UITP ADVANCING PUBLIC TRANSPORT

KNOWLEDGE BRIEF

WHAT DOES 'NEW NORMAL MOBILITY' LOOK LIKE?

JUNE | 2023

INTRODUCTION

An increase in home-based activities and a modal shift towards private car and greater flexibility in individual time planning have led to structurally lower ridership levels and fare revenue collection for public transport authorities (PTAs) and operators around the world.

This Knowledge Brief provides a global view of urban and regional mobility in a post-COVID-19 pandemic era. Building on the experiences of UITP members, it puts the major challenges that our industry faces in the spotlight: Bringing back passengers, ensuring truly sustainable economic models for public transport operations and building cities that better reflect what is good for the environment and citizens alike.

THE COVID-19 MOBILITY LEGACY: A DRAMATIC SHIFT IN MOBILITY BEHAVIOURS

Public transport users in metropolitan areas around the world have dramatically changed their mobility behaviours and practices since the shock of the COVID-19 pandemic. The emergence of home-based activities (home working, home studying, home shopping) and a greater flexibility in individuals' time planning have changed how much people move, when and why they move and how they chose to do so.

SALLY'S NEW MORNING ROUTINE

Sally no longer has to face the rush-hour commute every workday. Thanks to the remote work policies introduced by her employer during the pandemic, nowadays she can walk her dog before taking a 9am meeting with a client from her living room.

She will go to the office later in the morning, a trip that she now enjoys: "Subway mid-morning is lovely: I avoid the crowds, I can always find a place to sit, and it is always interesting to watch the people that move around at that time, having a day so different to mine".

ROB'S HYBRID LEARNING

Rob is a second-year architecture student enjoying a hybrid campus experience. With the exams approaching, he chooses to connect remotely to most lectures and only goes to campus once a week, for the Architectural Design Studio class. After all, it is not easy to do cardboard scale modelling via video conference!

MADELEINE'S ONLINE SHOPPING

At the age of 67, Madeleine long ago learned to use internet to make her life easier: why bother going to the book shop two stations away if she can buy the same book - often cheaper - with a single click?

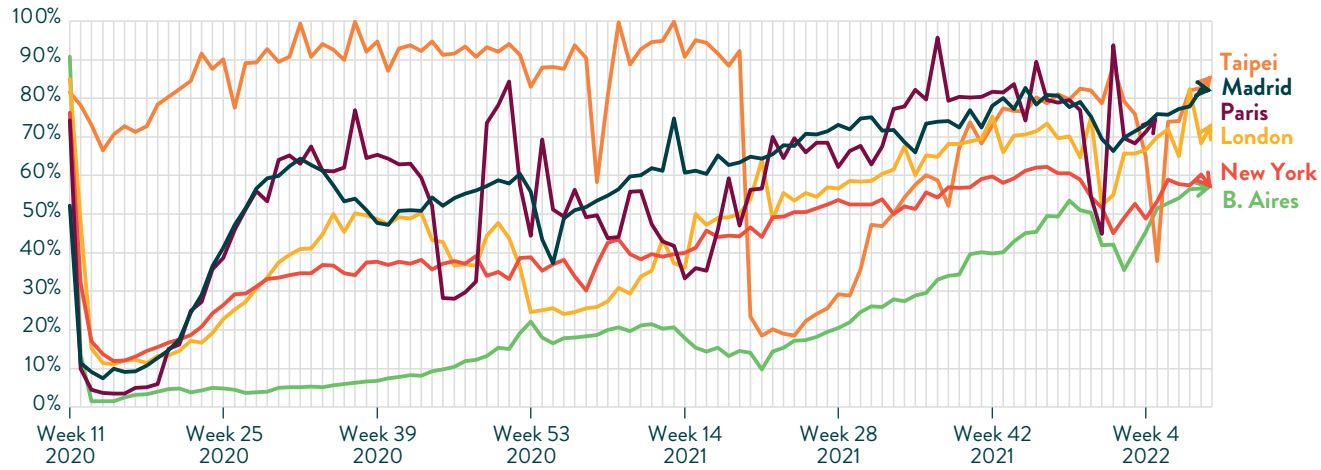
As she enters her favourite online platform, which is already familiar with her payment and delivery information, she thinks to herself: "better save myself to go out to the theatre with my friends later on".

For users such as Sally, Rob and Madeleine, these changes are certainly for the better; they enjoy extra flexibility and can tailor their mobility to their comfort and needs. However, the changes in their behaviours - together with those of millions of urban dwellers across the world – have shaken the public transport Industry to its core.

By the end of 2022, public transport ridership figures had settled at 90% of 2019 levels globally, with revenue collection around 87%. The estimated requirement of capital expenditure for the industry amounted to €150 billion per year for network development, energy transition and electrification and customer experience improvements.

The structural financial gap caused by changes in mobility behaviours has brought investments to a halt and heavily affected the capacity of Public Transport Agencies to ensure their long-term financial sustainability. Lately, this trend has been accentuated by inflation - which is affecting energy prices - and labour shortages. Without major changes, the industry will enter a phase of slow growth and investment deficits, ultimately detrimental for passengers and cities alike.

Figure 1: Metro network ridership for selected cities, 2020-21



LONG-TERM STRUCTURAL CHANGES TO MOBILITY PATTERNS

As in the cases of Sally, Rob and Madeleine, new behaviours have mainly affected commuters, students and the elderly, formerly major consumer groups for public transport. New Normal practices have structurally changed the mobility patterns of these population groups, strongly impacting public transport operations.[1]

HOME-BASED ACTIVITIES ARE PART OF THE NEW NORMAL

Home working, home studying and home shopping have reduced the mobility needs of public transport consumers who were previously key.

The largest focused consumer survey available - a wave of eight analyses covering 38 urban and metropolitan networks carried by Transdev in France[2] - shows that 45% of public transport users who travel less do so because of an increase in of home-based activities. This is particularly significant among young adults (61%). Among those who have abandoned public transport, 14% report that home-based activities have rendered previous trips unnecessary.

