

ANQ Congress 2020, Seoul

# “Building Society Quality towards with-Covid-19 Society”

2020 10 22

Keynote Speaker:

**Dr. Noriaki Kano**

Professor Emeritus, Tokyo University of Science  
Honorary Chairperson, ANQ

Coauthors:

**Dr. Kazuyuki Suzuki**

Professor Emeritus, University of Electro-Communications, Tokyo

**Dr.&Md. Tomonori Hasegawa**

Professor, Toho University, School of Medicine

**Yoshihisa Okamoto**

Guest Expert, Kano Quality Research Office (KQRO)

Let us show our deep thanks to the Medical Professionals and Others who have dedicated to the recovery of the cases from Covid-19 as we move from a Covid-95 Eradicated Society to with-Corona Society Quality!

The copyright of all this material  
“**Building Society Quality towards with-Covid-19 Society**”

belongs to :

**Dr. Noriaki Kano,**  
**Dr. Kazuyuki Suzuki,**  
**Dr.&Md. Tomonori Hasegawa, and,**  
**Yoshihisa Okamoto.**

In order to make a copy of any part of this material,  
the written permission from  
**Professor Kazuyuki Suzuki**  
is needed.

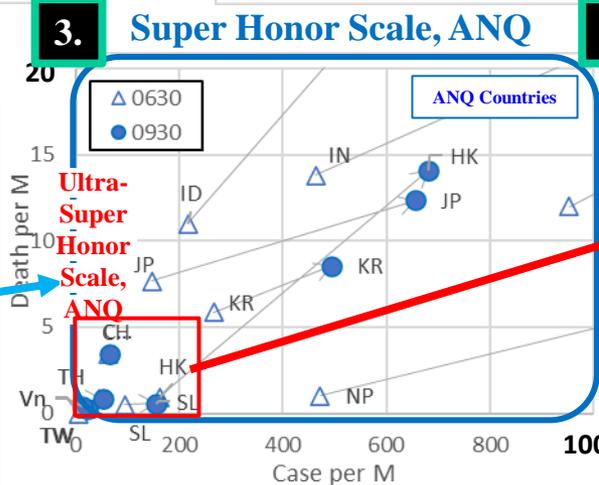
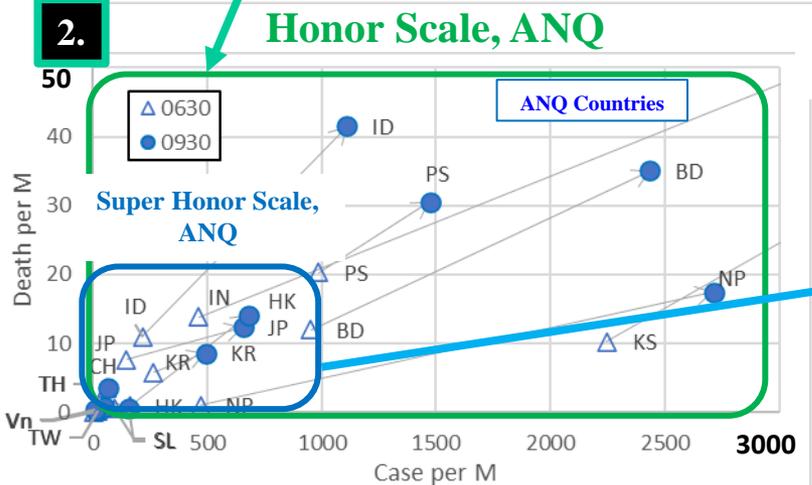
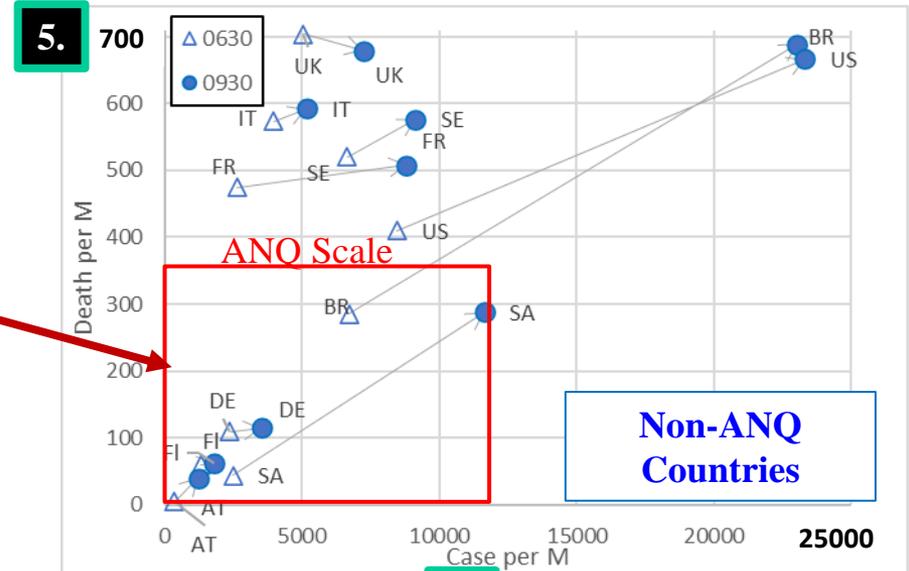
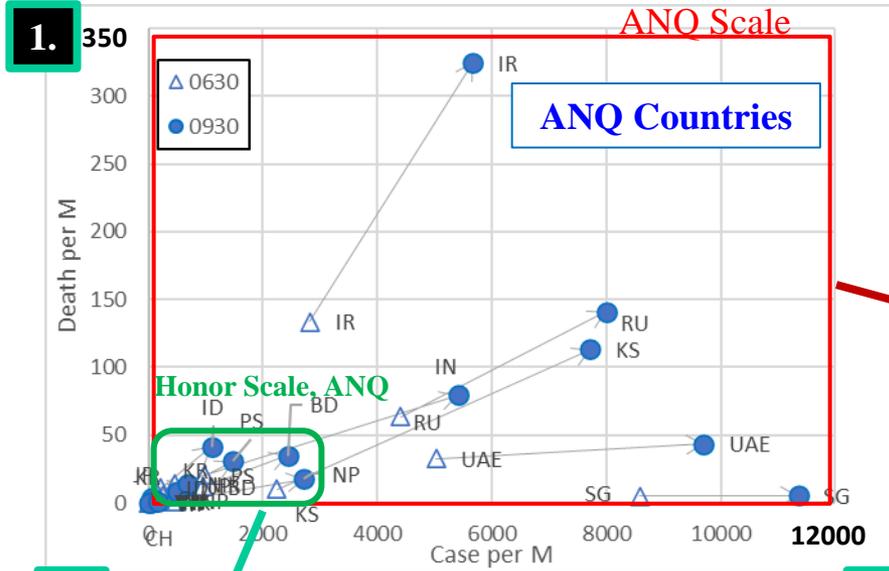
October, 2020

