## News Special Focus: COVID-19 impacts

uring these extraordinary times, *Tramways & Urban Transit* has spoken to authorities, operators and suppliers around the world to not only report the latest developments, but also to share first-hand experience. As the global pandemic affects every facet of society, we cannot possibly illustrate the whole picture of this rapidly-evolving crisis, but have endeavoured to give a snapshot of the challenges for the industry. A huge thank you to all those who have participated - you're doing an incredible job and we are here to support to you all. Stay safe.

Travel restrictions hit transport operators hard

National lockdowns see patronage fall by up to 95%

ublic transport ridership has been decimated as the global coronavirus pandemic that began in China in December has spread rapidly around the world. Falls of between 60% and 95% have reduced tram, metro and bus services to serving all but essential travellers as countries have increasingly adopted 'lockdowns' of their populations.

The amount of confirmed COVID-19 cases accelerated exponentially during March and early April. As *TAUT* went to press, reported infections

worldwide had passed 1.3m, with 70 000 deaths.

Although national restrictions varied by their start date, the immediate responses by transport authorities and operators followed a common theme: reducing timetables to weekend levels; enhanced cleaning for vehicles and stations; requirement of contactless payment or smart ticketing to reduce cash handling; strict enforcement of social distancing; limiting staff numbers in depots and control centres; and home working for administrative staff where possible.



A As one of Europe's coronavirus hotspots, Milan's normally busy streets were empty in March due to strict travel restrictions. A. Trentanni / CC BY-2.0

#### **EXPERIENCES:** BLACKPOOL

On Sunday 22 March we reduced our service from 15 to 30 minutes due to a drop in patronage of around 80%. We took the decision to close the tramway completely after service on Saturday [28 March] as there are no tourists and we were down to less than 500 passengers.

We're lucky in one respect in that we also operate the number 1 bus that runs parallel to the tramway, so we've enhanced peak services on that route to cater for key workers and essential travel. We've also introduced free bus travel for NHS workers and a GBP1.50 [EUR1.70] flat rate.

Starr Gate depot is all sealed up, with CCTV and intruder alarms all monitored from Rigby Road depot and we're sending security patrols every two hours. We're keeping the trams powered up for the time being, and if we need to we can move them around to stop wheel flats etc.

Tramway staff have been furloughed inline 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 Data released by mobility app Moovit showed that bus, train, metro, light rail and ride-sharing numbers have fallen by more than 80% in most European and US cities. The worst-hit cities are those with the strictest travel restrictions and where there are higher instances of confirmed cases of the coronavirus – Milan was down 86%, Madrid 84% and New York 80%.

Moovit's data is updated daily at www.moovitapp.com/insights

In extreme cases services have been suspended entirely. For example, India's strict 21-day lockdown saw its metros closed from 26 March until 14 April, with only essential freight services allowed on the nation's rail networks. This approach began in China, with urban systems repurposed to deliver vital supplies instead of farepaying passengers in some cities.

In the US, the Santa Clara Valley Transportation Authority shut its three light rail lines entirely on 26 March after a trainee driver tested positive for COVID-19 the day before. Bus replacement services are in operation for an as-yet undisclosed period.

Elsewhere in California, San Francisco's Muni light rail system, which usually carries 175 000 passengers/day, closed on 30 March with bus substitution services in place. 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.

## Wuhan's transport re-opens after lockdown

Wuhan, the city in central China's Hubei Province where the coronavirus outbreak began, resumed operations on 117 bus routes on 25 March – around 30% of the city's bus network capacity.

Six metro lines re-opened the following Saturday, although restrictions still apply, including the requirement for passengers to wear face masks, register with their names and scan a QR code, and take a temperature check

before entering stations and vehicles. Revised timetables were posted at stations. To minimise any further infection risk, those over 65 or with underlying health conditions are still not encouraged to use public transport.

The city's public transportation services closed on 23 January in an attempt to contain the epidemic; similar restrictions were soon introduced across Hubei province and in other cities.

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# US enacts urgent rescue package

USD2.2trn emergency fund launched, including USD25bn to support transit agencies

s nations surveyed the economic impacts of the pandemic, the US Senate and House of Representatives unanimously agreed a USD2.2trn stimulus package – the Coronavirus Aid, Relief and Economic Security (CARES) Act – that was signed into law on 27 March.

The largest economic rescue deal in US history, the CARES Act includes over USD110bn in grant funding, loans and other direct relief to transportation sectors severely affected by COVID-19. USD25bn has been directed to transit agencies 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 related to advertising and sales tax revenues; and recovery and restart costs.

