
PANDEMIC RESPONSES FROM THE GLOBAL LIGHT AND URBAN RAIL INDUSTRY

JUNE 2020

FOREWORD

Urban transport networks are a crucial element of our society, helping key workers get to work and back home again safely, and moving people around who need to complete essential tasks. We rightly thank health and care workers, but we should show similar respect and support to those running our transport networks and keeping our supermarkets open. They are the unsung heroes.

We are all learning lessons during this pandemic. With Keolis operations in Shanghai, as early as January our group head of safety began a weekly conference call for all of the cities in which we operate. Countries are obviously at different stages in their timelines in dealing with COVID-19, and that resonates on what are often difficult calls. As the most advanced in this crisis, our Chinese colleagues are sharing invaluable information on how traffic is moving, as well as network data as systems are gradually bringing people back to work.

We're also talking to the various Passenger Transport Authorities we partner with to share how others are dealing with the crisis. Some are finding themselves in an extremely perilous position financially, and with an emergency of this size it all comes down to the response of central governments. Only they have the resources to handle all the risks of lost patronage and lost revenues and provide essential support.

What the future holds depends on governments' resolve. Every country is going to face difficult decisions. However, we don't need to do what we were doing before and we now have a real chance for change. Of course a lot depends on how long the lockdowns last. If countries get back to 'normal' after a couple of months, I'm not sure the reset will happen. But if our travel restrictions last into the summer, this crisis will have profound effects on people's long-term behaviour.

This forced experience should therefore feed into our thinking when we come out of this. We will need to seriously think about the future of our transportation networks and their strategic role. In light rail we have a product that works incredibly well for the communities it serves. It's good for the environment and customers really like it; yet we still don't have a robust enough pipeline of schemes going forward.

Too many cities are having to do a lot of the work on their own with no support from the centre, so maybe this is an opportunity to take the critical situation being faced today to see how we can make ourselves stronger tomorrow.

Alistair Gordon
CEO, Keolis UK

INTRODUCTION

The spread of the novel coronavirus SARS-CoV-2 and its associated disease (COVID-19) into a global pandemic has evolved rapidly during the first half of 2020, impacting every facet of life – public transport is no exception.

As previously unimaginable steps taken by national governments resulted in large-scale lockdowns and quarantines, ridership figures have fallen to unimaginably low levels. Systems have performed heroically in the most difficult of circumstances as associated revenues have fallen, yet in almost all cases they have continued to operate, serving key workers and those performing the tasks most essential to the functioning of society.

The long-term effects are still unknown, but in this paper we will set out some of the responses from authorities and operators across the globe in an attempt to share best practice and lessons. We will also highlight a few key areas for consideration as we all seek to rebuild for the future.

The data within this paper is taken from a wider range of sources, including:

- *Tramways & Urban Transit* (the world's leading monthly publication dedicated to light and urban rail)
- Published guidelines and papers from transport associations, trade bodies
- Local and national government updates
- Local and national news reports
- One-to-one interviews with operators, authorities and supply chain partners around the world.

The key sources are listed alphabetically at the end of the paper.

THE GLOBAL POSITION

LIGHT AND URBAN RAIL NETWORKS

Falls in passenger numbers of between 60% and 95% seen between February and June 2020 have reduced tram, metro, train and bus services to serving all but essential travellers as countries have increasingly adopted 'lockdown' conditions as imposed a range of travel restrictions.

The worst-hit operators are obviously those serving cities with the strictest travel restrictions, and the timelines vary, but almost all reduced service provision to weekend timetables from mid-March. Gradually they have increased services as economies have 're-opened'.

In extreme cases, services were suspended entirely with some networks placed into temporary hibernation. For example, India's strict lockdown measures saw its metros closed from 26 March – reports suggest a late June reopening – with only essential freight services allowed on the nation's rail networks.

In the US, San Francisco's Muni light rail system closed in its entirety on 30 March; QLINE streetcar services in Detroit and El Paso Streetcar services were also temporarily suspended at the end of March – no re-opening dates have yet been announced.

The 'recovery' timelines have also varied by nation, with the Chinese city of Wuhan – the city where the outbreak began and public transportation services were closed on 23 January – reintroducing service on around 30% of its bus network from 25 March and six metro lines on 28 March. New safety measures have been implemented, such as a requirement for passengers to register their names and scanning a QR code before travel, and undertaking temperature checks before entering stations. Similar models have since been employed in other cities.

A sample of the major city and city region networks and their return to services approaching normal levels – while maintaining social distancing – are listed below:

• Vienna (Austria)	13 April
• Antwerp (Belgium)	20 April
• Dusseldorf (Germany)	27 April
• Berlin (Germany)	4 May
• Brussels (Belgium)	4 May
• Milan (Italy)	4 May
• Amsterdam (Netherlands)	11 May
• Zurich (Switzerland)	11 May
• Prague (Czech Republic)	16 May
• Jerusalem (Israel)	17 May
• Dubai (UAE)	13 May
• London (UK)	18 May
• Tyne & Wear (UK)	18 May
• Kiev (Ukraine)	23 May
• Paris (France)	25 May
• Strasbourg (France)	26 May
• Zaragoza (Spain)	1 June
• New York (USA)	8 June

As nations look at relaxing travel restrictions, more and more operators are gearing themselves up to increase services to accommodate social distancing.

THE SUPPLY CHAIN

Logistics were disrupted during the height of the pandemic as factories closed, workforces were reduced and border restrictions were imposed. Competition for vital cleaning and sanitisation products and protective equipment also saw shortages for some operators. The situation improved as supply chains stabilised while national and regional travel restrictions were eased, although this is still not back to pre-pandemic levels in many areas.