The figure is confirmed by public transport authorities, who report particularly low ridership levels for commuter services. The Washington Metropolitan Area Transit Authority, MTA New York and New Jersey Transit have reported commuter rail 2022 ridership levels ranging from 45-65% of pre-COVID-19 levels, with related losses in revenue.

With an average of 2.5 home-working days per week in office jobs in Paris, four to six commuting trips out of ten have simply disappeared. It should be noted that not all population groups in metropolitan regions have equal access to home-based activities; indeed, academics have raised early warnings around emerging potential new social inequalities.[3]

PRIVATE CAR USE AND WALKING ARE THE MAIN BENEFICIARIES IN TERMS OF MODAL SHARE

Convenience, an apparent feeling of safety and the increase of short trips close to home have led public transport users to prefer private car or walking to cover trips formerly undertaken by public transport.

In the 38-network survey conducted by Transdev, 12% of respondents reported using less public transport because they have moved to private car use, while 20% have moved to walking. This is particularly true for seniors, with 34% of this customer group who report using less public transport instead choosing to walk.

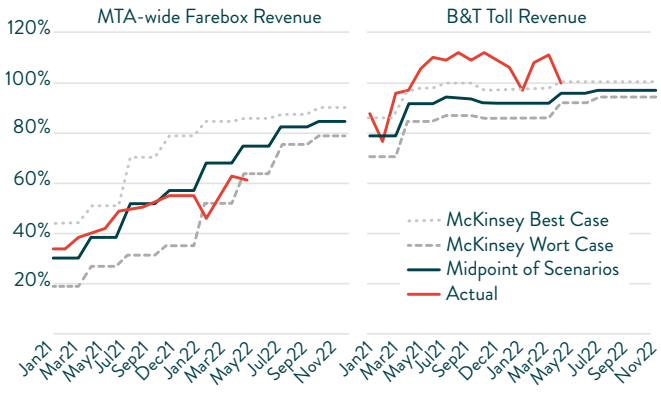
For those people no longer using public transport, the figures are even more acute: 52% of former public transport users have shifted to private cars, while 9% have shifted to walking. Public transport has lost around 10% of its former customer base.

The stabilisation of these patterns long after the end of the most-constraining health-protection measures leads us to think that the majority of these former customers will not return to public transport again.

MTA NEW YORK BRIDGES AND TUNNELS TOLL COLLECTION

Transit agencies collecting revenue from the wider urban mobility system have proved to be more resilient in facing the crisis. In New York, the MTA collects revenue from bridges & tunnels connecting with Manhattan: a higher modal share of cars has enabled to rebalance revenue collection beyond all projections (Source: McKinsey & Co).

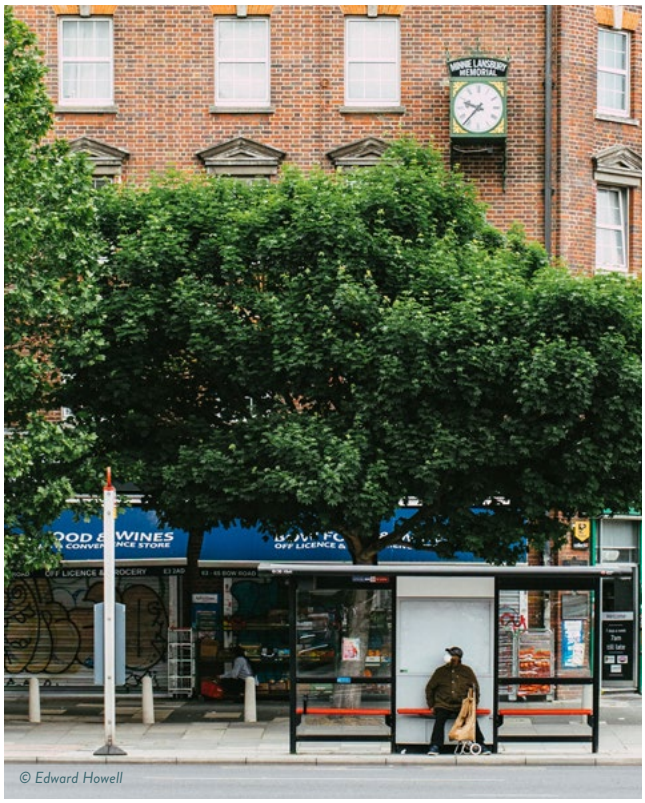
Figure 2: MTA Farebox & Bridge & tunnels revenue, 2021-22



1 De Palma A, Vosough S. 2021. Long, medium and short-term effects of Covid-19 on mobility and lifestyle. THEMA Working Paper n°2021-06 CY Cergy Paris Université, France. Paper available here: https://thema.u-cergy.fr/IMG/pdf/2021-06.pdf

2 Transdev France Consumer Survey, 2020-2022. COVID-19 Long Term Effects in Mobility Practices.

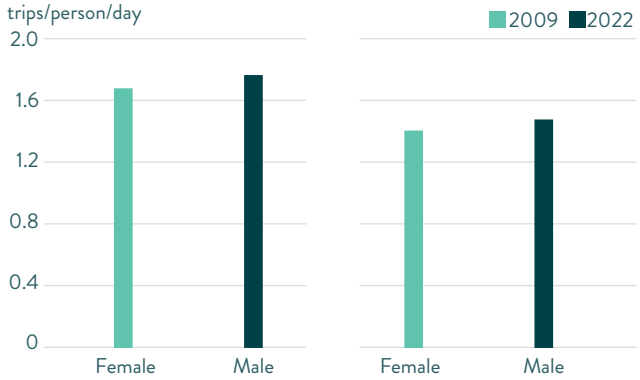
3 Fell, A. 2020. Mobility in the Pandemic – And After: Experts Say Now It is Time to Consider New Policy. UC Davis. Article available here: https://www.ucdavis.edu/coronavirus/news/mobility-pandemic-and-after



