



Research note – COVID-19 transport behaviour change – with update (2 of 2)

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Summary

The following research notes leverage both national and international sources to provide intelligence on emerging behavioural and attitudinal changes among transport users impacted by COVID-19. Because of the short time elapsed since the global pandemic began, considerable research remains unpublished or is ongoing. Therefore, we focus on published articles, partial sources of ongoing research (such as published surveys), and other mixed-format evidence of related research, observations or initiatives.

The two focal points for the research notes are:

- 1 national and international transport-related behavioural and attitudinal research captured as a result of COVID-19, and
- 2 active or proposed research and initiatives which may leverage, maintain or mitigate behavioural changes resulting from COVID-19 in turn to support recovery.

Resources have included academic journals, research databases, industry organisation publications, and a search for grey or draft literature through both public data search tools and in direct consultation with industry experts from the WSP global community. Public news media (for example, reporting changes in transport user behaviour) are included with caution as not all link to sources. In several cases a publication has been categorised as ‘news-media’ due to the nature of their references, whereas several news reports released by reputable organisations who cited reliable sources of data were categorised as ‘publications’ accordingly,

Using an open-thematic analysis method (per Braun and Clark, 2006¹; familiarisation, free coding, theme generation) in addition to expert-defined reference categories (eg travel mode changes’), the body of media was assessed for relevance, theme and topic, and grouped accordingly. The themes as follow (in Table 1) are denoted by a hashtag to enable quick navigation within the research notes. Focal region for each research item or publication is denoted by ISO alpha-3 codes with the addition of ‘INT’ to denote research or publications which cover multiple regions.

Table 1. Research themes, search terms.

#publication	#public-transport
#survey	#private-transport
#news-media	#commercial-transport
#webinar	#active-travel
#completed	#remote-working
#ongoing	#tourism-leisure

Table 2. Research note layout.

REGION – Paraphrased title
Source
Links
Search tags
Research note

¹ Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101

1 Behavioural and attitudinal research

1.1 Surveys

1.1.1 AUT – COVID-19 and mobility: results for Austria

Forschungsbereich Fur Verkehrsplanung Und Verkehrstechnik (Institute of Traffic Planning and Traffic Engineering Research)

<https://blog.fvv.tuwien.ac.at/corona/>

<https://blog.fvv.tuwien.ac.at/corona/covid-19-questionnaire-results-austria-de/>

#private-transport #public-transport #active-travel

#survey #ongoing

International survey translated into twenty languages (including English, French, Italian, Español, Slovak, Japanese, Thai, Mandarin, Farsi, Türkçe, Malay, Kurdi, Portuguese). Preliminary results are available in German and English-translated Japanese.

Figure 1. Changes in home-work commuting behaviour pre/during COVID-19.

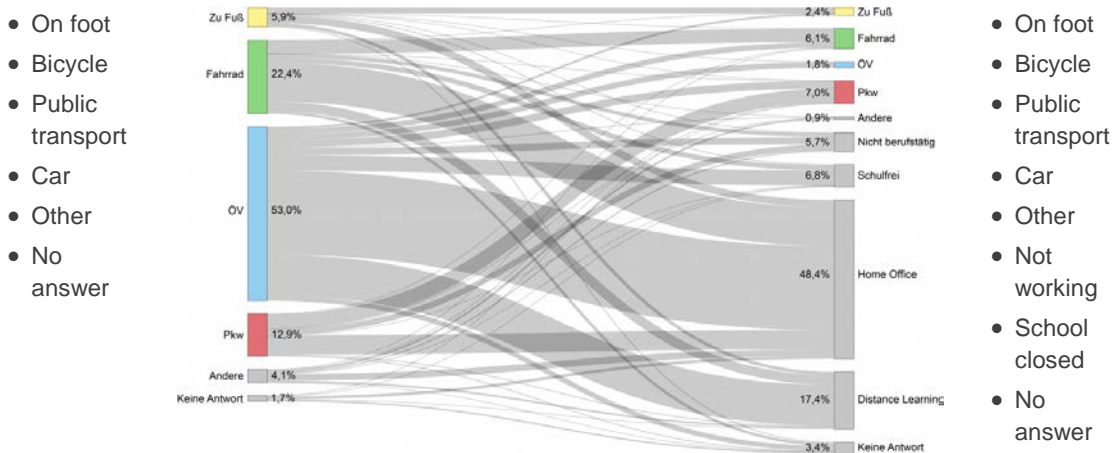
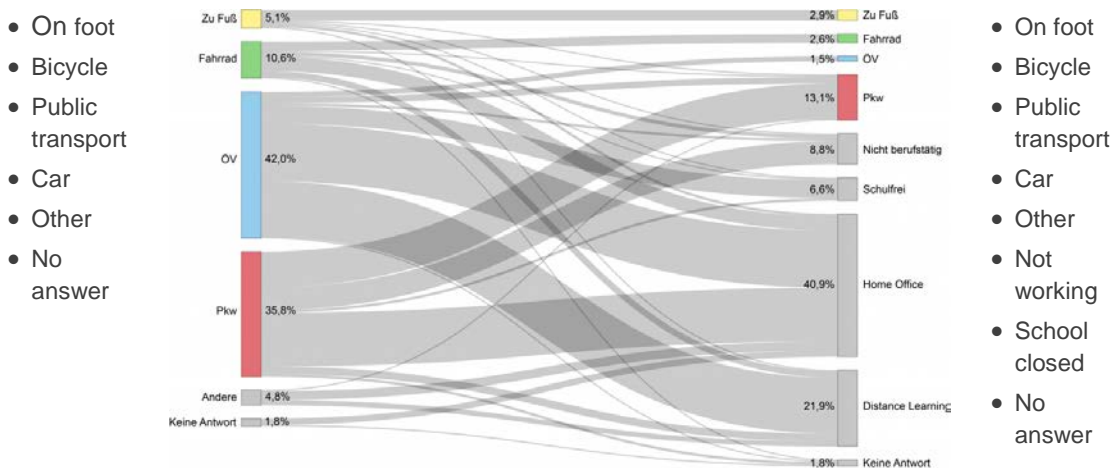


Figure 2. Changes in grocery shopping travel behaviour pre/during-COVID-19.



See also JPN – COVID-19 outbreak and mobility: results from Japan

1.1.2 GBR – Coronavirus consumer report March-April

Appinio Hamburg

https://cdn2.hubspot.net/hubfs/2714352/Coronavirus-Studie/Appinio_Consumer_Study_Coronavirus%20UK.pdf?_hstc=&_hssc=&hsCtaTracking=5f67d444-0901-4d70-b8bf-46908e0258b0%7Ccc7897c7-dabd-4b69-9233-5a8e21b14772

<https://www.appinio.com/en/uk-coronavirus-report#>

#public-transport #private-transport #remote-working

#survey #ongoing

UK-focused episodic survey, March and April reports have been released.

Questioned respondents on what measures they took to reduce their risk of infection from COVID-19. Only 3% took no extra measures to protect themselves, while 9% wore a mask when out in public.

Note - the statistics on avoidance have implications for the treatment of migrants or people believed to be migrants and visitors. With regards to future tourism, it is unclear how New Zealanders might react to foreign visitors, either positively due to perceived economic benefits or negatively due to perceived risk of infection.

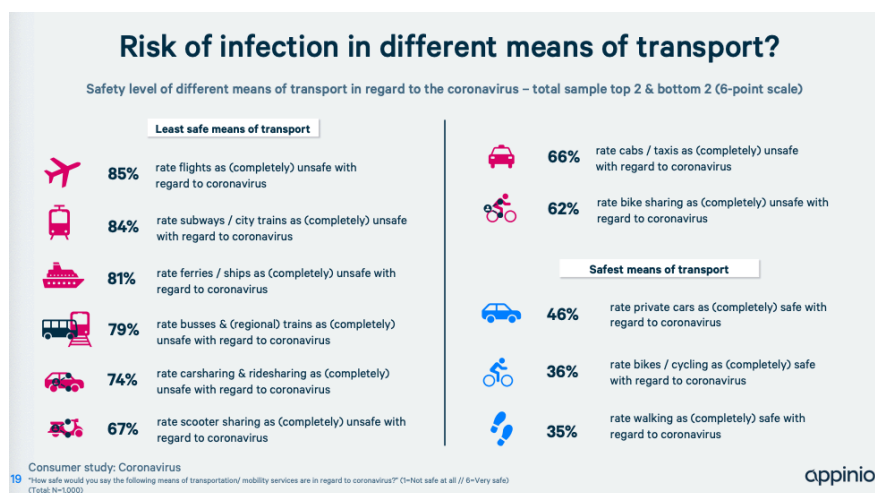
However, New Zealand-based consumer-behaviour change which has been observed may indicate fear-based avoidance of groups seen as risky, or other drivers such as intolerance. This may be a complex issue requiring further investigation. Furthermore, avoidance behaviours may affect patronage of commercial events and events centres over an extended duration.

Data shows many people transitioned to remote-work (39%), while 84% reported spending more time at home. Notably, the UK is at an earlier stage of pandemic response to New Zealand which imposes greater travel and movement restrictions on respondents in this survey.

Respondents report perceived risk of infection when using different forms of transport. Air-travel, train, ferry, bus travel modes are perceived by at least 79% of respondents as 'completely unsafe', with private travel, bicycle and walking modes seen as the safest.

March	April	Behaviour change
78%	79%	Wash hands more often
72%	78%	Avoid large gatherings / crowds
54%	67%	Avoid public transport
59%	61%	Use hand sanitiser
50%	56%	Avoid contacting at-risk groups to prevent their infection
34%	34%	Avoid contact with people who recently visited at-risk regions (travellers) to prevent my infection

March	
39%	Now working from home
30%	Not an option
18%	Could, but are not allowed to
6%	Could, but are not



The survey also assesses leisure activity (more than usual, less than usual, trips cancelled or postponed). Online and home-based activities, unsurprisingly, fall in the ‘more’ category’ while outdoor, social and shopping activities are severely curtailed (see Appendix A figures 1 and 2)

The April survey reports on measures respondents believe will encourage patronage of non-food stores (mainly social distancing measures, followed by mandated mask-wearing). Notably, 47% use physical stores for fewer purchases than before, with negative implications for shopping-related travel and associated supply chains. Conceivably, not all consumers will switch back to physical shopping, although this effect is likely to be less pronounced among lower-income consumers.



1.1.3 GBR – UK public transport survey

Transport Focus UK

<https://www.transportfocus.org.uk/news-events-media/news/growing-caution-around-return-to-public-transport-finds-transport-watchdog/>

<https://d3cez36w5wymxj.cloudfront.net/wp-content/uploads/2020/05/20152548/Travel-during-Covid-19-survey-week-3.pdf>

#public-transport

#survey #ongoing

In the Transport Focus survey 40% of riders say they will not use public transport again until they feel safe. The number of people ‘happy’ to use public transport fell from 24% to 18%. ‘It’s important that steps are taken as the lockdown is eased to rebuild confidence so that this anxiety doesn’t result in people turning their back on public transport or our roads becoming more congested’.

A rising number of respondents (63%) over three weeks of the rolling survey state that they believe riders should wear face masks. We query whether this trend would replicate in New Zealand as the COVID-19 experience is arguably less severe in terms of individuals directly affected or who have direct connections to victims.

