

**The 72nd Transport Policy Seminar**  
**The Latest Trends in Vaccine Passports and Travel Passes**  
**June 25, 2021**

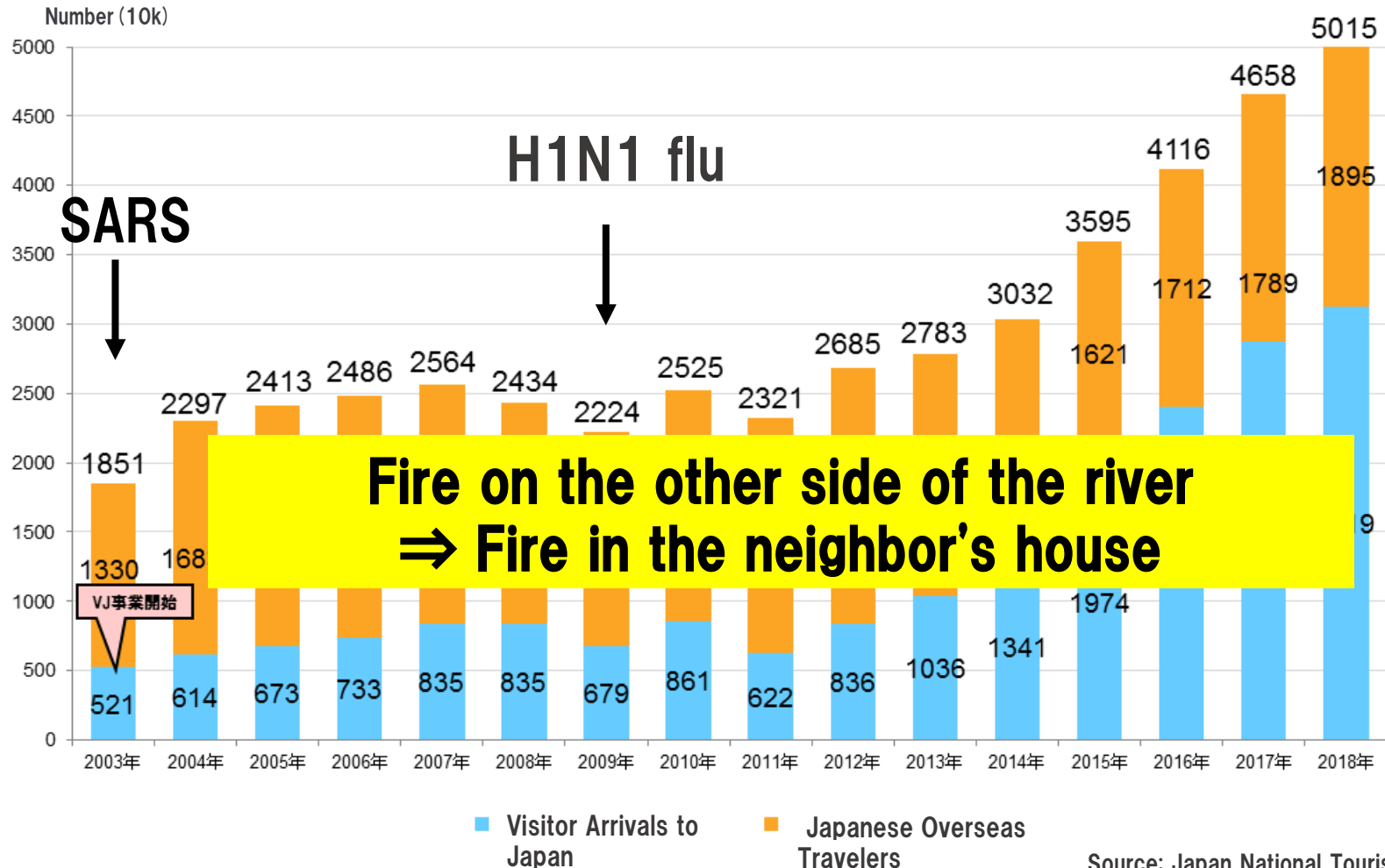
# **The Possible Solution for the Safe International Travel During the Pandemic**

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# 1 Imported Infectious Diseases COVID-19

Trend of Visitor Arrivals to Japan and Japanese Overseas Travelers



Source: Japan National Tourism Organization (JNTO)

# 2 New Coronavirus Infections

**Virus: SARS-CoV 2**  
**Infectivity  $R_0$ : 2-3** Mutant strains are highly infectious.  
**source of infection**  
Infected persons (mainly before and after onset of disease)  
Environment  
**Fatality rate (Japan) 1.8%**

**Pathogen**  
(Source of infection)

infection route

**Sensitive organism**  
(Immunocompromised person)

**Droplet infection >> Contact infection**

**People with no history of infection**  
**Unvaccinated persons**

[Longitudinal Monitoring of SARS-CoV-2 RNA on High-Touch Surfaces in a Community Setting | Environmental Science & Technology Letters \(acs.org\)](#)

# (Reference) Mutant Strain

	UK stocks	South African stocks	Brazilian stock	Indian stock
	$\alpha$	$\beta$	$\gamma$	$\delta$
Increased Infectivity (N501 mutation, etc.)	existence (at the present moment)	existence (at the present moment)	existence (at the present moment)	existence (at the present moment)
immune escape (E484 mutation, etc.)	None	existence (at the present moment)	existence (at the present moment)	possibility existence (at the present moment)
aggravation	existence (at the present moment)	unknown	unknown	unknown

Immune escape: mutation that allows infection to slip past once-acquired immunity

# Risk of infection on airplanes and trains

- **Infection among close contacts**
  - In the home (10.3%) >> Public transportation (0.3%)
    - <https://www.acpjournals.org/doi/10.7326/M20-2671>
- **Secondary infection in aircraft**
  - 44 cases per 1.2 billion passengers (1 case per 27 million passengers) of possible infections related to air travel
    - <https://www.iata.org/contentassets/a1a361594bb440b1b7ebb632355373d1/2020-10-08-jp.pdf>
- **Secondary infection on high speed train 0.32%**
  - Next seat 3.5%, same row 1.5%, different row 0.14%
    - <https://pubmed.ncbi.nlm.nih.gov/32726405/>



# But...

# If a person with symptoms boards a plane without a mask...

- A case of secondary infection on an airplane bound for Okinawa
- The source of the infection was a passenger who traveled to the Kansai region by air from March 20, and returned home on March 23.
- **He had a severe cough on the plane on March 23, but was not wearing a mask.**
- In the end, 122 out of 141 survey targets were contacted, and a total of **14 PCR-positive individuals** residing in 7 prefectures including Okinawa Prefecture were confirmed.