PEOPLE MIGHT BE TRAVELLING LESS THAN BEFORE... AND DOING SO BY CAR

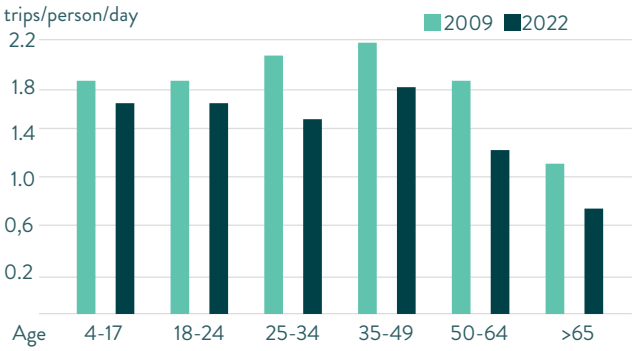
A metropolitan-wide passenger study in Cordoba, Argentina, shows that - despite population growth (from 1.6 million to 1.8 million) – the total number of public transport trips declined. The individual mobility rate went from 1.71 to 1.36 trips per inhabitant per day. Private car and walking are the major beneficiaries in terms of modal share. Such discoveries go against expectations of growth in a Latin American context; could it be part of 'the New Normal' effect?

Figure 3: Daily trips per inhabitant



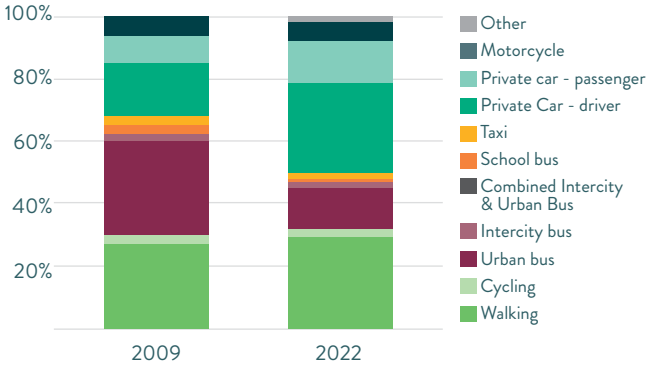
In the city of Cordoba, Argentina, 2,685,431 daily trips were conducted by the inhabitants of the metropolitan area in 2022. In 2009, this volume was 2,705,311 daily trips. We have seen a reduction of 0.7% in daily trips in the area, despite a population growth of 22.5% for the same period.

Figure 4: Number of trips per inhabitant per age group



The reduction in the number of daily trips affects all age groups equally; however, the trend is particularly sharp among young adults.

Figure 5: Modal share



Modal shift has clearly been in favour of individual car usage, either as a driver or as a passenger (dark and light blue, respectively) versus public transport (purple). The share of walking (green) remains stable.
Source: Transamo

4 Transdev Netherlands Ridership Survey (2020-2022). "COVID-19 Daily Mobility Practices." Internal document
5 De Palma A, Vosough S. (2021). "Long, medium and short-term effects of COVID-19 on mobility and lifestyle." THEMA Working Paper n°2021-06 CY Cergy Paris Université, France. Paper available here: https://thema.u-cergy.fr/IMG/pdf/2021-06.pdf

GREATER FLEXIBILITY IN INDIVIDUALS' TIME PLANNING

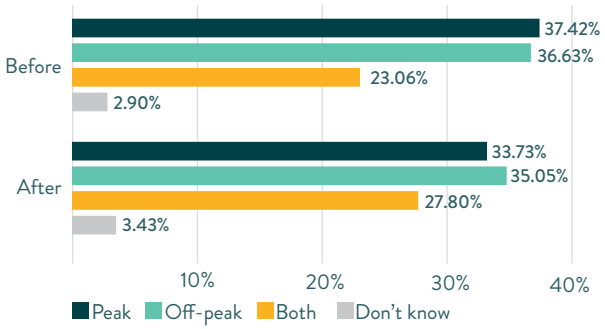
In comparison to pre-COVID-19 travel patterns, characterised by a strong concentration of flows during the morning and afternoon peaks, operators and authorities witnessed a large share of customers who travel indistinctively between peak and off-peak periods. Remember Sally, Rob and Madeleine, maintaining their activities but none of them travelling at peak times anymore.

A multimodal survey conducted by Transdev in the Netherlands showed that off-peak travels volume became higher than peak travels in the country, in contrast to the situation before COVID-19.[4] Academics examining this trend are calling on authorities to encourage this cultural change, which could be beneficial for the public transport industry.

In the long run, the better distribution of urban flows might enable the operation of more-efficient networks[5], with reduced investment and operational requirements on fleet and staff to cover peak hours.

Figure 6: Peak and off-peak travel by bus users in the Netherlands, 2022

When do you typically travel by bus? During peak hours (Mo-Fr 6:30-9:00 and 16:00-18:30) or off-peak?



