The impacts of COVID-19 pandemic in transport and land use: interpreting the results of WCTRS expert survey

22 October 2020

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Content 1

What have happened in Transport under COVID-19?
Modal shifts
(subjective observations, multiple choices)

< WCTRS Taskforce Survey 2020 >

PT → Low Carbon Mode (42.7%)

PT → Car, 35.0%
PT to Walking, 23.1%
PT to Bicycle, 19.6%
PT to Motorcycle, 10.2%
Others, 12.1%

PT → High Carbon Mode (45.2%)

S_{high-carbon}
Modal shifts
(subjective observations, multiple choices)

<WCTRS Taskforce Survey 2020>

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Where did people go/stay during the pandemic?

- **No Lock-down**
- **Little difference between week/weekend**
- **Emergency declaration**

**Japan**
- People cannot come back to work

**India**
- People cannot come back to work
- Poor people cannot get income

**US**
- People cannot come back to work

**Italy**
- Reference: Google Community Mobility Report

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Where did people go/stay during the pandemic?

Reference: Google Community Mobility Report
Trend in Transport Volume

Reference: Apple’s COVID-19 mobility trends reports
Content 2

Recommended Measures and Actions
Recommended actions during COVID-19 pandemic (multiple choices) 

- Increasing Emission Factor → Contribute to CO2 Increase from PT
- Decreasing Passenger Volume → Contribute to CO2 Reduction

< WCTRS Taskforce Survey 2020 >

- Online Booking, 3.9%
- PT Passenger Restriction, 9.4%
- Physical Exercise Alone/Few People, 9.9%
- Avoid Eating out, 13.3%
- Avoid Gathering Event, 15.6%
- Telework, 15.4%
- Online Lecture, 15.3%
- Online Meeting, 16.3%
- Others, 0.9%
- Online Booking, 3.9%
- PT Passenger Restriction, 9.4%
- Physical Exercise Alone/Few People, 9.9%
- Avoid Eating out, 13.3%
- Avoid Gathering Event, 15.6%
- Telework, 15.4%
- Online Lecture, 15.3%
- Online Meeting, 16.3%
- Others, 0.9%
Experts’ opinions on long-term changes (1)

More and more inter-city business trips for meetings will be replaced by online meeting.

Online services of government, bank, ticket purchase, etc. will become a standard service.

More and more intra-city business trips for meetings will be replaced by online meeting.

Online shopping will become the most popular shopping activity.

The society will become more isolated due to the progress of online activities and smart technologies (AI, IoT, robotics, etc.).

Online education will be a standard model of education.

Effects to CO2 Emission

Online education will be a standard model of education.
Experts’ opinions on long-term changes (2)

The **car dependence** will become more obvious due to adverse reactions to **crowded public transport** during the COVID-19 pandemic.

**Online shopping** will become the most popular shopping activity.

More and more people will **out-migrate from populated cities**.

More and more people will choose to **live far from city center**.

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**Effects to CO2 Emission**

- **car dependence**: 12% fully agree, 51% agree
- **out-migration**: 20% fully agree, 40% agree
- **living far from city center**: 3% fully agree, 19% agree
- **online shopping**: 18% fully agree

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Content 3

Japan
Cumulative Infected cases in Japan

https://www.worldometers.info/coronavirus/country/japan/
General measures taken by the Japanese government (+ major events)

- **January 16:** The first infected case was confirmed in Japan.
- **January 30:** The Japanese government formally established a headquarter for dealing with the novel coronavirus. [Global deaths: 213]
- **January 31:** WHO announced that the novel coronavirus is a Public Health Emergency of International Concern. [Global deaths: 259]
- **February 1:** The first infection case was confirmed on the Diamond Princess cruise ship. [Global deaths: 304]
- **February 11:** WHO formally named the virus as COVID-19. [Global deaths: 1,115]
- **February 13:** The first death in Japan was confirmed. [Global deaths: 1,383]
Measures by the Japanese government

- **February 25**: A task force of cluster countermeasures was formally established by the Japanese government. This was also the start of the so-called Japan-specific countermeasures. Concretely speaking, instead of making a thorough check of the population, the Japanese government started to identify and target clusters of infection. [Global deaths: 2,763]