In our own survey of 104 companies across the global supply chain during March and May 2020, over 60% said that they had furloughed staff or placed them on temporary leave; 80% said that they had cut all non-essential spend until lockdowns were released; and 40% said that they lacked confidence in a return to 'business as normal' before the end of the year.

Key industry events have either been cancelled or postponed, and confidence in travel and mass gatherings will also take time to rebuild. For example, InnoTrans – the world's largest rail technology fair – which was next due to take place in Berlin on 22-25 September 2020, has been postponed to 27-30 April 2021. The postponement follows a ban on events attracting more than 5000 people until 24 October, imposed by the Berlin Senate in order to limit the spread of coronavirus.

OPERATIONAL SAFETY AND SECURITY

Although national safety restrictions and guidelines varied by their implementation, from our survey of authorities, operators and trade associations in March 2020, the immediate responses and most common approaches taken are as follows:

- Development of business continuity plans to deal with scenarios resulting from staff shortages due to illness and self-isolation
- Support management, administrative and support staff to work from home where possible, with daily video conferences replacing face-to-face meetings to address updated guidance and key issues
- The introduction of online training sessions and guides for all affected staff
- Adjustment of service frequency to meet passenger demand/expectation
- Informing all driver-trained staff they may be required to maintain service
- Enhanced sanitisation of vehicles and stops, with regular cleaning of frequently-touched surfaces such as doors, handrails and ticket vending machines etc throughout the day
- Reviewing revenue protection measures to reduce contact between staff and customers
- Detailed review of appropriate cleaning products and hygiene processes
- Personal protective equipment for all customer-facing staff
- Alcohol-based sanitisers for duty staff and cleaning kits for drivers' cabs at the start and end of shifts
- Closure of face-to-face customer service centres, while maintaining telephone call centres, websites and social media updates
- Limiting the number of passengers per vehicle, with directions to sit diagonally at a 2m distance (this varied due to local guidelines, with some countries recommending minimum distances of one or 1.5m)
- Limiting staff numbers in depots and control centres, minimising personnel overlap and rotating teams to limit transmission risk and managing access points
- Distribution of information on health and safety and service alterations, using physical and digital means as required, updated regularly as guidance from government, emergency services and health authorities change
- Installation of floor markings to give guidance on social distancing at stops and stations
- Regular situation updates with local, regional and national authorities to determine the level of services to be maintained – and in the case of a worsening situation, at what point services should stop entirely
- Signage and social media campaigns to promote safe distancing, especially onboard LRVs
- Cancellation of special events and all non-essential activities.

Where possible/appropriate:

- Rear door boarding only for public transport vehicles
- Pedestrian crossing and door opening/closing buttons automated or controlled remotely
- Removal of cash handling with passengers encouraged to undertake contactless payment
- Canteens separated to single tables to maintain local social distancing guidelines, with staggered break periods
- Changing the configuration of air conditioning and heating systems, with additional filters to ensure the circulating air contains fewer potentially harmful particles; changing filters more regularly
- Financial incentives such as reimbursing or pausing monthly ticket subscriptions
- Complementary travel passes for health and social care workers.

PREVENTATIVE MEASURES FOR PASSENGERS

The debate around requirements for face coverings on public transport has been a controversial one, with many national guidelines evolving between March and May in response to the spread of the virus and emerging scientific and medical evidence.

The Czech Republic was one of the first nations to introduce such guidelines, with face coverings becoming a requirement for all public transport users in early March. Face coverings also became mandatory on public transport in Italy, Spain, Germany, France, Russia and US and the UK at various times from mid-April onwards.

To ensure compliance, operators across the US, Europe and Asia began distributing free face coverings as normal timetables resumed, reinforcing the message with additional messaging onboard vehicles and at stations and key interchanges. This was co-ordinated with social and traditional media campaigns.

In the UK, the use of face coverings on all forms of public transport became were to be a condition of travel from 15 June with volunteer 'journey makers' employed to reinforce their use. In an announcement on 4 June, Transport Secretary Grant Shapps said that "challenges" on public transport were "increasing" as more people went back into work and education, adding that "that doesn't mean surgical masks, which we must keep for clinical settings. It means the kind of face covering you can easily make at home."

In Paris, RATP began trialling the integration of Artificial Intelligence (AI) tools into security cameras on the Métro to collect data on which passengers are adhering to the measures. A three-month trial began in May, using technology developed by French startup DatakaLab. Collected data is not designed to identify or punish those not wearing face coverings, but instead to generate anonymised statistical data that will help anticipate future outbreak hotspots.

The introduction of such technology is a controversial issue. The spread of AI-powered surveillance and facial recognition in China has concerned many privacy advocates, but given pandemic conditions authorities many feel that public health takes priority over dangers to individual privacy. It is suggested that in countries where the use of masks and face coverings is unfamiliar, such technology can help authorities understand whether their messaging is having the desired effect.

As the guidance surrounding face coverings evolved, many countries implemented fines (for example, €135 in France, \$100 in Moscow, with varying levels elsewhere) for anyone found not wearing one on metro, trams, train and bus services. In some countries this also applies to taxis and ride-sharing services.

As well as the compulsory use of face coverings, on 19 May the Government of Singapore's multi-ministry COVID-19 taskforce announced another interesting measure to limit the spread of infection – no talking on public transport. National Development Minister Lawrence Wong said: "We fully expect it will be difficult to maintain physical distancing in public transport during the peak periods... so we will focus on other safe management methods and that will include requiring commuters not to speak to one another or to speak on the phone. This will avoid spreading droplets while they are in an enclosed space and we can keep public transport safe."