RECENT EVOLUTIONS OF THE PUBLIC TRANSPORT BUSINESS MODEL

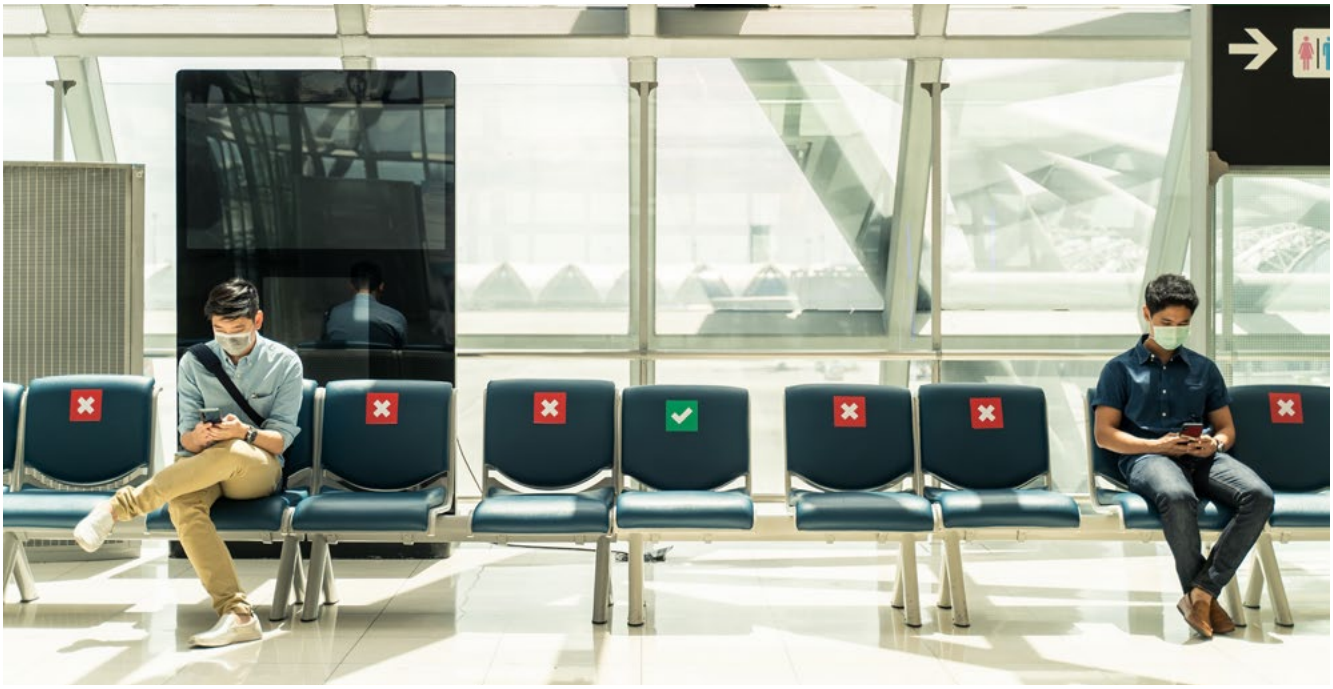
A STRUCTURAL FINANCIAL GAP

Lower ridership levels translate to lower revenue collection. The structural financial gap arising from these long-term lower revenue collection threatens the capacity of PTAs to invest in asset and infrastructure modernisation.

A survey of 71-UITP members in 2022[6] showed that 20% of respondents were experiencing passenger revenue losses, ranging from 5-10% compared with pre-COVID-19 levels. Meanwhile, for 50% of respondents the declared loss ranged from 10-30%.

This is confirmed by the accounts of operators and authorities facing difficulties reaching their targets. By March 2022, farebox collection for MTA New York was at 61% of pre-COVID-19 levels for the same period, while Île-de-France Mobilités closed the year 2022 with an-almost €1 billion deficit in its operating budget.

The 71-UITP Member survey indicated that respondents across regions have reduced investments to adapt to new realities, with only 44% maintaining previous investments in the event that supra-local grants become available. This means that by 2025 - if the current situation is sustained - the industry will have already accumulated billions in investment deficits.



6 UITP Transport Economics Committee Members Survey, 2022. Fiscal Year 2022 Financial Outlook.

COUNTRY	CURRENT SITUATION
Singapore	2021 closed with a drop of 27% ridership in the bus network compared to 2019 levels, a drop of 38% ridership in the subway network and of 27% in the Light Rail system. The regulatory agency, PTC, agreed a tariff rise of 2.9% to cope with higher staff recruitment costs and increasing energy prices. To avoid a large fare increase for commuters and further support the public transport system, the Government provided an additional subsidy of about $200 million in 2023, on top of existing subsidies of more than $2 billion annually to run bus and train services.
Brazil	By October 2022, Sao Paulo metro lines ridership levels had fallen by 19-25% compared with 2019 levels, while commuter rail had dropped by 25%. In Salvador, metro lines were operating at 9% lower ridership levels, while in Rio de Janeiro, tram lines were operating at 31% lower ridership levels compared with 2019; ferry boats were down by 38%. This is worrying, as passenger revenues provide the majority of public transport funding in the country.
Germany	The introduction of the €9 ticket in 2022 provided an unprecedented boost for ridership, with the added benefit of bringing non-customers into the networks; 20% of buyers of the ticket were normally non-public transport users.[7] During June, July and August 2022, ridership increased beyond 2019 levels in both urban public transport networks and regional rail, with urban public transport networks achieving 110% of pre-COVID-19 levels, with regional rail up to 141% in August 2022. However, at the end of the campaign, ridership in both types of operations fell back to 15% below 2019 levels, with a similar, persistent deficit in monthly and yearly subscriptions.
France	UTP reported that their 70 French networks panel closed up 3.1% in terms of bus and metro kilometres compared with 2019, down 3.3% in terms of ridership for the same period, and down 10.2% in terms of passenger revenues. The data showed that weekend ridership recovered faster than weekday, pointing out that people may have shifted to public transport for leisure journeys, underlining the influence of home-based activities in weekday trips.[8]
United Kingdom	In London, passenger revenues closed in 2022 at around 20% down on pre-COVID-19 levels, and are only expected to reach 96% of this level in 2025. A strong representation of high-income office workers in the London metropolitan area may explain this particularly low ridership for a metropolitan region, which has delivered strong policies in support of public transport over the last two decades. In York, ridership levels are at 75% of pre-COVID-19 levels, and the authority is struggling to maintain service levels as a result of the acute drop in passenger revenues.
Spain	In Barcelona, demand in the bus network is 10% lower compared to 2019 levels, while subway operations have almost reached the 100% level. The existence of a multi-modal network, an affordable fare scheme and strong policies in support of public transport led by the city may explain this relatively successful recovery. However, reduced compensation from the Spanish Government has affected the financial situation of the Public Transport Operator. In Madrid, demand is down only 5%, mainly due to a 30% temporary fare reduction in 2022 aimed at bringing passengers back.
Italy	Public transport ridership experienced an annual average loss of – 50% in 2020 and -42% in 2021 compared to 2019. A survey conducted by ASSTRA[9] showed that demand still remains below pre-Covid levels, with an estimated -21% for 2022 and -12% for 2023. In September 2022 the government introduced the "bonus trasporti", a measure confirmed in 2023. It supports citizens in lower income brackets and consists of a maximum contribution of 60 euros per month per person for the purchase of a single season ticket, annual, monthly or relating to several months pass, for local, regional and interregional public transport services, or for national rail transport services. More than 2.5 million vouchers were issued in the 4 months of 2022.