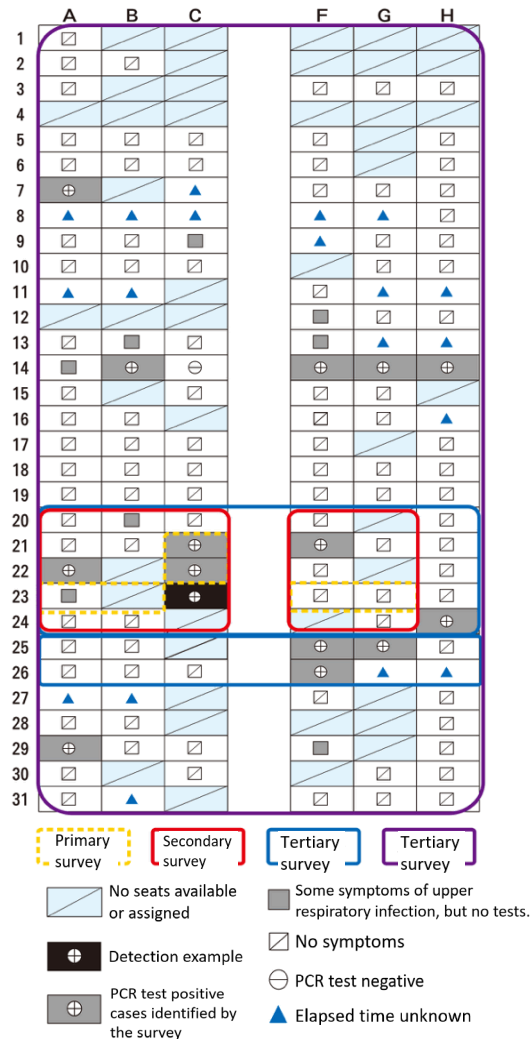


Figure 2: In-flight seating positions of the survey targets

IASR

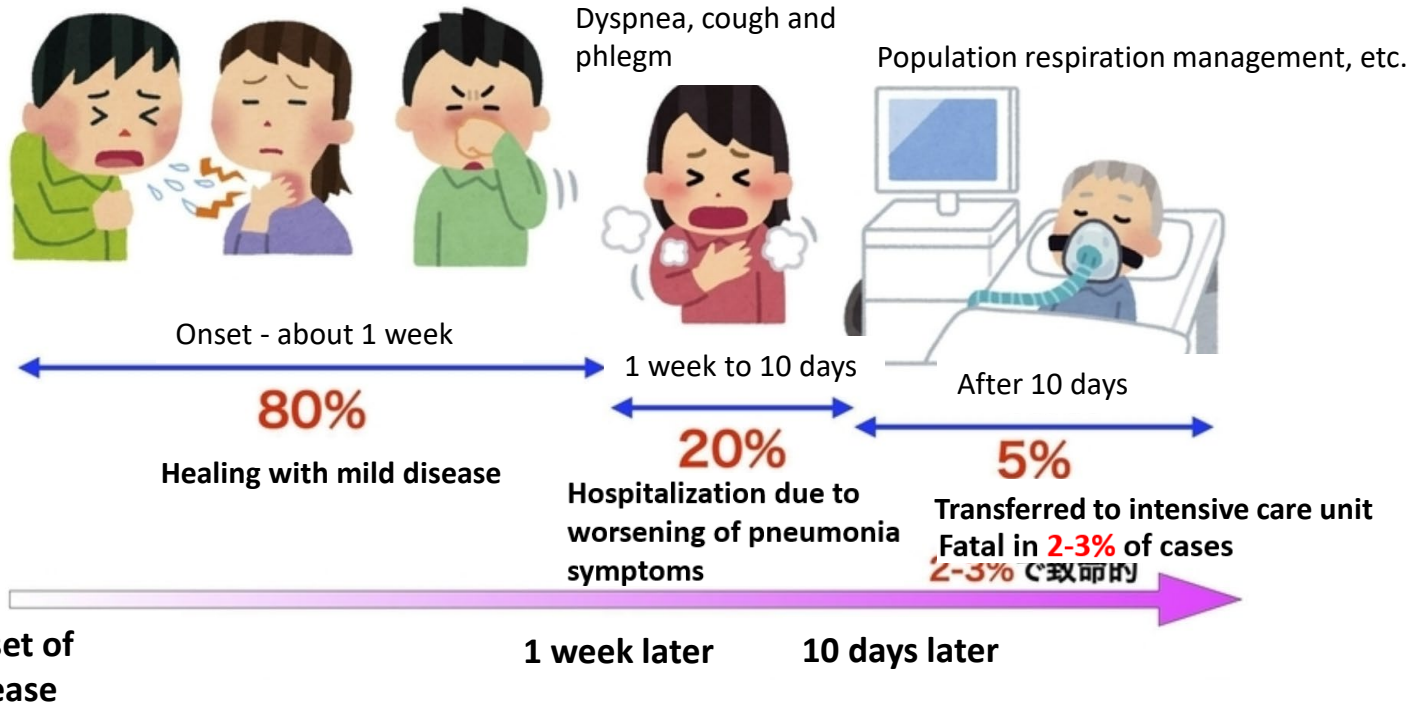
## Cluster case of novel coronavirus infection (COVID-19) suspected to have been transmitted in an aircraft.

(IASR Vol. 41 p187-188: [October 2020 issue](#))

# Clinical Progress

## Period of Infectivity

Cold symptoms, olfactory and gustatory disturbances



New Coronavirus Infections: A Guide to Clinical Practice 2020 19-COVID 3 Edition

<https://www.mhlw.go.jp/content/000668291.pdf>

# 3 New Corona Countermeasures

Stay Home

Anti-cluster measures  
Self-restraint and lockdown  
Proof of non-infection  
(PCR test, etc.)

Pathogen  
(Source of infection)

Infection route

Sensory organism  
(Immunocompromised)

Hand washing and masks  
Disinfection

Vaccine

Avoidance of three densities:  
distance and ventilation



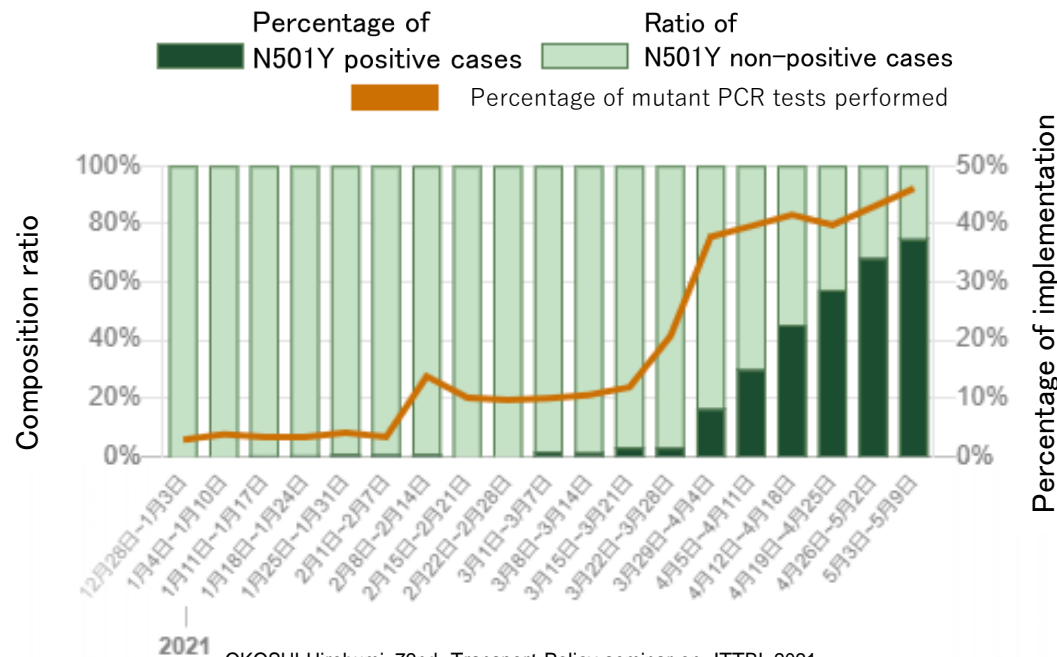
# 3-1 Proof of Non-infection by PCR Test