Contact Address:

Laboratory of Kazuyuki Suzuki,  
University of Electro-Communications, Tokyo  
e-mail: [suzuki@uec.ac.jp](mailto:suzuki@uec.ac.jp)

# Transition of Number of Covid-19 Cases and Deaths by ANQ and Non-ANQ Countries

(Normalized by Population in Million from  $\Delta$  June 30<sup>th</sup> -  $\bullet$  September 30<sup>th</sup>, 2020)



ANQ Countries	BD	Bangladesh	ID	Indonesia	KR	Korea	SG	S'pore	UAE	UAE	Non-ANQ Countries	AT	Australia	DE	Germany	UK	UK
	CH	China	IR	Iran	NP	Nepal	SL	Sri Lanka	Vn	Vietnam		BR	Brazil	IT	Italy	US	US
	HK	HongKong	JP	Japan	PS	Pakistan	TW	Taiwan				FI	Finland	SA	South Africa		
	IN	India	KS	Kazakhstan	RU	Russia	TH	Thailand				FR	France	SE	Sweden		

Data source: Nikkei Asia: Coronavirus infection tracker-World Map <https://vdata.nikkei.com/newsgraphics/coronavirus-world-map/>

[//vdata.nikkei.com/newsgraphics/coronavirus-world-map/](https://vdata.nikkei.com/newsgraphics/coronavirus-world-map/)

# Conclusion statements from Transition Data (1)

◇ANQ countries: 6.2 million infected in India gives the impression that the number of people infected in India is close to 7.2 million in the United States. But the number in India is less than a quarter of the number in the United States per unit of population. In order to make a reasonable comparison, this report compares the number of infected people and deaths per million population.

The number of people infected and died in Japan is 650 persons per million (ppm) and 12 ppm, respectively (Actual number: 82,494 and 1,557 as of September 29).

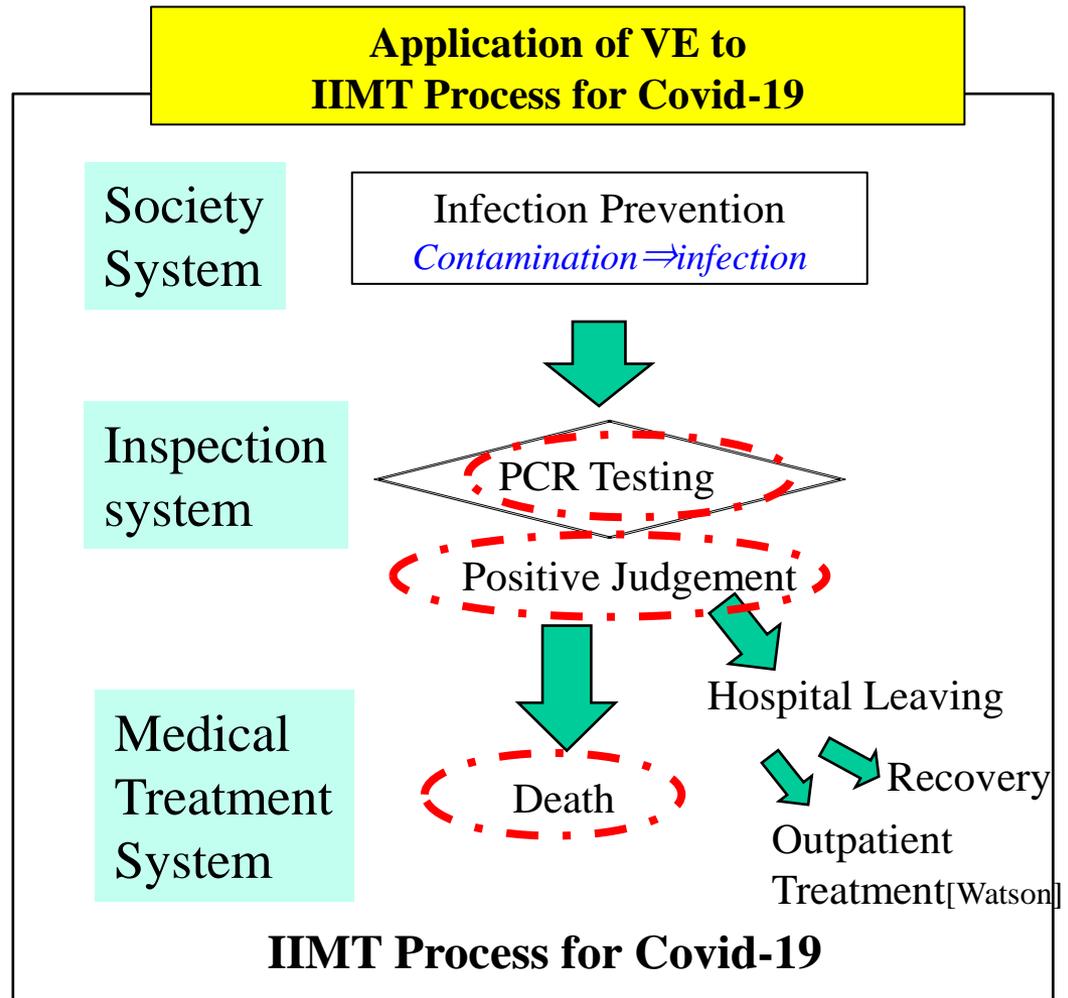
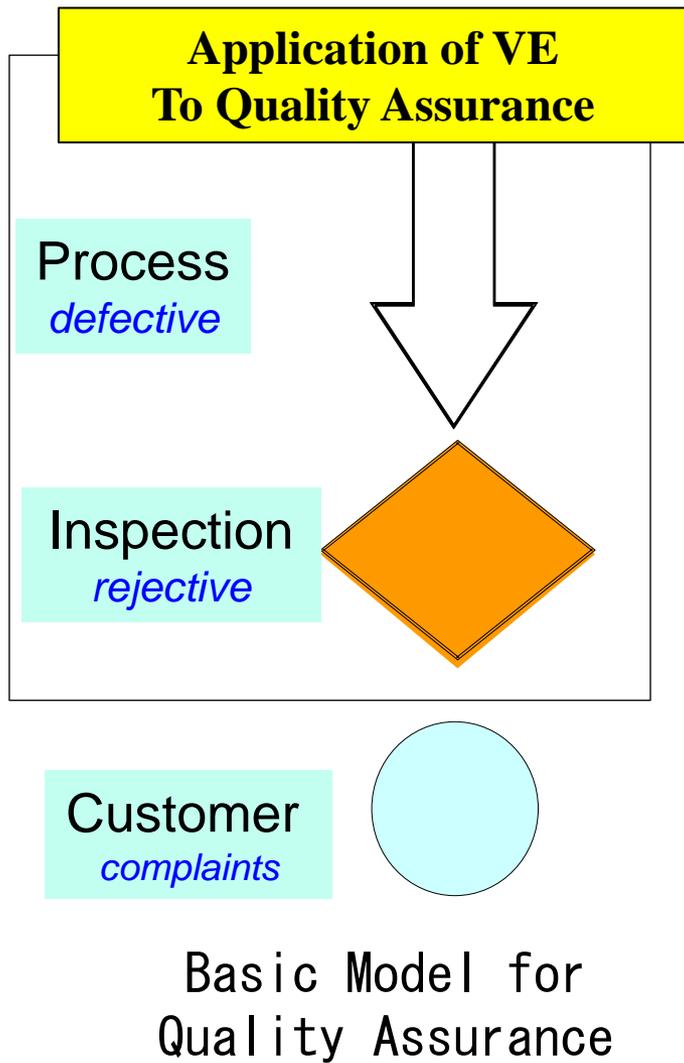
- The number of infected people and the number of deaths differ greatly from country to country. In Iran, for example, the number of infected is 5,700 ppm and the number of deaths is 320 ppm, which is half the number of infected and 60 times the number of deaths compared to Singapore's 11,300 ppm and 5 ppm. In order to visualize this directly, a scatter plot of the number of infected on the horizontal axis and deaths on the vertical axis is shown on the previous page. This scatter plot allows us to roughly understand the formula:  $\text{deaths divided by infected} = \text{fatality rate}$ .
- The area that includes all the people infected and dead in 18 ANQ countries (12,000 ; 350) is taken as the ANQ scale:
  - Around the circumference where the number of infected and dead is furthest from the origin, start from Singapore, followed by UAE (9,700 ; 40), Kazakhstan (8,000 ; 110) and Russia (8,000 ; 140), leading to Iran (5,700 ; 320), the country with the largest number of deaths in the ANQ.
  - India (5,000 ; 79) can be found in the middle of the ANQ scale.

