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**How to fundamentally reform transport and living-work systems considering pandemics ?  
- Infection, Resilience, QOL and Mindset -**

World Bank Sustaining Transport Services in the COVID-19  
Pandemic-Railway services Webinar, May 20, 2020

# Why TRANSPORT is important in COVID-19 Pandemic?

# The COVID-19 Pandemic

- **Spread** rapidly across the world.
- A huge number of **infections and death**.
- Biggest **challenge** to human society since the **Spanish Flu** in **1918**.
- The **whole world is connected** to each other by much more convenient transport systems and information

# Two Faces of Transport

- **Causer** of Infections
  - Unintentionally contributed to the **spread of the virus** through **international and urban** passenger travel
  - **Supply-chain disruption** undermined economic activities
- An integral part of **solutions**
  - to **mitigate** the impacts of COVID-19 through the delivery of **humanitarian goods and services**
  - to **facilitate resilient supply chains** for the recovery phase.

# What are happening in Transport under COVID-19?

# WCTRS COVID-19 Task Force

<https://www.wctrs-society.com/about-wctrs/wctrs-covid-19-task-force/>

## Chair of WCTRS COVID-TF

- **Yoshitsugu Hayashi**, Immediate Ex-President of WCTRS; & Director, Center for Sustainable Development and Global Smart City, Chubu University, Japan

## Co-Chairs of WCTRS COVID-TF

- **Lawrence D. Frank**, Chair of 'WCTRS – Transport and Health Special Interest Group'; Prof., Health & Communication Design Lab, University of British Columbia, Canada
- **Junyi Zhang**, Prof., Mobilities and Urban Policy Lab, Graduate School of Advanced Science and Engineering; Director of ASMO Center, Hiroshima University, Japan

## Members of [WCTRS](#) COVID-TF

- **Greg Marsden**, Secretary General of [WCTRS](#); Prof., ITS, University of Leeds, UK
- **E. Seetha Ram**, Dr. Eng., Senior Consulting Specialist, Asian Development Bank Institute
- **Peter John Forsyth**, Adjunct Prof., Department of Economics, Monash University

## Advisors

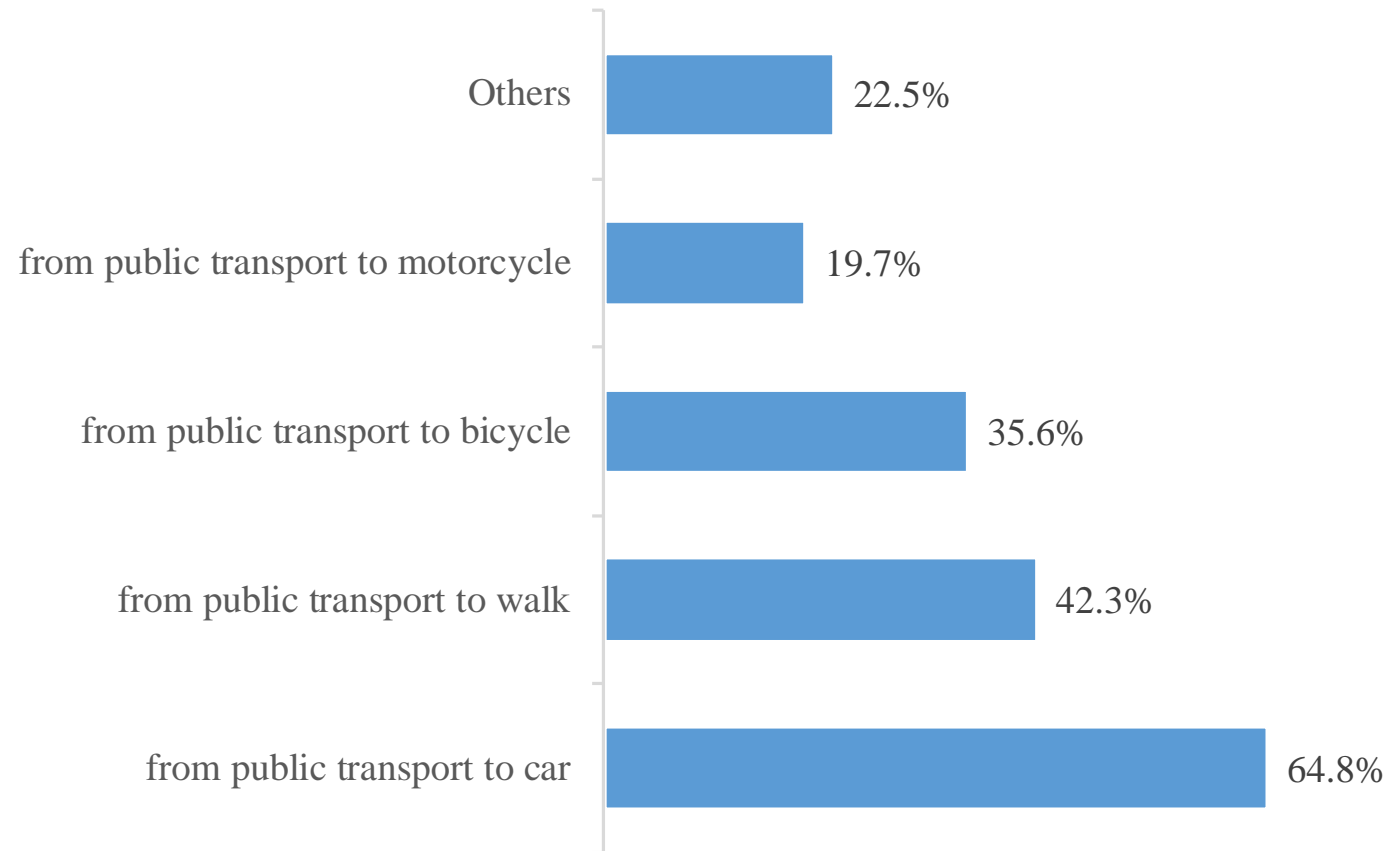
- **Tae Oum**, President of [WCTRS](#); Emeritus Prof., University of British Columbia, Canada
- **Werner Rothengatter**, Ex-President of [WCTRS](#), Emeritus Prof., Karlsruhe Institute of