- **February 28**: The first declaration of a state of emergency in Japan was made by the governor of Hokkaido Prefecture. [Global deaths: 2,923]

- **March 2**: All elementary, secondary and high schools in Japan temporarily suspended until the spring break (April 6). [Global deaths: 3,117]
Measures by the Japanese government

- **March 11**: WHO announced that the COVID-19 outbreak is a pandemic. [Global deaths: 4,627; Total infection: 126,215]
- **March 19**: Recommendations of behavioral changes by a governmental task force were released in Japan. [Global deaths: 10,077]
- **March 25**: The Tokyo governor announced her requests for self-restraint on weekends. [Global deaths: 21,746]
- **March 30**: The Tokyo governor further announced her requests for self-restraint on both weekends and weekdays. [Global deaths: 39,334]
Measures by the Japanese government

- **April 7**: The central government declared a state of emergence at seven prefectures (until May 6).
- **April 7**: The central government announced an emergent economic budget of 108.2 trillion yen.
- **April 16**: The central government declared a state of emergence for the whole country (until May 6).
- **May 4**: The central government extended the emergence period to the end of May.
- **May 14**: The central government cancelled the emergence declaration for 39 prefectures.
Impacts of COVID-19 on railways in Japan: examples

Shinkansen
(compared with last year)

Conventional Railway
(compared with last year)

Express trains at major lines

https://www5.cao.go.jp/keizai-
https://www5.cao.go.jp/keizai-
https://www5.cao.go.jp/keizai-
https://www5.cao.go.jp/keizai-
Impacts of COVID-19 on railways in Japan: examples

**Urban railways** [https://toyokeizai.net/articles/-/350639?page=2](https://toyokeizai.net/articles/-/350639?page=2)

- In March, Tokyo: -21.4% ~ -35.8% [commuter pass ÷ -50%]

- Effects of self-restraint requests (April):
  - Target: 70-80% reduction; Reality: -60% even during rush hours

**During the Golden Week**: declaration of a state of [emergence](https://www.bcnretail.com/market/detail/20200512_172995.html)

- JR East, JR Tokai, JR West (Shinkansen + Express trains of conventional railways): - 90% or more [max: -97%] {in normal GW: very crowded}
Measures taken by the railway sector in Japan, in sequence

- **Jan 30**: Established a government response headquarter
- **Jan 30**: Established a government response headquarter at MLIT
- **Jan 31, Feb 24**: Measures for employees and users (masks, hand washing, installation of antiseptic solution); Requested prompt report of employee infection.
- **Feb 12/14/24**: Measures for users at railway stations (installation of antiseptic solution)
- **Feb 24**: Requests to railway users via announcement at stations and inside trains >>> Telework or staggered commuting
- **Feb 24**: Requests on strict health check of crew and station attendants
Measures taken by the railway sector in Japan, in sequence

- **Feb 26, Mar 31, Apr 9/12/17**: Requests to railway operators >>> telework and staggered commuting
- **Mar 12, May 5**: Requests to users >>> ventilation, telework, cough etiquette
- **Mar 16**: announcement of financial support measures to railway operators
- **Apr 14**: Allow railway operators to postpone regular safety check due to the infection of employees
- **Apr 3/17/27**: Requests to the designated public transport operators >>> to continue the operation
- **Apr 12/27**: Social distancing measures at workplaces
Cumulative Infected cases in Japan

https://www.worldometers.info/coronavirus/country/japan/
Measures taken by the railway sector in Japan, in sequence

- **Apr 17**: Requests on the announcement at stations to users, about **refraining from unnecessary and unurgent trips**
- **Apr 20**: Requests on the cooperation with local municipalities who plan to implement **enlightenment campaigns** or check body temperature at stations
- **Apr 23**: Cable cars and ropeways should not be operated during the golden week
- **Apr 27**: Re-request about use of mask, hand washing for employees
- **May 4**: To publicize a guideline “About how railways should be operated against COVID-19 by MLIT”
- **May 5**: Self-restraint of inter-city trips
“About how railways should be operated against COVID-19”, by MLIT

- Railways are designated as the enterprises that must keep business operation for supporting people’s lives and national economy, by the central government.

- To meet the trip making needs from those who have to make trips (esp., medical staff); To take social distancing measures (avoid crowding)

- Importance of staff protection measures >>> In case of infection, operation frequency can be reduced or cancelled.