Number and results of PCR tests (including antigen tests) conducted in quarantine

Number of people tested	Number of positives
738,859	3,044

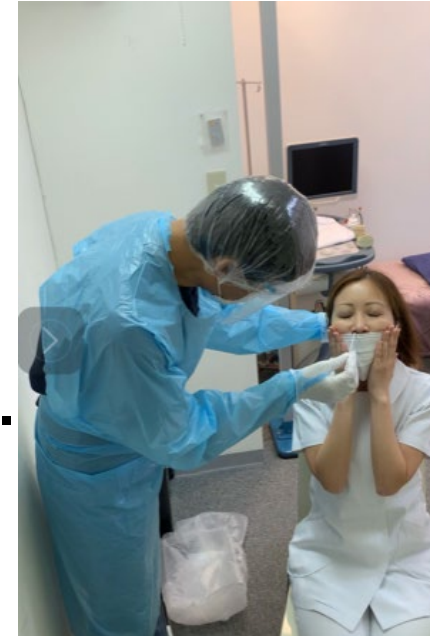
As of June 19, 2021, 2:00 p.m.

Percentage of mutant strains (N501Y) among infected persons (Tokyo)



# Non-infectious Certification Test at the Time of Entry and Exit

- Method of examination or inspection
  - PCR test or antigen test
  - Nasopharynx or saliva
- Timing of the test
  - Departure: within 48-72 hours of flight
  - Entering and leaving Japan: Upon entry +
- Problem
  - Early infection is undetectable.
  - False negative, false positive
  - Burden on the traveler: fees, receipt of certificates
  - Burden on medical institutions: Restrictions on medical treatment during tests, receipt of certificates
  - Forgery of certificates
- Needed for the time being to monitor mutant strains.



# 3-2 Vaccine

Prevention of serious illness

Prevention of disease

Infection prevention



Mass immunity



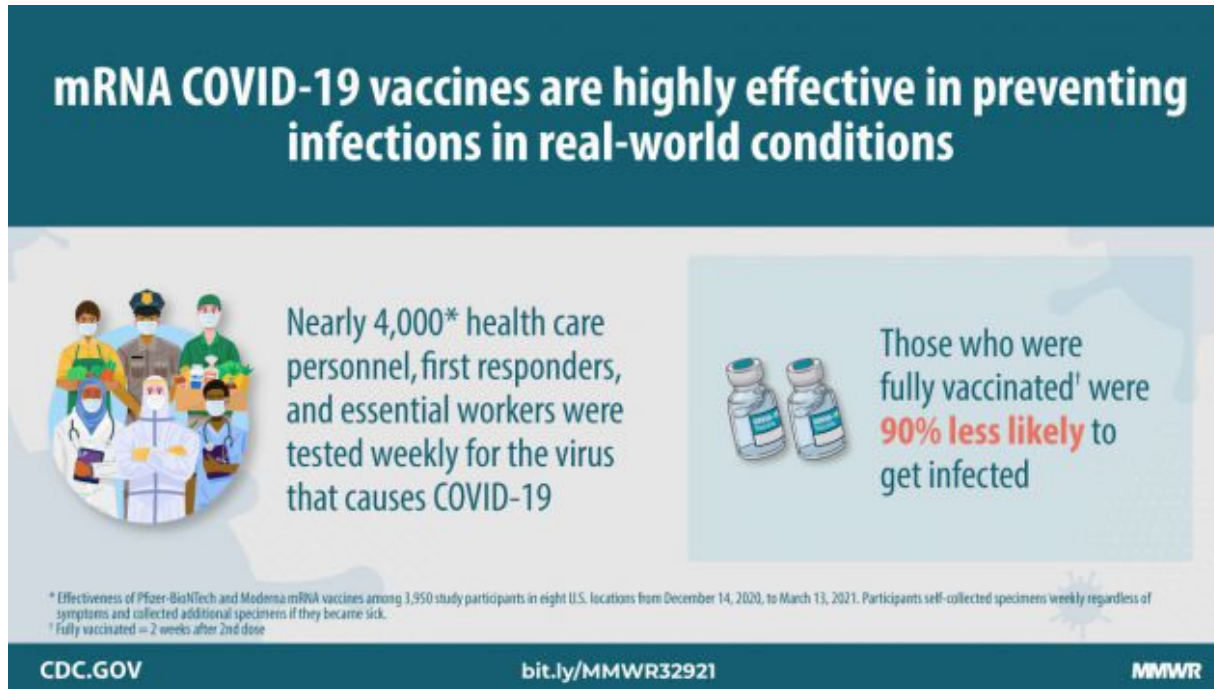
# New Coronary Vaccine

Company	Vaccine type	Age range	Effective rate (Prevention)
Pfizer	messenger RNA	$\geq 12$	95%
Moderna	messenger RNA	$\geq 18$	94.5%
AstraZeneca	virus vector	$\geq 16$	90%* 62.1%**

- adverse reaction
  - Many minor cases of local and systemic reactions.
  - Infrequent, but anaphylaxis
  - AstraZeneca's product is a less frequent thrombogenic agent.

# Effective in Preventing Infection

Verification by weekly PCR test from December 2020 to mid-March 2021.



**mRNA COVID-19 vaccines are highly effective in preventing infections in real-world conditions**

Nearly 4,000\* health care personnel, first responders, and essential workers were tested weekly for the virus that causes COVID-19

Those who were fully vaccinated<sup>†</sup> were **90% less likely** to get infected

\* Effectiveness of Pfizer-BioNTech and Moderna mRNA vaccines among 3,950 study participants in eight U.S. locations from December 14, 2020, to March 13, 2021. Participants self-collected specimens weekly regardless of symptoms and collected additional specimens if they became sick.  
<sup>†</sup> Fully vaccinated = 2 weeks after 2nd dose