From a business perspective, the public transport sector has therefore gone from a scenario of slow but continuous steady growth, allowing it to forecast multi-year investment programmes for maintaining and improving services, to a post-pandemic shock landscape for mobility. This landscape is marked by chronic revenue collection loss, where the sector must rely on short-term rescue fund decisions to make ends meet year-to-year.

Grateful for this support received, how can the public transport sector deliver to customers and other stakeholders under such circumstances? What happened in the first place to get to this point?

CONTEXT: A PANDEMIC SHOCK OVER YEARS OF FISCAL PRESSURE

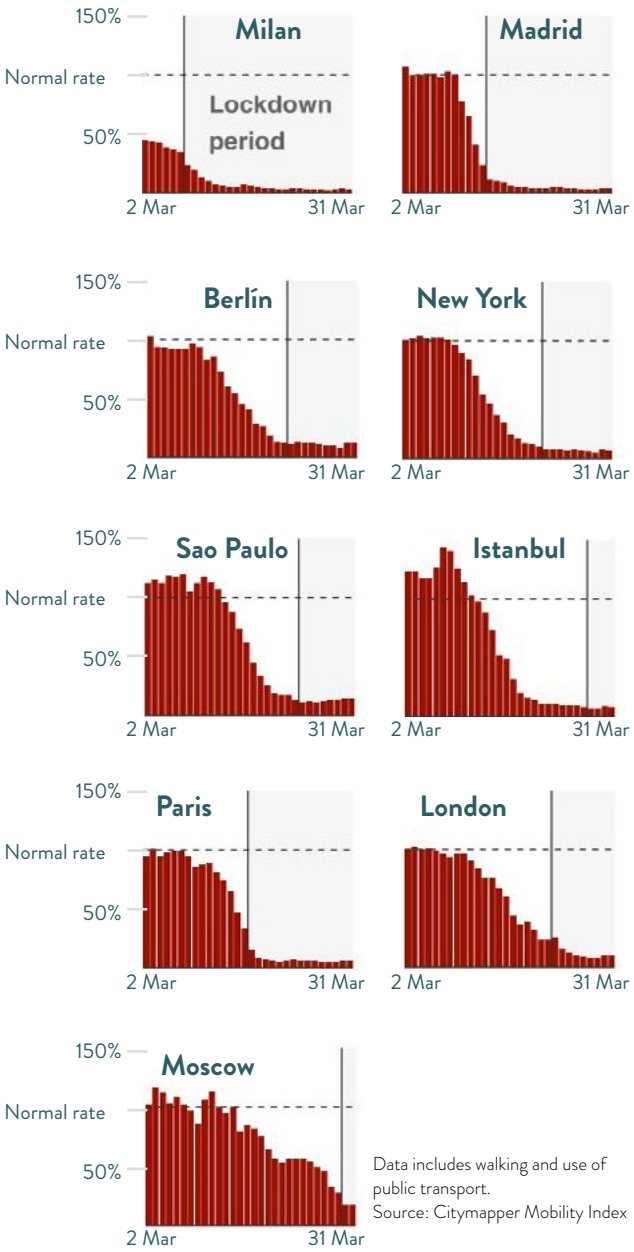
It begins with a story of local fiscal pressure, rooted in the 2008 financial crisis, its consequences to the real economy and the impact it has had - since 2015 - for local government financing. Commentators referred at the time to a 'scissor effect' between local government revenues and expenditures for OECD countries. This remains a worry to this day.[10]

7 VDV Communication, 2022. The 9€ ticket in Germany Scheme: Results & Next Steps. UITP Transport Economics Committee Meeting
8 UTP, 2022. Kilometers, Ridership & Fares Compared to 2019 – 70 Networks Panel. UITP Transport Economics Committee Meeting
9 Le performance delle imprese di trasporto pubblico locale. Intesa Sanpaolo-ASSTRA, June 2022
10 OECD Policy Responses to Coronavirus (COVID-19), 2020. Covid-19 and fiscal relations across levels of Government. Available here: https://www.oecd.org/coronavirus/policy-responses/covid-19-and-fiscal-relations-across-levels-of-government-ab438b9f/

Add to this the increasing demands on local governments, required not only to manage local public services, but also to steer citizen behavioural change and work towards increasing the resilience and sustainability of their communities.

The story picks up pace with the arrival of COVID-19.

Figure 7: Unprecedented ridership loss in 2020 in major global metropolitan areas



Data includes walking and use of public transport.
Source: Citymapper Mobility Index

By the end of 2020, research in many geographies had already established a direct link between lockdowns, the interruption of mobility patterns and the disastrous consequences for the Public Transport economic balance.

In an article focusing on the metropolitan region of Madrid, Ana Belén Rodriguez Gonzalez et al. pointed out that "public and private mobility drastically decreased by 95% and 86% of their pre-Covid values [during lockdowns] after which the latter [private mobility] experienced a faster recovery".[11]

Moreover, Professor Susan Shaheen, from UC Berkeley, gave early warnings in 2020 on the wider effects of the crisis, namely the destruction of jobs and increasing unemployment, as well as the resulting reduction in local taxes collection in different geographies.[12] UITP data pointed to losses going up to 90% of ridership in major cities from North America to China throughout the year.[13]

All these elements have come together with increases in costs and a slow recovery process, upsetting the industry's long-term economic balance and leaving it dependent of supra-local financing for survival.

A SHORT-TERM INCREASE IN OPERATIONAL COSTS

As an immediate reaction to the pandemic spread of COVID-19, public transport agencies and operators implemented a series of measures aiming at ensuring continuity of service. These measures ranged from the reinforcement of cleaning and disinfection protocols, to physical distancing adaptations and the implementation of specific services to support the fight against the pandemic.