# WCTRS COVID-19 Task Force: Expert Survey

- The WCTRS COVID-19 Task Force, established in April 2020, has implemented a questionnaire survey to experts in fields of transport and logistics, urban and regional planning and so on, since the end of April 2020. **The survey aims to investigate the following contents related to the transport and logistics sector.**
- **Impacts:** to investigate the impacts of COVID-19
- **Preparedness:** to investigate what our society had prepared for such a pandemic
- **During-pandemic measures:** to investigate what our society is currently taking measures to fight against this pandemic
- **After-pandemic recovery measures:** to suggest what our society should do after this pandemic
- **Long-term strategies:** to explore how to generalize the findings from the above actions to tackle other public health threats

# Modal shifts observed by experts (subjective observations, multiple choices)

<WCTRS Taskforce Survey 2020 >





# 1. Causing Infections

- Airlines can transport infected passengers from one side of the world to the other, within half a day.
- Passengers in crowded public transport are more at risk of infection than automobile users.
- There is increasing evidence of health risks to staff providing essential transport services.
- Infections among operational staff and reduction of transport services will lead to the collapse of supply chains and consequently lower the productivity of industries.

## 2. Low Resilience in Transport

5. Reduction of passengers by lockdown and emergency declaration may bankrupt the transport and tourism industries, thus worsening the regional and national economy.
6. Lockdowns have increased pressures on the supply chains of vital goods for medical care and for citizens' daily life.
7. In developing countries, paratransit and other informal transport services are very popular because of their low fares and flexibility, but both passengers and drivers face high risks of infection because drivers are poorly equipped and operate in close proximity to passengers.