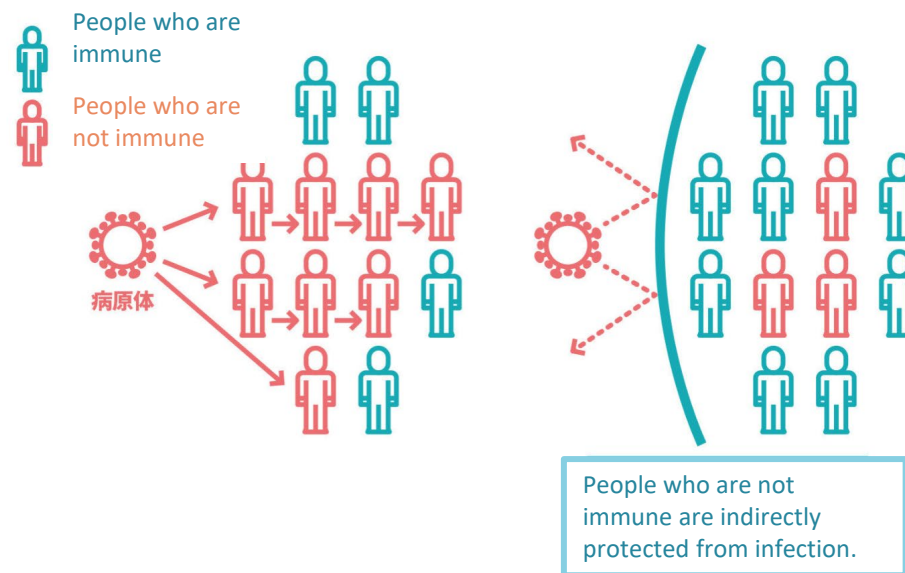
CDC.GOV [bit.ly/MMWR32921](https://bit.ly/MMWR32921) MMWR

CDC MMWR April 2 2001

Interim Estimates of Vaccine Effectiveness of BNT162b2 and mRNA-1273 COVID-19 Vaccines in Preventing SARS-CoV-2 Infection Among Health Care Personnel, First Responders, and Other Essential and Frontline Workers — Eight U.S. Locations, December 2020–March 202

# Herd Immunity Cocooning

- When a certain percentage of people are immune to an infectious disease, it is less likely to spread to others, even if they are infected, thus preventing the spread of the disease.
- Protecting the immunocompromised => Cocooning



[What is herd immunity? | Ministry of Health, Labour and Welfare \(mhlw.go.jp\)](https://www.mhlw.go.jp)

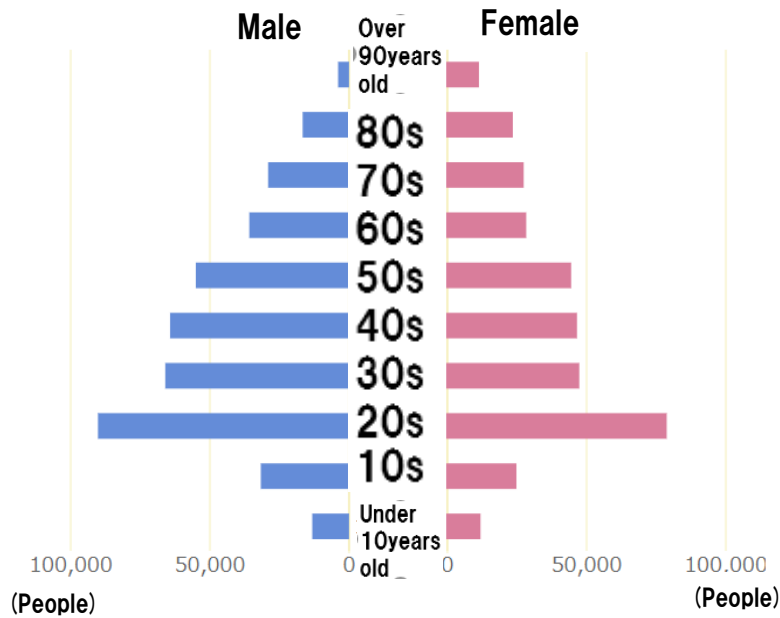
# How to Gain Herd Immunity?

- Herd immunity threshold =  $(1 - (1/R_0)) \times 100\%$ 
  - Threshold: Percentage of immunocompetent individuals required to acquire herd immunity
  - Method of acquiring herd immunity: natural infection or vaccination
- $R_0 = 2.5$  (conventional stock)
  - Natural infection 60% infection
  - Vaccine 70% inoculated
- Challenges in Herd Immunity
  - Educate reluctant people (especially the younger generation) about vaccination
  - Expansion of age range for vaccines
    - Pfizer begins clinical trials in children
- Threshold increased for highly infectious mutant strains

# Breakdown of the Infected and Seriously ill

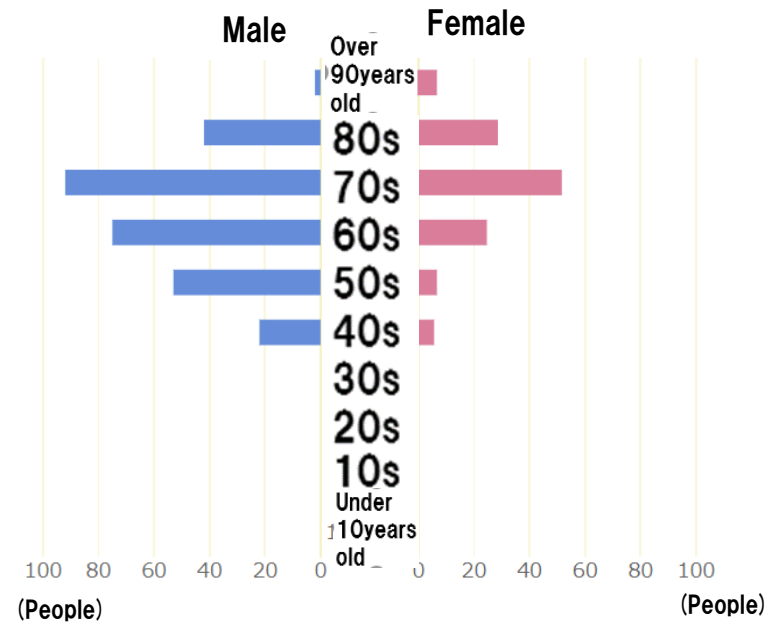
Number of positive cases by gender and age (cumulative)

Information update (weekly) : June 15, 2021



Number of severe cases by sex and age

Information update (weekly) : June 15, 2021





# 4 Domestic and International Trends

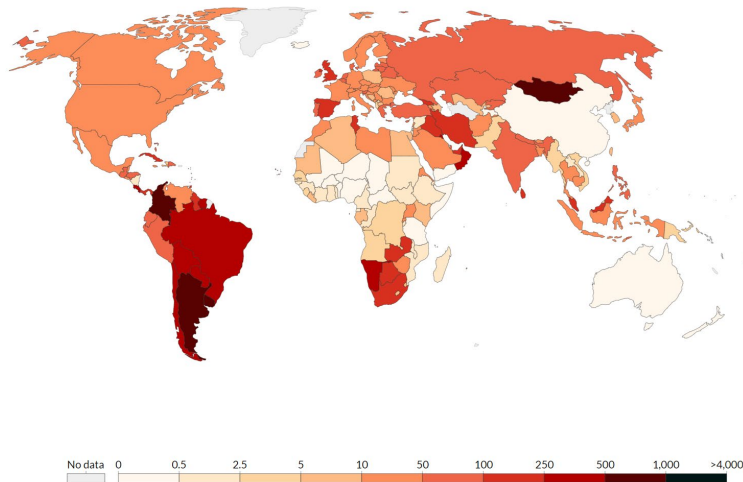
- Epidemic situation and vaccination
- Digital certificate
- Preferential treatment for those who have completed vaccination
- Vaccination required for admission
- Proof of vaccination in Japan