# Conclusion statements from Transition Data (2)

- ◇ **Comparison of non-ANQ and ANQ countries (Comparisons with the ANQ scale, including the number of cases and deaths in the 18 ANQ countries):**
  - Countries outside the ANQ scale in terms of number of both cases and deaths are Brazil and the United States. Excluding these two countries, the number of infected people in the non-ANQ countries is similar to that in ANQ countries. But the number of deaths in some countries, such as the UK, Italy, and Sweden, is about twice or more than the upper limit of the ANQ scale.
  - Germany, Australia and Finland in terms of number of both cases and deaths are within the ANQ scale.
  
- ◇ **Major changes in countries over 3 months:**
  - Kazakhstan: About 10 times more dead and 3 times more infected.
  - South Africa: About 8 times more dead and 5 times more infected.
  - India: About 6 times more dead and 10 times more infected.
  - Iran: About 2.5 times more dead and 2 times more infected.
  - Brazil, US: About 2 times more dead 3 times more infected.
  
- ◇ **The low number of deaths in Ultra super honor countries:**

Taiwan 0.3 ppm, Vietnam 0.4 ppm, Sri Lanka 0.6 ppm and Thailand 0.9 ppm while China was the first country in the world to be infected, but it has since subsided, with a death toll of 3.5 ppm.

# Analogical Comparison of Vertical Evaluation (VE) between Quality Assurance Process and Infection-Inspection-Medical Treatment(IIMT) Process for Covid-19



Gregory H. Watson(7 August, 2020) “Putting the Numbers in Proper Perspective”,  
Linkedin Post 1-3d

Noriaki Kano, Tomoyasu Kondo(2012) “ Vertical Evaluation of process quality with quality data at process, inspection and customer stages for in-process quality assurance ” Proceeding of The 98<sup>th</sup> JSQC Research Presentation Conference, pp29-32

# Structure of Society Quality from the viewpoint of Quality Theory

Historically speaking, [Aristotle \(384-322 B.C.\)](#) may have been the first to talk on the subject of quality in a systematic way. In his book "Metaphysics"[1], he first gave us four meanings of quality, and then summed them up into the following two:

(1) "Differences of real substance" and (2) "Mode of a subject in motion, of itself."

In addition, he commented that "Good (excellence) and bad (inferiority)" are a part of the latter mode.

Example which Aristotle explains in his book:

A man is different from a horse. This difference can be explained by the number of legs because man has 2 legs while a horse has 4 legs. Therefore, the number of legs is a quality to show the difference between Man and horse.

