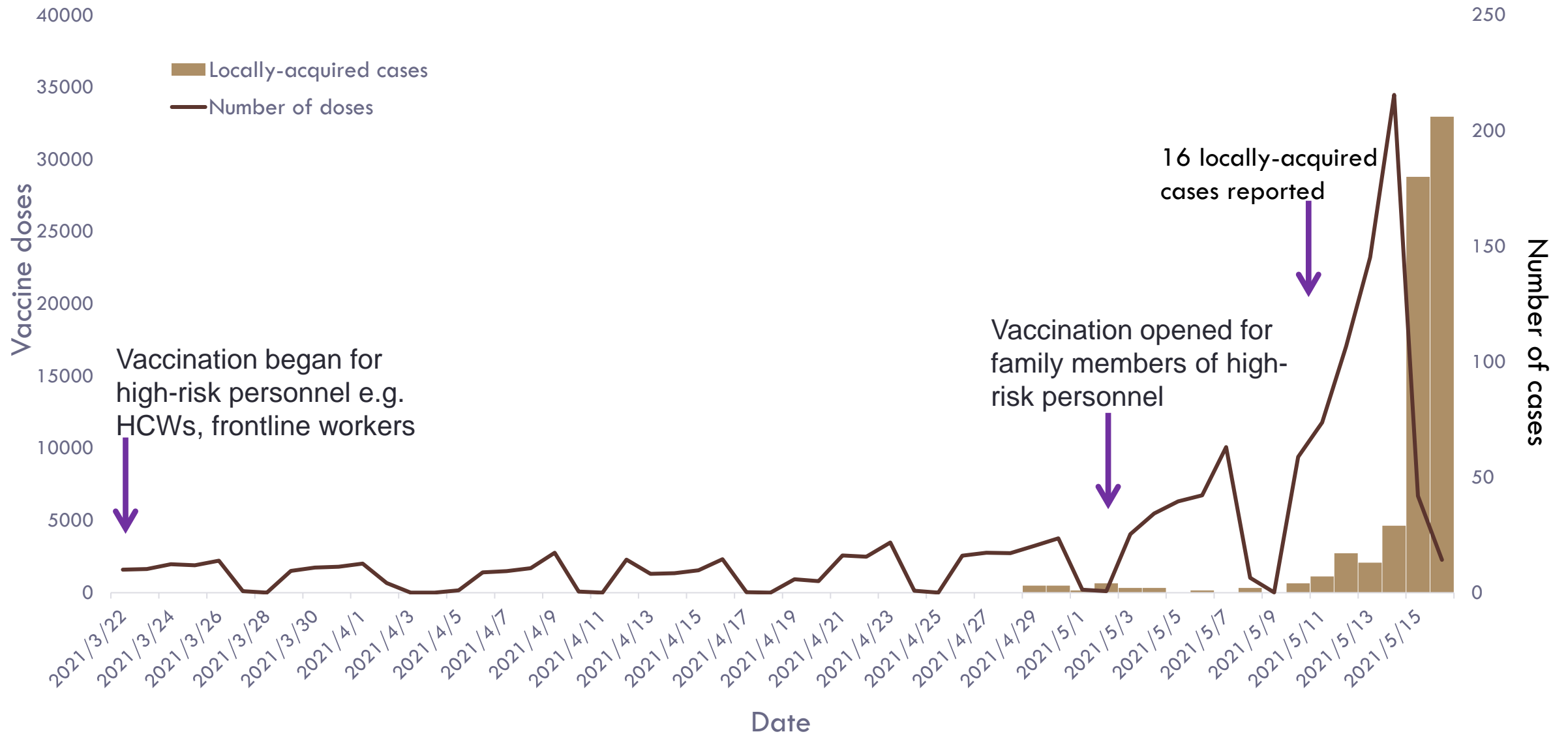
19,203 deaths (CFR : 0.19%)