1.1.4 GBR – Coronavirus logistics impact survey

Freight Transport Association UK

<https://fta.co.uk/coronavirus/fta-coronavirus-logistics-impact-survey>

#commercial-transport

#survey #ongoing

Rolling survey conducted among UK logistics firms, the current dataset covers nine weeks of input (March-May). The surveys report on a range of perceived business impacts (eg recruitment, fuel availability, revenue) and tracks supply chain disruption.

Industry initially furloughed a substantial portion of workforces on average, coupled with drivers in self-isolation. By end of April business (86%) reported general business downturn due to (i) lack of demand, (ii) reduced availability of drivers to fulfil current deliveries, (iii) customers cessation of business, (iv) fall in supplies. In May 16.7% of freight firms reported being in danger of financial collapse in the next eight weeks. Notably, the data suggest freight volumes are up overall, but they are for fewer freight kilometres, orders are down, and firm’s cash-flows are down. Nonetheless, over 25% of firms had brought staff back from furlough or intended to do so over the following weeks.

Measures firms are using to deal with the impacts of COVID-19 are displayed in the graph to right. A notable portion of firms did not have measures in place (eg 25% did not reduce face-to-face contact among employees, 47% did not increase vehicle / facility cleaning). However, there is no comparison on the reports of the March-May period. It is conceivable that government messaging in the UK, in contrast to New Zealand, at the time which played down the event was a driver behind these decrements, however individual or firm-level complacency may be a factor.

Of interest, the extent to which freight firms had taken advantage of various support schemes available to them (see below, data collected 5-7 May).

Measures in place	March
Hand-washing / hygiene facilities	94%
Reducing face-to-face contact with customers / suppliers	79%
Additional hygiene processes	78%
Reducing face-to-face contact among employee	75%
Emergency communication plan	70%
Business continuity plan	66%
Sick leave policy	62%
Increased vehicle / facility cleaning	53%
Adequate insurance	33%

	Not eligible	Applied successfully	Applied unsuccessfully	Applied but still waiting	Do not intend to use	Need more information
Coronavirus Job Retention Scheme	6.6%	55.6%	2.0%	9.7%	24.5%	1.5%
Bounce Back Loan Scheme (from 04.05.20)	10.1%	5.1%	0.6%	9.6%	56.7%	18.0%
Statutory Sick Pay relief package for SMEs	12.4%	15.2%	0.6%	7.3%	52.8%	11.8%
Coronavirus Business Interruption Loan Scheme for SMEs	12.6%	4.4%	4.9%	9.9%	53.8%	14.3%
Coronavirus Business Interruption Loan Scheme for large businesses	29.3%	2.4%	0.6%	3.6%	53.3%	10.8%
HMRC Time to Pay scheme	3.3%	18.6%	0.5%	8.2%	45.9%	23.5%
Self-employed income support plan	29.2%	0.0%	0.0%	0.6%	57.3%	12.9%
Deferring VAT and income tax payments	3.8%	29.3%	0.0%	7.6%	39.7%	19.6%

1.1.5 INT – Technische Universität Dresden survey on mobility behaviour

Technische Universität Dresden

<https://umfragen.psych.tu-dresden.de/sozsci/coronamobility/>

<https://tu-dresden.de/bu/verkehr/ivs/vpsy/forschung>

#public-transport #private-transport #active-travel

#survey #ongoing

Multilanguage survey (Deutsch, English, Russian Portuguese, Castilian), investigating the influence of COVID-19 on transport users’ mobility behaviours. The survey investigates the domains in which respondents are impacted by COVID-19 (eg freedom of movement, social interaction), then the extent to which transport use has changed across multiple modes (including public transport, private transport, active transport modes), and the extent to which travel purpose has changed on average (ie work, education, shopping, socialisation, leisure in groups, leisure solo). Notably, the survey focuses on leisure and social interaction behaviours and how these have changed. Respondents rate personal affect and comfort regarding different modes of transport (ie do transport users find public transport, buses or trains, comfortable, exhausting, unhealthy, and have a positive or negative affect toward them). Inclusion of a ‘healthy’ versus ‘unhealthy’ dimension has been absent from other related surveys. Nuanced scales like this may allow for more effective public messaging by targeting specific concerns.

1.1.6 INT – IATA survey of air travellers

International Transport Association (IATA)

<https://www.iata.org/en/publications/store/covid-passengers-survey/>

#air-travel #tourism-leisure

#survey #completed

This survey of recent air travellers was commissioned to elucidate the impact of COVID-19 on self-reported perceptions of the industry and future travel behaviour (N = 4700, Australia, Canada, Chile, France, Germany, India, Japan, Singapore, UAE, UK and USA). IATA wanted to ‘better understand what passenger trends to expect in the near future which would help shape guidelines for the industry recovery’.

Issue	Feb 2020	April 2020
% very concerned about personally contracting the virus	39%	53%
% afraid to travel until the virus is contained	74%	84%
My company prohibited all domestic travel	N/A	74%
My company prohibited all international travel	N/A	84%

The survey was conducted in two waves, on 22-25 February 2020 and on 6-9 April 2020. The survey featured 4,700 panel members from eleven countries (Australia, Canada, Chile, France, Germany, India, Japan, Singapore, UAE, UK and USA) who travelled in the last 9 months (selected results in the right-hand graph).

When asked about travelling again the following responses were given:



Also, when asked about the various aspects of the airport experience and the flight experience, there were no aspects about which less than 60% of respondent registered COVID-19 related concerns. This indicates that there are strong passenger concerns about air travel which may take some time to wear off.

1.1.7 INT – University Bologna COVID-19 pandemic and transportation survey

University of Bologna, Italy

<https://www.researchgate.net/project/Covid-19-pandemic-and-transportation>

https://www.researchgate.net/deref/https%3A%2F%2Fdocs.google.com%2Fforms%2Fd%2Fe%2F1FAIpQLSeiMzM6kShuBzWoyMKYLbSTXAI1TwujTGHHLsmzvWdhBxNgpQ%2Fviewform%3Fusp%3Dsf_link

#public-transport #private-transport #active-travel #air-travel

#survey #ongoing

This ongoing survey is examining the relationship between COVID-19 and travel behaviours, future travel behaviours, the role of transport systems in spreading the pandemic.

The survey queries pre-current COVID-19 travel behaviours, preferred modes of transport for work and leisure, whether respondents anticipate any changes will be enduring, how their daily travel activities were impacted and what precautions they take to reduce the effect of the pandemic (eg travel or shopping restrictions). In addition, respondents are queried on what modes of transportation they believe are riskiest and which modes they believe are responsible for 'fast spread'.

This survey has the potential to spread light on both travel behaviour changes and risk perceptions from a cross-cultural perspective (ie how relevant is research on behaviour changes and risk perceptions in foreign locales) consequently suggesting the extent of weight we should place on non-New Zealand sources.

1.1.8 INT – Tracking global demand for private travel

Ipsos (international market research company)

<https://www.ipsos.com/en>

<https://www.ipsos.com/sites/default/files/ct/news/documents/2020-04/ipsos-mobility-navigator-covid-19-impact-on-automotive.pdf>

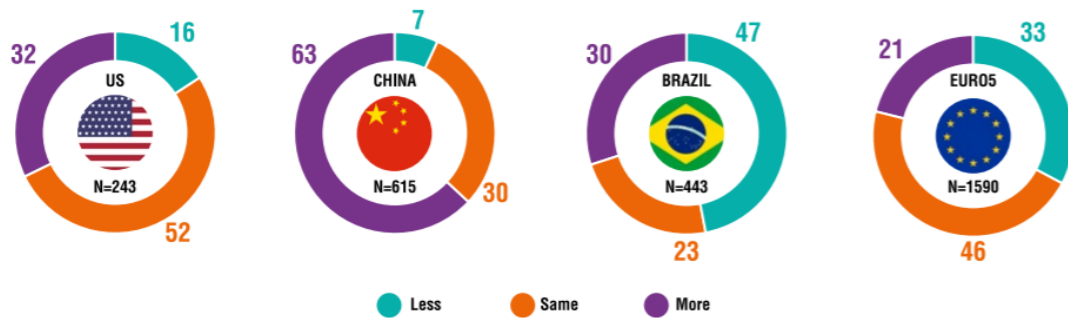
<https://www.ipsos.com/en/customer-needs-times-crisis-automotive>

#private-transport

#survey #completed

Ipsos has recently (June 2020) published the results of a 10-minute online survey 'designed to specifically address the impact of the COVID-19 outbreak on mobility and purchase consideration'. The survey was written in the native language of each country targeted and focused on eleven countries with 1000 completed surveys per country, totalling 11,000. The participants were survey panel members. The countries targeted were US, China, Japan, Brazil, Russia, India and the 'EURO5' (Germany, France, UK, Italy, and Spain).

The diagram below relates to the impact of COVID-19 on intentions to purchase a motor vehicle from selected countries. The figures represent the percentage of respondents who indicated that they were more, less, or unchanged in their degree of intention to purchase a vehicle.



There are large between country variation with China standing out as now more favourable to car travel. Possible motives put forward by commentators include (1) using the car as a method to increase physical distancing and (2) confidence that China has suppressed the epidemic making potential purchasers less circumspect about spending their money on a vehicle. In contrast residents of Brazil, the UK, France, Germany, Italy, and Spain were more circumspect with Americans being slightly less enthusiastic than the Chinese.

The following bar chart gives some global surveys figures related to feelings of protection from the virus while driving a personal vehicle. More than half of the respondents felt their personal vehicle was safer/more protected than other means of transport.



An interesting aspect of this are results of another Ipsos survey carried out in China in February 2020. These results suggested that Chinese car buyers had become more interested in health-related vehicle features (A/C systems with germ filtering, antibacterial interior materials, etc.) and low-contact options when shopping for vehicles.

1.1.9 JPN – COVID-19 outbreak and mobility: results from Japan

Forschungsbereich Fur Verkehrsplanung Und Verkehrstechnik (Institute of Traffic Planning and Traffic Engineering Research)

<https://blog.fvv.tuwien.ac.at/corona/>

<https://blog.fvv.tuwien.ac.at/corona/covid-19-questionnaire-results-japan-en/>

#private-transport #public-transport #active-travel

#survey #completed

International survey responses from Japan on travel patterns and travel modes pre- and current-COVID-19.

Figure 3. Changes in home-work commuting behaviour pre/during COVID-19.