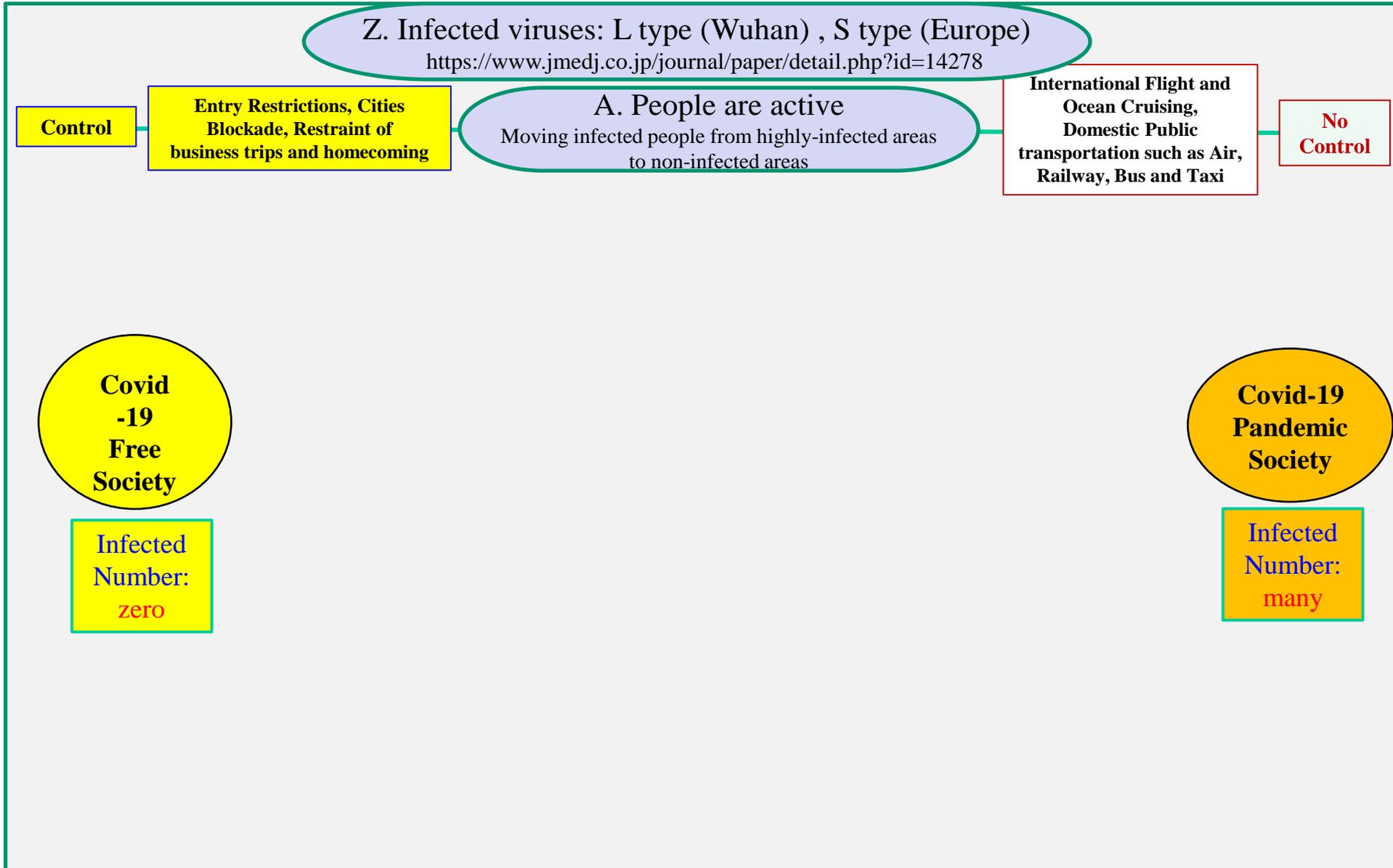
*\*Kano, N., Seraku, N., Takahashi, F., Tsuji, S. (1984) "Attractive Quality and Must-Be Quality." Hinshitsu (Quality, J. of Japanese Society for Quality Control) Vo.114, No.2, pp.147-156.*

When we have different substances, quality can be defined as their difference.

Under the Covid-19 pandemic situations, let us discuss the two societies such as *Covid-19 Pandemic Society* and *Covid-19 Free Society*. The former shows inferiority while the latter shows excellence. We can define **Quality of Society**, or, Society Quality(SQ), as a fundamental difference between the two types of societies. SQ can be evaluated by the number of infected cases and the number of deaths normalized by population in million.

# Structure of Society Quality from a Covid-19 Perspective

The factors A, B, C, D, and Z below are society qualities that represent the species differences between two different societies: the "Covid-19-pandemic society" and the "Covid-19-free society".



Important notice for preventing COVID-19 outbreaks.

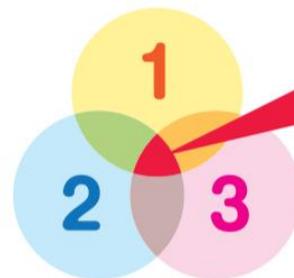
# Avoid the “Three Cs”!

- 1. Closed spaces** with poor ventilation.
- 2. Crowded places** with many people nearby.
- 3. Close-contact settings** such as close-range conversations.



One of the key measures against COVID-19 is to prevent occurrence of clusters.

Keep these “Three Cs” from overlapping in daily life.



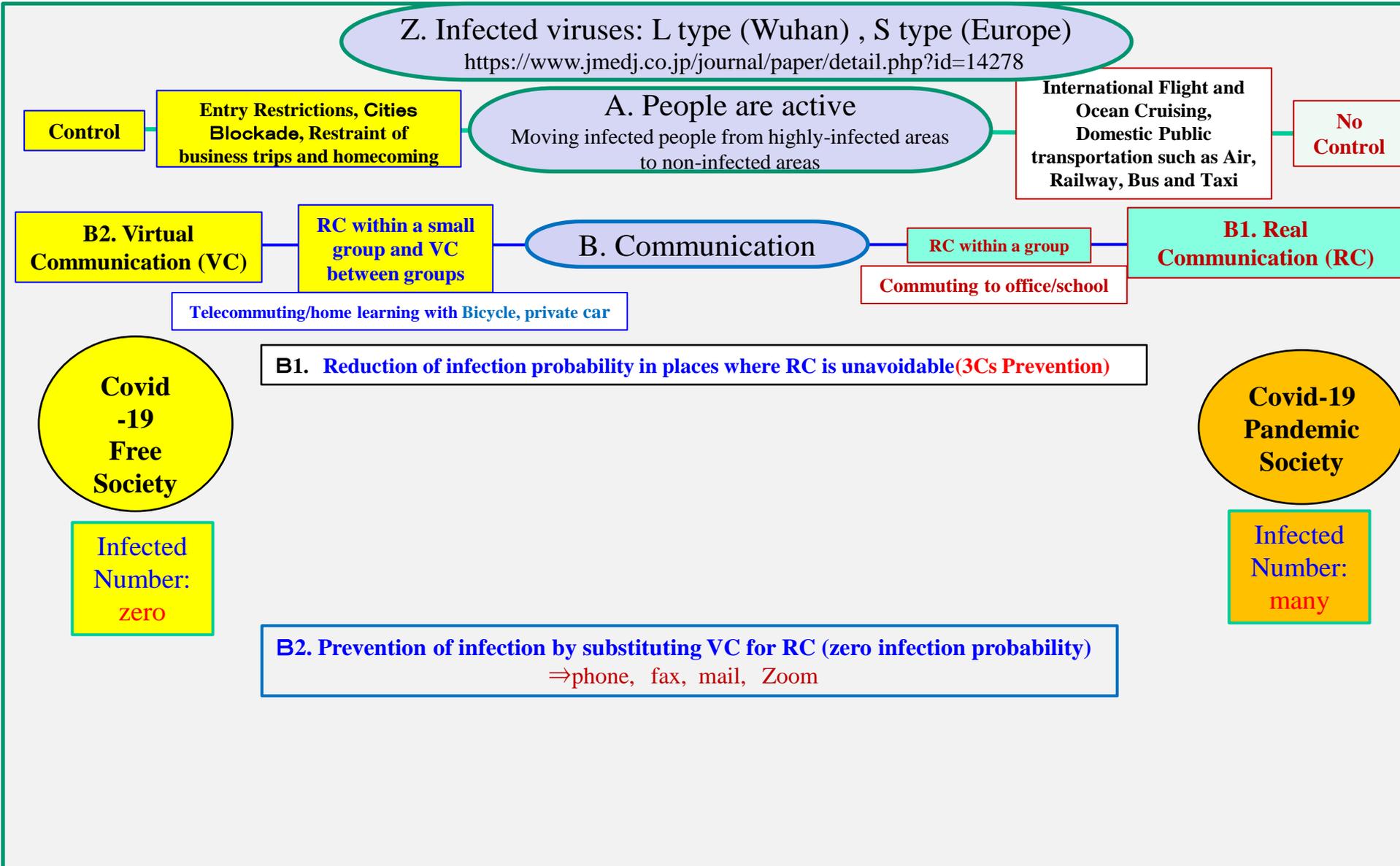
**The risk of occurrence of clusters is particularly high when the “Three Cs” overlap!**