THE FUNDING CRISIS

Public transport ridership has been decimated as the coronavirus pandemic has spread around the world.

Farebox revenue contributes anywhere between 30% and 90% of the operational costs for public transport systems. Yet, as operator and authority income has dwindled to near nothing (many have chosen to give free passes to health and care workers, reducing income even further), the costs of recovery could be even greater as services return to 'normal' levels but with patronage still be well below pre-lockdown measures due to social distancing and continuing travel restrictions.

Responses from local and national authorities to the crisis have been diverse. Some have acted quickly and decisively, underwriting essential services and giving longer-term certainty to operators. Due to the complexity of funding methodologies or the sheer weight of responsibility placed on overburdened government departments, others have been slower to react with exact figures related to emergency funding grants difficult to obtain. A few examples of the responses from around are given below:

USA

Due to the devolved nature of the US Federal system, each state formulated its own travel restrictions based on central advice, with 32 out of 50 states locked down by the end of March. Nevertheless, the Government in Washington, DC moved swiftly in offering its support, signing into law the \$2.2trn Coronavirus Aid, Relief and Economic Security (CARES) Act on 27 March. This massive stimulus package confirmed \$25bn to support transit agencies.

The largest economic rescue deal in US history, the CARES Act includes over \$110bn in grant funding, loans and other direct relief to transportation sectors severely affected by COVID-19. The support package is designed to offset either capital or operating losses, including direct costs such as additional cleaning or the purchase of personal protective equipment; farebox losses and lost income.

To help bridge this gap, the American Public Transit Association (APTA) has asked Congress to provide an additional \$23.8bn in funding relief as a matter of urgency. "The \$25bn provided by the CARES Act was a lifesaver for public transit services, but we now have a more complete picture of the extraordinary and devastating impact," said APTA President & CEO Paul P. Skoutelas. "These additional funds are critical to continue serving essential workers and make sure that we can help get our country back to work and to other activities that are so important for our economic recovery."

UK

On 23 March it was confirmed that existing heavy rail franchise contracts would be suspended for at least six months, transferring revenue and cost risk to the Government with operators paid a management fee. Support packages were also agreed with bus operators to support key worker and essential travel.

After weeks of negotiations, on 1 May the Department for Transport (DfT) agreed similar packages for five tramway and light rail systems in England (Greater Manchester Metrolink, Tyne and Wear Metro, Nottingham Express Transit, West Midlands Metro, and Sheffield Supertram), with £30m committed to help close the financial gap caused by the coronavirus crisis.

The agreements for English networks, back-dated to March, would support the five systems for an initial 12 weeks. A further £29m was committed on 23 May, part of a wider £283m local transport package, as the UK Government announced that it wanted to see public transport provision increase – notwithstanding its message that such modes should only be used in the absence of alternatives.

Emergency funding for Edinburgh Trams and the Glasgow Subway comes under Transport Scotland (TS) and discussions are understood to be underway between TS and the City of Edinburgh Council and Strathclyde Partnership for Transport (Glasgow) as reserves for both face significant long-term pressure.

London Trams, the Docklands Light Railway and London Underground fall under the remit of Transport for London (TfL) and as such a separate agreement was agreed as TfL's financial losses are far greater and its status differs from other urban authorities.

On 14 May, the UK Government agreed a grant of £1.095bn and a loan of £505m from the Public Works Loan Board to support operations until 17 October. Back-dated to 1 April, the agreement required TfL to restore services to normal levels to help passengers follow social distancing guidelines.

Under the terms of the agreement, a London COVID-19 taskforce with Government and TfL representatives will oversee operational decisions during the crisis, promoting traffic management and active travel alternatives. There is also to be an “immediate and broad-ranging” review of the authority’s financial position and structure. Two Government representatives will be allocated to TfL’s board, its finance committee, and its programmes and investment committee.

Since pandemic-related travel restrictions began, TfL has seen a 95% reduction in Underground journeys, an 85% fall in bus travel and a 90% drop in income. As a result, it predicts a funding shortfall of around £3-4bn. The funding package also includes the Mayor agreeing to increase fares in 2021 by RPI+1%, ending a four-year fares freeze.

Describing the deal as a “sticking plaster”, London Mayor Sadiq Khan emphasised that London was “the only major city in western Europe that hasn’t received direct government funding to run day-to-day transport services” in recent years, and with fares revenue down “there simply isn’t enough money coming in to pay for our services”, adding that “over the next few months we will have to negotiate a new funding model, which will involve either permanent funding from government or giving London more control over key taxes so we can pay for it ourselves – or a combination of both.”

EUROPE

One example of early intervention came in Lower Saxony (Germany), where an emergency fund was announced in March to ensure the liquidity of public transport companies, bringing forward financial aid for the rest of 2020, a total of €67.5m, to aid cashflow and prevent bankruptcies.

A federal rescue package for local transport worth €2.5bn – part of a wider national stimulus deal of €130bn for 2020-21 – was announced on 3 June. The Verband Deutscher Verkehrsunternehmen (VDV) welcomed the funding, but emphasised that it is vital that federal states contribute the same amount: “The public transport rescue package, unanimously approved by the federal states at the meetings of the ministers of transport and finance ministers and which is now half-financed by the federal government, is imperative,” said VDV president Ingo Wortmann. “We assume that the Länder (states) will now very promptly initiate an analogous financing of the other half from their own budgets.”

The rate of VAT on train fares in Germany will be cut from 7% to 5% from 1 July to stimulate demand for rail travel, while the general rate of VAT will be reduced from 19% to 16%.