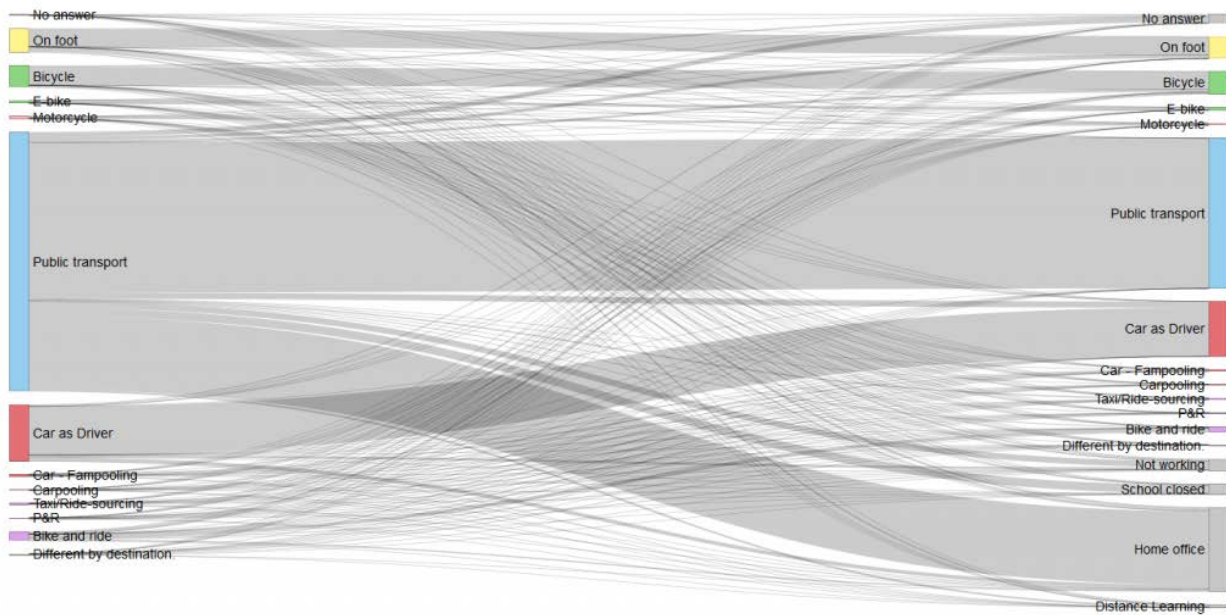
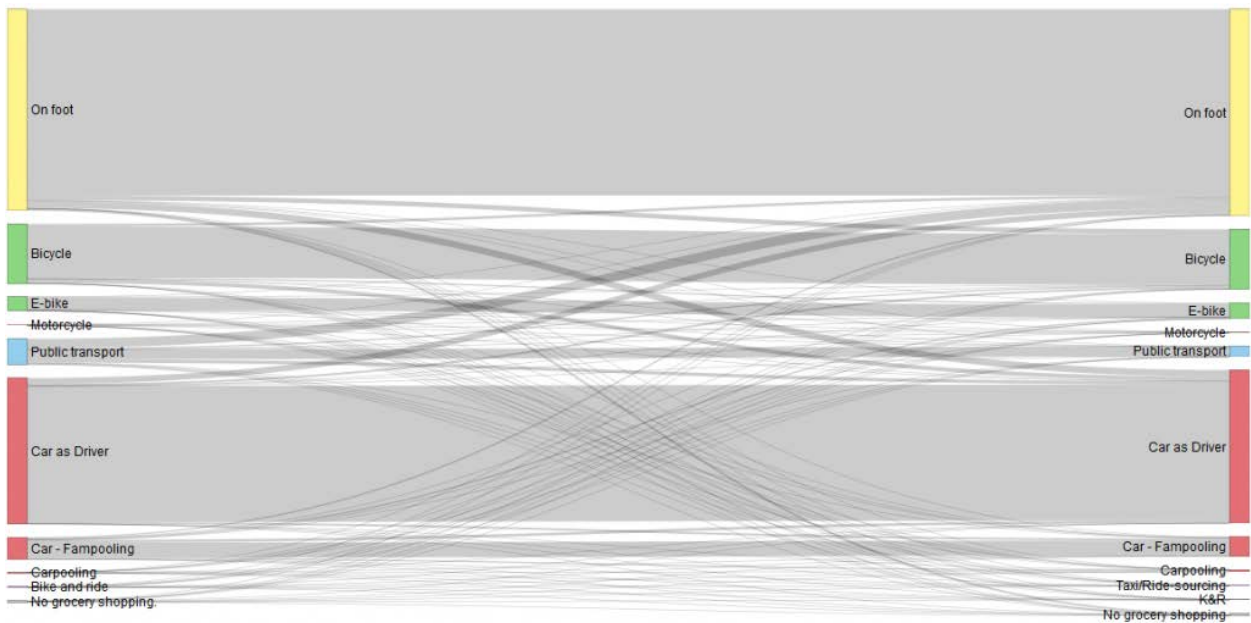


Figure 4. Changes in grocery shopping travel behaviour pre/during-COVID-19.



1.1.10 TWN – Taiwanese increase interest in local tourism post-COVID-19

Focus Taiwan (CAN English News)

<https://focustaiwan.tw/society/202006040007>

#tourism-leisure

#survey #completed

In an online poll conducted by Mastercard 78% of the 500 respondents expressed interest in taking two-to-three-day trips around the country, an increase from the 48% who said they wanted to do so before the pandemic. The rise is attributed to the success of Taiwan in (1) controlling COVID-19, (2) the global status of the pandemic and (3) cross border restrictions.

1.1.11 USA – COVID-19 consumer preferences survey

IBM Institute of Business Value (IBV)

<https://newsroom.ibm.com/2020-05-01-IBM-Study-COVID-19-Is-Significantly-Altering-U-S-Consumer-Behavior-and-Plans-Post-Crisis>

#public-transport #private-transport #active-travel #tourism-leisure

#survey #completed

The IBM Institute of Business Value (IBV) surveyed twenty-five thousand American consumers on preferences and intentions regarding transportation, future attendance of events in large-scale venues, returning to work and preferred modes of transport. The researchers believe COVID-19 will result in permanent behaviour changes, for example more negative attitudes toward public transport. The research reports 28% of regular public transport users plan on using buses, subways and trains less often, and 20% plan on finding alternative modes of transport. Respondents reported they planned on using personal transport more often, whereas more than half indicated they were unwilling to expose themselves to large crowds for the remainder of 2020. The authors predict downturn in attendance to public events, large venues, but that smaller venues such as bars and restaurants are likely to fare better. Remote working is single out, with 54% of respondents report a preference for remote working.

Psychological assessments observe consistent gaps between planned behaviour as reported by research participants and actual future behaviours—although the trends tend to be reliable, the size of change is often overstated. We are unable to assess the data from this research directly.

1.1.12 USA – New Urban Mobility Alliance (NUMO) telework policies survey

New Urban Mobility Alliance (NUMO)

<https://docs.google.com/forms/d/e/1FAIpQLSdce4HowjkySReh5Owa2ILjshYsRNW7kykwsQ-Cx7tjiNFXSA/viewform>

<https://www.numo.global/>

#remote-working

#survey #ongoing

International online survey measuring worker's attitudes to teleworking and how teleworking has changed in their workplace as a result of COVID-19. The survey assesses pre- and post- teleworking practice, worker attitudes, perceived efficiency or benefit for the organisation.

Research is in the data collection phase and may be used to quantify capacities for teleworking or remote working, and to estimate how 'sticky' change is based on attitudes and perceived benefits. If a substantial number of workers continue to work remotely this has implications for transport infrastructure and supply chains which are optimised to service commercial, not residential hubs.

1.2 Publications

1.2.1 DEU – Impact in transport, from the railways' systems research perspective

Tardivo, Alessio & Martín, Celestino & Zanuy, Armando. (2020). COVID-19 impact in Transport, an essay from the Railways' system research perspective.

https://advance.sagepub.com/articles/Covid-19_impact_in_Transport_an_essay_from_the_Railways_system_research_perspective/12204836/files/22449668.pdf

#public-transport

#publication #completed

The authors report demand changes in the transport sector (passenger, freight, rail and air). For example, strong eCommerce growth in China, the USA, France, Germany and Sweden, with strong growth in rural areas in China, in the short term.

The focus of this report, however, is the relative merit of rail transport compared to other forms including bus, air and private transport, to provide sufficient, safe and environmentally responsible transport during and post COVID-19. Distinct advantages are described for rail over other transport modes. 'The crisis halted passengers' mobility and limited air and sea freight significantly. On the contrary, long-distance trans Eurasian rail lines have been untouched'. Rail transport offers advantages over road and air transport due to the relative ease of adapting seating layouts, provision of independent carriages which isolate passengers from each other, and the ability to screen passengers more efficiently through station entrances. In contrast, there are economic barriers to air travel providing sufficient safety and social distancing, such that long-distance rail transport becomes increasingly competitive (eg re-establishing night-train services for long-distance travel)

However, 'emergency health measures will play a key role on the psychology of passengers regarding... uncertainties and the fear of social intimacy [in context of personal mobility]'. As such, urban public transport systems are at risk should users' preference crystallise in a switch to personal transport. Users' safety fears combined with existing barriers to comfort when using public transport could result in an enduring downturn in ridership, such that substantial government financial assistance would be needed to restart it. More intrusive elements of the public transport experience push end-users back to individual mobility or air transport. Public safety, hygiene and social distancing measures provide additional barriers that public transport users must face, therefore incentivising individual mobility where possible. Instead, 'continuous experiences' will encourage patronage. As part of the continuous experience, the authors point to integrating micro-transport (eg electric scooters and bicycles) rather than encouraging other transport cost saving measures (eg relaxing environmental standards or subsidising electric vehicles in the short term).

Finally, the authors cite a need for travel providers to exhibit higher levels of cooperation to deliver safe outcomes, in that a single break in the safety chain could contaminate a large section of a transport network.

Note - from a behavioural perspective we understand that use of micro-transport services has been problematic due to a lack of social norms governing users' behaviour (eg fast travel on footpaths, pedestrian road crossings, and lack of helmet use) which have put others at risk. Any decision regarding integration of micro-transport would need to be combined with initiatives focused on developing pro-social behaviour norms.

Note - consumer behaviour varies on- versus offline, with online consumers more price conscious, less brand loyal, with implications for well-established brands which may not translate their business entirely into online sales.

eg Wang, H. H., Hao, N., Zhou, Q., Wetzstein, M. E., & Wang, Y. (2019). *Is fresh food shopping sticky to retail channels and online platforms? Evidence and implications in the digital era*. *Agribusiness*, 35(1), 6-19.

Commentary - some consumers are likely to stay 'switched' to online shopping after travel opens. It is unclear to what extent income level will drive this as for lower income public transport users physical shopping may present a substantial cost in terms of financial cost of public transport, convenience cost multiple service lines and time lost (notwithstanding the cost of delivery). Conceivably the cost-benefit of online delivery is greater for people in lower income brackets, to a point. The main driver of differentiation may be access to and comfort using digital tools. In addition, individual personality is likely to be a factor, with relatively more extroverted individuals needing more social contact, therefore more likely to make consumption choices which maximise social interaction. This is likely to be a more salient factor regarding the consumption of products which involve substantial social elements, such as provided by bars, restaurants and cafes, than low social interaction consumption like grocery shopping. This represents a driver for goods and services which involve large gatherings of people and represents a conflict between individual safety perceptions and individuals' socialisation needs.

Note – refer also WSP whitepaper 'COVID-19 and Public Transport: From Response to Recovery' which provides evidence of rail greater ability to reconfigure services for social distancing over other public transport options (eg trams and busses).

1.2.2 DEU – The SARS-VoV-2 pandemic and public transport strategy 2020

Mobility Institute Berlin

https://mobilityinstitute.com/wp-content/uploads/2020/04/Beyond-the-immediate-crisis-The-SARS-CoV-2-pandemic-and-public-transport-strategy_mib_v1.02.pdf

#public-transport

#publication #completed

The authors make the following predictions:

- 1 **Mobility demand will rebound** after the initial crisis phase, to near pre-COVID-19 levels but nonetheless remain depressed for an extended period
- 2 Due to the **high perceived risk of infection when using shared transport**, people are likely to seek out other modes where possible
- 3 **Need for transportation services to remain ready** to raise health-safety protection measures periodically to cope with resurgence of COVID-19 over approximately the next 18 months
- 4 **Demand will be volatile in response to recurring waves of infection**, but become more flexible and more resilient over time as users become accustomed to a 'new normal'
- 5 **People tend to overestimate the risk of public transport** but ignore their own advice. Per public response to SARS 2002-2003, Swine flu 2009-2010 and A(H7N9) 2013-2017 risk perceptions among users were relatively high, but intentions to switch to other modes did not entirely materialise. For example, the authors cite approx 60% of Hong Kong public stating they would avoid public transport, but only 7% subsequently did so. The authors estimate a lag of approximately one month between

decrements in ridership driven by infection fear and recovery after infection numbers fall. They comment that fear appears to be driven primarily by infection numbers, not infection deaths.