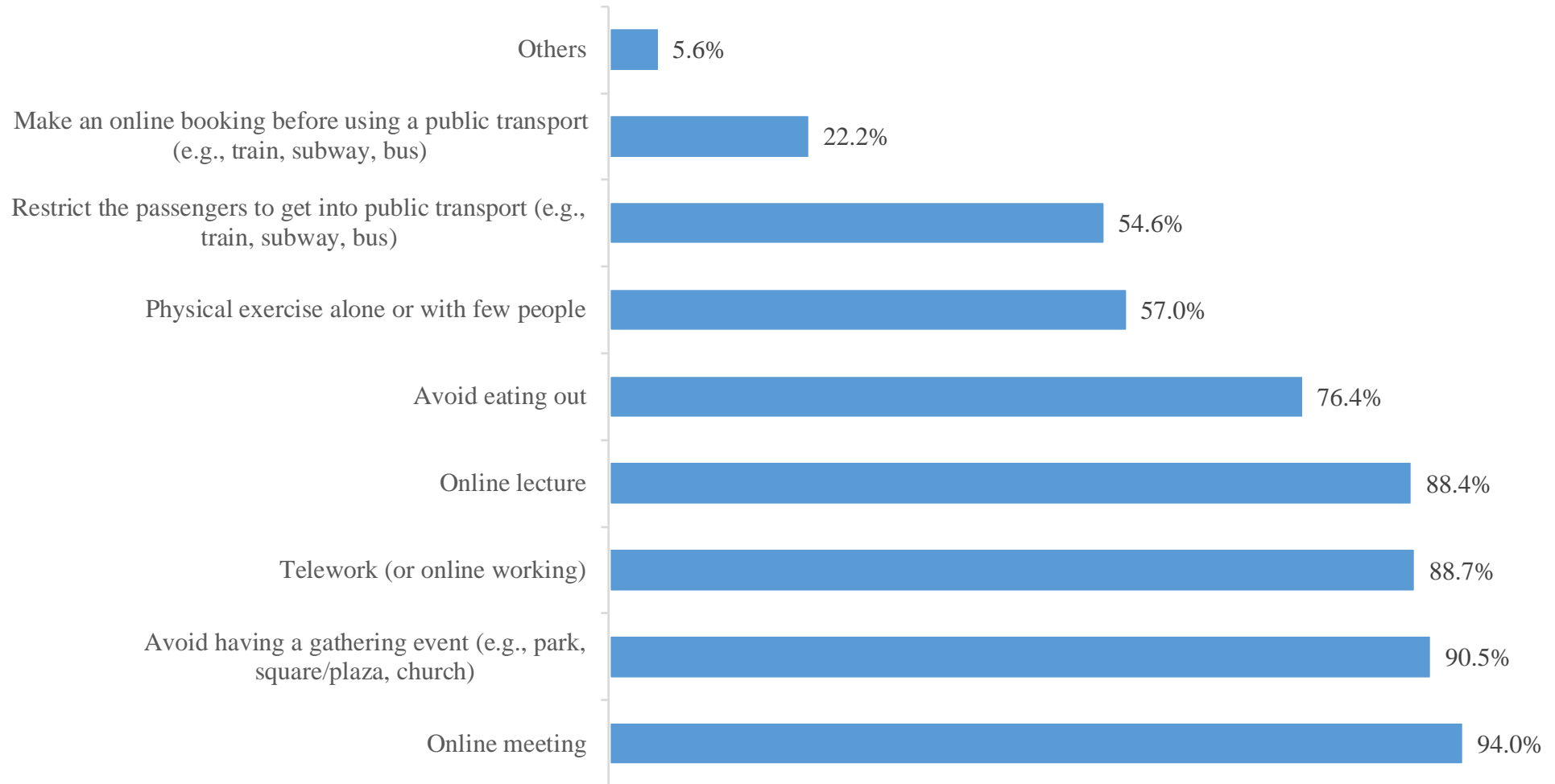
# Can Transport be built back better?

1. It may be recommended for citizens to temporarily shift from public transit to cars to avoid the risk of infection. However, this may become a permanent change in transport behavior even after COVID-19 has been eradicated?
2. Social distancing requires to stay at home and shut-downs of offices, schools, shops, restaurants, tourism places, amusement parks, etc. Can we (citizens, transport operators) build back better?

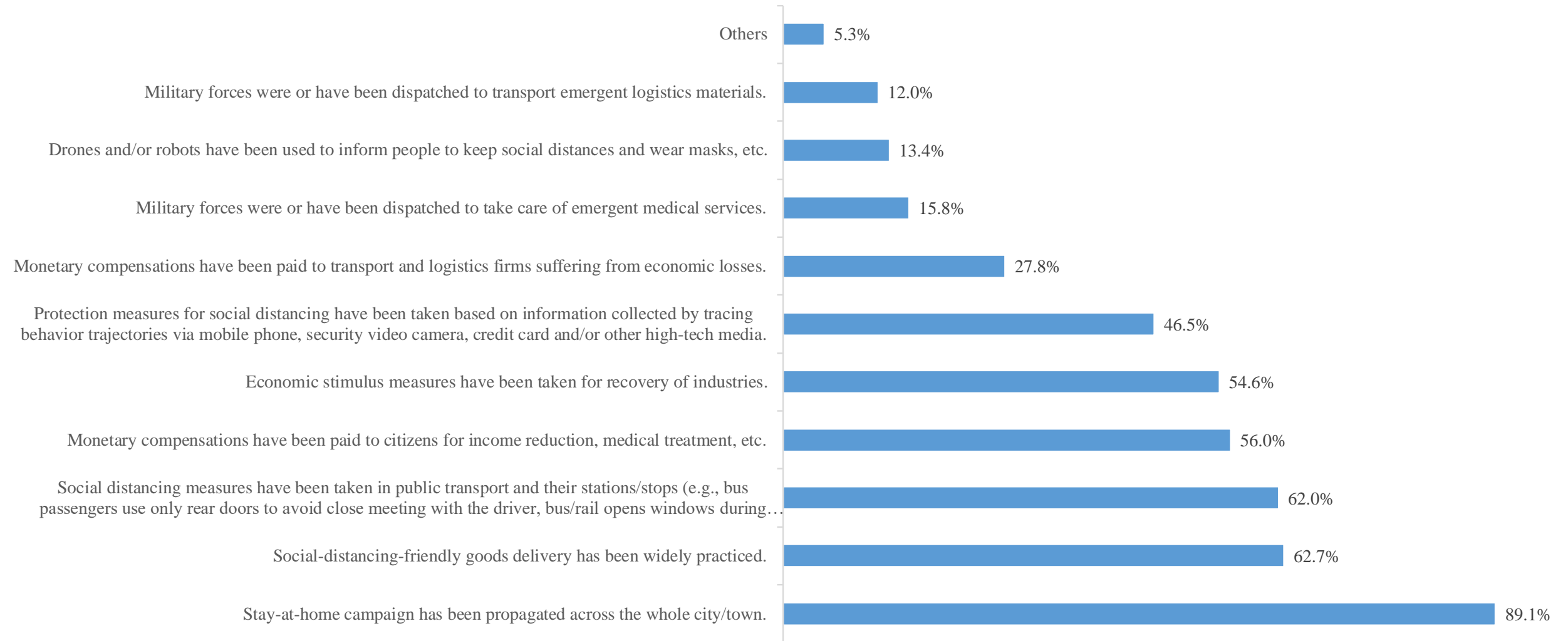
# Measures and Actions in Transport and its Surrounding

