

PUBLIC TRANSPORT AUTHORITIES AND COVID-19

RESPONSE FROM THE FRONT LINE

MARCH | 2020

INTRODUCTION

Despite the reported rapid transmission globally, early understanding of transmission dynamics suggests that COVID-19 is the first pandemic where transmission can be controlled by implementing necessary measures at an appropriate scale.

Social distancing measures and good (enhanced) hygiene practices, similar to public health response to an influenza pandemic, are top of the list in terms of transmission control interventions (pre-emptive and otherwise).^{1,2,3}

To that effect, public transport systems such as buses and trains could be a high risk environment for COVID-19 transmission (especially in certain geographies) due to the high number of people in a confined space, limited access control to identify potentially sick persons, and importantly a number of common surface touch points such as ticket machines, handrails and door knobs.⁴

At the same time, public transport is a vital service in any society and service continuity is important not only for sustaining economic activity, but also important in a situation such as this where passengers may have to travel to access appropriate public health care.

In response to the COVID-19 outbreak, operators globally have been taking appropriate measures to protect both the community and its workers, in-line with their respective health authority guidelines.

In February 2020, [UITP](#) released [guidelines](#) to assist public transport operators in tailoring business continuity plans responding to specific challenges of communicable diseases.

The speed of transmission of COVID-19 has created an imperative to quickly share knowledge from the front line, particularly from jurisdictions who have been at the forefront of the outbreak.

RESPONSE FROM THE GLOBAL PUBLIC

TRANSPORT SECTOR

Recently, [UITP-APURP](#) (Asia Pacific Urban Rail Platform) brought together rail operators from the Asia-Pacific region to share their response to COVID-19. The interventional response from those members and what is being observed in major cities around the world has been primarily five-fold across the board:

- Disinfection and Sanitisation
- Workforce monitoring
- Access control
- Business continuity plans
- Communication – internal and external.

This paper draws on the outcomes of that forum, together with further research encompassing a number of other operators in North America, Europe and Australia.

DISINFECTION AND SANITISATION

An increase in frequency and scale of disinfection and sanitisation of high-touch point surfaces has been the most common response by major transport operators as a control measure against the COVID-19 spread. The latest scientific developments on COVID-19 suggests that the virus can be inactivated from surfaces with a solution of ethanol (62-71% alcohol), hydrogen peroxide (0.5% hydrogen peroxide), or sodium hypochlorite (0.1% bleach) in about a minute, and that frequent hand washing is the most effective way to avoid contagion.⁵

Surfaces are being disinfected every hour to every two hours, and in some cases at the end and/or start of journeys. Distinctive measures include:

- **In China**, in a typical city like Shenzhen, the bus fleet is sanitised after each trip and buses are filled with no more than 50% capacity and cleaning of air-conditioning filters has been enhanced. To increase natural ventilation, some operators have retrofitted window vents to air-conditioned fleets⁶
- **Tehran** metro has dismantled all handles inside the trains, removed all water coolers and water dispensers from stations, as well as shut down all cafeterias inside the subway stations. Muroc train operators have disabled train open/door push buttons

- **Hong Kong** has successfully trialled a disinfection robot to spray bleach in train saloons, and is going to continue this method
- **Shanghai bus** operator Pudong Public Transport Yanggao and the Moscow Metro have been using ultraviolet (UV) light to disinfect public buses and train carriages respectively. COVID-19 is believed to be sensitive to UV and heat, however, is not safe to be used on human skin directly.

A Nature paper published in 2018 showed that far-UV (207-222nm) efficiently inactivates airborne aerosolised droplet viruses such as H1N1 influenza virus and while the *exact* transmission mechanism of COVID-19 is undetermined, there is enough evidence to suggest that community spread is via similar aerolised droplet mechanism.⁷



UV disinfection in Shanghai

- In the **U.S.**, the degree of response has been varied between cities. In New York, for example, bleach is being used to disinfect subway station equipment such as Metrocard machines, turnstiles and handrails every 72 hours. In San Francisco, BART officials are wiping down their buses and subways with disinfectant, and trying to reassure an anxious public. Los Angeles' Metro agency's buses and trains are being cleaned and disinfected every day. Similar preventative measure are underway in Chicago, Boston, and Seattle.⁸