# Epidemic Status    Vaccination Status

Daily new confirmed COVID-19 cases per million people, Jun 16, 2021

Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

World



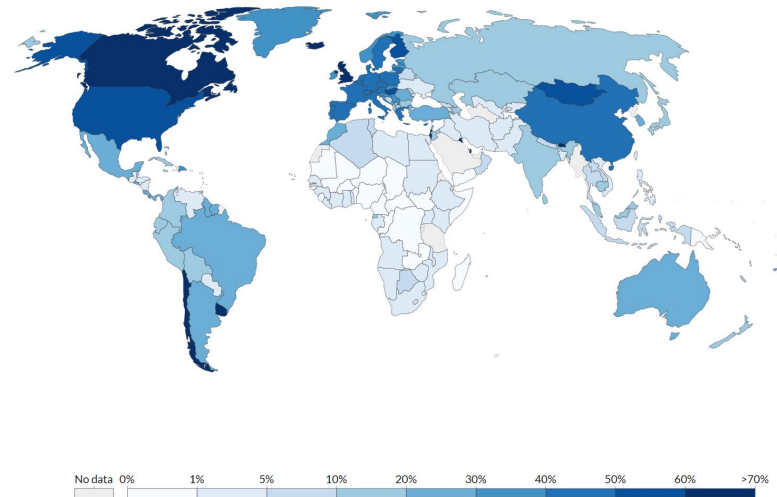
Source: Johns Hopkins University CSSE COVID-19 Data

Number of newly infected people

Share of people who received at least one dose of COVID-19 vaccine, Jun 15, 2021

Share of the total population that received at least one vaccine dose. This may not equal the share that are fully vaccinated if the vaccine requires two doses.

World



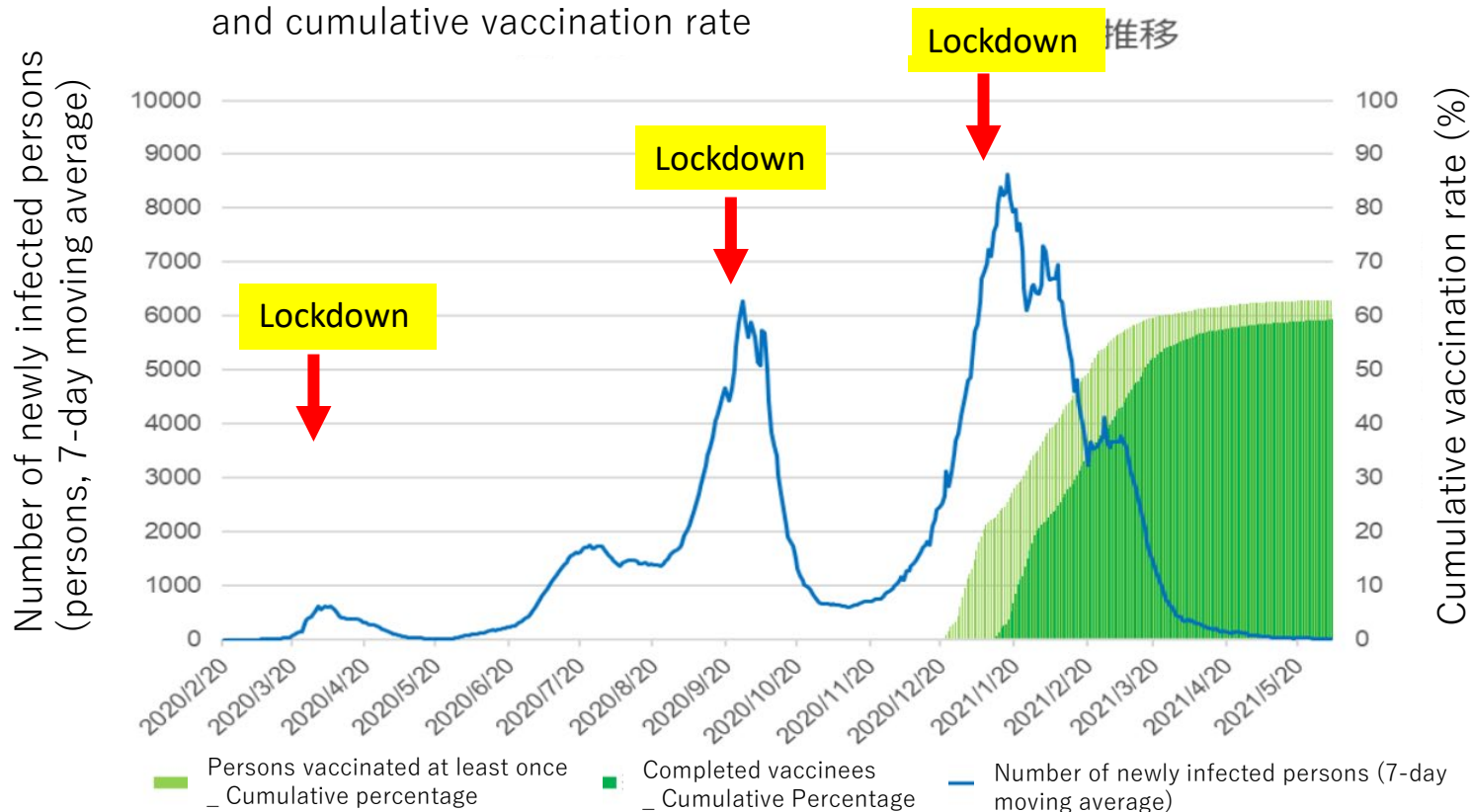
Number of people vaccinated  
(At least one vaccination)

- Some countries are seeing epidemic flare-ups despite high vaccination rates

## The Israeli Epidemic

**Infection prevention: 91.5%**  
**Prevention of disease onset: 97.5%**  
**Prevention of hospitalization: 96.7%**  
**Prevention of serious hospitalization: 95%**  
**Prevention of related deaths: 97.3%**

Israel\_\_Number of newly infected cases and cumulative vaccination rate



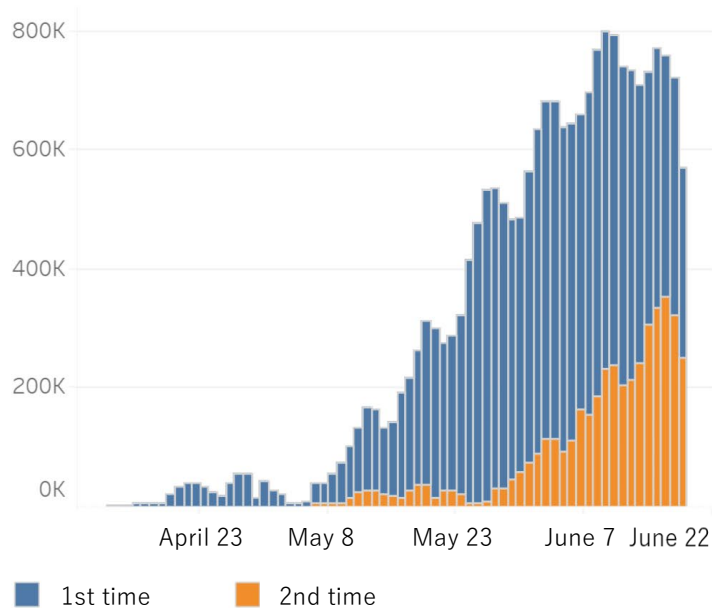
[Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel](#)