# Recommended activities during COVID-19 pandemic (multiple choices)

<WCTRS Taskforce Survey 2020 >



# Protective and supportive measures



# Recommended Measures & Actions by WCTRS COVID-19 Taskforce (1)

<https://www.wctrs-society.com/about-wctrs/wctrs-covid-19-task-force/wctrs-covid-19-appeal/>

- To allocate enough **resources** to allow **airlines to immediately reduce flights**, which will help **prevent the spread** of COVID-19 and enable a responsible and **safe transition in the recovery** process.
- To **financially support** the deficit facing the **transport and logistics industries**, which are **lifelines** for regional **economies** and citizens' **daily life and health**.
- To **financially support public transport** service **providers** and their **employees**, as well as service **users**, by subsidizing services during the **transition from lockdown** restrictions.

# Recommended Measures & Actions by WCTRS COVID-19 Taskforce (2)

<https://www.wctrs-society.com/about-wctrs/wctrs-covid-19-task-force/wctrs-covid-19-appeal/>

- To **prevent increased car dependence** due to adverse reactions to public transport services **after the pandemic**.
- To urgently develop knowledge on how best to **communicate with the public** about **risks** and **safe use of public transport** and movement in **crowded places**.
- To promote **collaboration** between **public health, transport and supply chain experts** to **inform policy-makers'** decisions about **lockdowns**.
- To make use of the “**new normal**” after COVID-19 to encourage changes toward more **environmentally sustainable life and work choices** after the crisis.