USD13.79bn has been allocated to urban systems, USD2bn to rural areas, USD7.51bn to 'state of good repair' maintenance and USD1.71bn to systems in growing and high-density states. The law stipulated that funds be distributed according to "fiscal year 2020 apportionment formulas" with seven days of the signing of the Act. USD1.02bn is also allocated to support Amtrak's passenger rail services.

American Public Transportation

Association President Paul P. Skoutelas, representing 1500 public and private sector organisations, applauded Congressional leaders and the Trump administration for reaching bipartisan agreement so quickly on the provision of these desperately-needed funds.

The USD25bn figure matches the amount the ten largest transit operators in the US said would be the minimum to help the industry cope with COVID-19 disruption on 23 March, although city leaders and transit advocates believe it may take as much as USD40bn to keep agencies solvent if the crisis continues into the summer.

> On 23 March UK Transport Secretary Grant Shapps confirmed that existing heavy rail franchise contracts would be suspended for at least six months, transferring all revenue and cost risk to the Government, with operators paid a small management fee. A separate agreement allocates GBP567m (EUR646m) for the country's bus operators.

As TAUT went to press, there were no details of such a package for light rail systems despite pressure from authorities, operators and the supply chain. In a video message released on 2 April, Tobyn Hughes, Managing Director of Nexus, said: "It's





A ABOVE: MTA staff disinfecting frequentlyused surfaces at the New York Subway's Fulton Center. P. Cashin / MTA

✓ LEFT: The Tyne & Wear Metro is continuing to operate for NHS and other key workers, but has seen passenger numbers fall more than 90%. Nexus

#### **EXPERIENCES: INDUSTRY**

Such significant falls in patronage and reduced timetables clearly have an impact on revenues, and we're actively working with the Department for Transport to explore the support members need to meet the fixed costs associated with maintaining what is a vital service in key cities.

Unlike some other forms of public transport, a sector-wide solution is not possible due to the differing contractual obligations under which networks operate, but we'll continue to raise the concerns of members with Ministers and officials and press for suitable financial support where it is needed.

James Hammett Managing Director, UKTram

vital that we continue to offer public transport networks for key workers to get around... but we're actively discouraging people from travel unless their journey is absolutely essential. "The Government really does need to take this issue seriously if it wants to preserve vital local systems like the [Tyne and Wear] Metro and tram systems in other UK cities."

### KEEPING PASSENGERS AND STAFF SAFE

From our operator survey, these are the most common approaches being taken to limit the spread of infection:

- Develop a business continuity plan that deals 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.
- > Online training and guides for all staff
- Adjust service frequency to meet passenger demand/expectation
- Inform 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. Review the use of the most appropriate cleaning products
- Limit the number of passengers per vehicle, with directions to sit diagonally at a 2m distance
- Minimise personnel overlap in depots and control centres, rotating teams to limit transmission risk
- Distribute information on health and service alterations, using physical and digital means, updated regularly as guidance from government, emergency services and health authorities change
- Review revenue protection measures to reduce contact between staff and customers
- Personal protective equipment for all customer-facing staff
- > Alcohol-based hand sanitisers

- available to duty staff and cleaning kits for drivers' cabs to apply at the start and end of each shift
- 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

#### Where possible/appropriate:

- Rear door boarding only for all public transport vehicles
- Pedestrian crossing and door opening/closing buttons automated or controlled remotely
- Remove cash handling with passengers encouraged to undertake contactless payment



- Canteens separated to single tables placed two metres apart, with staggered break periods
- Change the configuration of air conditioning and heating systems, with additional filters to ensure the circulating air contains fewer potentially harmful particles; change filters more regularly
- Offer financial incentives such as reimbursing or pausing monthly ticket subscriptions

# Germany's operators follow pre-prepared VDV guidance

Industry body's head calls for compensation after 'devastating' fare income decline

erman transport body Verband Deutsche Verkehrsunternehmen (VDV) has rejected suggestions that public transport passengers could be registered, [as has been implemented in China] arguing that with 30 million passengers/day, such an approach would be unrealistic.

Public transport is exempt from Germany's ban on contact between more than two people, introduced on 23 March. However, on 3 April VDV reported that sales of single and monthly tickets had fallen by 70%-90%. VDV head Oliver Wolff described the financial consequences for transport organisations as 'devastating', calling for government compensation to offset losses. Some moves have already begun in that direction. such as the establishment by the state of Lower Saxony of an emergency fund to ensure the liquidity of public transport

companies, bringing forward financial aid for the rest of 2020, a total of EUR67.5m, to provide short-term support to aid cashflow and prevent bankruptcies.