On 14 May, Italy’s Ministry of Infrastructure and Transport launched a multi-billion Euro fund to support local and regional public passenger transport through compensation payments for the reduction in fare revenues between 23 February and the end of the year. This is calculated from the average farebox income recorded over the same period in 2019.

Data released by the International Association of Public Transport (UITP) on 13 May suggests a €40bn shortfall in European operator revenues by the end of 2020 as a result of pandemic travel restrictions and the costs of implementing associated safety measures. In a letter to the Presidents of the European Commission, European Council and European Parliament, 80 city transport leaders and manufacturers – mobilised by UITP – called upon European institutions to prioritise urban transport in the economic recovery programme from the COVID-19 crisis.

Germany’s public transport sector is expected to report losses of €5-7bn in 2020, according to VDV figures, with French operators expected to see farebox losses of more than €5bn over the same period.

In Spain, city mayors and leaders of the autonomous regions have petitioned the national government for direct emergency funding packages to get public transport authorities through the crisis.

Amongst the other data submitted by UITP members:

- **Netherlands:** Urban and regional public transport operators project losses of €0.8-1bn in 2020
- **Spain:** Public transport operators are currently losing €250m/month in fare revenues
- **Portugal:** Public transport operators are currently losing €80m/month in fare revenues

- **Sweden:** Public transport operators are currently losing around €100m per month
- **Finland:** City transport operators expect €192m in losses by the end of the year, with the capital, Helsinki, expected to account for €150m of this figure
- **Norway:** Public transport revenue losses of €625 by the end of the year
- **Italy:** Farebox losses of €1.5bn shortfall in 2020, with a 50% reduction in passenger numbers.

UITP suggested that as ridership may not recover for two years, exceptional measures are needed at EU level, deployed rapidly to limit the long-term economic damage of the crisis. In its letter to EU leaders, the association said: “It is evident that receiving not more than 10% of ticket revenues while maintaining up to 100% of the service is not financially sustainable.”

ASIA

While the financial impacts on public transport operators in the MENA and wider Asian regions are less clear, what is known is that around 20% of the total budget of the Government of Dubai is allocated to the Roads & Transport Authority that manages the city’s tramway and metro systems, emphasising the importance of infrastructure development to the Emirate’s future.

Dubai’s tramway and metro networks closed to passengers from 5 April, with a phased reopening beginning on 26 April and returning to ‘full’ service on 13 May.

Metro operators in India – public and private – have accumulated losses of up to INR70bn up to the start of June. Delhi Metro Rail Corporation (DMRC), which operates the country’s largest metro, was reporting an average of INR90m in fare revenues each weekday in 2019, excluding earnings from advertising, property revenues, feeder buses and consultancy.

AUSTRALASIA

Although specific figures for support packages in the transport sector are unconfirmed, on 12 May the Morrison Government confirmed AU\$259bn in fiscal and balance sheet support, equivalent to around 13.3% of annual GDP. Direct fiscal measures are equivalent to around 6.9% of GDP.

Both State and Federal grants for public transport operators, which had seen significant financial losses as a result of the pandemic, were under discussion as of the start of June.

Metro and tram operators have been running broadly normal timetables despite a 70-90% drop in passenger numbers.

OPERATOR EXPERIENCES

In collaboration with colleagues at *Tramways & Urban Transit* magazine and its contributors, Mainspring gathered the experiences of authorities and operators around the world in March and April. Covering light rail and metro operations, excerpts from a few of their responses are included below:

UK Blackpool

Following a drop in patronage of around 80% and a halving of the service (from 15 minutes to 30 minutes) from 22 March, the decision was made to close the tramway completely after service on 28 March.

As Blackpool Transport Services also operates a bus service that runs parallel to the tramway, peak services on this route were enhanced to cater for key workers and essential travel. Free bus travel was also offered for health and care workers, with a £1.50 flat rate introduced for other passengers.

All heritage tram operations – an important source of revenue – have been cancelled until further notice, and the tramway’s main depot has been closed with enhanced monitoring and regular security patrols.

“Tramway staff have been furloughed in-line with Government guidelines, but they are all on 48 hours’ notice to return as and when the passengers re-appear. Two are still working to look after essential overhead line maintenance.”

Ian Middlemiss: Tramway Manager, Blackpool Transport Services

Edinburgh

Service was initially halved, with trams running a 15-minute service. From 12 April this was reduced further, operating every 15 minutes until 19.30, then every 30 minutes until the end of the day. Services were gradually restored on a 05.00-0.00 timetable from 1 June.

Over half of the systems staff were entered into the Government’s job retention scheme in April for an initial period of two months.

“Patronage will bounce back, but we could well see a fundamental shift in travel behaviour once the pandemic is over. Working from home may become more of a norm and, for example, discretionary travel demand outside of peak hours could grow as people re-think their travel options.”

Lea Harrison: Managing Director, Edinburgh Trams

London

Providing public transport across all modes in London costs around £600m per month. Transport authority Transport for London (TfL) ‘furloughed’ 7000 staff (25% of its total) from 27 April, allowing it to access the Government’s Job Retention Scheme, saving £15.8m a month.

Across tram, light rail, bus and overground rail services, social distancing measures are in place and where operational staff are in close contact with customers, staff are required to wash their hands as soon as possible. Hand sanitiser and gloves are also made available to all staff who request them.

Services increased on all modes from 18 May including: Docklands Light Railway (80% of normal services, providing approximately ten-minute headways); London Trams (95% of normal services with ten-minute headways Wimbledon – Elmers End/Beckenham Junction, and seven-minute headways New Addington – Central Croydon); and the Underground (75% of normal services).