# Recommended Measures & Actions by WCTRS COVID-19 Taskforce (3)

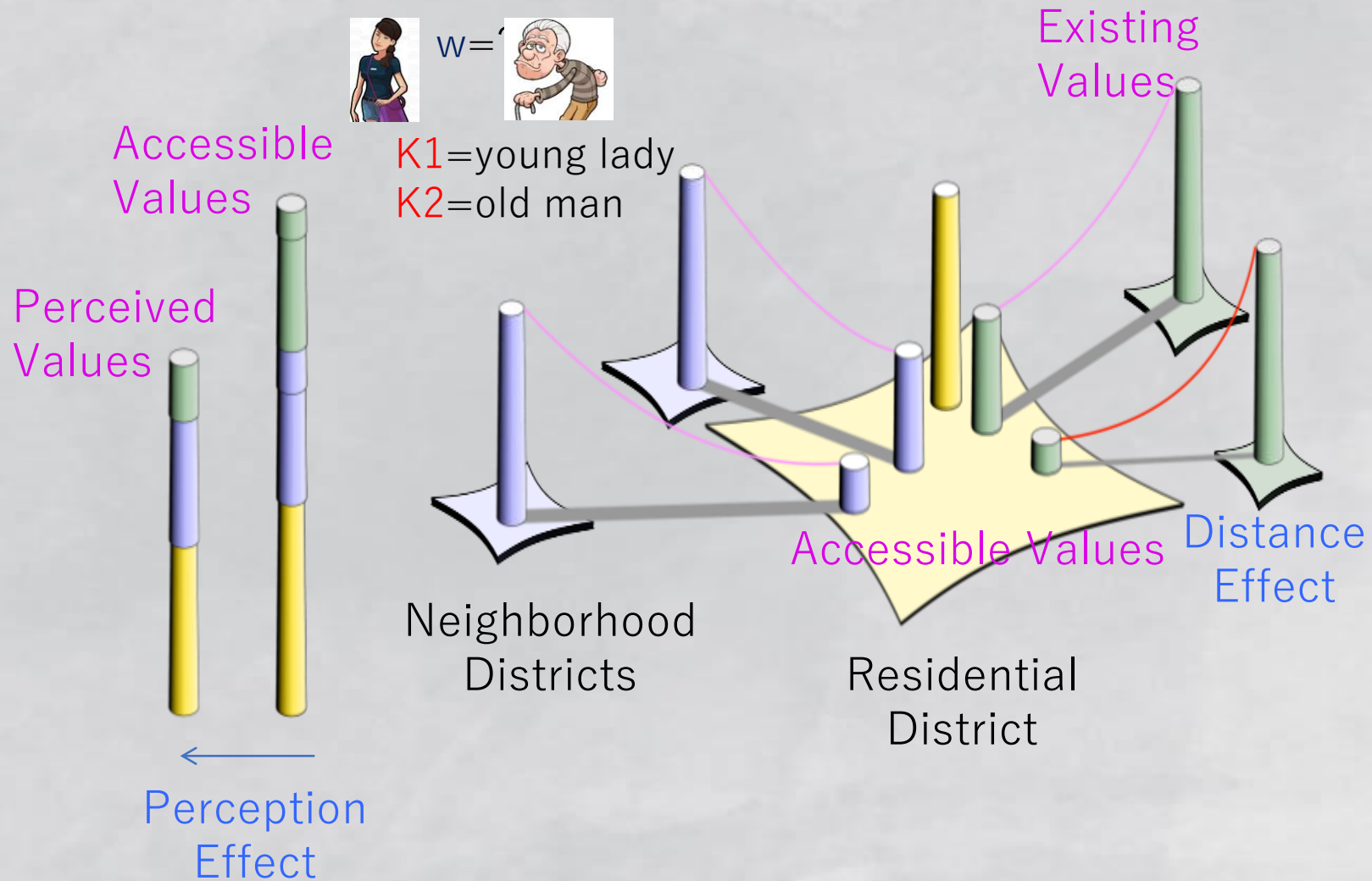
<https://www.wctrs-society.com/about-wctrs/wctrs-covid-19-task-force/wctrs-covid-19-appeal/>

- To **share** the learning of **successes and failures** in responding to COVID-19 across countries **all over the world**.
- To take immediate measures to **sanitize public transport** vehicles/facilities and maintain **safe loading factors** for different vehicles at **different levels of virus management**.
- To provide **urgent international aid** to compensate **operators/drivers of paratransit** and other informal transport services in **developing countries** for their **economic losses** due to **social distancing** and other **operational restrictions**.

Impact Evaluation of High Speed Rail  
by QOL Indicators

Can we consider Risk of Virus Infection ?  
Yes, we can !!