However, light rail operators have instead been able to draw on a comprehensive approach to pandemics developed in response to the swine flu outbreak in 2009. On 28 February VDV reproduced its guidance paper, No. 9040 Influenza - Pandemieplanung in Verkehrsunternehmen (Influenza pandemic planning in transport organisations) - that covers both management and operational situations, as well as advice for employees when away from work, such as how to shop effectively and maintain social distancing.

Drawing on research by the US-based Centers for Disease Control and Prevention, the guidance warns that in a city of 600 000, around 500 people may be expected to die, and

#### **EXPERIENCES: STUTTGART**

We are facing unusual times indeed, and much that seemed to be certain proves not to be so.

We are adjusting staff rosters to the changed patterns of the timetable; there are some personal requirements 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 at maximum transparency in our internal and external communication.

**Reinhold Schröter** Operations Manager Bus and Tram, SSB

that at the peak of the outbreak 40%-50% of an organisation's employees might be unavailable. It also cautions that a pandemic might be expected to have two or three waves, each of around eight weeks in duration.

Separately, the VDV has set up a members' area on its website to share coronavirus-related information and made access to its professional education materials free of charge. In addition, the organisation has published a 'charter' arguing that freight movement should be concentrated on rail, given its relatively low personnel intensity.

It is also recommending that planning starts on how to reduce crowding and maintain social distancing once the strictest restrictions are lifted – for example by staggering school hours.

#### **EXPERIENCES: PRAGUE**

We are doing our best to run the shortest interval between vehicles 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 a 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.

All vehicles are disinfected daily and all stations are wet-cleaned regularly. We are testing two new types of disinfectant, based on the ability of nanopolymers to destroy bacteria, viruses and other micro-organisms. The tests are being undertaken on two 15T trams and one SOR NB 12D 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 ultra-thin invisible hydrophobic layer and have a 'self-cleaning' effect. This layer 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. They are effective from 0°C to 100°C and are non-corrosive, biodegradable and do not contain alcohol, aldehydes or phenols.

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

# Cleaning robots and 'subways by appointment'

Working in partnership with Hong Kong-based biotech company Avalon, MTR Corporation has begun the deployment of 'Vapourised Hydrogen Peroxide Robots' to sterilise its 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



A Up to 20 VHP Robots' are to be deployed across MTR's network to enhance the sterilisation procedures for trains and office buildings. MTR Corp.

with a mobile device from up to 20 metres. It takes four hours to deep clean an eight-car train in automatic mode. Dr Tony Lee, MTR Operations Director, said that a plan to deploy 20 of the robots for train cleaning in depots was in progress.

The collaboration includes the creation later in the year of a dedicated face mask manufacturing facility for MTR, producing masks capable of blocking PM2.5 particles with nanofibre technology developed with Hong Kong Polytechnic University.

> Chinese metros are trialling a 'subway by appointment' system to prevent overcrowding as travel restrictions are lifted.

In Beijing, commuters can use smartphone apps to book their entry to two of 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.

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## Tube overcrowding row

London Mayor at odds with the UK Government over reduction of services

eeping cities moving while maintaining the recommended two-metre social distancing has proved a challenge, with reduced timetables seeing overcrowded vehicles in contravention of the recommendations in some cities.

While countries such as Sweden have relied on voluntary responsibility and trust to limit the spread of the virus, other approaches have led to fierce debates on the role of government in enforcing lockdown rules. Complaints that peak time London Underground services were dangerously overcrowded in March due to service reductions drew the city's Mayor into conflict with the UK Government.

On 25 March London Mayor Sadiq Khan said Transport for London (TfL) was doing its best considering that "nearly a third of staff are now off sick or self-isolating – including train drivers and crucial control centre staff. Many have years of safety-critical training in order to run specific lines – so it is simply not possible to replace them with others."

Over 500 British Transport Police officers have been deployed across London, opening different routes to platforms and turning off down escalators to slow the flow of passengers.

With well-documented budgetary pressures, TfL forecasts suggest the impact of the pandemic on its finances could be up to GBP500m (EUR566m). UK Health Secretary Matt
Hancock claimed there was "no
good reason" why timetables
have been cut, with Mr Khan
responding that "[TfL will do]
everything possible to continue
safely running a basic service
for key workers including
our amazing NHS staff", but
warned that staff numbers could
continue to fall due to sickness or
self-isolation

Train drivers' union Aslef joined the argument by saying that more should be done to limit the number of people still using public transport: "As MPs vote to leave their own place of work, it is disgraceful that the government puts key workers' lives at risk by refusing to close other non-essential workplaces."