USA San Francisco

The Muni light rail system, which usually carries 175 000 passengers/day, closed on 30 March with bus substitution services in place from the following day. The MTA said: “This is a unique opportunity to improve the state of good repair of our system and come out of this shutdown stronger than ever,” adding that closing the seven rail lines would allow more staff to focus on works on the network’s 151 vehicles, 116km (72 miles) of track, three tunnels, nine subway stations, 24 surface stations and 87 surface stops.

Denver

All staff and riders were mandated to wear face coverings from 24 April. To address shortages of medical-grade face masks – prioritised for healthcare workers – RTD employees have utilised downtime to make face coverings for distribution to fellow mechanics and maintenance crew members, following federal and state health safety recommendations for behaviour outside the home.

Los Angeles

Face coverings were mandatory from 11 May as services were reduced to every 12 minutes during the peak (06.00-09.00) and 20 minutes at other times.

“Services on the Metrolink Light Rail System have been reduced in accordance with ‘Safer at Home’ emergency orders, and employees are instructed to work from home where possible. Sanitation operations have been strengthened with hand sanitiser dispensers installed at major transit hubs, and we are exploring equipping buses and trains with these dispensers.”

Dave Sotero: Communications Manager, LA Metro

New York

The MTA ended overnight Subway operation from 6 May to allow intensive disinfecting of its trains and stations as part of its COVID-19 response. Replacement bus service was provided for the affected lines.

The agency’s board also ratified a range of 41 family benefits agreements that include a \$500,000 payment to the spouse, beneficiary or estate of any MTA worker who dies as a result of COVID-19, as well as providing three years’ health insurance for dependents up to the age of 26.

Full Subway and bus services resumed on 8 June as the city entered Phase 1 of its reopening after a mandated ‘stay-at-home’ order. The MTA still called for only essential journeys to be made, and for face masks to be provided to passengers where possible. While their use is mandatory, MTA staff and the city’s police said they would not support sanctions for those who did not comply.

Washington, DC

During the pandemic the Metro has operated 05.00-21.00 with Red line trains every 15 minutes and a 20-minute service on other lines. The first and last cars of all trains are closed to the public to protect drivers; 19 of the 91 stations have been closed.

The Washington Metropolitan Area Transit Authority (WMATA) is taking advantage of reduced ridership to accelerate its \$300-400m platform rebuilding programme, extending its summer shutdown to nine stations on the Orange and Silver lines. The project is part of a three-year plan to rebuild platforms at 20 stations.

EUROPE

Brussels (Belgium)

A new timetable for weekdays and another for weekends was introduced in March (returning to more regular timetables in early May), with priority given to lines that run close to a hospital. Staff have been redeployed to clean all vehicles after each service, with additional resources at certain route endpoints.

“The first door is not accessible on our buses and some types of trams, and each driver has a kit to disinfect their cab at the end of their shift. While cleaning products were in short supply, we have a stock and a daily update is done with a redistribution of products organised every day.”

Jan Pannus: Director, Tram Operations, STIB-MIVB

Bucharest (Romania)

As transport authority STB reduced its services by 40% in March and April, 20% of the company’s employees (except for drivers) were placed on leave with all others reduced to a four-day week, with a corresponding reduction in salary.

On the separately-operated metro, a decrease of passenger traffic (50%-60%) saw increased headways to maintain safe distancing. All holiday requests between March and May were approved.

“Metrorex has asked the sanitation companies to intensify their cleaning actions. Using 3D nebulisation, subway trains are disinfected using a portable device patented and manufactured in Romania. This is one of the most efficient forms to sterilise every corner of the wagon and also the ventilation systems.”

Mariana Miclăuș: General Manager, Metrorex

Munich (Germany)

In response to social distancing concerns, operator MVB (Münchner Verkehrsgesellschaft) adopted a temporary software solution from April that facilitated drivers signing on and off from the cab of their vehicle rather than using the communal facilities of the crew room.

Paris (France)

Fifty Paris Métro stations were closed during March and April (those without an interchange to another line). Trains ran from 06.00 -22.00 with a 30-50% timetable. Trams ran from 06.00 to after midnight, but with 30-50% operation. RER services were provided 06.00-22.00 with special timetables, mostly offering a 30% service. Service levels returned to near-normal levels across all modes from 25 May.

Prague (Czech Republic)

All public transport vehicles were disinfected daily and all stations wet-cleaned regularly from the start of March. Two new types of nanopolymer disinfectants are being trialled to destroy bacteria, viruses and other micro-organisms. The tests are being undertaken on two trams and one bus, and both products have health certificates from the National Institute of Public Health and meet the relevant Czech and European standards. They have been shown to be effective for up to 21 days, while the effectiveness of conventional disinfectants is in the order of tens of minutes or hours

These products create an invisible 'self-cleaning' hydrophobic layer that is anti-bacterial, and respectively anti-viral. In addition to their durability, they are non-flammable, water- and alcohol-soluble, colourless, fragrance-free, do not irritate eyes or mucous membranes or cause allergic reactions.

"We are doing our best to run the shortest intervals possible to avoid overcrowded services and all passengers must cover their nose and mouth before entering DPP premises and vehicles. It does not matter if they use a face mask, a bandana or scarf, the most important thing is to be kind and courteous to each other and especially drivers. Front doors of almost all vehicles are closed, with rear boarding only."

Jiří Došlý: Head of Corporate Affairs, Dopravní podnik hl. m. Prahy

Stuttgart (Germany)

SSB (Stuttgarter Straßenbahn) adjusted staff rosters to the changed patterns of the timetable from March; some personal requirements were given for additional days off – for example to care for children – so this gives some relief in terms of counterbalancing the reduction in 'hours in duty'.