# Vaccination Status in Japan

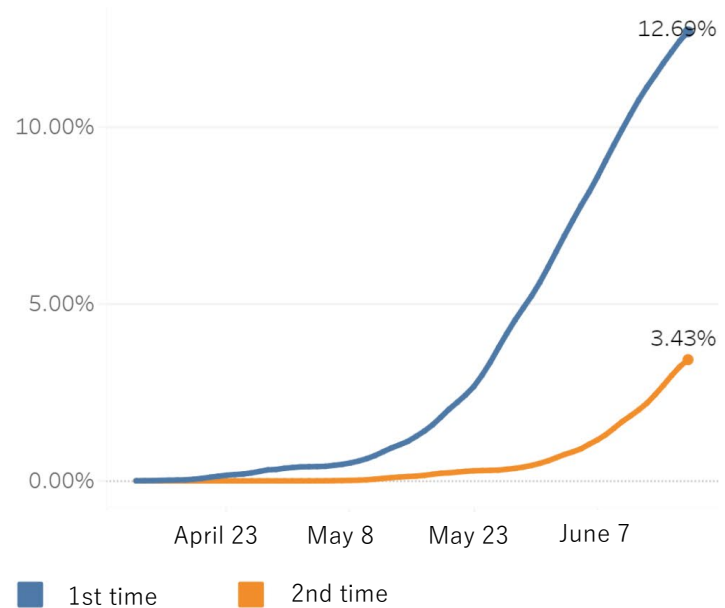
June 17, 2021

Prepared by the Information and Communication Technology (IT) Strategy Office, Cabinet Secretariat