This had a short-term impact on costs: in a 2021 UITP-ISSA survey, 86% of respondents reported an increase in costs for cleaning and disinfection, sometimes amounting up to 280% of initial budget[14]. Although the initial impact eased as pandemic control measures were progressively scaled back, a UITP survey showed that, in 2022, operators and authorities expected an overall impact of 10% on costs, which can be partly attributed to a feedback effect from the pandemic. Some respondents indicated that certain measures may be maintained in the long-term, outside of a pandemic scenario.[15]

Despite this quick reaction and the means deployed, the increase in costs had a relatively low impact on the economic business model compared with the massive loss of passenger revenues. This remains a major issue at the time of writing of this knowledge brief, some three years after the start of the crisis.

11 Rodriguez Gonzalez AB, Wilby MR, Vinagre Diaz JJ, Fernandez Pozo R. 2021. Characterization of COVID-19's Impact on Mobility and Short-Term Prediction of Public Transport Demand in a Mid-Size City in Spain. Sensors (Basel) Oct; 21(19): 6574. Available here: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8512832/
12 Shaheen, S. 2020. Impact of Covid-19 on Public Transit and Shared Mobility, Presentation for the thenextmobility.com online summit. Presentation accessible here: https://wstc.wa.gov/wp-content/uploads/2020/06/2020-0707-BP4-ImpactofCOVID19-SS.pdf
13 UITP, 2021. Preparing for a Better Future: How Transport Authorities Have Managed the Crisis. Knowledge Brief available here: https://www.uitp.org/publications/preparing-for-a-better-future-how-transport-authorities-have-managed-the-crisis/
14 UITP, 2021. Adopting Long-Term Strategies for Cleaning & Disinfection of Public Transport Systems. Knowledge Brief available here: https://www.uitp.org/publications/cleaning-and-disinfection-public-transport-systems/
15 UITP, 2021. Win Back Passengers: Facts, Figures and the New Normal. Report available here: https://www.uitp.org/publications/win-back-passengers-facts-figures-and-the-new-normal/

CLEANING AND DISINFECTION MEASURES

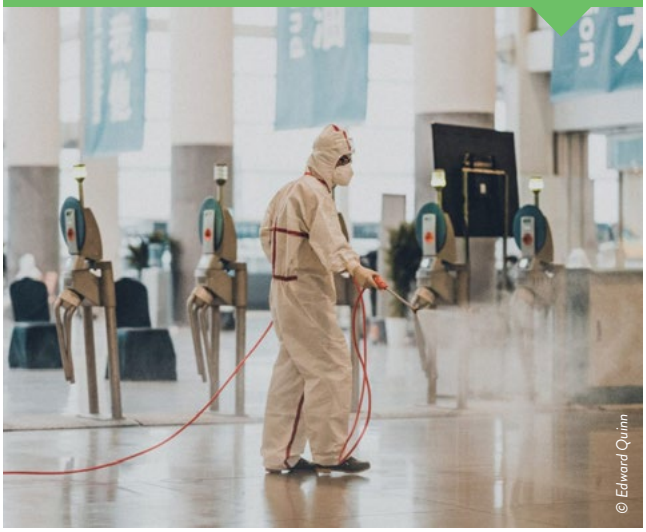
- Face mask protection for all staff
- Disinfection protocols: use of ozone gas, dry fogging, robots for vaporised hydrogen peroxide
- Refurbishing of air conditioning units to draw fresh air, avoiding recirculation.

PHYSICAL DISTANCING ADAPTATIONS

- Signage and visual labelling throughout the transport system.
- Capacity management technologies to share real-time rail capacity levels with passengers.
- On-line pre-payment of tickets and the introduction of electronic wallet technologies.
- Increase in service levels to absorb loss of capacity per unit as a result of physical distancing restrictions.

IMPLEMENTATION OF SPECIFIC SERVICES TO SUPPORT THE FIGHT AGAINST THE PANDEMIC

- On-demand public transport
- Night-time services for healthcare workers
- Supplies deliveries service
- Free public transport for hospital personnel.



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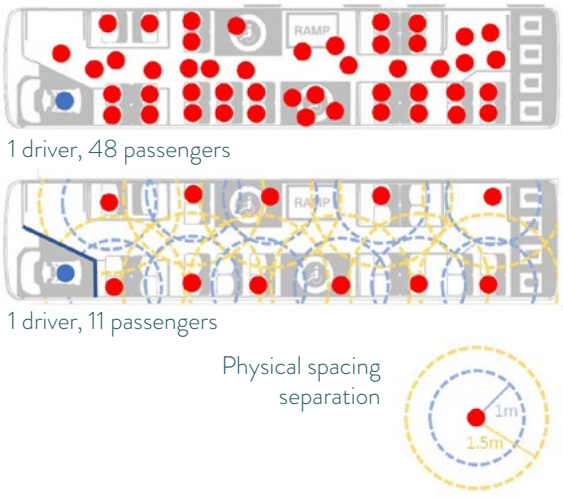
A SLOW RECOVERY PROCESS

Individual cases lead to thinking that the recovery process is slow, the issue is widespread across regions and is affecting all metropolitan areas alike.

Latest UITP figures (update March 2023) show that in 2023, metropolitan networks such as Buenos Aires, Sydney, Vienna, Rio de Janeiro, Beijing, Bogota, Berlin, Frankfurt, Karlsruhe, Budapest, Shiraz, Tokyo, Auckland, Lisbon, Singapore, Stockholm, Chicago, Washington and Montevideo have been consistently operating below the 100% level of pre-COVID-19 levels, three years after the pandemic's emergence.

Figure 8: Social distancing in public transport vehicles



Cases of recovery are hard to find (Oslo, Innsbruck, Dijon), and are characterised by at least one week of the year 2022 with more than 100% of ridership compared to pre-COVID-19 levels. At the time of writing of this Knowledge Brief, no metropolitan network has been able to sustainably maintain this level on a permanent basis.

The public transport networks of smaller cities have sometimes been more resilient in facing demand crisis than their larger metropolitan counterparts. Such cities have maintained strong ridership levels by preserving or expanding service levels, keeping fares affordable and communicating with citizens.

Cities that made changes to local road networks during the pandemic to discourage car use and encourage active modes have also seen public transport usage hold up well.