"To communicate with passengers we are using social media channels, our website, announcements at stations and short messages on platform displays. We are aiming for maximum transparency in our internal and external communication."

Reinhold Schröter, Operations Manager Bus and Tram, Stuttgarter Strassenbahn

Zaragoza (Spain)

From March 30 all services are made of double-tram trains to maintain social distancing. Frequencies were reduced to 10 and 13 minutes in the weekday peaks, and 30 minutes on Saturdays and Sundays.

Trams have been segmented, with clear signage on which seats can be used by passengers and markings on where to stand, to guarantee compliance with the maximum capacity of each type of vehicle and to prioritise the safety of both users and employees. Each five-module tram has therefore now been limited to 70 passengers. Normal timetables returned from 1 June.

"The impact of the coronavirus in Zaragoza has not been as hard as in other Spanish cities, like Madrid. However, the city council has decided that all healthcare employees can now travel for free by tram and by bus, as well as those who work in nursing homes."

Marcos Espanol: Head of Communications, Tranvía Zaragoza

ASIA

China

The pandemic has also seen the implementation of some innovative responses, including the use of automated and digital solutions. Since the release of the strictest lockdown measures, some Chinese metros are trialling a 'subway by appointment' system to prevent overcrowding. In Beijing, commuters are now using smartphone apps to book their entry to the Chinese capital's busiest subway stations during rush hour. Once signed up to the app, users are given a QR code that is valid for a 30-minute window for their journey.

In Hong Kong, in partnership with biotech company Avalon, MTR Corp. has deployed robots to sterilise its metro trains and office buildings. The robots spray an atomised hydrogen peroxide solution to penetrate gaps that may be difficult to reach during manual cleaning; they can be preset with a floorplan of the designated area, or remotely controlled with a mobile device from up to 20m. It is claimed that it takes around four hours to deep clean an eight-car train in automatic mode.

Israel

In Jerusalem the light rail operating schedule was changed by law to end on weeknights at 20.00 instead of 00.00 in March, with no service on Fridays, Saturday nights after Sabbath, or on days preceding holidays. The recognition that the light rail service should remain operational to this extent can be attributed to the unique status the JLRT has achieved and its relationship with Government stakeholders.

“As the situation worsened, more stringent measures were enacted for the Passover holiday, restricting certain Jerusalem neighbourhoods and mandating limitations on movement between them. A closure was ordered for five of the downtown Jaffa Road stops, with JLRT drivers ordered to essentially bypass this central part of the line. From 20 April, these station closures have just been lifted.”

Reuven Levy: Senior Manager and General Counsel, Connect Jerusalem (Light Train)

AUSTRALIA

In Melbourne, Yarra Trams has restricted passenger access to the first row of seats on trams and has sealed off its drivers' cabs. As national social distancing rules require a minimum of 4m² per person, Yarra Trams installed signs telling commuters they cannot sit in the front row to "help keep your driver on the road", instead instructing them to only sit in forward-facing seats.

Tram crossings have been automated from 05.30 to midnight to remove the need to press crossing buttons and ensure safe hygiene measures.

LOOKING TO THE FUTURE

The ability for urban transport networks to 'bounce back' will depend on many factors, many of which are still uncertain as countries continue to evaluate the complex social, economic and environmental impacts of the ongoing global pandemic.

Amongst many challenges faced by the sector, three key considerations need to be addressed to safeguard its long-term future: financial, operational and reputational. Clear and consistent approaches to policy and strategy will be required for each, at both at national and local levels.

THE FINANCIAL CHALLENGE

With ridership still at a fraction of pre-pandemic levels, this is arguably the most significant issue. As potential passengers are still being encouraged to either 'stay away' or limit their use of public transport, cash reserves dwindle further as authorities and operators return to regular timetables but with fewer passengers to meet overheads.

While short-term relief packages and stimulus initiatives are critical, policy-makers should at the same time focus their efforts on what will almost certainly be a number of difficult years ahead. Suggestions for stabilising future income streams and supporting the future of urban transportation services have taken many forms, although there are few certainties as to how cities are to weather the crisis longer-term.

In the US, surveys undertaken in April and May from the nation's largest transit agencies revealed that total losses may reach \$48.4bn in 2020-21, with a further need to reduce capital spending by \$8.4bn in 2020 and \$7.8bn in 2021. Such reductions could result in the loss of more than 30,000 construction jobs due to project delays and cancellations.

In its open letter to European political and economic leaders on 13 May, the UITP said: "Public transport is essential to reduce traffic congestion, which costs the European economy 1% of GDP, €100bn per year... urban and local public transport services in Europe also contribute between €130-150bn per year to the economy. This is 1-1.2% of the GDP.

"The COVID-19 pandemic has demonstrated that urban public transport is essential and a common good we have to preserve. The sector is strongly inter-linked with many other economic sectors, and develops economic benefits that are five times higher than its own turnover.

"Moreover, the crucial objectives of the Green Deal will not be met without a clear priority given to public transport. Consequently, public transport and local mobility systems are vital to the recovery of the European economy, both in the short- and long-term."

An interesting trend reported by the Italian public transport association (ASSTRA) is an increase in fare evasion since services returned to normal timetables. This may be an unwanted effect of social distancing as revenue protection officers are less able to check the travel passes of those onboard vehicles. With safe distancing requirements of one metre in Italy, the association has demonstrated that the maximum capacity of trams and LRVs has reduced by 80% and metro trains by 75-85%.