### After March 20 2023 (only report moderate to severe cases)

3,178 confirmed cases

211 deaths

# Locally-acquired cases and vaccines given — Taiwan, March 22–May 17, 2021



# Strategies For Promoting COVID-19 Vaccines

1



Expansion of vaccination sites

2



Setting up vaccination stations & Providing outreach services



Taiwan V-Watch System

3



To increase vaccines availability & accessibility

4



Voucher for COVID-19 vaccinee

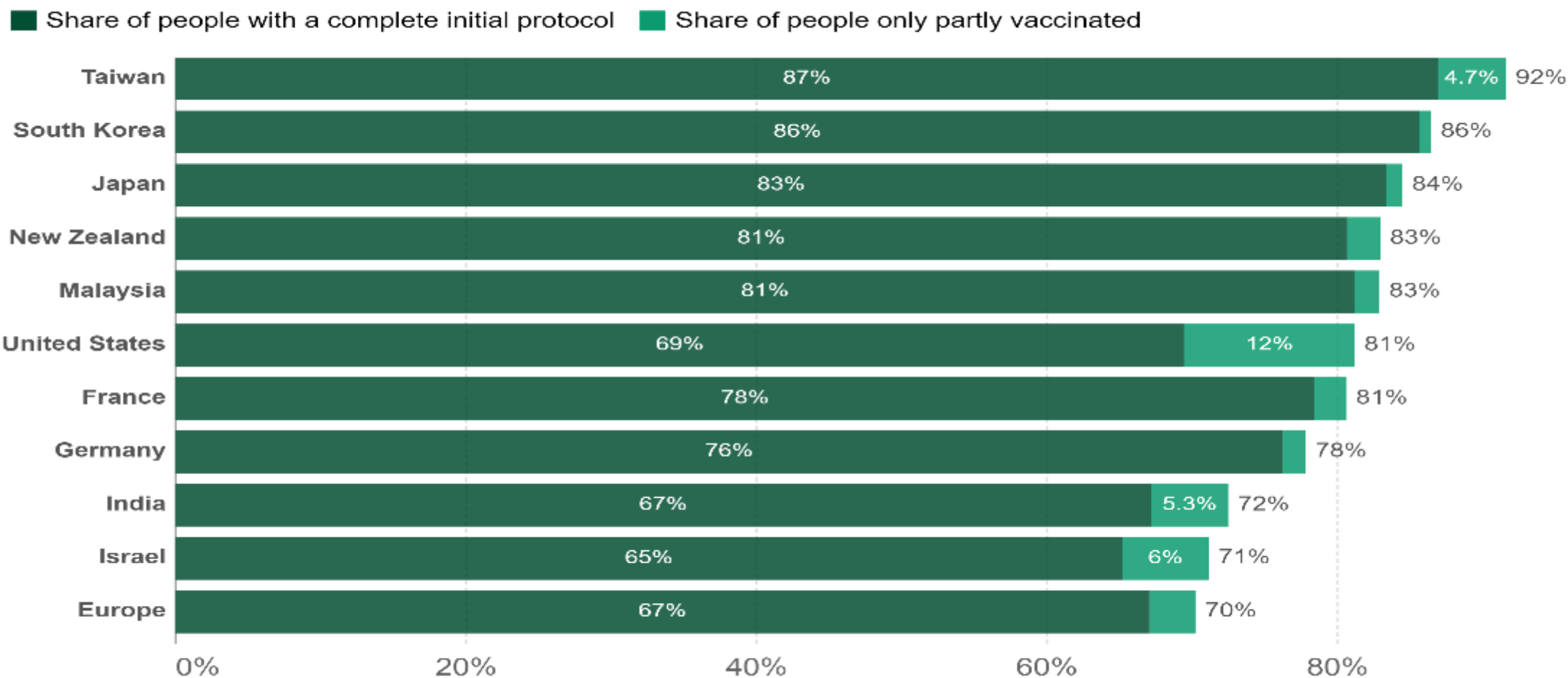


COVID-19 vaccination Record

# Taiwan COVID-19 Vaccination Coverage

Share of people vaccinated against COVID-19, May 3, 2023

Our World  
in Data



Source: Official data collated by Our World in Data

Note: Alternative definitions of a full vaccination, e.g. having been infected with SARS-CoV-2 and having 1 dose of a 2-dose protocol, are ignored to maximize comparability between countries.