Note – the reasons behind the disparity between estimated risk and actual travel behaviour may be numerous. Individual predictions of future behaviour have an element of error, meanwhile financial or systemic constraints may be more salient drivers behind public transport use than purely psychological or ideological ones.

Note – demand volatility will follow, to some extent, recurring waves of infection overseas as individual’s risk perceptions are peaked unconsciously by news media and word of mouth. Therefore, demand may partially reflect external factors, not only the presence or non-presence of COVID-19 in New Zealand. This trend may become more pronounced when New Zealand opens to more international visitors who are perceived of as potential carriers. Coordinated and clear communication strategies could mitigate this, emphasising any border protection initiatives, ongoing monitoring and health-safety strategies in place among local or internal transport services. Finally, risk responses tend to dull over time, such that any demand volatility is likely to become less pronounced over an 18-month period.

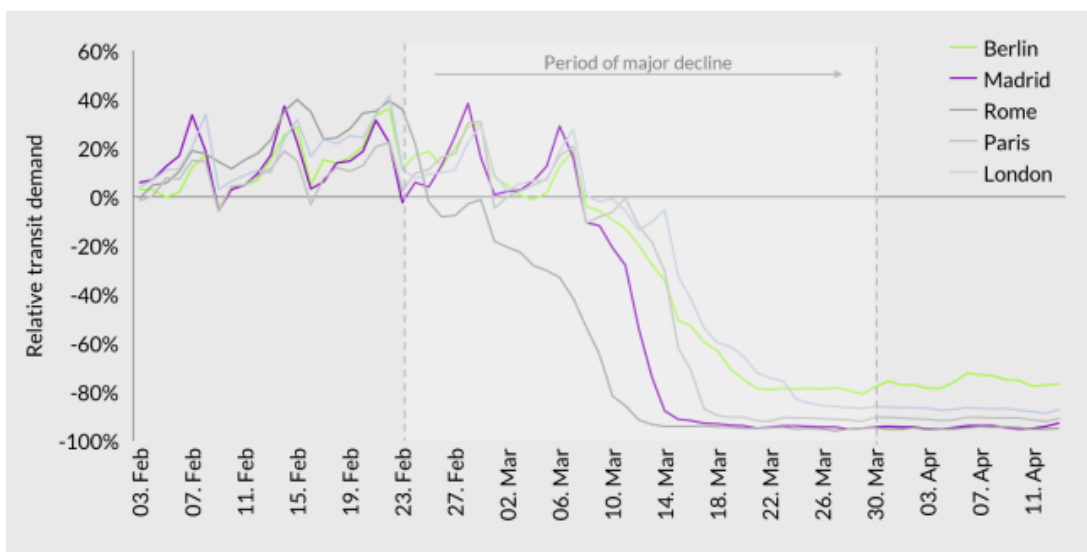


Figure 4: Volume of Apple Maps directions requests per city relative to January 13, 2020

Note - the authors track traveller’s requests to Apple Maps for travel directions (see graph above), showing a sharp drop in exploration behaviour as travellers shift to fewer, known destinations. Such data might be used to predict transport users’ risk perceptions by proxy as they begin to explore more post lockdown, in turn providing guidance on what level of health-safety communication is needed by the general public, or whether more communication is needed if exploration behaviour is deemed risky (in terms of volume or risky destination).

1.2.3 EUE – Jobs in green and healthy transport: making the green shift

United Nations Economic Commission for Europe (UNECE)

International Labour Organisation (ILO)

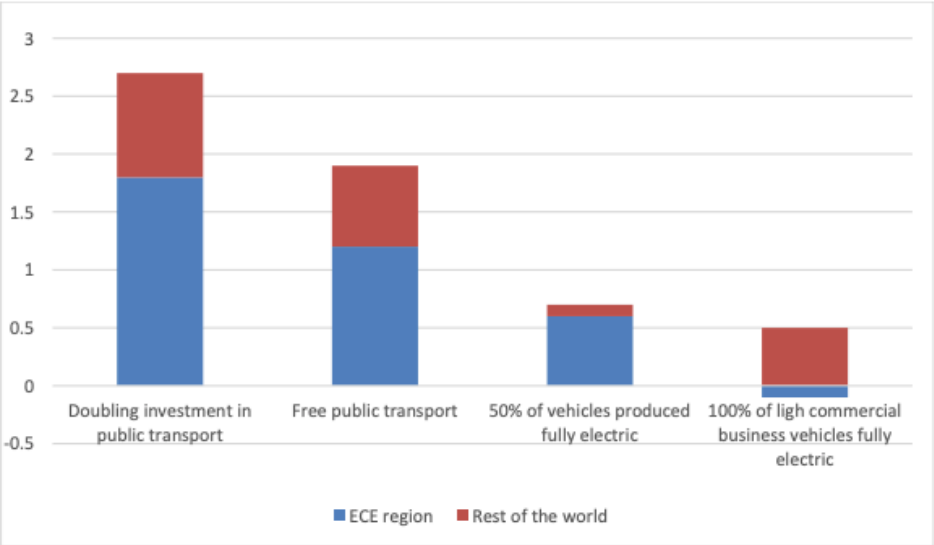
<https://thepep.unece.org/sites/default/files/2019-10/Informal%20document%2008%20Study%20on%20green%20and%20healthy%20jobs%20in%20transport.pdf>

#public-transport #private-transport #commercial-transport

#publication #completed

In the wake of the above report the UN has stated that based on the report's findings 'Transforming the transport sector to be more environmentally-friendly in the aftermath of the COVID-19 pandemic, could create up to 15 million new jobs worldwide and help countries move to greener, healthier economies'. The report examines the employment implications of four 'green transport' scenarios in nearly 60 UNECE countries, in North America, Europe, the Caucasus and Central Asia. The scenarios, which envisage an accelerated expansion of public transport, and the electrification of private passenger and freight transport, are compared with a 'business-as-usual' approach. The authors found that 'if half of all vehicles manufactured going forward were electric, an estimated 10 million more jobs could be created worldwide; nearly a third of them in the UNECE region. Additionally, nearly five million more jobs could be created if UNECE countries doubled their investment in public transport'.

Figure E.2. Net job creation (in millions) in the whole economy under each of the scenarios modelled in the study



1.2.4 GBR – How will COVID-19 change our travel behaviour?

Northern Ireland Assembly

<https://www.assemblyresearchmatters.org/2020/05/07/how-will-covid-19-change-our-travel-behaviour/>

#public-transport #private-transport #remote-working

#publication #completed

Discussion on impact of social distancing and users' health fears on transport infrastructure, specifically, rising congestion costs as a result of greater private transport use. They cite UK surveys which indicate 20-40% of public transport users will decrease their use of public transportation due to health concerns (49%) or due to work-from-home arrangements. Further, 'the UK government may have to reconsider a reversal of current transport policy, encouraging commuters... to drive as opposed to using public transport'.

The authors query whether sanitiser 'stations' at public transit stations will enhance public feelings of safety or highlight potential dangers with negative affect. They also query whether active travel will

increase post-lockdown, as survey respondents indicate their intention to. UK and Italian authorities are said to be increasing spending to support ‘pop-up’ cycle lanes, and other active travel initiatives.

Note - links to tactical urbanism and short-term infrastructure experimentation. Notably the examples given (Milan, Belfast) tend to be more densely developed with mixed development than New Zealand locales.

1.2.5 INT – Changes in transport behaviour during the COVID-19 crisis

International Energy Agency (IEA)

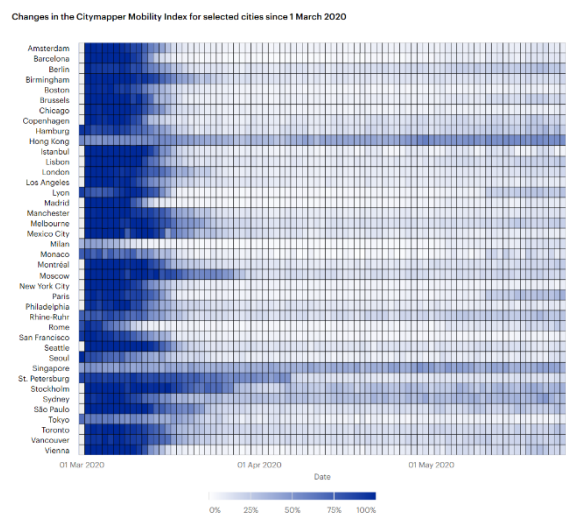
https://www.iea.org/articles/changes-in-transport-behaviour-during-the-covid-19-crisis?utm_campaign=IEA%20newsletters&utm_source=SendGrid&utm_medium=Email

#public-transport #private-transport #active-travel #air-travel

#publication #completed

Outlines the fall in global transport activity (eg road transport ‘almost below the 2019 average by the end of March 2020’), the authors provide a semi-interactive visualisation of travel activity from March to May using Citymapper data which is focused on public transport and active travel (see ‘Citymapper Mobility Index’ research note) (right, dark blue represents 100% of regular travel activity).

The authors then focus on air travel, observing more marked effects on non-essential travel with a marked impact on air travel. This impact is observed also in public transport, with Taipei seeing depressed demand for up to four months post-peak SARS 2003. The authors suggest the public response to COVID-19 will “more closely resemble the response to SARS.



IEA. All rights reserved.

From a behavioural perspective, the authors suggest that the speed and extent of recovery in travel demand will partially depend on how the travel experience is impacted (eg whether increased health screening is required at transit stations, such that travel is more complicated, time-consuming and travellers may be dissuaded as a result. As such, they cite risk and inconvenience as factors in how transport demand recovers.

Note – the tone of this section suggests concerns regarding the negative effects of additional health-safety procedures which is a legitimate concern, however additional measures may only represent a small increase in overall security screening (for airlines at least) such that their net effect is minimal.

Enduring modal shift was observed by the authors after the London terrorist attacks 2005 ‘cycling trips remained high until the end of 2005, with a 9% annual increase in registered trips compared to the previous year, whereas car, bus and underground use [in London] decreased’ (see graph right). In contrast, the authors anticipate a more pronounced movement away from Bus, Rail and Underground travel in favour of active modes and Cars.

Note – we can anticipate that modal shift to active travel is likely to be less marked and enduring given New Zealand’s seasonal transition into winter and the effect to vary furthermore according to urban density and associated travel distances. Even so, (case right) the rise in active travel appears to be at the cost of Car and Bus travel not Rail, suggesting these are not preferred modes.

Finally, the authors discuss potential government levers, such as (1) infrastructure investment, (2) pricing and regulatory policies, (3) stimulus spending and (4) public behaviour change campaigns. ‘Campaigns may be necessary to help inform the public to make choices based on sound analysis of risks’, User-centred design of campaigns might emphasise the co-benefits of public transport or active travel, such as increments in well-being, environmental or convenience benefits.