## **EXPERIENCES:**JERUSALEM

We have introduced a revised timetable with last trams from both sides leaving at 20.00 instead of 00.00. There is no service from 20.00 on Thursday until 05.30 on Sunday morning. Staff patterns have been modified accordingly and the activity of inspectors has been limited to avoid interaction with passengers. The Operations Control Centre (OCC) is isolated, with a limited number of controllers allowed in the room at one time.

Our supply chain is currently running well, however we have received a notice from Alstom that this may be interrupted in the medium-term.

**Simcha Ohrenstein** Consultant, Israel Ministry of Transport and Road Safety

### **EXPERIENCES: EDINBURGH**

We have halved our regular frequency. Trams now run a 15-minute service, with spare capacity as required. Government advice on non-essential travel and the near-closure of the Airport has reduced our patronage by over 90%.

I'm proud to say I have 100% buy-in to the Government's job retention scheme with every colleague agreeing, if required, to enter into the scheme, with over half confirmed already placed onto furlough leave for the next two months.

My goal was always to ensure that by maintaining the safety and security of the staff and our customers we would be able to continue running a service capable of supporting Edinburgh through these difficult times. We've managed to do this, which I believe is a fantastic endorsement of the leadership team, and in the future of the business.

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

## EXPERIENCES: ISLE OF MAN

Operation of the steam railway, horse tramway, Manx Electric and Snaefell Mountain Railway are all suspended until 28 June. We will review this position during May and issue another update then.

We are maintaining bus services, running a Saturday frequency from start of service until 10.00 and then Sunday hours to allow key workers to get to work.

We have reduced staff numbers due to loans to other key areas of Government. For example, railway staff are driving buses, minibuses and ambulances, and acting as security staff at the hospital and virus testing sites. Railway and catering staff have been being redeployed to increase the frequency of bus cleaning.

For passengers arriving on the Island by air and sea we are using a special service, with even more cleaning, to take them to quarantine for 14 days.

**Ian Longworth** Director of Transport Services, Isle of Man CANADA: Work on the CAD6bn (EUR3.9bn) Réseau Express Métropolitain (REM) light metro in Montréal was suspended on 25 March in response to Quebec's partial lockdown and the closure of all non-essential businesses the day before. Around 100 workers reportedly walked off construction sites related to the project the week before over fears of the spread of the coronavirus.

**POLAND:** From 25 March only 50% of seats were allowed to be occupied on public transport vehicles in a nation wide measure.

RUSSIA: Moscow Metro has been using modified infrastructure inspection vehicles to spray all its tunnels – both running tunnels and those used for stabling or connections to depots – with liquid disinfectant.

UKRAINE: Metro service in the cities of Dnipro, Kharkiv and Kyiv was suspended from 18 March as part of tactics to prevent mass infection.

UK: In April, Transport for West Midlands made travel on its bus and tramway network free for National Health Service staff, as well as school travel for all children of key workers.

USA: New York Metropolitan
Transportation Authority (MTA)
Chairman and CEO Patrick J. Foye
tested positive for COVID-19 a day
after the authority, in partnership
with state health authorities, said
it had secured 75 000 masks for
employees on 27 March. New York
State has become the epicentre of
the pandemic in the US.



## Museum and heritage tramway closures

The effect on the fragile finances of transport museums and heritage lines is still to be fully understood, but as an example the Kapiti Coast Electric Tramway - home of the Wellington Tramway Museum - closed to the public on 22 March. Located in Queen Elizabeth Park, about 45km (28 miles) north of New Zealand's capital, the tramway uses equipment salvaged from the city's four-foot (1219mm) gauge system that closed in May 1964.

Built in 1923, double-saloon tram 151 is seen at the terminus for Whareroa Beach. It awaits its passengers on 14 March, for whom the tramway visit formed part of a cruise ship itinerary.

In response to the pandemic, public transport in Wellington and Auckland were made free from 26 March until June.

## 'An experiment in cleaner air'

New figures show how cities are seeing public health benefits as industry slows and roads clear

ata from the UK's National Centre for Atmospheric Science (NCAS) released in late March showed marked reductions in nitrogen dioxide ( $NO_2$ ) and PM2.5 particulate matter in many cities as industry slows and forced travel restrictions take effect.