# Hayashi's Value Accessibility Method for QOL Evaluation



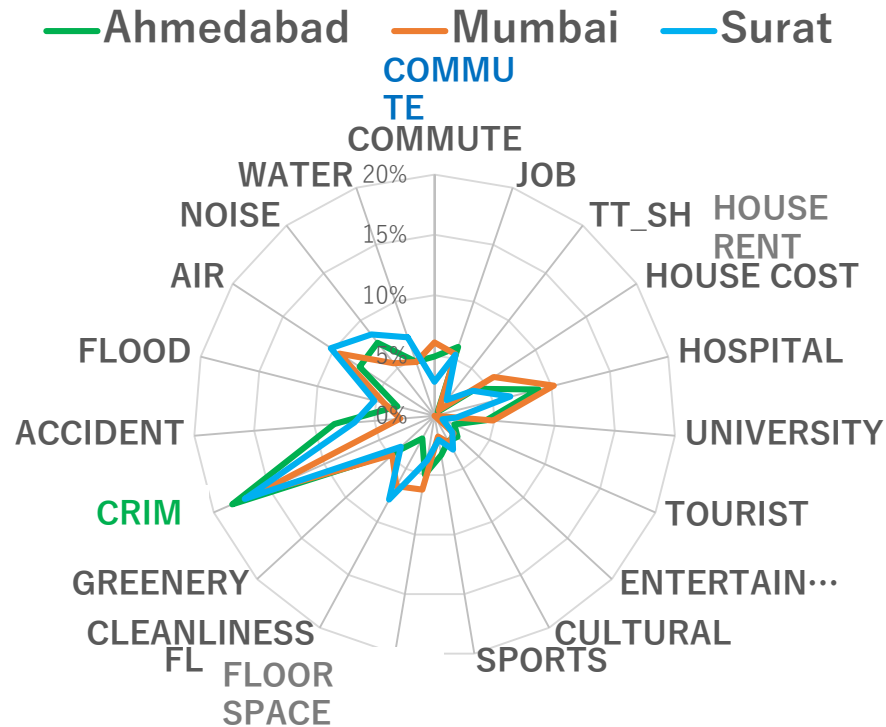
# Mumbai-Ahmedabad HSR Alignment



Proposed HSR Network in India

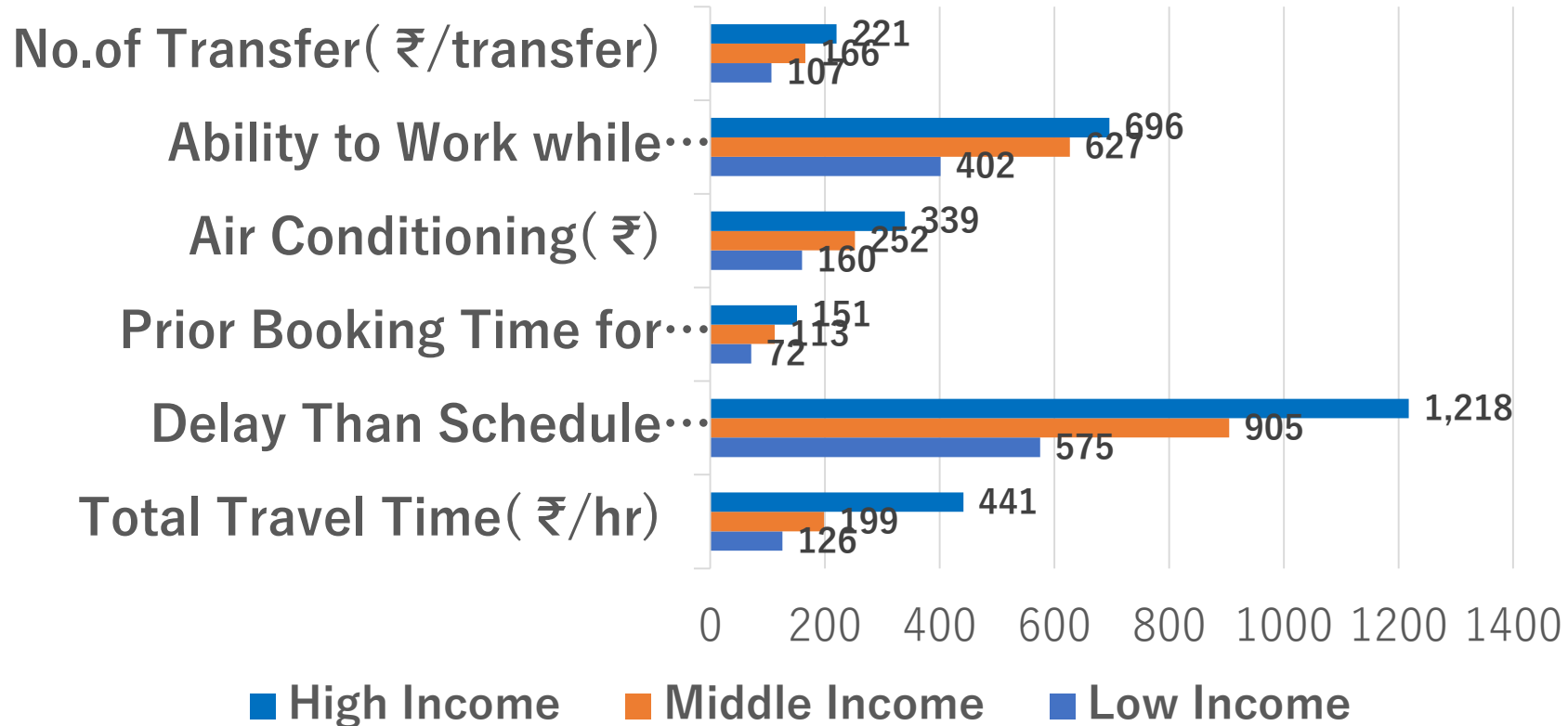


# User Perception Weight Graphs (City-wise)



- All cities - maximum **crime**
- **commuting time** (Mumbai > Ahmedabad > Surat)
- House rent and floor space (Mumbai > Ahmedabad > Surat)
- Surat – **cleanliness** high.