In the UK, on 15 May the Urban Transport Group that represents English city region transport authorities, wrote to the Government calling for a need to move to integrated support for the industry, arguing that "we need to move away from the fragmented approach to funding public transport experienced during the lockdown phase. An approach that has been both modally compartmentalised and on a 'too little too late' basis (with the exception of national rail services, which had all its costs covered on the day lockdown was announced)."

As the crisis slowly resolves itself we face a global economic depression of the magnitude unseen for generations, leading to significant increases in public debt and unemployment. These impacts will be experienced unevenly, so the biggest policy challenges for the coming months will be how to effectively integrate post-pandemic strategies with the urgent need to further accelerate carbon reduction strategies.

Strong and forward-looking leadership can exploit the fact that the benefits of infrastructure projects extend across generations. Powerful and persuasive arguments centre around 'Build back better' strategies. This approach is gathering momentum amongst politicians and industry in equal measure,

suggesting that investment in sustainable transport, digital infrastructure and renewable energy policies are preferable to the more obvious 'growth at any cost' policies, that carry with them a risk of raising inequality and reducing social mobility for those who need it the most.

In any case, the stated ambition of many governments to 'Build back better' need to be made both explicit and transparent, rather than piecemeal national or regional responses.

As an example of the environmental improvements seen during our periods of enforced lockdown, data from the UK's National Centre for Atmospheric Science (NCAS) from late March showed marked reductions in nitrogen dioxide (NO₂) and PM2.5 particulate matter in many cities as industry slowed and forced travel restrictions took effect.

The NCAS said that in an unexpected way, the pandemic offers something of a policy experiment to test realistic targets for clean air: "We're essentially looking into the future when we don't have diesel cars because we plan to take them off the roads. This summer may tell us what level of PM2.5, for example, is likely to be achievable in big cities such as London or Birmingham."

Such data mirrors trends seen around the world as people have spent less time in cars, offices and factories. Monitoring stations in Hong Kong recorded PM2.5 levels down by 32% in February, while the larger particle pollutant PM10 fell by up to 29%; nitrogen dioxide (NO₂) was reduced by up to 22%.

In France, the opportunity has been taken to reduce modal competition and improve the efficiency of the overall transportation network at the same time. The €7bn state aid package offered to airline Air France-KLM included a condition that the carrier limit compensation with domestic rail services.

Going forward, the airline will not be allowed to carry domestic passengers on flights lasting less than two-and-a-half hours on routes where there is a clear rail alternative, and it has also been set a target of reducing its CO₂ emissions by 50% by 2030.

As part of its stimulus package to kickstart Germany's post-Covid economy, policy-makers have included initiatives such as a requirement for petrol stations to include more electric vehicle charging points to ease potential buyers' range anxiety, and an enhanced €6000 subsidy for new EV purchases. These measures are part of a €2.5bn programme that also includes further grants for vehicle battery development.

OPERATIONAL CHALLENGES

Another key facet in our recovery is how quickly travel restrictions are lifted, how these measures are practically applied, and how long that wider social distancing measures remain in place. There will be a significant difference in the fortunes of urban transit systems if lockdown measures and strict social distancing measures are continued into August or September, instead of June or July.

The operational challenges associated with ensuring the safety of staff and passengers as ridership climbs are considerable. The availability of furloughed or quarantined employees to return to work, not to mention subcontractors and service providers, is obviously a key factor. Likewise, maintaining social distancing as stops, stations and interchanges get busier, and introducing complementary measures where this is difficult to guarantee, are vital in restoring trust.

Given that transmission of the coronavirus is more prevalent in enclosed spaces, and where people are in close proximity for periods of more than 15 minutes at a time, this becomes an especially difficult obstacle for mass transit. It is also one which requires consistency, clarity of message and adaptation to local circumstances.

Enhanced cleaning and sanitisation regimes are already in place with almost all transport operators around the world. As these continue they bring with them both added time and cost to daily operations. Employee virus testing and robust health and well-being policies are required to manage safety and ensure that staffing is at the levels required to meet the needs of growing levels of people requiring reliable, safe and secure access employment, education and healthcare facilities. In time, as leisure and social destinations reopen to the public, travel numbers will almost certainly increase further.

Crowd control systems require detailed planning, validation and enforcement, and the introduction of technological measures such as temperature screenings at urban transport hubs will increasingly become

commonplace. Shifts to digital ticketing initiatives, such as the use of mobile ticketing and QR codes – were introduced quickly in many cities as lockdown measures were introduced to reduce passenger contact with operational staff and ticket machines, and such programmes are likely to continue.

Construction work sites will also take time to recover to pre-pandemic levels of efficiency as supply chains have been disrupted and staffing levels have been reduced. This will likely lead to delays where timescales are tight and contractual modifications are required. Major project works around the world began again from mid-April, albeit at a reduced level.

RESTORING CONFIDENCE

With a reduction in services, more people have been choosing active travel modes such as walking or cycling for local journeys.

Cities around the world have reallocated road space with pop-up cycle paths, widened pavements, reductions of traffic speed limits and removed parking facilities. While such measures are easy to apply when there are no other options for travel and during periods of pleasant spring and summer weather, it will be interesting to see if they are continued as the seasons progress and mass transit options reappear.

Restoring passenger confidence will also require targeted local marketing and advertising campaigns. In Prague, DPP is spending CZK6.5m to restore trust in the city's metro, tram and bus networks. This is particularly relevant for a city operator that brings in an estimated CZK1bn from tourist revenues.