Note – the authors comment that ‘analysis has since [Fukushima nuclear crisis 2011] found that the actions most likely to be taken up were those that did not require either frequent efforts or considerable discomfort’. Regarding active travel change, we are likely to see greater uptake where information campaigns or infrastructure improvements likewise reduce discomfort or reduce effort (eg congestion information or separated cycleways).

1.2.6 INT – Citymapper Mobility Index

Citymapper

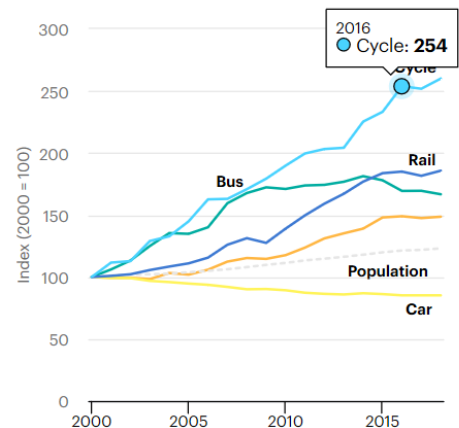
<https://citymapper.com/cmi>

<https://citymapper.com/cmi/about>

#public-transport #active-travel

#publication #ongoing

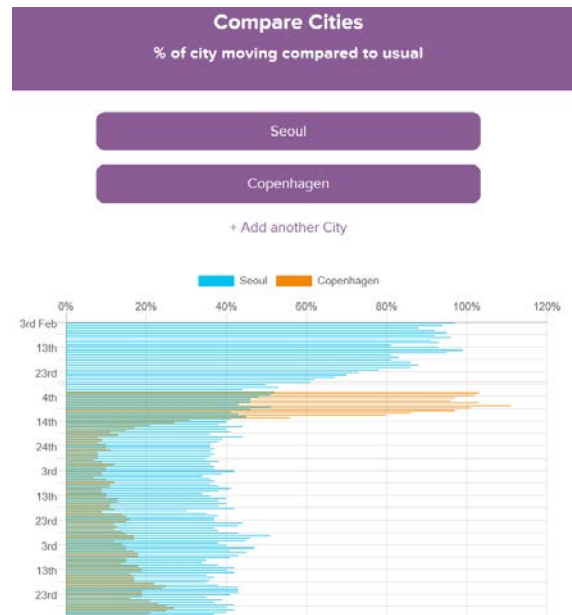
Growth in journey stages of selected modes in London, 2000-2018 Oper



IEA. All Rights Reserve

● Cycle ● Rail ● Population ● Bus ● Car
● Underground/DLR

The Index compares trips planned in the Citymapper app to recent typical use. ‘Our users are public transport users and also use us for walking, cycling, and some micromobility and cabs. We are not used for driving’. The tools Index covers a limited number of major cities and provides for a day-by-day breakdown of ‘moving’ in addition to the ability to compare multiple cities (see below-left partial list and below-right comparison Seoul and Copenhagen), in addition to an option to download the data. Citymapper provides an app, pass and subscription service for mobility services intended to act as a cross-mode / cross-region travel pass.



1.2.7 INT – ICAO future scenarios for air travel

International Civil Aviation Organisation (ICAO)

<https://www.icao.int/Meetings/FutureOfAviation/Pages/default.aspx>

#air-travel

#publication #completed

The latest estimates of the International Civil Aviation Organisation (ICAO) indicate that compared to a business as usual baseline the impact on global scheduled passenger traffic for the calendar year 2020 are:

- overall reduction ranging from 32% to 59% of seats offered by airlines
- overall reduction of 1,825 to 3,208 million passengers
- approx. USD 238 to 418 billion potential loss of gross operating revenues of airlines.

The outcome will depend on:

- duration and magnitude of the outbreak
- containment measures
- consumer confidence in air travel
- economic conditions, etc.

The above estimates are based on the analysis of separate scenarios for international and domestic travel as shown below:

International passenger traffic for 2020, compared to Baseline (business as usual)

V-shaped (a first sign of recovery in late May)

- Overall reduction ranging from **38% to 58% of seats offered by airlines**
- Overall reduction of **867 to 1,333 million passengers**
- Approx. **USD 152 to 235 billion potential loss** of gross operating revenues of airlines

U-shaped (bottom out and pick up in 3Q or later)

- Overall reduction ranging from **48% to 71% of seats offered by airlines**
- Overall reduction of **1,108 to 1,524 million passengers**
- Approx. **USD 194 to 269 billion potential loss** of gross operating revenues of airlines

Domestic passenger traffic for 2020, compared to Baseline (business as usual)

V-shaped (bottom out and pick up from late May)

- Overall reduction ranging from **28% to 44% of seats offered by airlines**
- Overall reduction of **958 to 1,494 million passengers**
- Approx. **USD 85 to 133 billion potential loss** of gross operating revenues of airlines

U-shaped (bottom out and pick up from July)

- Overall reduction ranging from **35% to 51% of seats offered by airlines**
- Overall reduction of **1,206 to 1,684 million passengers**
- Approx. **USD 107 to 149 billion potential loss** of gross operating revenues of airlines

1.2.8 INT – UN World Tourist Organisation (UNWTO) forward scenarios to the end of 2020

United Nations Tourism Organisation (UNWTO)

<https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-05/Barometer%20-%20May%202020%20-%20Short.pdf>

#tourism-leisure

#publication #completed

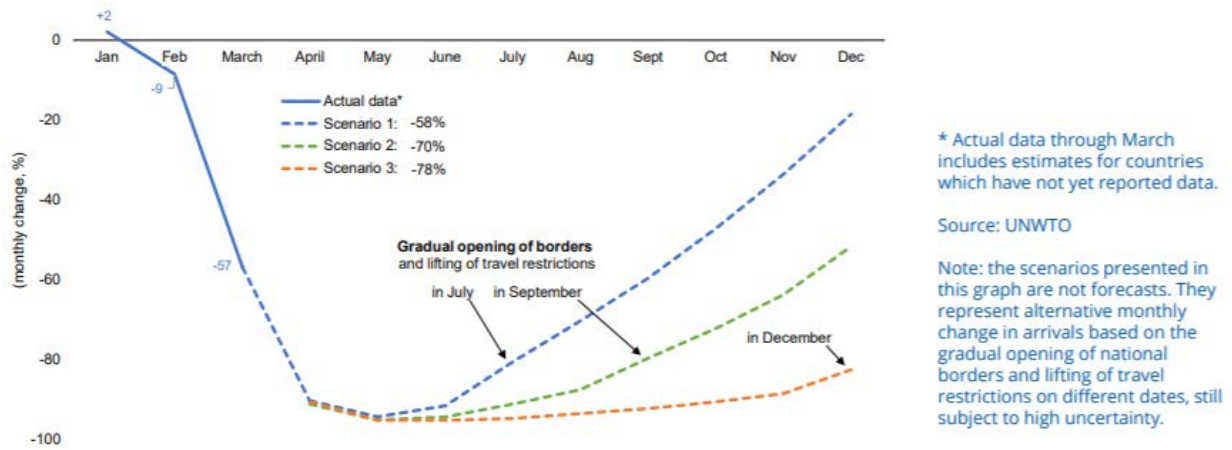
Three scenarios of international tourism in 2020 are presented representing possible ‘patterns of monthly change in arrivals from April to December 2020’. The three different assumptions are that travel restrictions start to be lifted and national borders opened in:

- early July (Scenario 1)
- early September (Scenario 2)
- early December (Scenario 3).

All three scenarios involve different declines in arrivals through December 2020. The scenarios assume that Asia and the Pacific sees a change in trend earlier. This is because the pandemic hit Asia earlier than other regions and seasonality in Asia is less significant than elsewhere. Economic factors are not explicitly incorporated although these are expected to affect tourism by adversely impacting on spending power. The scenarios will be rerun as new information comes available. The changes represented by the three scenarios are shown in the chart following.

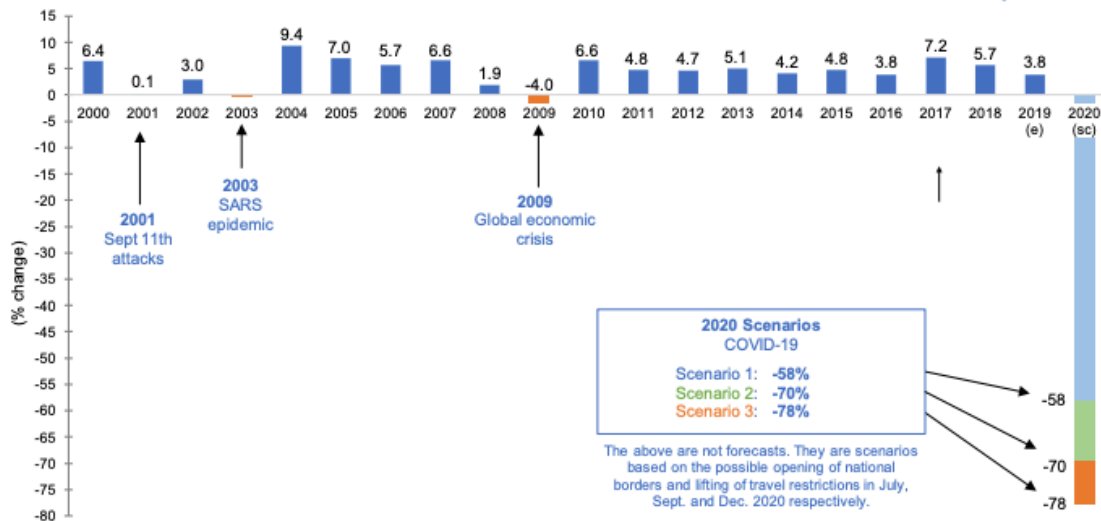
Forward-looking scenarios depend on re-opening of borders

International tourist arrivals in 2020: three scenarios (YoY monthly change, %)



The authors predict arrivals could drop 58-78% depending on pace of normalisation:

International tourist arrivals, 2000-2019 and scenarios for 2020 (% change)



Source: World Tourism Organization (UNWTO) (e) Estimate (sc) Scenario-based data

A list of strengths, weakness and opportunities are presented for tourism industries, notably, a (1) lack of references to previous downturns, (2) perception of travel as a risk (therefore depressing tourism numbers), (3) low levels of demand when restarting tourism due to enduring social distancing. Opportunities point to a need to re-think tourism business models.

Note - the ICAO has developed six scenarios for aviation and predict weaker recover (see following).