In addition to the “Three Cs,” **items used by multiple people** should be cleaned with disinfectant.



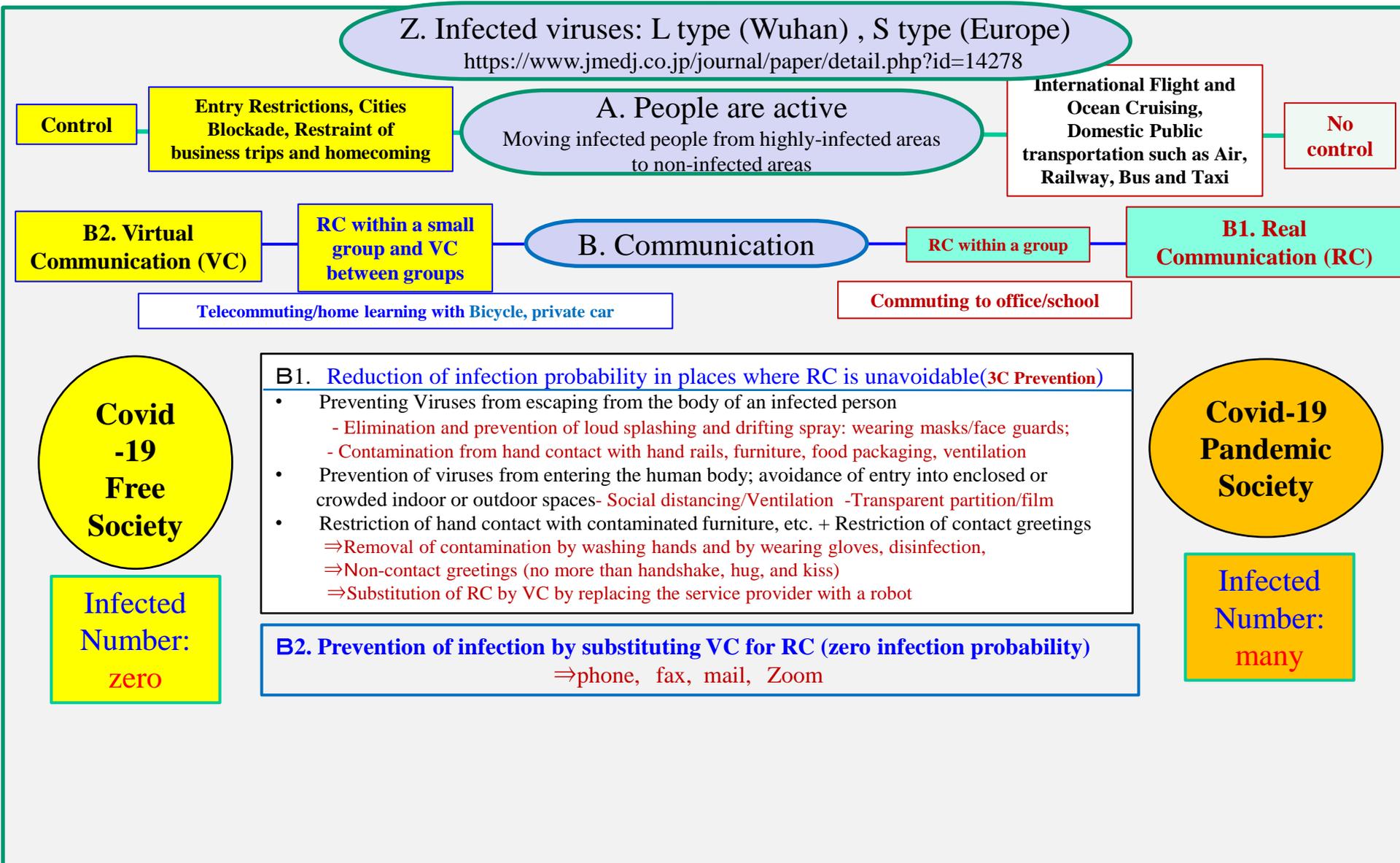
# Structure of Society Quality from a Covid-19 Perspective

The factors A, B, C, D, and Z below are society qualities that represent the species differences between two different societies: the "Covid-19-pandemic society" and the "Covid-19-free society".