- STM, in Montreal, **Canada**, has increased the frequency of cleaning and disinfecting the buses, paratransit minibuses, trains and stations to more than once a week (official number was not available). Disinfectant wipes are being distributed to station agents, operators and drivers of business and paratransit minibuses. On the South Shore, cleaning of surfaces in buses has been stepped up to every second day.⁹
- While the Public Health England has stated that there are currently no specific concerns about using public transport, **Transport for London** is trialling a long-lasting cleaning agent, along with finalising plans to use hygiene back-pack equipment to spray the new disinfectant. Tube trains, stations, key interchanges are planned to be cleaned more regularly than usual with an enhanced hospital grade disinfectant. High-touch areas that were previously cleaned with a regular cleaner, will now be cleaned with the new disinfectant every day.¹⁰ Public in general are being encouraged to use good hygiene practices.
- In **Europe**:
 - RATP in **France** has deployed its staff to disinfect high-touch areas
 - In **Italy**, the Azienda Transporti Verona (ATV) has adopted the use of germicidal chlorine-based products to sanitise the surfaces, seats and support poles. The bus fleet underwent a special environment sanitisation procedure, using 180 degree celsius dry steam. In addition to that, the entire fleet also went through an ozone clean which is a process similar to what is used on ambulances to ensure best hygiene
 - Similar to Italy, DPP in **Prague** are also using Ozone for deep cleaning, and are able to clean 10-12 trams per day
 - **German Rail (DB)** has increased the use of soap and disinfectants on trains by up to 20%.
- **South Australia** public transport to be disinfected daily as of 16 March 2020.

In addition to disinfecting and sterilising surfaces, depending on the station commuters are being encouraged to practice good hygiene by regularly washing hands, and using hand sanitisers (either provided by transport agencies or personal) to control the spread of the virus.



WORKFORCE MONITORING

Public transport staff are exposed to a large number of commuters on a daily basis, requiring adequate protection at all times. Generally, staff are being monitored through regular temperature

checks across the board, and are supplied with face masks, gloves and hand sanitisers by major transport operators in the Asia-Pacific. The priority has been to protect front-line staff in most jurisdictions. Distinctively,

- in **Singapore**, staff are being supplied with Vitamin C tablets to keep their immunity up
- in **Seoul** there are isolation rooms to monitor staff members should they develop any symptoms
- **Manila** has installed intercoms in teller booths to minimising contact to respiratory secretions
- **ATV in Italy**, has suspended on board ticket purchase from drivers, and suspended physical ticket inspection. Thin chains have been installed to create a safety zone for the driver avoiding close/direct contact with passengers.



ACCESS CONTROL

Train stations and transit interchanges can be hotspots for COVID-19 spread if not managed properly. The most common access control measure in place is temperature monitoring of commuters entering the stations/depots. Some relatively drastic measures observed over the last few days around the world include:

- In **Taipei**, designated stations are equipped with infrared imaging devices to help conduct temperature tests for people entering the station with symptoms of fever
- **Hong Kong** has closed the HSR, WEK and HUH intercity lines
- **Slovenia** banned use of public transport from 16 March 2020, in an effort to restrict the spread of COVID-19
- **France** is expected to progressively reduce long-distance train, bus and plane travel on its territory over the coming days
- Authorities in **Denmark** have advised people in the country to avoid using public transport where possible and have been encouraged to walk or cycle for shorter trips, as well as travel outside peak-hours¹¹
- In **Italy**, while public transport is operational – only people with a valid reason for work or family are allowed to travel. Passengers need to complete a government form to justify their need to travel. Additionally, Trenitalia and NTV-Italo have cut the frequency of their high-speed services. Both rail operators have closed their passenger lounges at stations and suspended at-seat service. Overnight service between

Venice, Milan, and Paris, and its day trains linking Milan, Nice and Marseille, suspended by Thello until April 3¹²

- The **EuroCity** service linking Munich, Innsbruck and cities in northern Italy, operated jointly by German Rail (DB) and Austrian Federal Railways (ÖBB), has been suspended south of Innsbruck
- Occupational level of trains in **Catalonia** have been kept at 1/3 of maximum capacity as of last week to maintain minimum distance between people
- Interestingly, however, in **China**, despite most of the country being in lockdown, public transport was entirely suspended only in Wuhan and its commuter belt. Buses were then used to move medical staff and deliver goods.



BUSINESS CONTINUITY PLANS

Business continuity is critical for public transport systems as it is a vital service in any city. There are a range of measures reported by transport operators that ensure business continues as usual. A number of these plans are contingent to the degree of spread in that country. Some examples are highlighted below:

- In **Japan**, there are provision of rooms for employees to bring in their children to work while schools are in shutdown
- In **Hong Kong**, the staff are working in split teams of A & B rotating between office and home
- In **Japan and Singapore**, large scale events have been cancelled or postponed as well as flexible or remote working arrangements have been made for their staff where possible
- In **Korea**, if a staff member is detected positive with the virus the entire team of that staff member is replaced by another team
- In **Taipei**, affiliated businesses such as shops inside the stations and underground malls are being offered a 3 month rent rebate of 50% as a distinctive business continuity plan. Workforce has been prepared with a “work from back-up office” strategy to minimise risk of cross infection amongst workforce
- **Danish State Railways (DSB)** is running longer trains during off-peak period to allow passengers to sit further apart from another, making all tickets refundable at no charge for no show commuters
- **TPG in Geneva** has had to reduce the service to continue business because 1/3 of TPG’s employees come from France and the border has been closed unless for essential travel

- The **American Public Transport Association (APTA)** released a planning and response statement for its stakeholders that follows the key points of a report published from the **NCHRP**. The guidelines state some actions that organisations may take (see below), following the same principles with others around the world of social distancing, good hygiene, disinfection and good ventilation.