1.2.9 INT – ICAO effects of novel coronavirus on civil aviation: economic impact analysis

International Civil Aviation Organisation (ICAO)

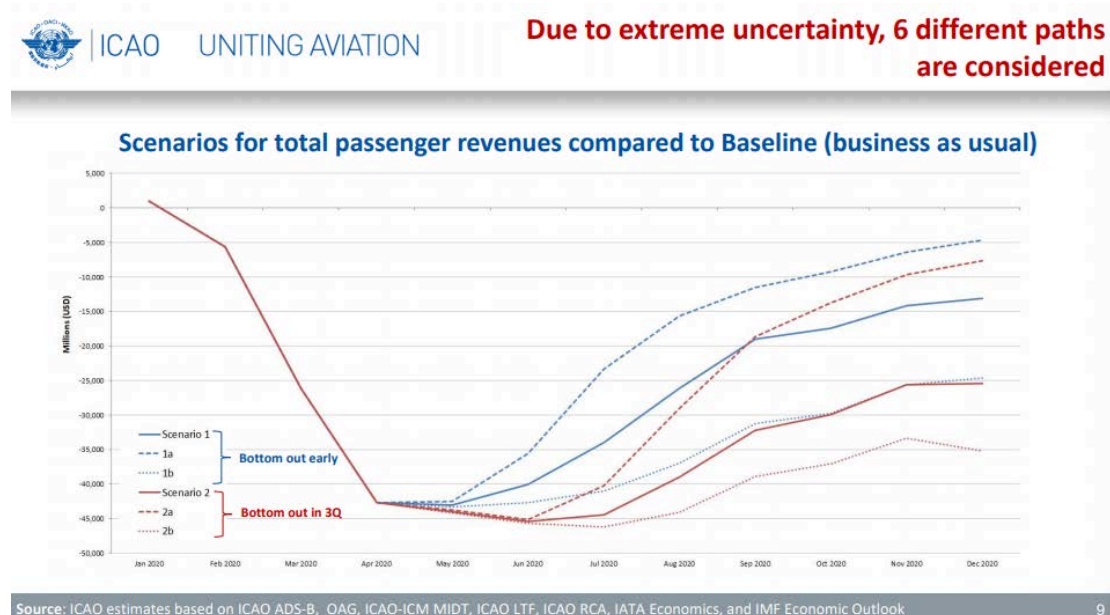
https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf

#air-travel #tourism-leisure

#publication #completed

Analysis on the global impact of COVID-19 in international and domestic airline travel, seat capacity changes and six scenarios for recovery in 2020. Notably, the ICAO predicts a weaker recovery in air travel than the UNWTO does for tourism in general.

Speculation - Tourists may rank air travel as riskier than land-based travel by private transport or rail. Due to New Zealand's less acute experience of COVID-19, however, for New Zealanders this effect is likely to be less pronounced. Further, conceivably certain demographics within the tourist market may be less susceptible to risk-based concerns (eg adventure sport tourists versus luxury experience tourists).



1.2.10 INT – Effect of COVID-19 and subsequent social distancing on travel behaviour

De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behaviour. Transportation Research Interdisciplinary Perspectives, 100121.

https://www.researchgate.net/publication/340894452_The_effect_of_COVID-19_and_subsequent_social_distancing_on_travel_behavior

#public-transport #active-travel #remote-working

Desk research which predicts falling travel demand due to increased remote working, e-learning and reduced public events and activities, impacting public transport ridership and a shift to online shopping. However, they also predict personal well-being decrements as a result of ongoing social distancing or shifts in group norms which approximate greater social distancing compared to pre-COVID-19. Active

travel is cited as a counterbalance to improve wellbeing and the author cites examples in Europe, North and Latin America where travel infrastructure has been repurposed for active travel modes (eg temporary cycleways). The important role of public transport operators is discussed regarding provision for users on low incomes or who are physically disabled—noting a need to improve safety, but challenges of falling ridership and revenue. Implicit is the risk of cost-saving measures which reduce capacity and increase crowding.

1.2.11 INT – Rail and the effects of the COVID-19 pandemic (part 1)

WSP whitepaper

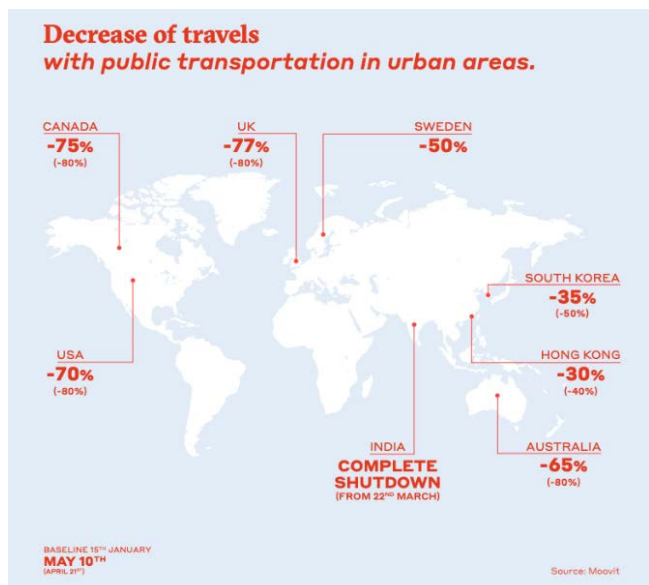
<http://cdn.wsp-pb.com/415648/swedish-white-paper-rail-and-the-effects-of-the-covid-19-pandemic.pdf>

#public-transport

#publication #completed

Estimates short-term decrements in public transit ridership will continue into the long-term. The authors assess the reduction in public transportation ridership in April and May compared to January 2020 baseline, Australia, Canada, Hong Kong, India, South Korea, Sweden, USA (between -75% and -35%). Noting that Hong Kong, South Korea and Sweden were not 'locked down' and therefore experienced a less severe fall in ridership. Government financial support packages for public transport are briefly described per region.

Note - the remainder of the whitepaper addresses initiatives and interventions. These are continued to the 'Behaviour Change for Recovery Section' of the research notes.



1.2.12 INT - COVID-19 transport brief: Electric mobility

International Transport Forum (ITF)

<https://www.itf-oecd.org/sites/default/files/electric-vehicles-covid-19.pdf>

#private-transport

#publication #completed

The International Transport Forum (ITF) has recently published material on the prospects for EVs. While predicting a short-term reduction in demand they are positive about the longer-term future 'over the next decade and beyond' citing the following factors.

- Opportunities for self-reinforcing cost reductions in EV production will persist. These result from increasing scale of battery production as well as battery technology improvements and will make it easier for BEVs and PHEVs to compete with vehicles using internal combustion engines in terms of total cost of ownership.

- The interest in, and need for, policy action on priority objectives such as mitigating climate change, improving local air quality, improving economic productivity and fostering industrial development will continue. These priorities require support for innovation, including industrial progress in the EV and battery value chains.
- Oil prices will progressively increase from their current levels as the global economy recovers from the COVID-19 shock, even if they could remain lower than before the pandemic.

They then list the policy implications below:

- **Electric mobility** requires rapid government interventions to provide insurance against COVID-19 risks to a variety of stakeholders. These range from large established corporations such as car manufacturers, public utilities and energy companies to small but often fast-growing companies without stable and substantial cash flows. In the near term, sticking to policy requirements on clean mobility would help to reduce risks for investments into e-mobility that have already been made.
- **Derogations, or exemptions** would offer advantages for stakeholders that have not yet acted. Should derogations be allowed, they should include guarantees that the requirements will be met in due course.
- **Economic stimulus packages** geared towards decarbonising transport would benefit e-mobility and could help strengthen the pace of economic recovery over time. This is because e-mobility, like other energy efficiency improvements, can improve economic productivity by reducing the cost of travel and, in addition, be a driver of innovation. It is central for stimulating progress in battery technology, which has wider implications for the clean energy transition and, more broadly, the growth-enhancing impacts of self-reinforcing innovations.
- **Increased public debt as a result of stimulus programmes** will likely mean that in the mid- to long-term polices will need to help recover government revenues, and not just fulfil policy goals like economic development and clean mobility. This may increase interest in taxing carbon-intensive fuels, implementing bonus/malus schemes that tax vehicles based on their environmental performance, as well as introducing distance-based charges for road use that are well-suited to manage a decline of fuel tax revenues resulting from the decarbonisation of transport.

1.2.13 INT –Transport brief: Restoring air connectivity under policies to mitigate climate change

International Transport Forum (ITF)

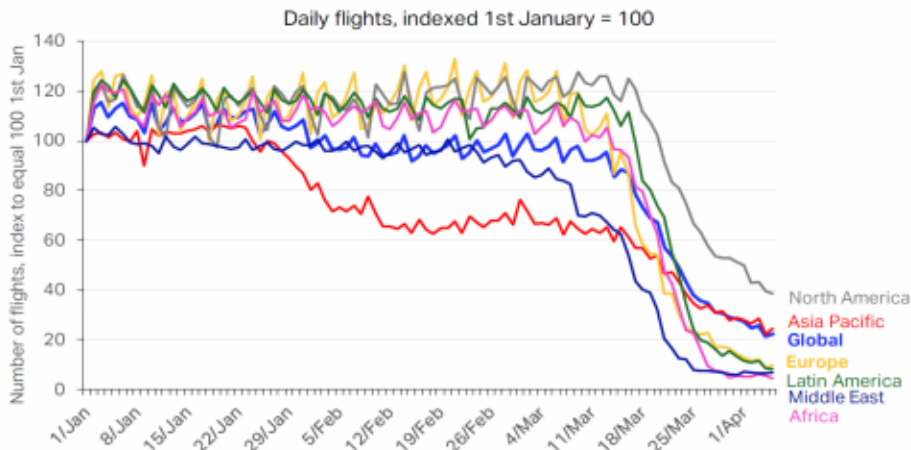
<https://www.itf-oecd.org/sites/default/files/air-connectivity-covid-19.pdf>

#air-travel #commercial-transport #tourism-leisure

#publication #completed

Environmental policy for the Aviation Sector relates to concerns over noise, air pollution, and mitigating CO₂ emissions. These policy priorities are independent of COVID-19 crisis. The crisis has already temporarily reduced CO₂ emissions from aviation. COVID-19 contingency measures and post-crisis consumer spending patterns are likely to severely dampen demand for air travel for an extended period. The disruption will accelerate the retirement of older, less fuel-efficient aircraft, based on experience with previous economic shocks. But neither effect will alter climate change impacts significantly and durably. Achieving international aviation's carbon neutral growth target is a formidable task regardless of the impact of COVID-19. Accordingly, aid to the sector must align with existing sectoral policies to increase social welfare outcomes, both in terms of environmental impacts and consumer benefits.

Worldwide flights down 80%



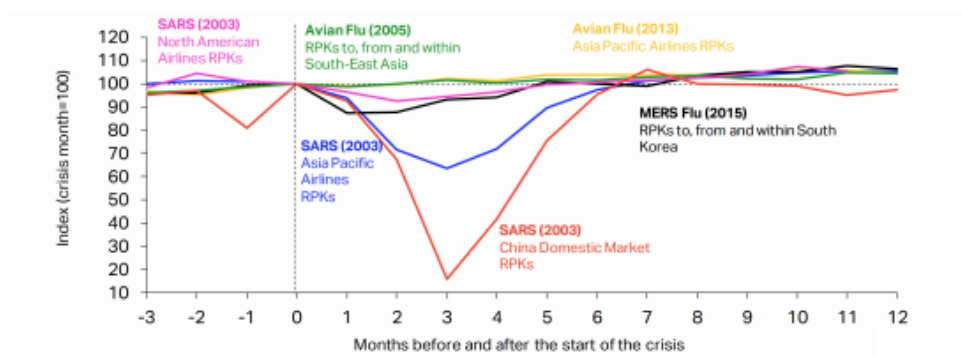
Source: IATA Economics analysis based on data provided under license by FlightRadar 24. All rights reserved.