- Operation frequency can be reduced or cancelled, in the case of demand reduction caused by self-restraint.
Measures taken by the **JR East**, Based on **Guidelines of Measures against COVID-19 for Rail Operators**

### Main measures for users

<table>
<thead>
<tr>
<th>対策</th>
<th>分類</th>
<th>項目</th>
<th>内容</th>
</tr>
</thead>
</table>
| air-tight | 据電の配行 | 車内換気 | 空調装置や窓開けによる車内換気を行っています。
| | | | JR東日本アプリにて、山手線車内や一部駅における混雑情報を提供しています。 |
| | 情報提供 | 混雑状況の緩和 | 駅構内放送や車内放送、デジタルサイネージ等を活用し、時刻出勤やデタラミング等への協力の呼び掛けを行っています。
| | | 客さまへの呼びかけ | 客さまへマスク着用の呼びかけを行っています。
| Crowd edness | 発売時の取扱い | 座席指定 | シートマップを活用し、可能な限り隔間を空けて、座席を販売するよう取扱っております。
| | | 飛沫感染防止 | ピニールシート等の設置 | 改札等にピニールシート等を設置しています。
| | | お並び位置の明示 | 消毒液の設置 | 消毒口等に、アルコール消毒液を設置しています。
| | | | 改札口等に、アルコール消毒液を設置しています。
| | | | 駅の券売機や階段、エスカレーターの手すり及び車内のつり革等は消毒液を用いて、定期的に清掃しています。

### Main measures for employees

<table>
<thead>
<tr>
<th>項目</th>
<th>内容</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear masks</td>
<td>全社員にマスク着用を指示しています。</td>
</tr>
<tr>
<td>Hand washing, gargling</td>
<td>石鹸を使用した手洗い、うがいを徹底しています。</td>
</tr>
<tr>
<td>Protect employees’ health</td>
<td>出勤前に体温確認を実施しています。</td>
</tr>
</tbody>
</table>

*From the JR East website*
Guidelines for different modes/facilities, by MLIT

- https://www.mlit.go.jp/kikikanri/content/001344259

Guidelines of Measures against COVID-19 for Rail Operators

Version 1

Railway liaison meeting

鉄道連絡会

令和2年5月14日

May 14, 2020
Social distancing and reduction of railway capacity (actual ridership): in the case of pandemic flu (2011)

- Required reduction: 1m > -68%; 2m > -82%
  If the absence ratio of staff is 40%
- Required reduction: 1m > -84%; 2m > -91%
- Experiment in 2011

2011 Survey by MLIT: https://www.mlit.go.jp/
Summary: railways

- **Preparedness**: for example,
  - ✓ Survey and Research on measures against novel influenza in Tokyo Metropolitan Area by MLIT in 2011

- **During the COVID-19 pandemic**
  - ✓ Establish a headquarters in MLIT, following central gov.
  - ✓ *PASS approach* [named by the speaker, not by MLIT]
    - Step 1: (P)rotect Measures for employees and users
    - Step 2: (A)void Telework
    - Step 3: (S)hift Staggered commuting
    - Step 4: (S)top Stop unnecessary and unurgent trips

- **After the COVID-19 pandemic**
  - ✓ Financial measures for compensating losses and recovery
  - ✓ “Go to Travel” campaign (cross-sectoral)
  - ✓ Deregulation for new transport/logistics businesses (e.g., online order and food delivery, freight transport by taxi)
  - ✓ Improvements of public transport for international tourists
  - ✓ Large-scale promotion for inbound tourism
  - ✓ Reform of supply chain
  - ✓ Society 5.0
Content 4

Conclusion
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 an outcome of social activity appreciated in 21st century rather than higher economic prosperity (Income, GDP) as an input to the life sought in 20th century

• Less income with less passengers but even less cost to maintain infrastructure by peak-cut → seeking for Higher net income and increased personal time

• Resilient Society
  • Emergency adaptive life-work style
    • 20th century: Climate Emergency → Excessive Extreme Weather
    • 21st century: Future: Reversible Society → Infrastructure with Rooms and Redundance

• Never-coming chance to mindset for human beings

  <https://clubofrome.org/>