Evidence collected suggests that the following variables determine a baseline for the ridership recovery rate:

- Smaller networks tend to recover faster than larger ones, mainly where service levels are maintained or improved. This is in part because smaller cities propose more on-site jobs than larger metropolitan areas.

- In cities where leisure travel is strongly represented, public transport ridership recovers more quickly. This is particularly apparent in weekend travel patterns in major metropolitan areas with historic or natural patrimonial assets, and it says a great deal about risk trade-offs by passengers, who are more willing to travel by shared means for occasional leisure activities than for work.
- Young people tend to return faster to public transport than seniors, the latter being the customer group that has most abandoned public transport.
- Low-income residents tend to return to public transport more rapidly than those with high-incomes. This is particularly evident in some Latin American metropolitan areas, where income inequalities generate strongly differentiated travel patterns.
- Private car ownership and use, and the place it holds in urban culture, are major determinants for the speed of recovery, with ridership levels in cities made for cars recovering much more slowly. In this particular case, the hypothesis is that 100% levels might never come back.

Readers can refer to these trends when analysing their own local context, bearing in mind that each city is unique and that general variables generate different effects depending on the specific local dynamics.

LONDON'S WEEKENDS PEAK HOURS

In London, weekends in 2022 were busiest, with levels at nearly 90% of pre-pandemic trips. Mondays, Tuesdays and Fridays were quieter, with averages of 65-70%, while Wednesdays and Thursdays were slightly busier, with averages of 70-75%. If this trend stabilises, what are the implications for service organisation and delivery?

LONG-TERM SOLUTIONS FOR INDUSTRY SUSTAINABILITY

The combination of reduced revenues and a restricted budget position at local level means that both public transport agencies and city governments are now more dependent on regional or national funding than ever before.

The argument in this paper is that, while the immediate recovery from the pandemic was relatively quick, the social changes the pandemic brought about will depress revenues into the medium and long-term. This loss of revenues comes at a time when capital investment requirements to meet the growing environmental challenge - including enhancements to encourage modal shift and the decarbonisation of the bus sector - are high. We can expect the budget gap to become larger, meaning new solutions are necessary.

While there are large quantities of data across the world to support this argument, the underlying social changes are still relatively new; public transport agencies and others will want to continue to study the development of these trends.

INITIATIVES TO BRIDGE THE GAP

This section looks at how public transport authorities can cover the budget gap. Figure 9 introduces the Public Transport Business model, which provides a useful way of structuring potential changes. Most of these start in the orange boxes, which covering costs and revenues; this is unsurprising, as this is a discussion around viability. However, the green boxes examining feasibility and the blue boxes examining desirability remind us that stakeholders, customers, staff and communication are also important.

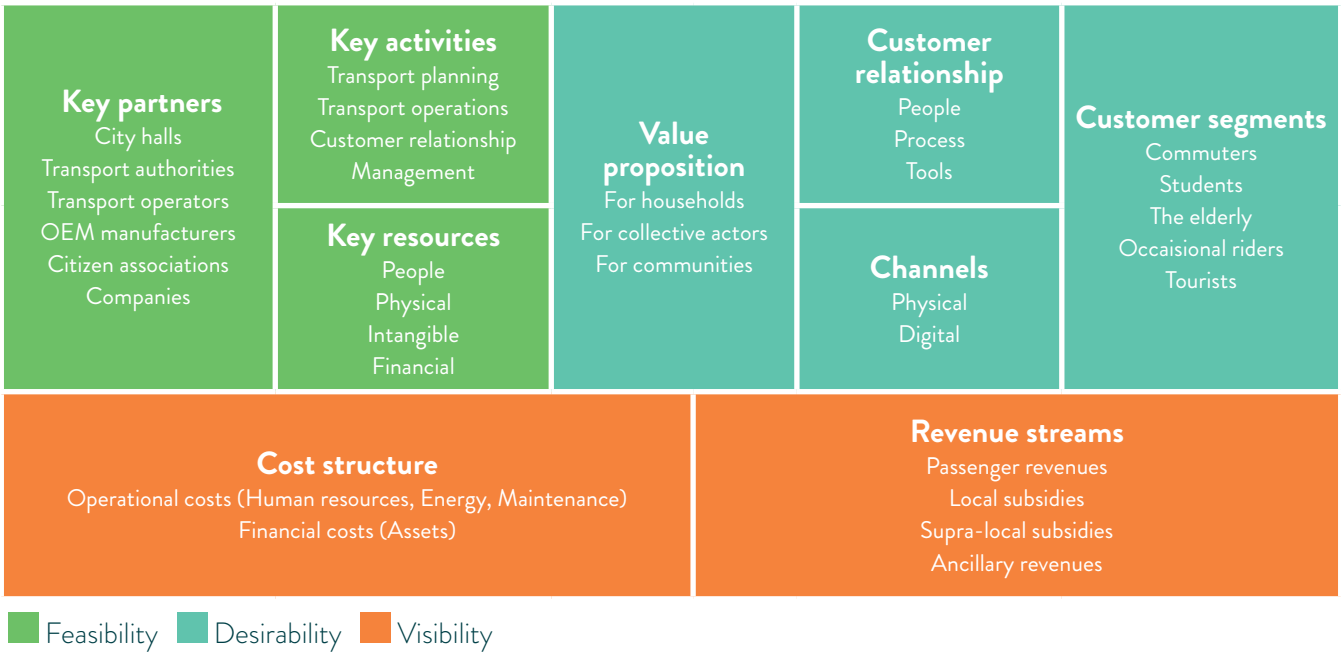
There are approaches around fare revenues and costs, and these should probably be considered first. Authorities and operators are now facing reductions in revenues that can be survivable through adaptation and some external help; this is very unlike the situation in the opening weeks of the pandemic.

The part of overall costs covered by passenger revenues and revenues from ancillary activities has remained static for many operators and authorities. Our work suggests the following:

- Simple reductions in fares, or moves to a free-fare transit system, are an expensive way of making permanent changes in demand. The German €9 ticket is an example here; it had highly variable effects and was too expensive to sustain. Pre-COVID work on free fares by UITP[16] showed limited modal shift from cars to public transport.