Air cargo traffic has fallen abruptly, albeit less than passenger traffic



Source: IATA Economics using data from IATA Statistics

Covid-19 will have a much greater impact on air passenger travel than previous corona virus and influenza outbreaks



1.2.14 INT – Restoring trust in public transport: The way forward

Local Governments for Sustainability (ICLEI)

<https://ecomobility.org/restoring-trust-in-public-transport-the-way-forward/>

#public-transport

#publication #completed

With a focus on South Asia, and observing falling public transport ridership, the authors describe five focal points they believe will help cities rebuild public transport ridership:

- 1 coordinated multilevel governance of public transport systems
- 2 resilient business models which can repurpose underutilised public transport for other commercial services (eg freight)
- 3 leveraging trusted public-private-partnerships, particularly cooperation among providers and modes, such that active mobility, informal and shared transport easily fills gaps in public transport
- 4 rebuilding passenger trust with enhanced hygiene standards, reliable services and professional staff behaviour
- 5 climate action relief packages, to leverage or scale uptake of low-carbon options, e-mobility and better integration of public transport systems generally.

In principle the five focal points are sound, but the publication is light on examples and implementation. From the behavioural perspective ridership is likely to follow (i) trust and (ii) necessity as for those passengers who have options and experience low trust, they are likely to stick to alternative modes until their trust metric is met.

1.2.15 INT – ACI Future estimates for air travel

Airport Council International (ACI)

<https://aci.aero/wp-content/uploads/2020/05/200505-Third-Economic-Impact-Bulletin-FINAL.pdf>

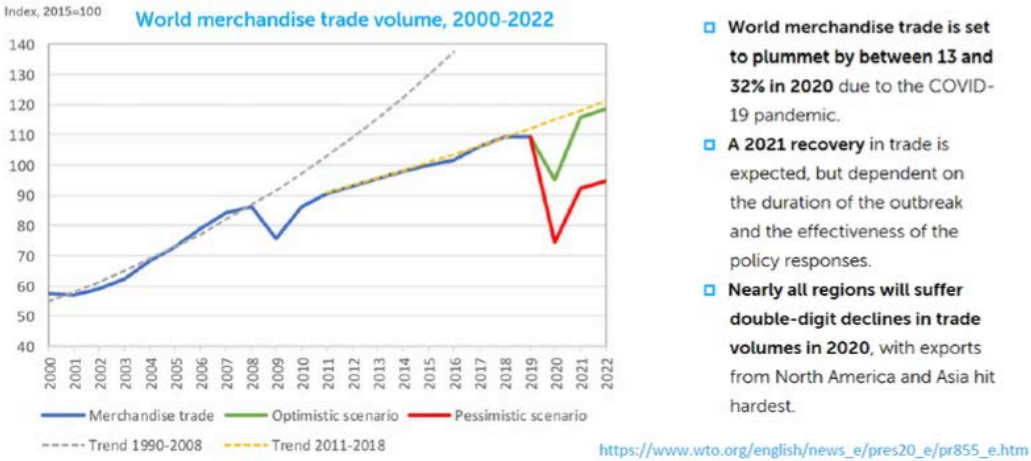
#air-travel

#publication #completed

These are shown below indicating that airports are estimated to lose 97.4 billion in revenue and 4.7 billion passengers in 2020 compared with business as usual.

Region	Passenger number - both interntional and domestic for full year 2020		Airport revenue - both aeronautical and non-aeronautical for full year 2020	
	million and % change from 2020 "business as usual" baseline scenario		USD billion and % change from 2020 "business as usual" baseline scenario	
Africa	-114	-47.3%	-2.2	-51.2%
Asia/Pacific	-1,797	-52.9%	-29.4	-58.9%
Europe	-1,416	-57.1%	-37.1	-62.6%
Latin America/Caribbean	-289	-44.2%	-5.3	-50.5%
Middle East	-201	-46.9%	-7.0	-53.0%
North America	-859	-41.1%	-16.4	-47.3%
Total	-4,676	-50.4%	-97.4	-56.7%

World Trade Organisation (WTO) Global trade estimates:



1.2.16 IRL – COVID-19 passenger numbers on public transport services

Transport for Ireland (TFI)

<https://www.transportforireland.ie/news/covid-19-passenger-numbers-on-public-transport-services/>

#public-transport

#publication #completed

A brief public information bulletin noting that ridership on public transport (Ireland) in March fell between 25% and 30% compared to 2019.

1.2.17 ITA – Impacts of the pandemic on transport networks in Italia

Laboratorio Di Politica Dei Trasporti (TRASPOL) (Research Centre on Transport Policy)

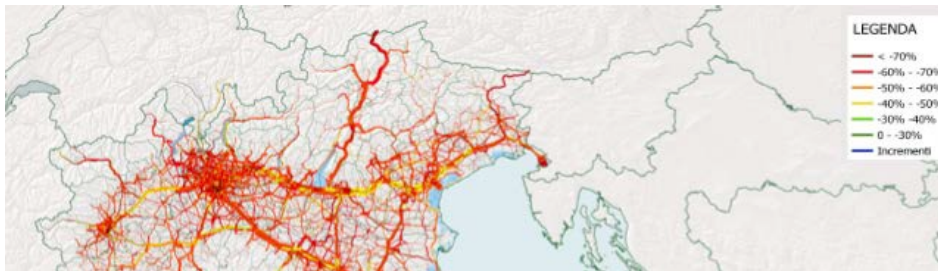
<http://www.traspol.polimi.it/wp-content/uploads/2020/05/TRASPOL-META-2020-Impatti-pandemia-reti-trasporto-iTraM-final.pdf>

<http://www.traspol.polimi.it/traspol-report-2-20-gli-impatti-della-pandemia-sulle-reti-di-trasporto-in-italia-scenari-esplorativi-fase-2/>

#private-transport #public-transport

#publication #ongoing

Modelling to predict future road network traffic flows and levels of use of public transport in Italy. The authors develop three scenarios based on varying (1) reduction of travel in general and (2) changing propensity to use public transport. The model includes predicted effects on road traffic in general and medium-long-distance public transport (ie inter-regional bus transport).



- **Scenario 1** (COVID-2a or 2A in the figures below) represents the shock of COVID-19, schools are closed and there is a significant reduction in work-related travel (-30% to -60% depending on potential for remote-work in the region), personal and family travel (-40%), and decrements in travel for general business or leisure (-80% in both cases).
- **Scenario 2** (COVID-2b or 2B in the figures below) retains the same conditions as the first but re-opens inter-regional travel.
- **Scenario 3** (COVID-2c or 2C in the figures below) represents a transitional period to recovery where travel is no longer restricted. Schools are still closed, and some workers choose to continue remote-work arrangements (30%). The authors allow for tertiary institutions to open.

Note - the third scenario differs to the current New Zealand case in that tertiary activity has largely rebounded, but primary and secondary schools are still closed. Nonetheless, the predict travel overall will be lower and public transport ridership remains low. Scenario 2c is the most relevant to our current situation (Jun 2020).

Figure 5. Changes in the number of public and private transport trips.

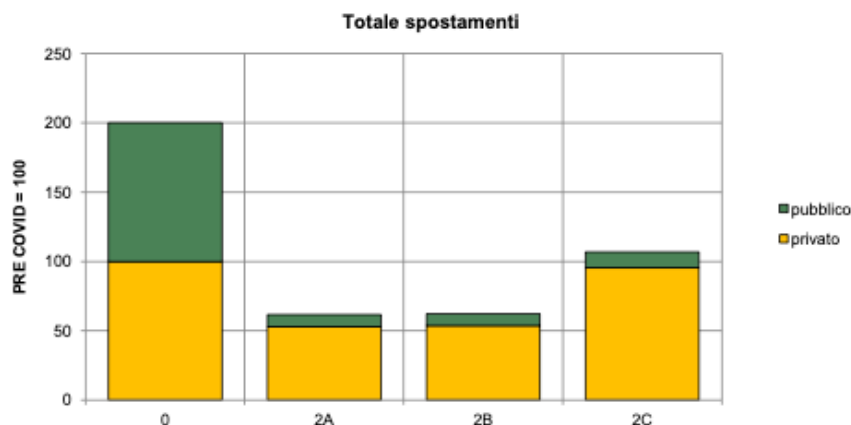


Figure 6. Changes in traffic volume per road category and scenario.

*millions of vehicle kilometres per day

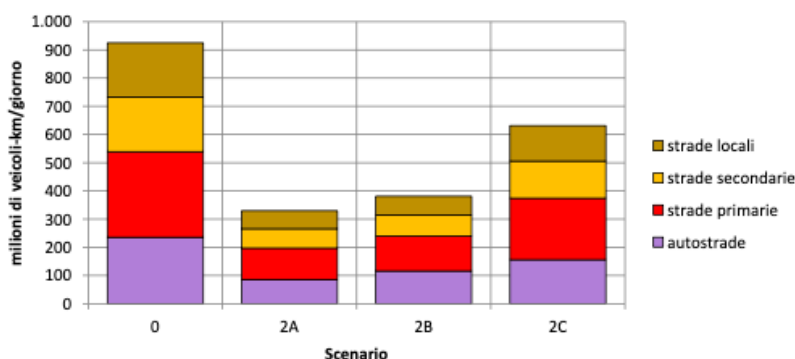
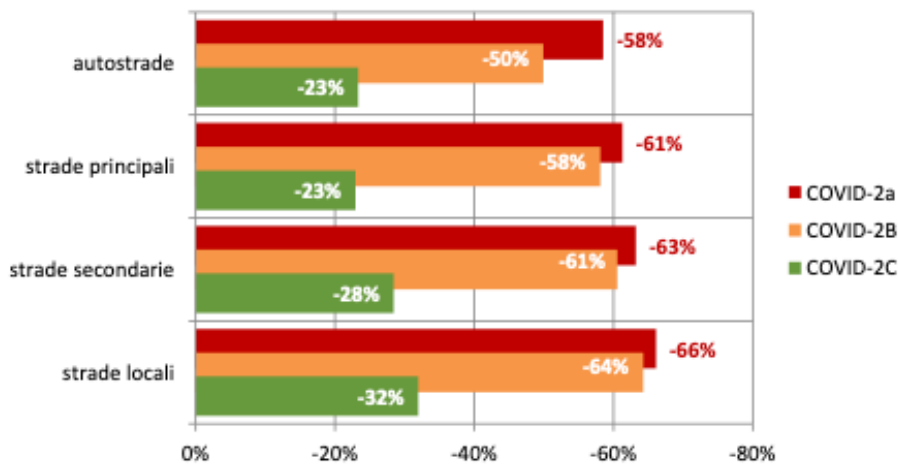


Figure 7. Percentage change in traffic volume by road category and scenario.



1.2.18 SWE – Swedes stay home over the holidays

Telia Company (telecommunications Sweden)

<http://press.telia.se/pressreleases/svenskarna-stannar-hemma-under-paasklovet-2990179>

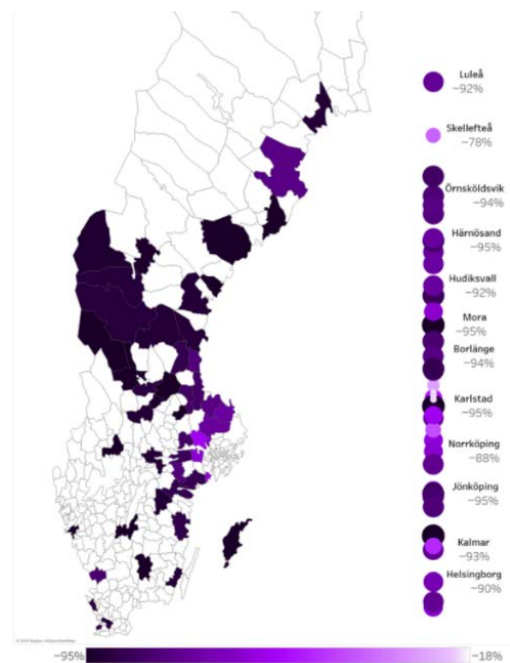
#private-travel

#publication #completed

Tracks reductions in travel behaviour at the beginning of April using aggregated mobile network data, citing holiday travel down by up to 70-90%.