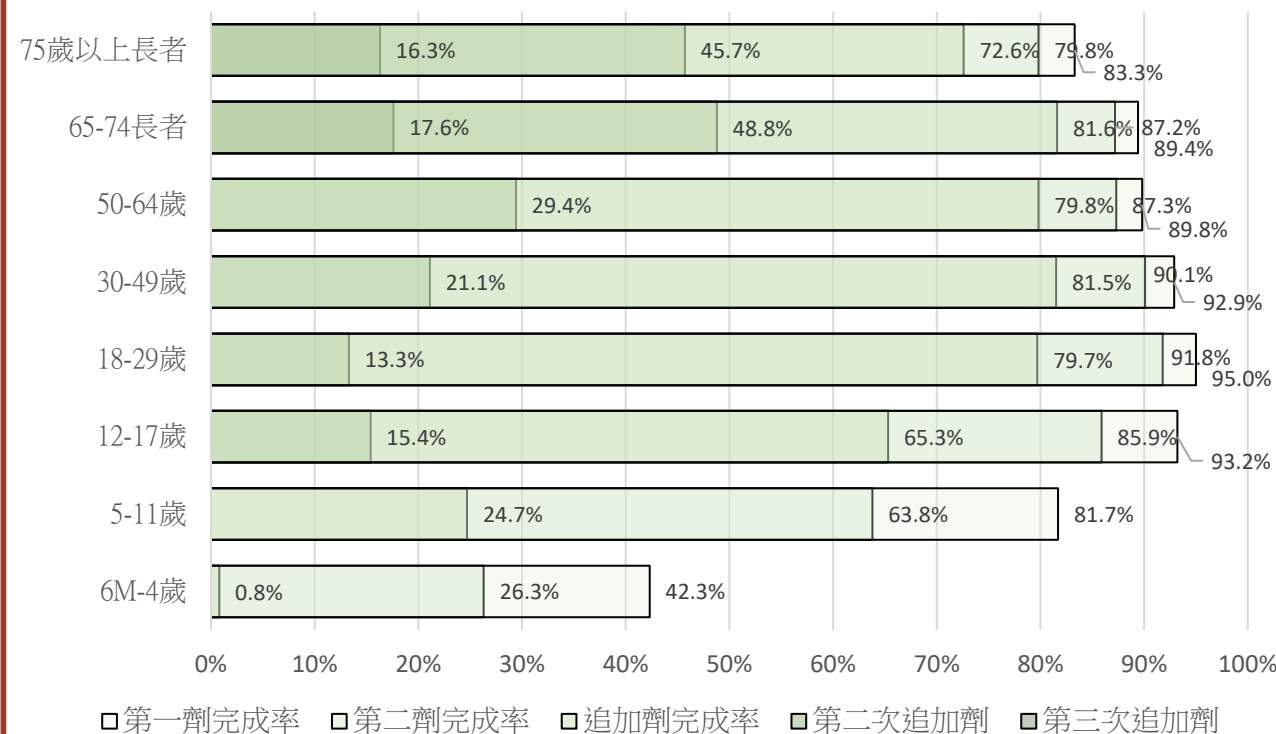
CC BY

# Lessons learned from COVID vaccination

- The journey from vaccine discovery to global herd immunity against COVID-19 continues to present significant challenges revolving around its development, distribution, affordability, accessibility, and acceptability.