# Quality of Travel: Monetary Values

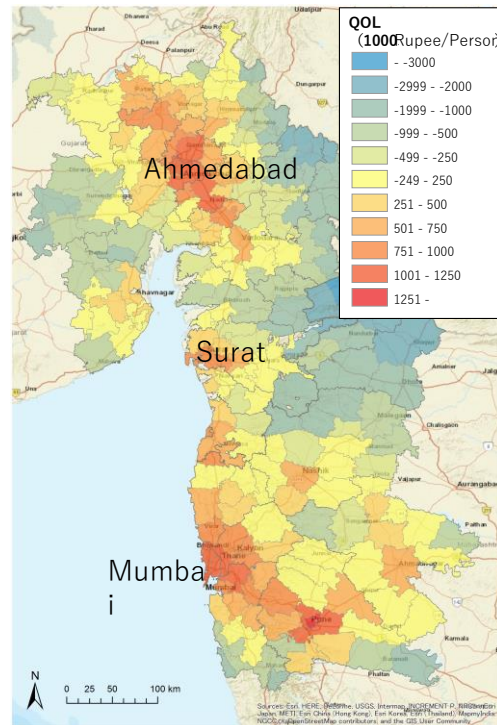


**How much monetary value does VIRUS PANDEMIC RISK have ?**

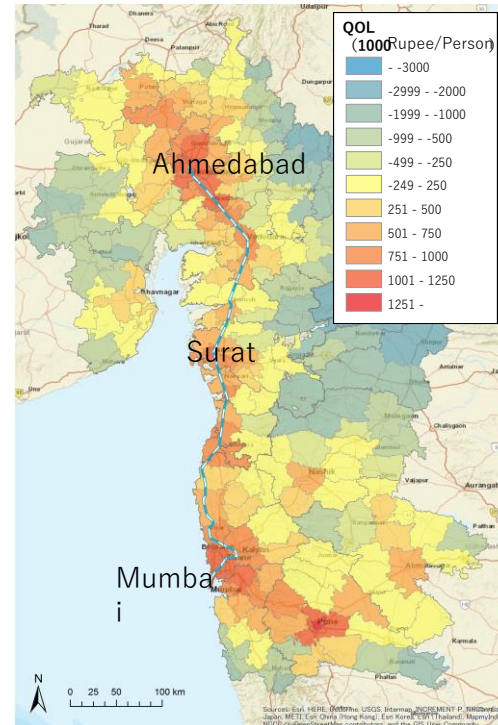


# Geographic QoL Distribution with and without HSR

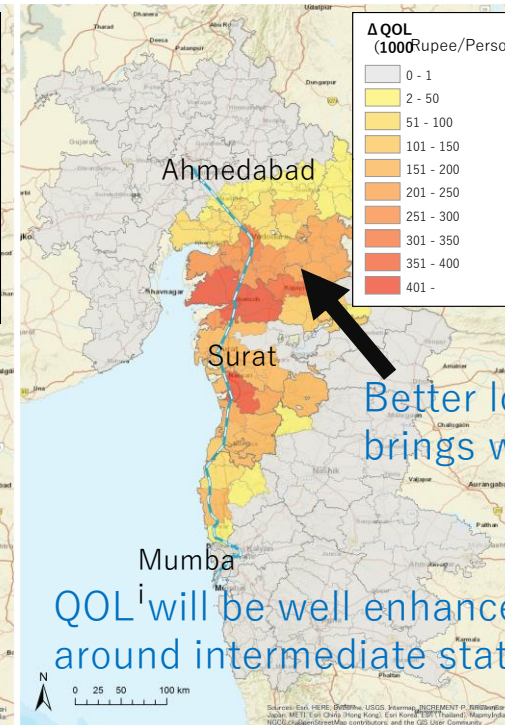
**Without** HSR (Current Situation)