16 UITP, 2020. Full free fare public transport: objectives and alternatives. Policy brief available here: https://www.uitp.org/publications/full-free-fare-public-transport-objectives-and-alternatives/

Figure 9: Key elements of the public transport business model



- At a time of inflation in many countries, fares should remain at the same real level wherever possible.
- There must be the possibility of reconfiguring fare arrangements to reflect the new patterns in peak and off peak travel. This may require the collection of further data, but we can already foresee discounts on Mondays and a different approach to season tickets in some places.

There must also be a careful consideration of costs. It may be possible to reduce certain service levels, and these are always kept under observation. However, budget-driven cuts in services or in replacement investments are unlikely to make public transport more attractive to those users who can exploit the flexibilities illustrated in our case studies. As many of the costs - particularly in the metro and rail sectors - are fixed, service reductions can worsen the financial balance. The solutions used in other industries are not available.

That takes us to the part of the business model that looks at the value of the industry to society and its stakeholders. Previous work has shown that urban and public transport services in Europe contribute between €130-€150 billion per year, or 1.0-1.2% of GDP, and that the economic benefits of public transport are five times greater than the money invested in it.[17] Transport unlocks positive effects for the wider economy by reducing congestion, allowing the clustering of activities, improving the quality of life, supporting tourism, stabilising property values and helping regenerate cities. Local studies show that for each €1 invested in public transport, 75% remains in its own region, mainly due to the strong relationship between public transport operators and local SMEs.

17 UITP, 2020 . Public Transport: Moving Europe Forward. Leaflet available here: https://www.uitp.org/publications/public-transport-moving-europe-forward/

The table below sets out some possibilities for asking the beneficiaries of public transport to make a contribution towards the accessibility provided:

Implementing some of these measures would require a change of both mindset and fiscal policy. The use of isochrone mapping would allow clear communication of the benefits, which can be shared with all stakeholders.

BENEFICIARY	PRINCIPLE
Households	Public transport reduces individuals' travel costs and increases employment, education and leisure opportunities. Public transport tariffication, under a public service value generation scheme, would be based on the accessibility offered to the customer and balanced by their ability to pay. A simple way of implementing this principle would be through differentiated tariffication by network entry point. Accessibility pricing is smooth enough to avoid frontier effects. Pay-as-you-Go and unlimited consumption beyond the maximum subscription price paid by household based on income might do the rest. Such a scheme would maximise passenger revenues without hindering universal accessibility to the service, in a way that is fair and politically acceptable.
Collective Actors	Accessibility generated by public transport reduces transaction costs for collective actors seeking to reach geographical markets, including employment and consumer markets. As direct private beneficiaries of an accessibility that requires regular public expenditure to maintain, it could be fair to call on such collective actors to share value to maintain and improve the service. Public transport earmarked taxation, under a public service value generation scheme, would be based on the accessibility consumed by each player based on its location, and on the benefit extracted from it. A percentage of company revenue, weighted by the number of workers in the location and the accessibility rate of the site, could provide a basis for calculation. Company participation in financing employee travel passes would also be differentiated by the subscription price paid by household. This would cover real consumption only, making company support more equitable and more acceptable. It may be sensible to focus on market sectors where accessibility is a key component of the price of the goods or services traded, such as real estate. Here, value generation and capture logics can be implemented for all scales of projects, in order to contribute to financing public goods that generate private value.
Communities	Accessibility generated by public transport - given its essential qualities of economies of scale, low consumption of urban space compared to individual mobility, energy efficiency and zero emission technologies - has a major impact in reducing urban carbon footprints. This in turn has major positive effects on health, happiness and quality of life for the population. More than any other, our industry could make a case for carbon financing, which could become a major future sources of funding for networks at all scales. This is because public transport is single-handedly the largest single lever that urban decision-makers can activate to reduce urban CO_2 production through modal shift from private cars. Even if these cars are electric, they still consume more resources per passenger than shared mobility. Zero-emission, sustainable accessibility generates value for all and should be financed.

ADDED VALUE PARTICIPATIONS IN BOGOTA, COLOMBIA

In Bogota, property owners pass back, to the local government, a share of any increases in property prices that are the direct consequence of public investment in the area.

Added value participations, amounting to up to 50% of the estimated added value, are captured when building permits are implemented or when a property is sold. This has provided Bogota with a stable source of income to invest in major transit infrastructure developments.

CONCLUSION

In time, the disruption in ridership and revenues caused by the social changes emerging from the COVID-19 crisis will fade. Population growth and economic growth will erode the budget gaps suffered in many urban areas.

The mobility landscape will not, however, be the same as before. The shifts to home-based activities and greater individual flexibility may well remain. Relying on gradual improvements will mean accumulating significant deficits, which will often lead to a burden of debt and reduced capacity for investment. The arguments for change are now strong.

In many countries and regions, the industry has received significant emergency support from the general taxpayer during the crisis. Clearly, we should be grateful for this, but governments cannot now withdraw all the additional support to an industry that finds itself more dependent than before on this contribution.

The suggestions made in this paper on public service value generation schemes based on accessibility could provide levers for authorities. In addition, the links between public transport and urban land use policy remain strong, and integrated governance can be an efficient institutional arrangement for delivering value for money over the long term.

The industry should not stand still and await external funding. There are opportunities for changing the revenue and cost sides of the business model that will make public transport as efficient as possible.

Finally, authorities and operators should remember that while the pandemic itself was a terrible global phenomenon, the social changes it created are often seen as welcome by those who now have greater flexibilities in their living and travel patterns. The Sallys, Robs and Madeleines have embraced the new normal, and are enjoying its advantages. They are our customers now, and we should also be positive about these changes.

This is an official Knowledge Brief of UITP, the International Association of Public Transport. UITP represents the interests of key players in the public transport sector. Its membership includes transport authorities, operators, both private and public, in all modes of collective passenger transport, and the industry. UITP addresses the economic, technical, organisation and management aspects of passenger transport, as well as the development of policy for mobility and public transport worldwide.

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