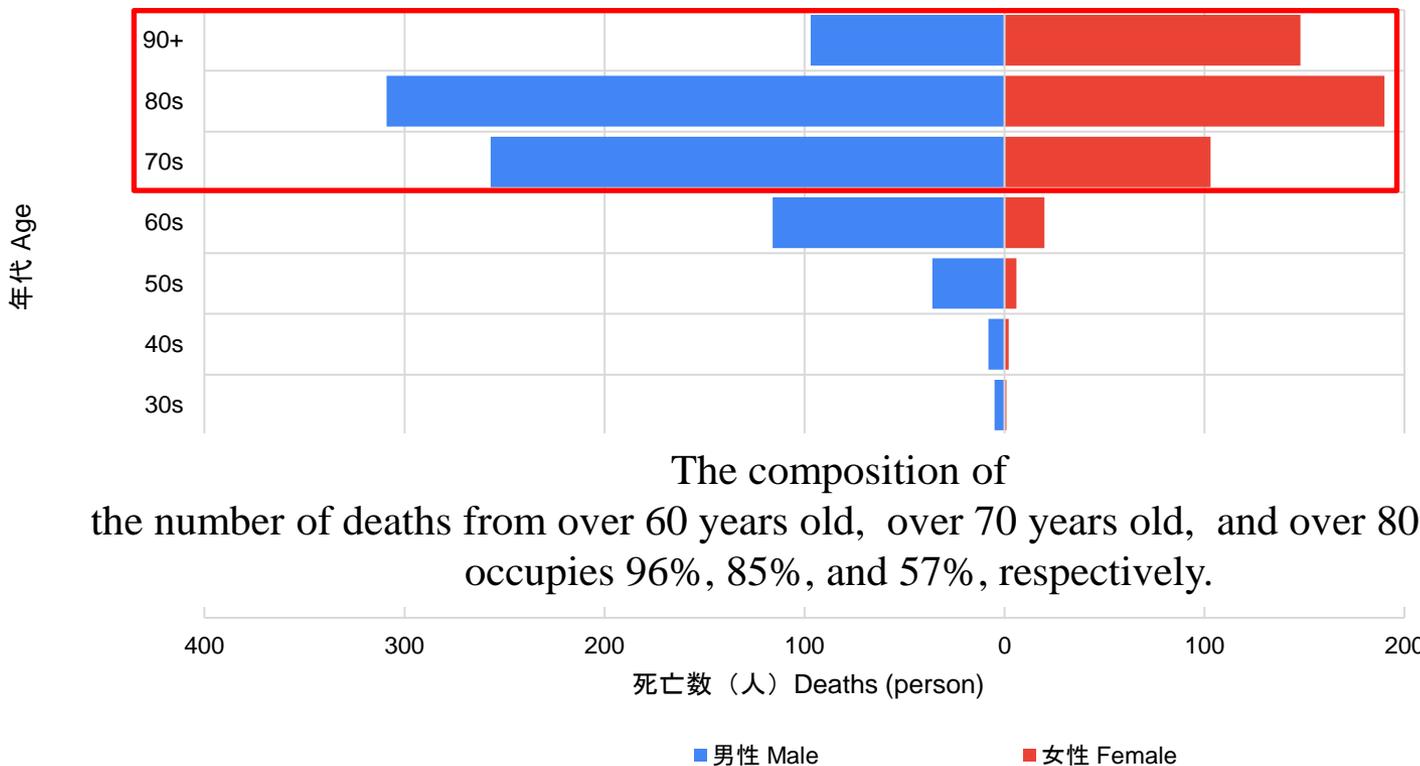


# Structure of Society Quality from a Covid-19 Perspective

The factors A, B, C, D, and Z below are society qualities that represent the species differences between two different societies: the "Covid-19-pandemic society" and the "Covid-19-free society".



# Number of deaths by age class 2020/9/22



Over 70 years old occupies 85% of the total deaths.

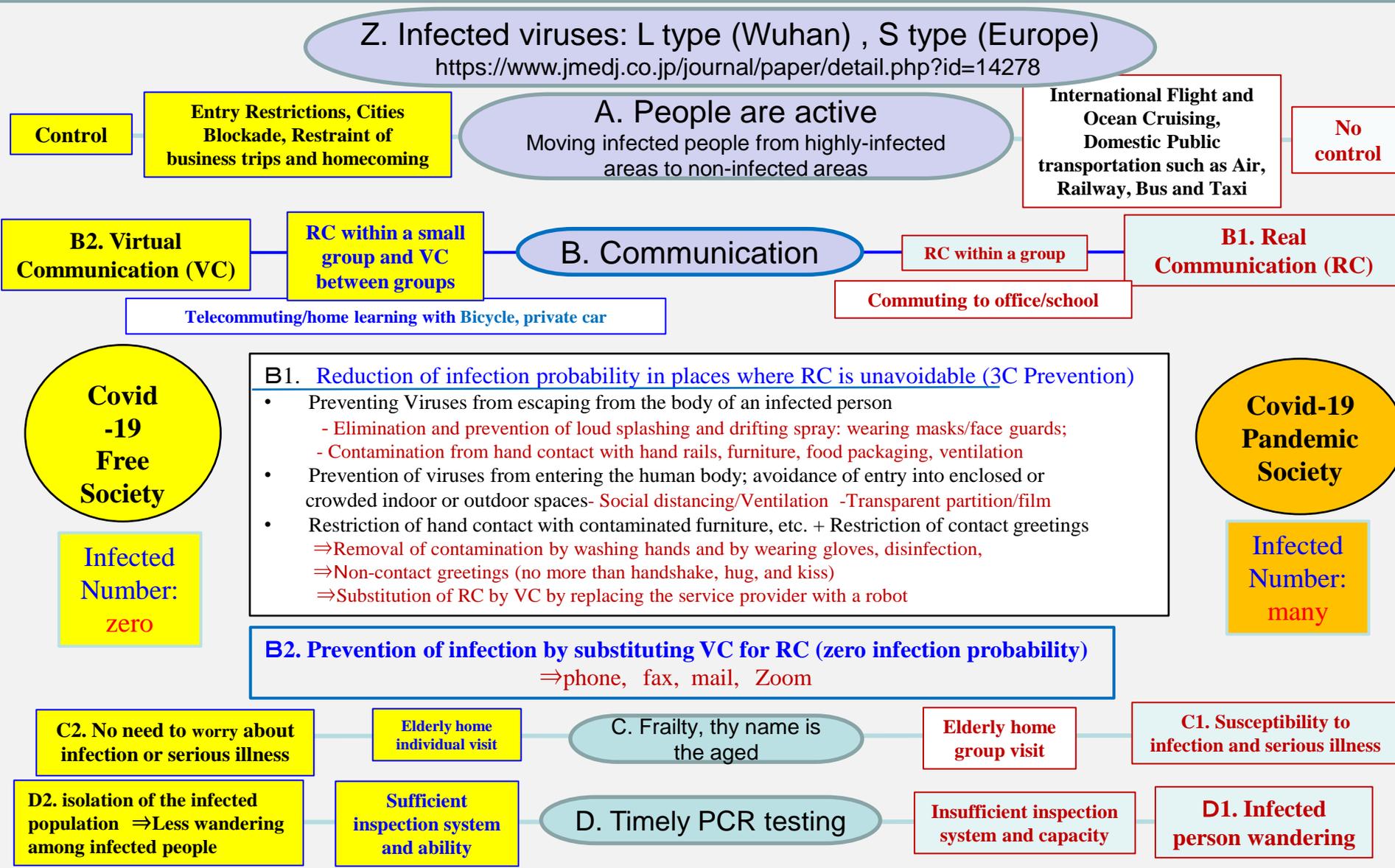
The composition of the number of deaths from over 60 years old, over 70 years old, and over 80 years old occupies 96%, 85%, and 57%, respectively.