**With** HSR



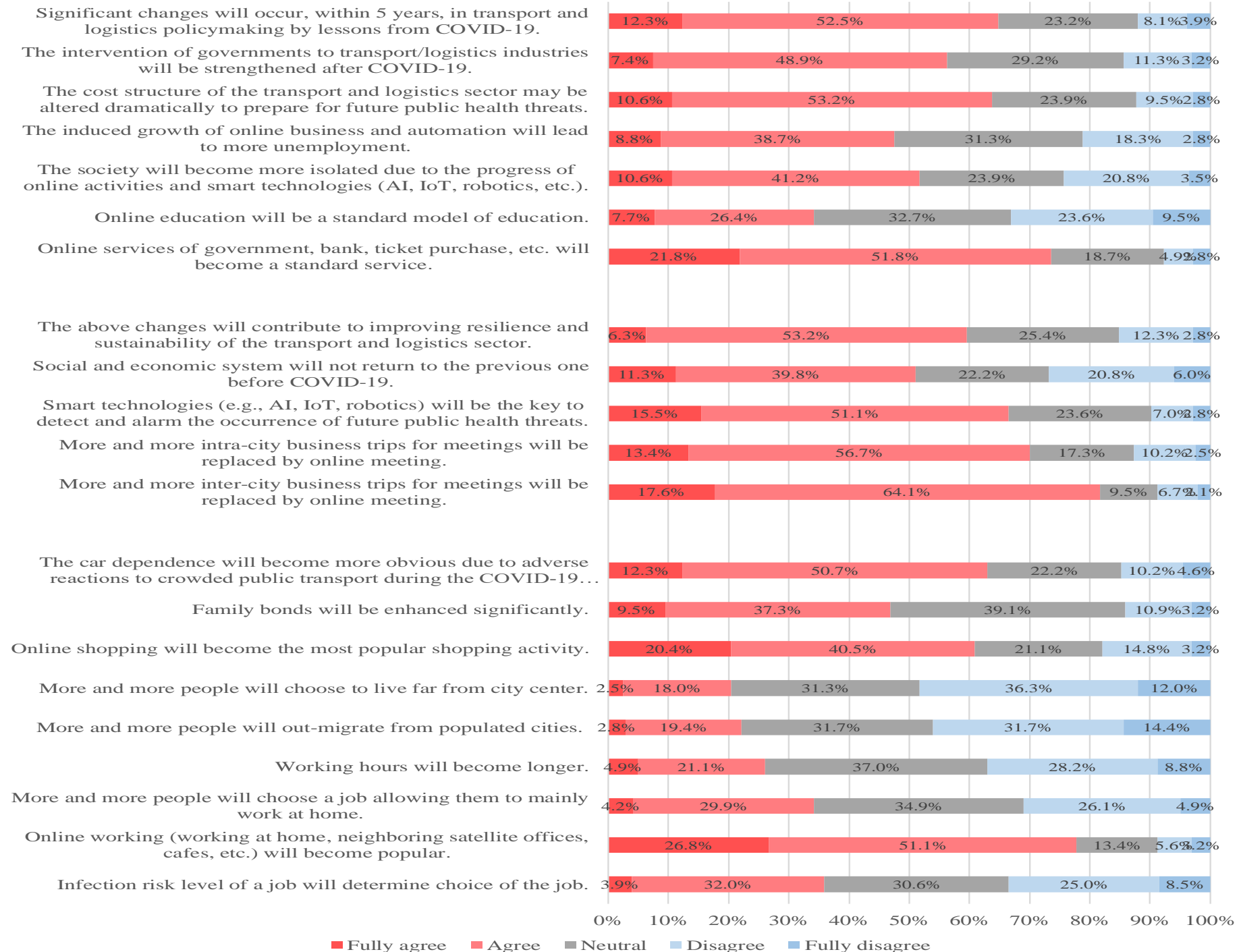
**QoL Difference** (With-Without)



# Mindset in Transport



# Experts' opinions on long-term changes



# New Normal in Transport

- **Down sized equilibrium** of sales and cost to maximize profit
- **Peak-cut merits**: less per hour demand intensity with lower cost for Infrastructure → Do not be afraid of downsizing!
- **Resilience**(復元力)
  - Reversible Society, Redundancy of Infrastructure, Contingency Plan
- **Transport small** [not make unnecessary trips], Benefit large
- Not transport all at peak hours/seasons, but select passengers and freights.
- Clear policy of congestion charge & off-peak hour discount to realize non-congested transport and cities

# What does COVID-19 suggest to Human Society?

## How to live in Anthropocene ?

- Healthier life (QOL, GNH) as outcome of social activity appreciated in 21<sup>st</sup> century rather than higher prosperity (Income, GDP) as input to the life sought in 20<sup>th</sup> century
  - Less income with less passengers but even less cost to maintain infrastructure by peak-cut → *Higher net income and increased personal time*
  - Resilient Society
    - Emergency adaptive life-work style
      - Climate Emergency → Excessive Extreme Weather
      - Reversible Society → Infrastructure with Rooms and Redundant
    - Never-coming chance to mindset for human beings
- Anthropocene: see Club of Rome 50<sup>th</sup> Anniversary Book *“Come On!”* (Springer, 2018)  
<<https://clubofrome.org/>>

COVID teaches us better transport systems to support  
happier life-work styles as New Normal  
- Build back Better for Everyone! -



**Thank you for your attention!**