In the UK, research undertaken in April by international transport consultancy SYSTRA suggests that the number of journeys made by public transport could fall by as much as 20% after travel restrictions are lifted. In its survey of 1500 adults, commuter Tube and bus use in London could fall by as much as 40% from pre-lockdown levels; rail use across the country could fall by 27%; and 20% of respondents said they will use public transport less.

Of those expecting to reduce their use of public transport, 49% say they will do so for fear of getting ill; 24% will work from home more; 14% will find alternative means of travel; and 67% believe virtual meetings will replace some or all business meetings.

In a survey of members, the Canadian Urban Transit Association (CUTA) reported that around 25% of passengers claimed they would not be fully comfortable returning to public transport until a vaccine is found. That said, CUTA members also believed that a 50-75% return in ridership is achievable through the clear demonstration by operators of enhanced cleaning and sanitisation measures and the implementation and enforcement of social distancing.

Managing reduced capacity on our transportation networks – and how this is clearly communicated to intending passengers – is also related to the operational challenges. At 1.5-2m social distancing and in denser urban geographies, it won't take long for vehicles to reach capacity, so nuanced and localised messaging will be essential. This could include a communications policy that encourages people to stagger their journeys, or to suggest alternatives – ideally active travel modes – or not to travel at all.

Careful and considered messaging at a central government level will be key in helping to restore confidence; reducing anxiety for those returning to work, education and leisure.

Updated recommendations from the US Centers for Disease Control and Prevention which encourage those returning to work to avoid public transport in favour of private car use has therefore drawn criticism from the nation's transit operators.

The guidance for employers, released on 28 May, stated that “if feasible, offer employees incentives to use forms of transportation that minimise close contact with others (e.g. biking, walking, driving or riding by car either alone or with household members).”

APTA President & CEO Paul Skoutelas labelled the CDC advice as “misguided”, adding that it would “severely hamper our nation's economic recovery,” and that “the guidance also doesn't consider the congestion created by millions of cars stuck in traffic. Gridlock and polluted skies are not the mobility future we want emerging from this crisis.”

ACKNOWLEDGEMENTS

Mainspring would like to gratefully acknowledge the following sources and contributors and offer thanks to all those who have participated in the compilation of this paper. Our sources and contributors include:

American Public Transportation Association (APTA)
ABC
Italian Public Transport Association (ASSTRA)
BBC
Blackpool Transport Services
Canadian Urban Transit Association (CUTA)
Connect Jerusalem (Light Train)
Dopravní podnik hl. m. Prahy
Edinburgh Trams
Financial Times
Hindustan Times
International Association of Public Transport (UITP)
Keolis
LA Metro
L'Opinion
Metropolitan Transportation Authority (New York)
Metrorex
MTR Corporation
New York Times
Politico
Regional Transportation District (Denver)
SYSTRA
The Age
The Conversation
The Guardian
Transport for London
STIB-MIVB
Stuttgarter Straßenbahn
The Atlantic
Tramways & Urban Transit
Tranvía Zaragoza
Urban Transport Group
UKTram
Verband Deutscher Verkehrsunternehmen (VDV)
Wall Street Journal
Washington Post
World Bank
World Economic Forum



MAINSRING KNOWLEDGE SERVICES

As a leading provider of intelligence to the transport sector, Mainspring helps to connect companies and organisations of all sizes to unlock new opportunities and grow their businesses through our extensive industry knowledge and unrivalled network of worldwide connections.

We provide you with the data, knowledge and insight to enter, understand, and position yourself within the Light and Urban Rail market to deliver against your business objectives, including:

- > **Understanding** the industry, its composition and size – both in terms of current and future growth
- > **Recognising** where your product or service fits within the market, its relevance and the competition
- > **Working with you** to develop the right contacts, opportunities and messages for maximum impact
- > **Providing** a significant cost-saving compared to internal resource, or expensive outside resource

Examples of our detailed research and intelligence includes:

- > **Light and urban rail system overviews** (country- or continent-specific and global trend analysis)
 - Details of individual systems and local and regional trends, recent developments, known expansion plans and future ambitions and key contacts
- > **Operational and technical data**
 - Facts, figures, details and specifications of key infrastructure and rolling stock provision
- > **Construction data and specifications**
 - Details of recent and current major projects across tramway, LRT and metro systems worldwide
- > **LRT rolling stock data**
 - Manufacturer overviews, fleet sizes, specifications, procurement and market analysis by sector and by country/region
- > **Tender and procurement analysis**
- > **Holistic light and urban rail market analysis** – including market trends, prospects and expansion
 - Wider socio-economic analysis of transport investment programmes and the key drivers – political trends, investment profiles, particular environmental imperatives etc.
- > **Bespoke projects**
 - Examples of recent reports we've compiled include information and analysis on construction project staffing requirements, vehicle washing systems, tramway and metro rail specifications, revenue collection and ticketing systems, and automation and driver assistance systems.

Mainspring's Knowledge Services are provided in addition to our market-leading news, publications and networking services that have been helping to disseminate knowledge and experience between transport professionals for over 15 years.

Mainspring is proud of its long-standing relationships with organisations such as:

Bombardier Transportation	MetroTenerife	Tram-Pro
Brookville Equipment Corp.	Mott MacDonald	Tranvía Zaragoza
CAF	MPact-Thales	Transport for Greater Manchester
Colas Rail	Network Rail	Transport for London
Docklands Light Rail	North Star Consultancy	Transport Infrastructure Ireland
Edinburgh Trams	Pandrol	Ultra Electronics
Egis Rail	Porterbrook	UKTram
First Group	Rosehill Rail	West Midlands Metro
Furrer + Frey	Siemens Mobility	...and many more
Hitachi Rail Europe	STRAIL	
Keolis	SYSTRA	