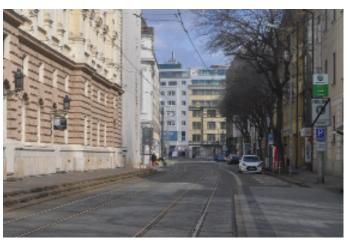
Speaking to the BBC, NCAS Director of Science Professor Ally Lewis said that in an unexpected way, the pandemic offers something of a policy experiment to test realistic targets for clean air: "We're essentially looking into the future when we don't have diesel cars because we plan to take them off the 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."

The UK data mirrors trends seen around the world as people have spent less time in cars, offices and factories and more time at home. 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%, and nitrogen dioxide ( $NO_2$ ) was reduced by up to 22%.

It is also reported that in Germany these factors and the associated reductions in electricity usage could see the nation emit between 50m and 120m tons less  $\mathrm{CO}_2$  this year, meaning it could even exceed its annual climate target.

But it is not just general industry that is closing factories, as rail manufacturers across Europe closed their plants in March.

Bombardier, CAF and Hitachi have temporarily put rolling stock



A Blue skies over Bratislava. A deserted Jesenského Street in the heart of the old town on 13 March. Young Shanahan / CC-BY 2.0

production in the UK on hold, with skeleton teams remaining, under 'enhanced safe working practices', to maintain rolling stock maintenance, technical support and spares, as well as ensuring that production lines can be restarted at short notice.

In Spain, CAF agreed with local authorities and unions to cease production in Zaragoza, Beasain and Irun until 20 April, creating agreements to recover the lost hours when restrictions are lifted and the hiring of extra staff to fulfil orders.

#### **EXPERIENCES:** BRUSSELS

We've introduced a new timetable for weekdays and another for weekends, with priority given to lines which run close to a hospital. We have redeployed staff to clean all vehicles after each service and there are people on certain endpoints to clean all the handles etc.

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 are in short supply, we have a stock and a daily update is done with a redistribution of products organised every day.

## **EXPERIENCES: BUCHAREST**

Taking into account the significant decrease of passenger traffic, around 50%-60%, as well to protect our own staff, it was decided to decrease the number of trains by 15%. All holiday requests have been approved. Metrorex has already asked the sanitation companies to intensify their cleaning actions and using 3D nebulisation, subway trains are disinfected using a portable device patented and manufactured in Romania. This is one of the most efficient forms as it can sterilise every corner in the wagon, also the ventilation systems.

## **EXPERIENCES: DENVER**

Certain staff can work from home and at this point this is happening through 10 April. Front-line employees are being provided PPE as it becomes available,

although some supplies are hard to acquire as we are competing with the rest of the world, and supply chains are making health care facilities their top priority.

## **EXPERIENCES: LONDON**

All employees are aware of the Government's social-distancing guidance, however where close contact is required to assist our customers, staff are required to wash their hands as soon as possible. Gloves are also made available to all staff who request them.

We have not experienced any supply chain issues so far, but are aware that other companies have received hand sanitisers that were out of date - this was only discovered because staff reported a burning sensation upon using it.

## **EXPERIENCES:**LOS ANGELES

Trains are running often and we continue to provide service on a daily basis, but in accordance with 'Safer at Home' emergency orders. We have asked employees to work from home where possible.

We have strengthened sanitation operations and are reviewing these as the situation evolves. METRO has installed hand sanitiser dispensers at major transit hubs and is exploring equipping buses and trains with these dispensers.

### **EXPERIENCES: THE NERT FE**

Our timetables have been revised in accordance with instructions from the Central Government, meaning a 50%

reduction in frequency [occupancy has fallen by 90%]. All weekend night services have been cancelled.

Our city is not badly affected, we have among the lowest confirmed cases in the country, and from 23 March we have offered a free service. Passengers who bought a non-single ticket from 1 to 15 March and have only used it three times will receive a complimentary ticket with similar conditions when the lockdown is over.

#### **EXPERIENCES: ZARAGOZA**

From March 30 all services use double trams. Frequencies are now 10 and 13 minutes in the central hours on weekdays, and 30 minutes on Saturdays and Sundays. In this way, the availability of space is fully maintained and distributed among the connected trams, while maintaining the highest frequencies.

The seats in which it is forbidden to sit have been marked on the tram, to guarantee compliance with the maximum capacity decreed for each type of vehicle and prioritise the safety of both users and employees. The maximum capacity for each five-module tram has now been limited to 70 passengers.

The impact of the coronavirus in Zaragoza has not been as hard as 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.

In recent days the tramstops have all been disinfected by the Unidad Militar de Emergencias (Emergencies Military Unit), like many other places in the city.