MEASURES	EXAMPLES
Engineering Controls	Separate people from the contamination (e.g., Plexiglas barriers for drivers and ticket sellers)
Administrative Controls	Training, plans, policies, and procedures that articulate and enforce means to reduce infection
Personal Protective Equipment	Gloves and respiratory protection to reduce contamination
Hand Hygiene	Hand washing, waterless hand sanitiser
Environmental Hygiene	Cleaning (e.g., steam cleaning, disinfectants) of stations, vehicles, and workplaces to minimise surface contamination (fomites)
Social Distancing	Maintain a space of 3-6 feet between persons to minimise contamination from aerosol and droplets (e.g., sneezing and coughing); canceling church, schools, declaring "snow days" when everyone stays home. It is important to note that social distancing decisions must be made in collaboration with all organisations that will be impacted. For examples, if a small town is significantly impacted, a collaborative decision may be made to close schools, shopping centres, churches, non-critical medical facilities and government offices. This in turn would have direct impacts on the extent of need for transit
Ventilation	Control heating, ventilation, and air conditioning to reduce the spread of contamination.



COMMUNICATION

Appropriate level (quality, frequency, and medium) of communication externally and internally has no doubt been a significant aspect to responding to the COVID-19 pandemic. Generally, public transport operators and stakeholders are reporting use of posters and screen displays reminding the public of good personal hygiene practices of hand washing etc.

In **Japan**, for example, posters and station displays are being used to encourage good hygiene practices such as coughing etiquette and regular handwashing in four different languages. In addition passengers are being requested to work remotely and commute during off-peak times through broadcast messaging inside the stations and within train carriages.

In **Beijing**, prevalent social media platforms such as tik tok and Wechat are being utilised to communicate with commuters and employees.

The **Canadian** Urban Transit Association (CUTA) has some important steps listed on its website, many of which are at the stage of ‘updating’ preparedness and response plans. Educating and training employees around good hygiene practices, as well as providing information to customers through various media platforms, is a response similar to what is being seen in various countries globally.

Wiener Linien in Vienna, **Austria** have focussed on not creating a panic for its employees by being vigilant about their internal communication.

CONCLUSION

Public transport operator response to the COVID-19 outbreak depends on the status of the spread within the city of operation and guidelines issued by the wider government and public health authorities. Most operators have responded five-fold, focussing on the safety of their employees and commuters while ensuring there is a business continuity plan in place as public transport remains an essential service in most cosmopolitan cities.

While shut-down of certain public transport services (e.g, cross-border, long-distance) has been seen in some cities, a complete shutdown of a city’s public transport system could be counterproductive in an acute situation such as this. This is because many public health workers and people needing healthcare services may rely on public transport to get around. Service cut downs seem to have been successfully implemented. However for this response to fully achieve its purpose the operators have needed to ensure that the services that are in fact operating are not overcrowded, and are disinfected/sanitised frequently during service.

FURTHER INFORMATION

Michelle Batsas, Executive Director, UITPANZ, International Association of Public Transport (UITP)
michelle.batsas@uitp.org

UITPANZ would like to acknowledge the support of Mark Streeting, Partner, L.E.K. Consulting Australia in preparing this paper for its Australian and New Zealand members.

REFERENCES

1. [Critical preparedness, readiness and response actions for COVID-19](#)
2. [Nonpharmaceutical measures for Pandemic influenza in nonhealthcare settings-social distancing measures](#)
3. [Preemptive low cost social distancing and enhanced hygiene implemented before local COVID-19 transmission could decrease the number and severity of cases](#)
4. [Management of COVID-19-Guidelines for public transport operators](#)
5. [Persistence of coronavirus on inanimate surfaces and their inactivation with biocidal agents](#)
6. [To limit coronavirus risks on public transport, here’s what we can learn from efforts overseas](#)
7. [Far-UVC light: A new tool to control the spread of airborne-mediated microbial diseases](#)
8. [How cities are fighting coronavirus on public transportation; our subways and buses are about to get the delousing of their lives. The Verge accessed on 13th March 2020](#)
9. [Coronavirus: STM steps up cleaning and disinfecting of buses and metros](#)
10. [Coronavirus: TfL trials longer-lasting anti-viral cleaner](#)
11. [Coronavirus in Denmark: These are the recommendations for using public transport](#)
12. [European train operators respond to coronavirus epidemic](#)