- ※ Sex ratio (Male/Female × 100) is 177.
- ※ Based on the published information by municipality governments. Data (excel) is downloadable from National Institute of Population and Social Security Research, Japan
- ※ Above figure does not include 228 deaths where sex and/or age were not disclosed by the municipality government, Japan.

# Structure of Society Quality from a Covid-19 Perspective

The factors A, B, C, D, and Z below are society qualities that represent the species differences between two different societies: the "Covid-19-pandemic society" and the "Covid-19-free society".



# Coexisting Society With Covid-19 in contrast with Covid-19 Eradication Society

## Covid-19 Eradication Society

Forced isolation : Implemented as part of a containment policy.  
Effective in the early stages when infection is observed in limited areas.

COVID-19 : It is already widely spread in society and difficult to eradicate.  
If we are to eradicate COVID-19, isolation must be widespread and long-term.

⇒Causing economic hardship and, eventually, bankruptcy.

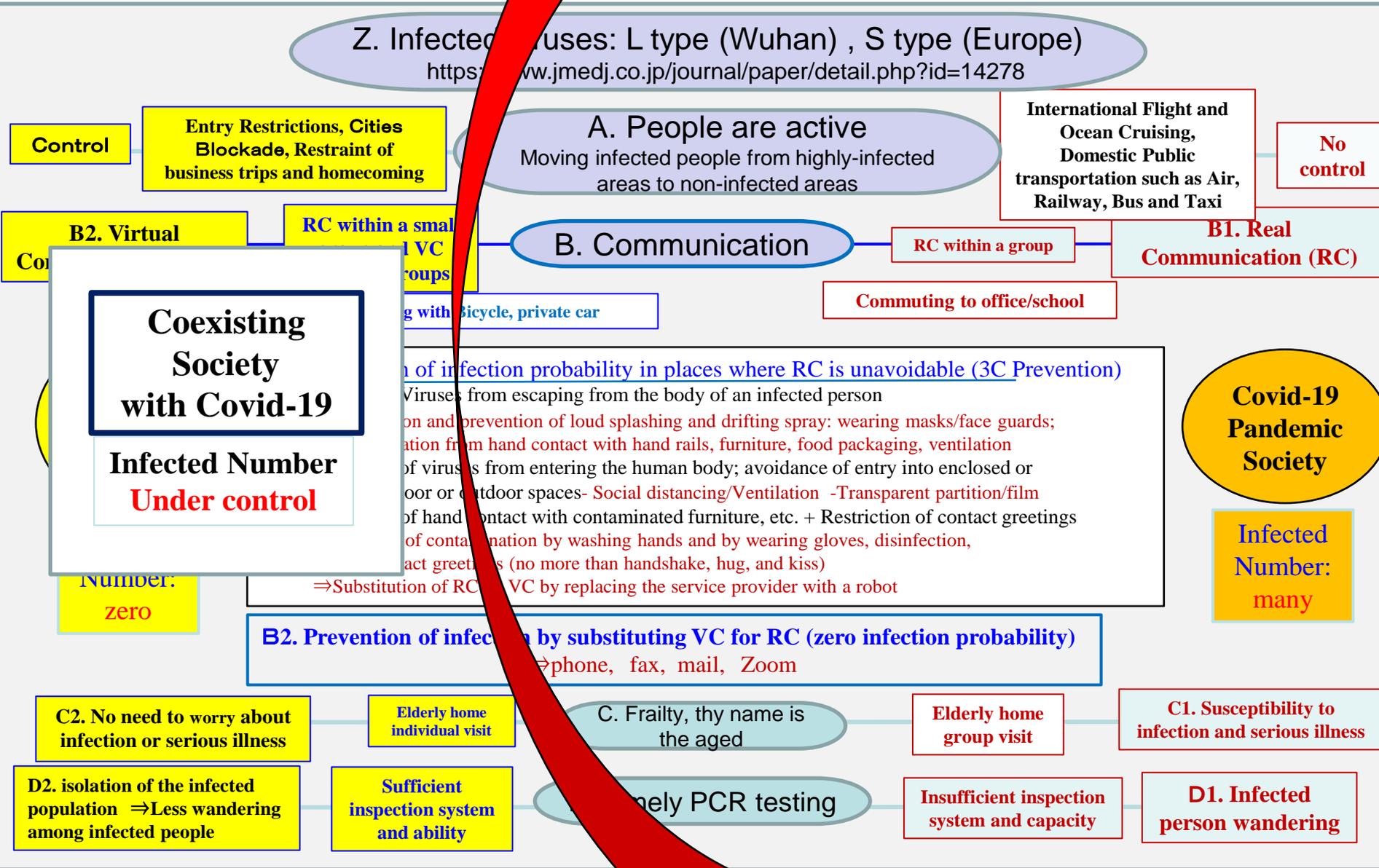
## Coexisting Society with Covid-19 (wC)

Fortunately, serious case is rarely seen and case fatality rate in the second wave has become lower than the first wave in Japan.

It is a practical solution to find a way to control the risk of infection in daily life below an acceptable level and to live with Covid-19.

# Structure of Society Quality from a Covid-19 Perspective

The factors A, B, C, D, and Z belong to the society qualities that represent the species differences between two different societies: the "Covid-19-pandemic society" and the "Covid-19-free society".