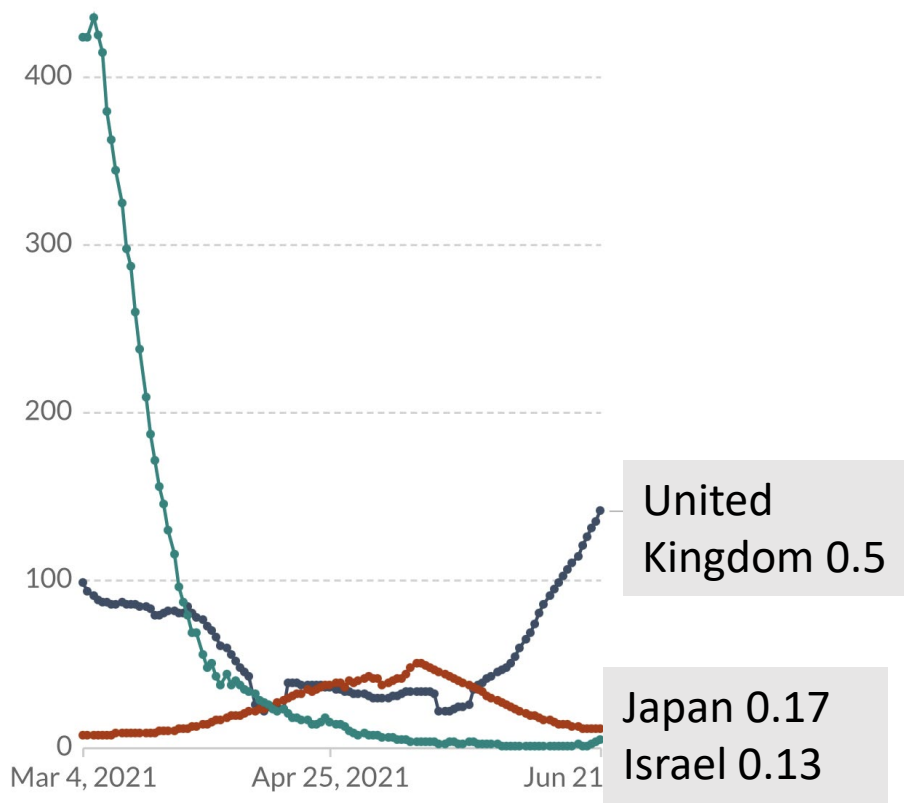
Daily number of inoculations



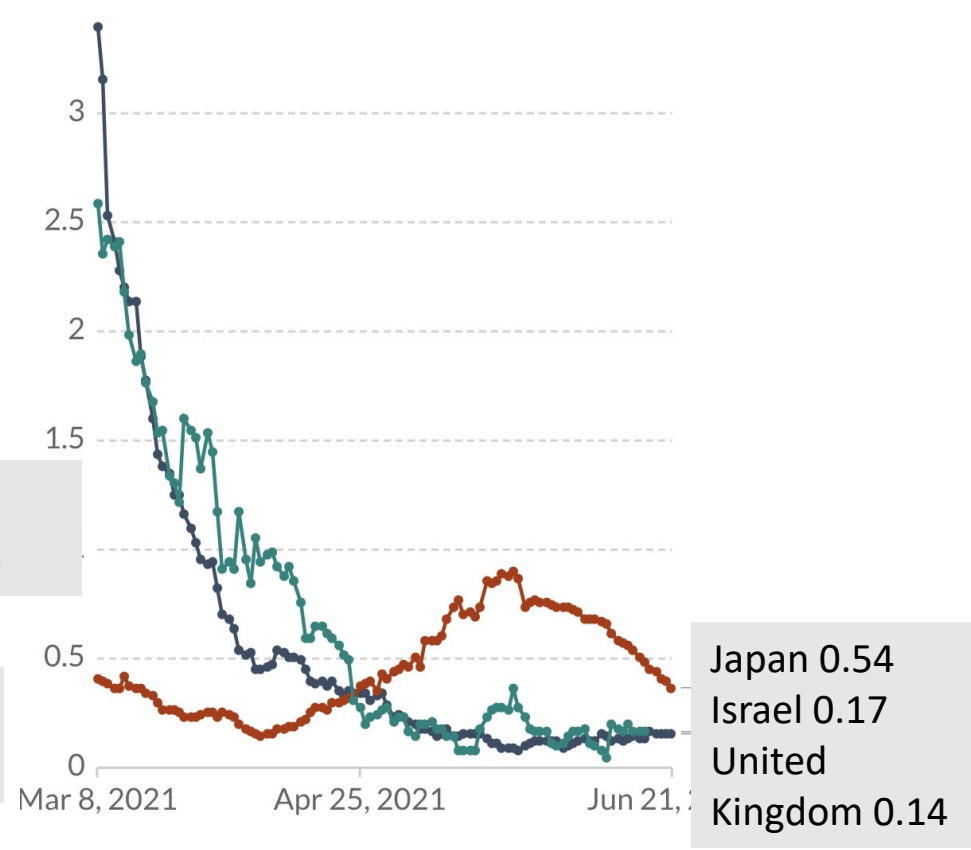
Daily Vaccination Rate



# Comparison of Japan, UK and Israel



Number of new infections per million people

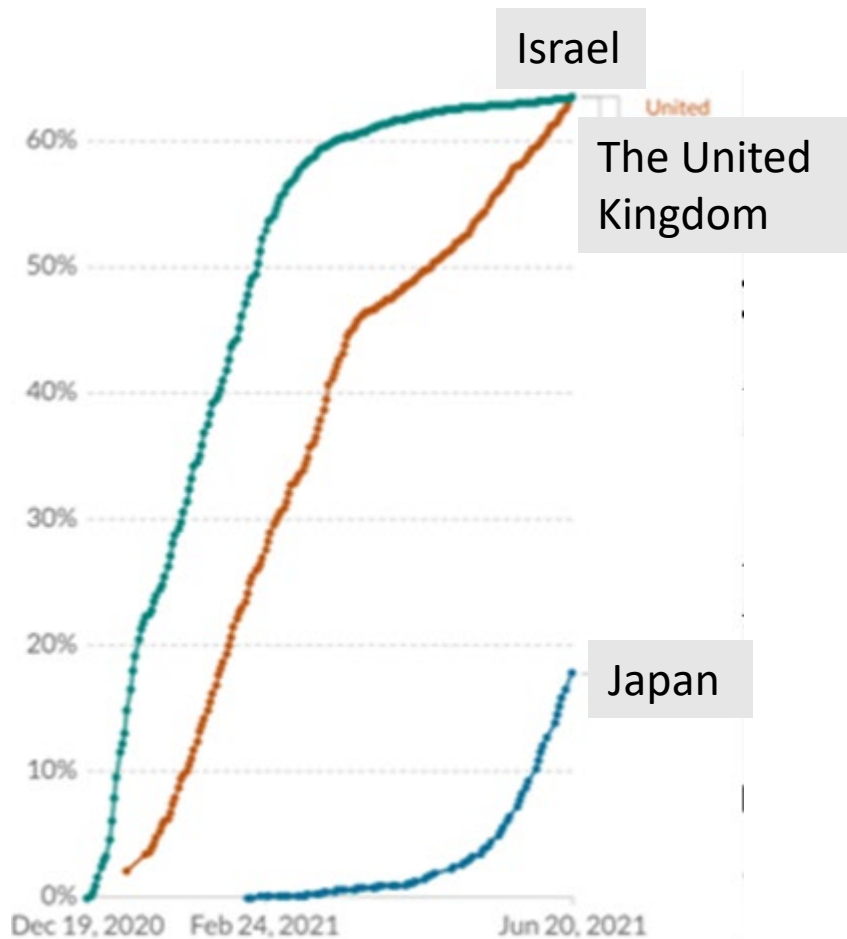


New deaths per million people

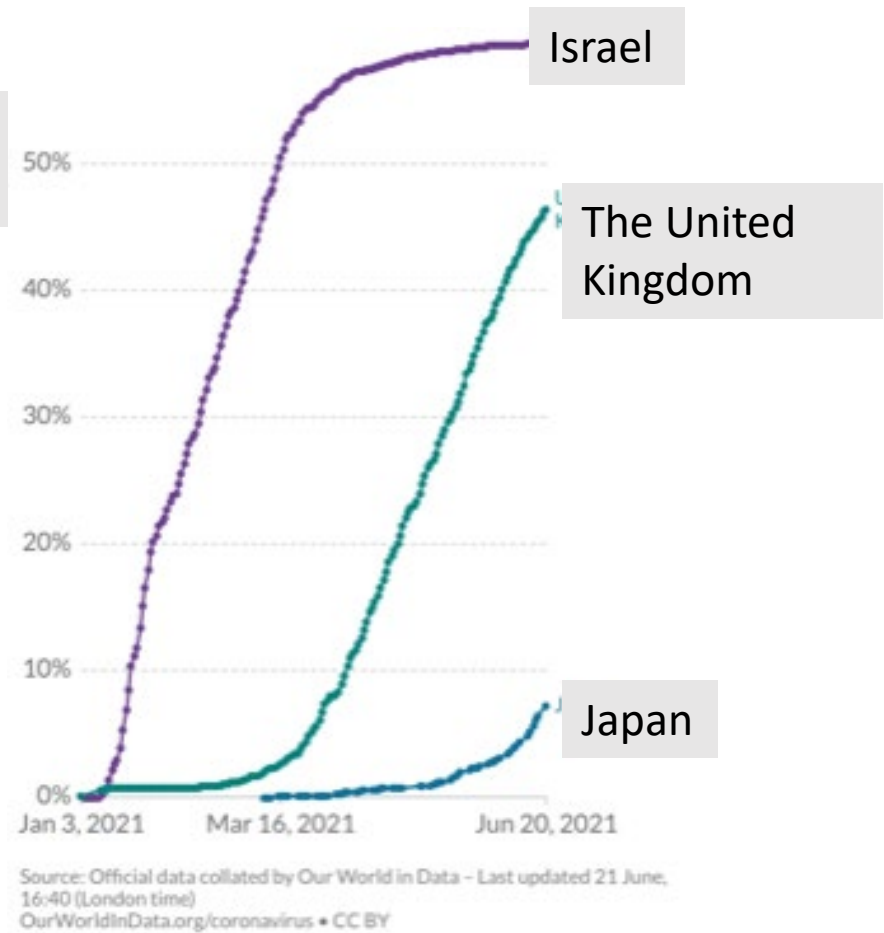
## 4 Domestic and International Trends

Comparison of Japan, UK and Israel

# Vaccination Rate



At least one vaccination



Two vaccinations completed

# Digitization of Certificates European Union



## Digital Green Certificate

17 MARCH 2021

#DigitalGreenCertificate

The European Commission presented a proposal to create a Digital Green Certificate to facilitate safe free movement of citizens in the EU during the COVID-19 pandemic. Digital Green Certificates will be valid in all EU Member States.