- **Vaccine allocation** : priority group, essential workers
- **Vaccine delivery**: multi-dose vial, extreme low temperature cold chain
- **Vaccine hesitancy** : mistrust, fake information, political issue
- **Vaccine mandates**: HCWs, air-crew members, etc.
- **Increase access**: Vaccination Leave, vouchers for vaccinee

## Vaccination Coverage Rate for Different Age Groups



# Information Transparency



Social Media



Press Conference



Press Release



Taiwan CDC Website



Countering Disinformation

Health Education

Risk Communication



International Media



Letter to Medical Facility



Television



1922 Hotline



A world map in shades of blue with a network of white lines and circles overlaid, representing global connectivity. The text is centered in the lower half of the image.

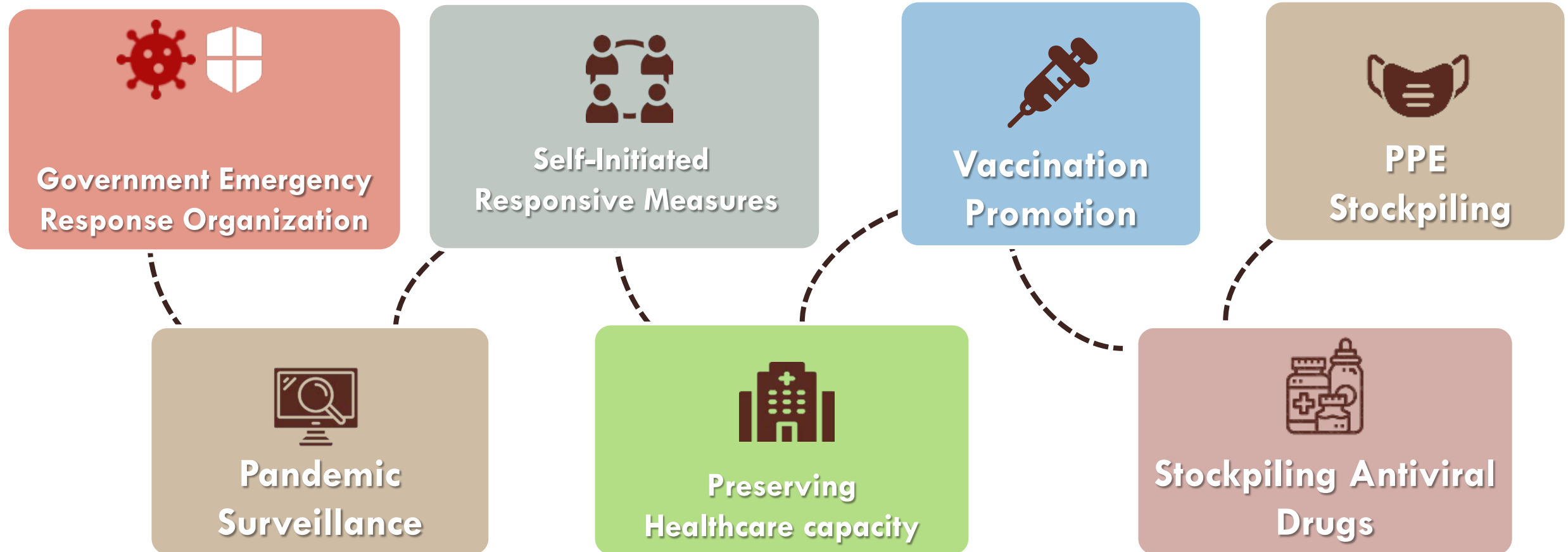
# Preparation for the Next Pandemic: Taiwan and Global Perspectives

# A Return to Normal





# Preparation for the Next Pandemic



# Coexisting with the Virus in the Future

## Objectives

- **Prevent severe cases and deaths**
- **Maintain medical capacities**
- **Protect vulnerable groups**
- **Streamline screening and medical treatment processes**
- **Return to normal life and ensure economic growth**

## Strategies

- **Multiple surveillance systems and regular release of results**
- **Continued provision of government-funded vaccines and development of an annual immunization program**
- **Continued antiviral treatment to prevent disease severity and care services for confirmed cases**
- **Sufficient stockpiles of medical supplies for rapid response**

**THANK YOU**



**Taiwan Can Help ! Taiwan is Helping !**