APPENDIX: SELECTED GEOGRAPHIES AND RESPECTIVE MEASURES FROM THE ASIA-PACIFIC

REGION ARE NOTED IN THE TABLE BELOW:

	CHINA (BEIJING)	IRAN	KOREA (SEOUL)	JAPAN	SINGAPORE	HONG KONG
Disinfection and sanitisation	<ul style="list-style-type: none"> Staff and commuters must wear a mask High-touch surfaces disinfected every hour as well as at the end of every trip 	<ul style="list-style-type: none"> At the end of every round trip: Disinfection of all internal rods inside train cars Disinfection of all river cab and driving consoles Disinfection of all high-touch surfaces every two hours Dismantling all handles inside the trains Dismantle all public water coolers and water dispensers 	<ul style="list-style-type: none"> Disinfection of train platforms, toilet escalators and other high touch areas 	<ul style="list-style-type: none"> Provision of hand sanitiser for passengers and workers Sterilisation of main stations, trains, conventional services, and high touch surfaces 	<ul style="list-style-type: none"> 2-hourly cleaning of stations' high human contact areas Cleaning toilets 4 times a day Cleaning and disinfecting before each train is launched MRT depot main office aircon to purge air twice a day during office hours 	<ul style="list-style-type: none"> Doubled cleaning frequency Cleaning of every train at every terminus
Workforce monitoring	<ul style="list-style-type: none"> Masks, gloves for workforce in addition to temperature monitoring 	<ul style="list-style-type: none"> Facemasks and plastic gloves distributed to train drivers and stations personnel 	<ul style="list-style-type: none"> Temperature measurements, hand sanitiser, vinyl gloves an masks for staff Staff isolated to be treated by a in-house nurse if presented with COVID symptoms 	<ul style="list-style-type: none"> Compulsory masks for staff who have direct contact with passengers 	<ul style="list-style-type: none"> Temperature monitoring twice a day Track overseas travel of staff & contractors VitaminC tablets issued to employees 	<ul style="list-style-type: none"> Customer-facing staff to wear mask, goggles and protective clothing Temperature monitoring before work
Access Control	<ul style="list-style-type: none"> Temperature checks before entering the stations 	<ul style="list-style-type: none"> Personnel temperature checks before entering the stations and administrative buildings 	<ul style="list-style-type: none"> No information available 	<ul style="list-style-type: none"> Temperature screening of visitors, contractors, with the collection of contact details 	<ul style="list-style-type: none"> Stop visits to Ops control centres & maintenance ops centre Guardhouses- temperature taking; disallow non-essential visits 	<ul style="list-style-type: none"> HSR, WEK and HUH intercity has been closed
Business continuity plans	<ul style="list-style-type: none"> No information available 	<ul style="list-style-type: none"> Planning to service delivery to affected passengers and other intact passengers Plans to provide antiseptic materials to stations, trains and administrative office before COVID-19 out break in unaffected cities 	<ul style="list-style-type: none"> Entire team is evacuated if one staff member from that team is confirmed positive, and the work is continued by another team 	<ul style="list-style-type: none"> Provision of rooms for employees can bring children to work while schools are closed Large scale events postponed or cancelled Remote working and off-peak travelling is recommended 	<ul style="list-style-type: none"> Cancel or defer large scale events Minimise cross team/zone/depot coverage of duties Update & refresh split team plan Allow flexible work arrangements Ensure sufficient supply of masks, and disinfectants 	<ul style="list-style-type: none"> Office staff to work in split teams (A and B) in office and at home

	CHINA (BEIJING)	IRAN	KOREA (SEOUL)	JAPAN	SINGAPORE	HONG KONG
Communication	<ul style="list-style-type: none"> ➤ Posters and screen displays encouraging commuters to practice good hygiene ➤ Signage put up to advice passengers to sit on every other seat ➤ Channels such as tik tok, and we chat used to reach out to commuters 	<ul style="list-style-type: none"> ➤ No information available 	<ul style="list-style-type: none"> ➤ Public announcements are made in four different languages ➤ Posters and screen displays used to encourage good hygiene practices 	<ul style="list-style-type: none"> ➤ Posters and screen displays to encourage good hygiene practices 	<ul style="list-style-type: none"> ➤ High internal communication through social media channels, e.g., workplace@ facebook ➤ Increased external communication through social media and digital screens – debunking fake news, videos on SMRT cleaning efforts, and reminders to commuters about good personal hygiene practices 	<ul style="list-style-type: none"> ➤ High internal communication with staff through meetings, union sessions, newsletters etc. ➤ Posters and screen displays to encourage good hygiene practices