# Preferential Treatment for Those Who Have Completed Vaccination U.S.

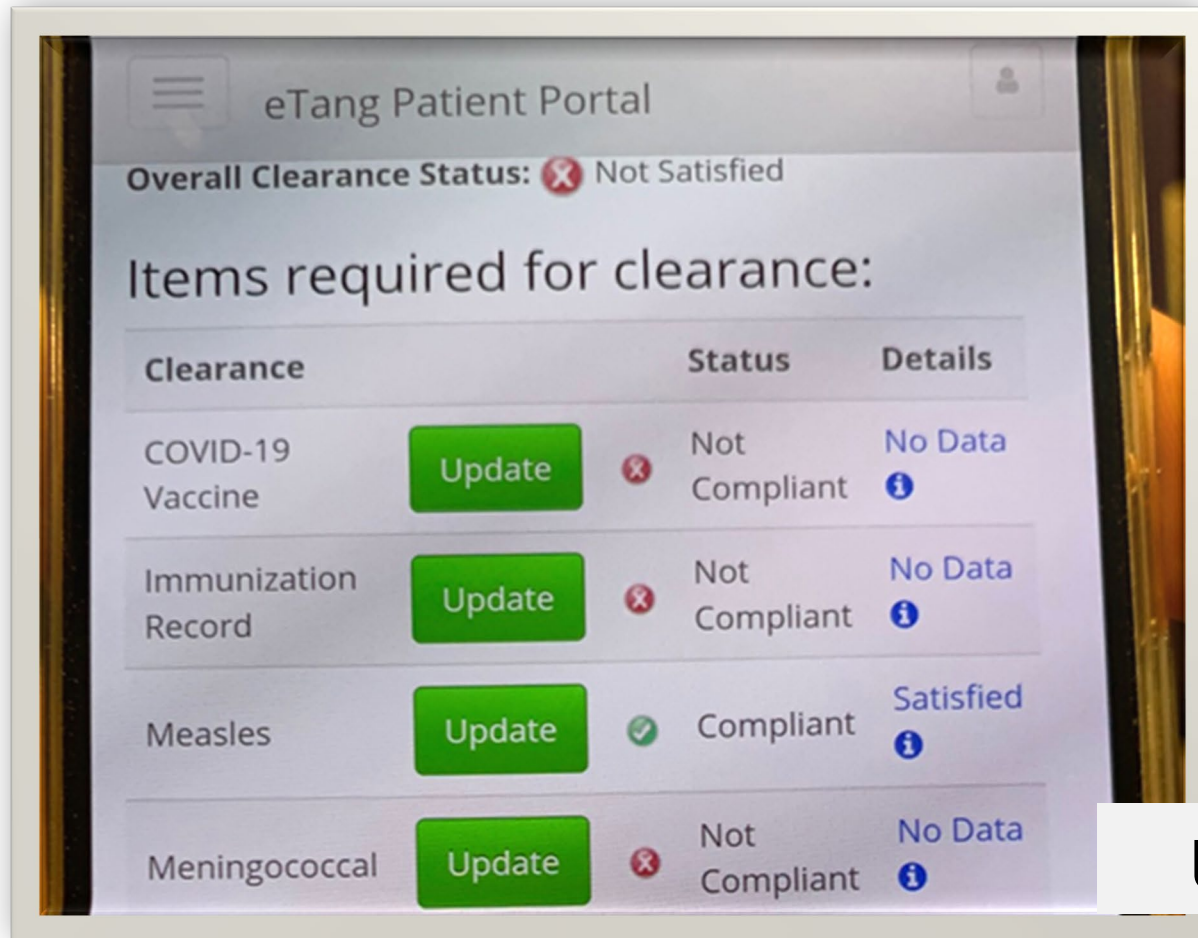


- Can be resumed without mask and without social distance in unregulated areas
- Domestic Travel
  - Pre- and post-trip inspections and post-trip voluntary isolation are not required.
- Overseas trip
  - Pre-departure inspection is not required unless required at destination.
  - Negative results or proof of cure still required prior to boarding return flight
  - After returning home, you should get tested in 3–5 days.
  - No need for voluntary quarantine after entry into the US
- However, wear a mask in public places.

May 16, CDC, USA



# Demand for New Corona Vaccination for Enrollment United States



UC Berkley

# Vaccination Certificate Japan

- Chief Cabinet Secretary Katsunobu Kato said, "We would like to proceed with preparations so that the vaccine passport," which certifies the vaccination history of the new coronavirus vaccine, can be issued in writing by the middle or end of July.
- This was based on the fact that there is a growing movement to require official proof of vaccination as part of countries' waterfront measures.
- The certificate is issued by the municipality that maintains the vaccination records.
- The certificate is expected to include the type of vaccine and the date and time of vaccination.
- For the time being, the documents will be issued in writing, but Mr. Kato indicated that he will also consider electronic certificates.

Jiji Press, June 17, 2021

# 5 Future Tasks

## Increase in vaccination coverage

- Promote vaccination at workplaces and expand coverage of mass vaccination
- Expand the age range for vaccination and raise awareness of vaccination

## Certification of vaccination for overseas travelers

- Applicable vaccines (WHO-approved vaccines or vaccines approved by the destination country)
- Efficacy and expiration date for mutant strains, necessity of additional vaccination
- Information on the certificate

## Digitization of certificates

- Digital proof application for non-infection, recovery, vaccination, and antibodies

## Methods to ease restrictions on vaccinated persons

- Refer to Europe, US, and Israel
- Ethical considerations [“Vaccine Passport” Certification — Policy and Ethical Considerations | NEJM](#)

# 5 Future Tasks

# YELLOW CARD

## WHO Vaccination Record Sample



↓ Fill in by yourself

**INTERNATIONAL CERTIFICATE OF VACCINATION OR PROPHYLAXIS**

This is to certify that (name) Joe Bloggs  
 date of birth 3 May 1965 sex male  
 nationality British  
 national identification document, if applicable \_\_\_\_\_  
 whose signature follows JBloggs.  
 has on the date indicated been vaccinated or received prophylaxis against: (name of disease or condition)  
yellow fever  
 in accordance with the International Health Regulations.

**CERTIFICAT INTERNATIONAL DE VACCINATION OU DE PROPHYLAXIE**

Nous certifions que (nom) \_\_\_\_\_  
 né(e) le \_\_\_\_\_ de sexe \_\_\_\_\_  
 et de nationalité \_\_\_\_\_  
 document d'identification national, le cas échéant \_\_\_\_\_  
 dont la signature suit \_\_\_\_\_  
 a été vacciné(e) ou a reçu des agents prophylactiques à la date indiquée contre: (nom de la maladie ou de l'affection)  
 conformément au Règlement sanitaire international.

Vaccine or prophylaxis Vaccin ou agent prophylactique	Date Date	Signature and professional status of supervising clinician Signature et titre du clinicien responsable	Manufacturer and batch no. of vaccine or prophylaxis Fabricant du vaccin ou de l'agent prophylactique et numéro du lot	Certificate valid from: until: Certificat valable à partir de: jusqu'à:	Official stamp of the administering centre Timbre officiel du centre habilité
<u>yellow fever</u>	<u>12 July 2016</u>	<u>ANOTHER RGN</u>	<u>Sanofi Pasteur xx-xxxx</u>	<u>23 July 2016 life of person vaccinated</u>	<u>UK YFVC stamp</u>

Full name

Date of birth and gender

Nationality

Same signature as passport

Type of Vaccine

Clinic Stamp

Expiration date

Vaccine Lot and Manufacturer

Date of vaccination

Doctor's signature

# Why Do I Need Digital Proof?

- Prevention of loss and non-carrying
- Reduce the burden of hand delivery
- Anti-counterfeiting
- Information Security
- Used for vaccination records and various documents
  - Maternal and child health handbook and records for self-management
  - Proof for international students and visas
  - Proof to be submitted to the workplace (e.g. medical profession)
  - Translation of referral letters and medical checkup results
  - . . . .

## WHAT IS THE DIGITAL GREEN CERTIFICATE?

A Digital Green Certificate is a digital proof that a person:

- ✓ has been vaccinated against COVID-19, or
- ✓ has received a negative test result, or
- ✓ has recovered from COVID-19.

- › Digital and/or paper format
- › With QR code
- › Free of charge
- › In national language and English
- › Safe and secure
- › Valid in all EU countries