# Some Remarks for Joining Events

(Focus on the combination of SQ Factors such as A, B, C, and D)

- ◆ It is not recommended for elderly or high-risk people to attend events (C)
  
- ◆ Some remarks to help the general public join events (B1, B2)
  - When eating and drinking, Speaking out loud, and Heavy breathing among a Group for a long time (Factor B1+B2)
    - ⇒ May have a case to remove mask with high risk for being infected.
    - × Shift to Virtual order-taking and accounting, Wearing a mask shield, Installing transparent partitions, Avoiding face to face seating
  - People waiting in long motion line with unstable footing, steps or stairs
    - ⇒ May have high risk of touching handrails and furniture + touching eyes, nasal cavity, or mouth with hands
    - × Before or after sanitization + Enforcement of hand washing, Alcohol disinfection + Wearing a mask
  - Stagnant air space or a closed space ⇒ May High risk for infection
    - × Improve ventilation, Avoid crowded places by limiting the number of people and shortening the time together
  - Many people gathering in a small indoor area ⇒ May reducing social distancing in crowded places
    - × Practice social distancing by limiting the number of people, Improved ventilation
  - Many opportunities to come in contact with people ⇒ High risk of infection by neglecting the 3Cs
    - × Avoiding contact with people unless urgent or necessary, Avoiding long stays in the same place
    - × Place an order by Tablet or a robot, Pay off/Cash
  
- ◆ Watching sports (B1, B2, D)
  - × Conduct Pre-event PCR test for players ⇒ Decrease the risk of infecting the audience and players
  - × Regulate the number of spectators, Restrict loud cheering, Require mandatory wearing of mask, Suspending the sales of food and beverage at the sporting event
  
- ◆ Exercise facilities (Gym, Tennis club, Golf club, Pool) (B1, C)
  - × Following the rule thoroughly for using a locker room

□ The Government of Japan prepared examples of guidelines to be observed in public facilities such as sports facilities and park from the viewpoint of 3Cs. The authors expanded these as shown on the following slide including international and domestic flights.

# Guidelines for preventing spread of infection at events in public facilities

		Outdoor		Outdoor									
		Sports facility (Outdoor)	Park	International flight	Domestic flight	Public transportation	Movie theater Public hall Theater	Merchandising business (Supermarket)	Museum Art museum Library	Beauty and hairdressing, and other service industry	School Cram school	Restaurant	
Close-contact	Droplet infection	Ingenuity to avoid having conversations with people at close distances (Virtualization of order/payment/service) Wearing a mask/securing social distancing/prohibition of talking with loud voice											
	Contact infection	Restrictions on contact sports Sanitization of toilets and other shared facilities	Sanitization of toilets and other shared facilities	Regular sanitization of shared equipment such as toilets and handrails Disinfection of shared equipment such as tables and monitors for each flight	Sanitization of shared equipment such as straps and handrails, etc.	Sanitization of shared equipment such as seats and handrails, etc.	Sanitization of shared items such as baskets and carts, etc.	Sanitization of shared equipment such as door knobs and benches, etc.	Sanitization of barber tools and equipment.	Sanitization of shared equipment such as desks and chairs, etc.	Sanitization of tables, chairs, and menus, etc.		
Crowded places	Restrictions on the use of shared facilities such as lockers and showers	Post a warning so as not to be crowded Restrictions on the use of indoor shared facilities	Paying attention to the space between seats Limitation of the number of passengers Isolation space for emergency case	Paying attention to the space between seats Limitation of the number of passengers	Paying attention to the space between seats Limitation of the number of passengers Staggered commuting	Arrangement to make all four sides of the seat vacant Limitation of staying time and number of visitors	Keeping distance when lining up at the cashier ( mark on the floor, etc. ) Limitation of staying time and number of visitors	Arrangement to make all four sides of the seat vacant Ingenuity in the arrangement of exhibits Limitation of staying time and number of visitors	Arrangement to make all four sides of the seat vacant Limitation of staying time	Arrangement to make all four sides of the seat vacant Small number of people Limitation of staying time	Paying attention to the space between seats Avoid sitting face-to-face Limitation of staying time and number of visitors		
Closed spaces	-		Replacing all air of aircraft cabin within the specified time (e.g. 3minutes)		Frequent ventilation (Open windows/fan)						Terrace seats Open two-way window		
Hygiene measures Others	Wear mask												
	-		Installation of vinyl curtains in face-to-face situations										
	Refrain from drinking parties after sports, etc	-		Hand and finger hygiene at the time of entering						Frequent hand washing	Hand and finger hygiene at the time of entering		
	Sanitization of facilities and shared items ( Use of disposable products ) · cashless												
	-		Proof & check of physical condition at the time of boarding		-		( when staying for a long time ) check of physical condition at the time of entering				-		
Employee hygiene measures · measures for Three Cs · Dispersion of break and meal times													

# Acknowledgement

In the process of preparing this report, the authors wish to thank Dr. Yoji Nagai, Chairman, and our colleagues, Study Group on Comprehensive “Quality” of Medical Management, JSQC, for their valuable comments and suggestions; Dr. Harold S Haller and Mr. N. Ramnathan, Global Quality Future Workshop (GQFW), for their brushing up English including suggestions about technical selection of terms, and Ms. Yoko Oyama, Kano Quality Research Office (KQRO), for her thoughtful support including data arrangement and report preparation on this paper.

**감사합니다! Thank you! Arigato! ありがとう!**

Arigato-Ohkini-Dan Dan-Xiexie-Dosha-Ganxie-Xiaja-Shale-Bayarlalaa-MahaloNui-Gamsahamnida-Komapsumnida-Terimakasih- Salamat -CamOn -KobKunKrub-Chiztinbate -Kadinchey La- Dhanyavad-Dhanyabedam - Nandri-Dev Borem Korum-Nanni- Abhar-Aabhari Ahe-Thagetchari -ka lawm e-Stutiya – Dhanyabaad- Raxmat -Shukria-Mamnoon-SepasGozaram-Motshakeram-Toda-Shukran-AsanteSana-NaGode-Me daa si- TeshekkurEderim-Efharisto-Grazie -Grazzi- Grazie-Gracias-Obrigado-Merci-Danke-DankU-Tack-Kitos -Dankie-Thank You- Jinkua-Go Raibh Maith Agat-Spasibo-Ačiū-Aitäh-Paldies-KoeSoeNoem- Blagodaram-благодаря (blagodarya) –Kosti- Multumesc-Multzumesc -Dziekuje-Dekuji-Akwaaba-Hvala-Takk Fyrir-Villmots Merci-Paxмет!

- Faleminderit -Thucee (75languages, as of 2019/08, by N. Kano)

Do you know which country or which language each of these expressions come from?  
If you know more than 10 languages, your level of international knowledge is quite high.