Figures right and below, holiday travel reduction per region.

Avesta	>90%	Halmstad	82%	Knivsta	18%	Norrköping	88%	Uppsala	74%
Berg	>90%	Helsingborg	90%	Leksand	>90%	Nyköping	87%	Västervik	89%
Bollnäs	88%	Hudiksvall	>90%	Linköping	>90%	Sandviken	84%	Västerås	84%
Borlänge	>90%	Håbo	68%	Ljusdal	>90%	Skelefteå	78%	Växjö	>90%
Enköping	57%	Härjedalen	>90%	Ludvika	90%	Strängnäs	63%	Åre	>90%
Eskilstuna	86%	Härnösand	>90%	Luleå	>90%	Sundsvall	>90%	Älvdalen	>90%
Falun	>90%	Jönköping	>90%	Lund	>90%	Söderhamn	80%	Örebro	>90%
Gotland	>90%	Kalmar	>90%	Malmö	88%	Tierp	78%	Örnsköldsvik	>90%
Gävle	84%	Karlstad	>90%	Malung-Sälén	>90%	Trosa	61%	Östersund	>90%
Göteborg	>90%	Katrineholm	80%	Mora	>90%	Umeå	>90%	Östhammar	73%



Note – the Swedish government has issued generalised health-safety recommendations, ‘urged’ residents against non-essential travel and not to travel internationally, with a corresponding fall in international travel from Sweden particularly. This is at odds with one common narrative which suggests Sweden is completely open. It appears the Swedish approach has become more stringent than was initially planned.

1.2.19 SWE – Swedish travel increased during week 17 (mid-April)

Telia Company (telecommunications Sweden)

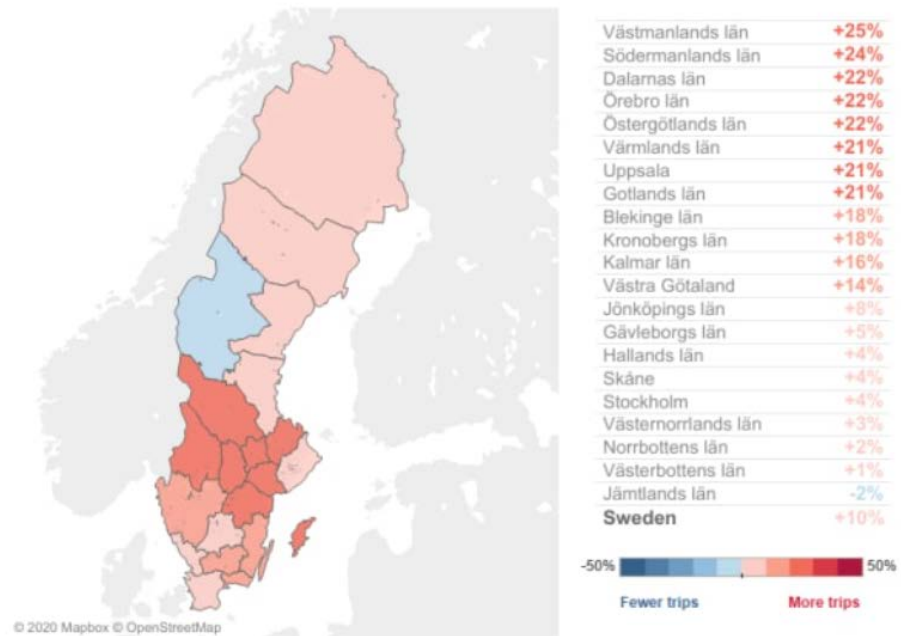
<http://press.telia.se/pressreleases/svenskarnas-resande-oekade-under-vecka-17-2995516>

#private-travel

#publication #completed

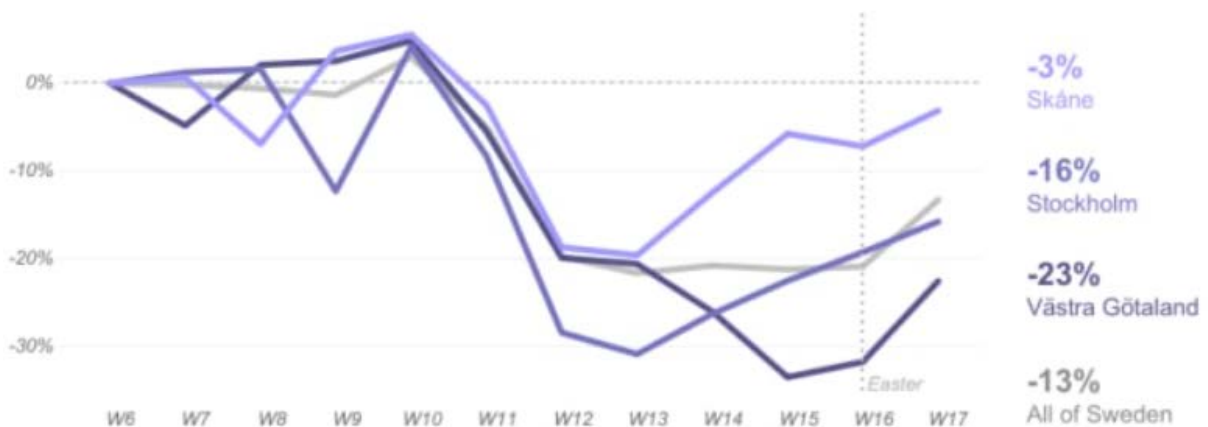
Using mobile network data to track travel movements, Telia observes increased local travel behaviour nearing pre-COVID-19 travel behaviour in late April. For example, in Skåne, trips are only 3% lower than in February, in Stockholm 16% fewer, and in Västra Götaland 23% fewer.

Change in the number of daily trips by county
Week 17 (20 April - 26 April) compared to week 16 (13 April - 19 April)



Change in the number of daily trips in three major counties

Compared to week 6 (3 February - 9 February)



Note - this represents a substantial recovery over a short period despite ongoing infection and highlights a distinction between holiday travel related behaviour (see previous Telia item early April) and local, or general travel related behaviour. We query whether this pattern will replicate in New Zealand, particularly as economic factors, in addition to perceived risk factors, may depress holiday travel behaviour.

1.2.20 USA – Assessing the effect of COVID-19 travel and work restrictions on vehicle trips

Perez, M., & Custer, K. (2020). Assessing the effect of COVID-19 travel and work restrictions on vehicle trips: A naturalistic driving case study.

https://advance.sagepub.com/articles/Assessing_the_effect_of_COVID-19_travel_and_work_restrictions_on_vehicle_trips_A_naturalistic_driving_case_study/12252029

#public-transport #private-transport

#publication #ongoing

Noting that macro changes are easily observed through aggregate vehicle volumes, the authors instrumented 40 private vehicles prior to lock-down or stay-at-home orders to analyse driving data over time. Data points include (1) trip volume, (2) trip purpose, (3) trip duration, (4) trip distance, (5) destination variability. Data collection is ongoing and intended to track travel changes as restrictions are eased in the Commonwealth of Virginia.

1.3 News Media

1.3.1 DEU - Pop-up infrastructure for active mobility in Berlin

EXPERI

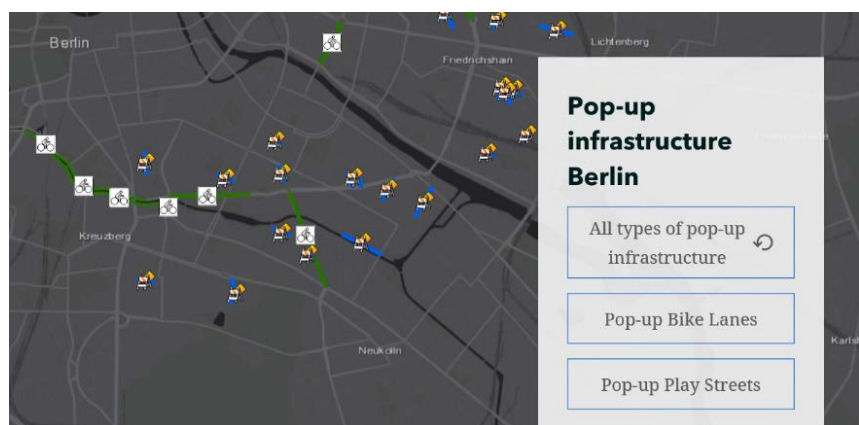
<https://storymaps.arcgis.com/stories/9f47ef654c7841e1a8d35034088d75b7>

<https://experi-mobilitaet.de/>

#active-travel

#news-media #completed

Very briefly introduces the topic of pop-up infrastructure for active mobility, particularly bicycle travel in Berlin (eg delineators, road marking or pictograms). Of interest is the ArcGIS Storymap which shows the location of pop-up bike lanes and 'play streets' around the central city. Conceivably, resources like this could promote active travel and assist route planning (in addition to the concept of pop-up infrastructure itself).



1.3.2 EUE – China-Europe rail is set to boom as COVID-19 chokes air, sea and road transport

Forbes magazine online

<https://www.forbes.com/sites/wadeshepard/2020/03/31/china-europe-rail-is-set-to-boom-as-covid-19-chokes-air-sea-and-road-transport/#6a58728937db>

#commercial-transport

#news-media #completed

Wade Shepherd, writing in Forbes Magazine, highlights the rail network between China Central Asia and Europe (with more than thirty lines) has been heavily subsidised by China. Shepherd claims that information from industry insiders indicates that many of these lines provide a middle ground between expensive air freight and slow ocean freight and have grown in usage to the extent that they may be getting close to unsubsidised viability. He postulates that with the impact of COVID-19 on trucking, shipping and airfreight, there may be a further shift to these rail lines which at the time of the article (March 31, 2020) were running relatively normally. Finally, the author claims that ‘under normal circumstances, trans-Eurasian rail is generally eight-times cheaper than air freight and only a week or so slower’.

1.3.3 EUE – Train or plane: traveller’s dilemma after COVID-19, amid climate change

UBS Investment Bank

<https://www.ubs.com/global/en/investment-bank/in-focus/2020/by-train-or-by-plane.html>

#air-travel #commercial-transport

#news-media #completed

Author suggests that ‘COVID-19 could accelerate the shift from air to rail travel in the EU and China’, citing existing low-carbon investments combined with depressed air travel demand and rising tolerance for longer rail journeys among business travellers. ‘Service [unclear, either the presence of a service or quality] and frequency are key drivers of demand for longer train journeys.’

Note – other commentators predict a slow recovery in air travel, while the current author suggests that investments in rail could further ‘slow global air traffic growth to 4.6% per annum over 2018-2028; no growth in intra-European traffic, 6.1% within China, and 2.8% in the US’. The infrastructure scenario in New Zealand obviously differs with lower investment historically in high-speed rail. Therefore, we can conclude that mode shift to rail will be more limited here, however the global trend suggests that transport users could be convinced.

1.3.4 INT – APEC Tourism Working Group setup

Asia-Pacific Economic Cooperation (APEC) Tourism Working Group

https://www.apec.org/Press/News-Releases/2020/0518_TWG

#tourism-leisure

#news-media #ongoing

This APEC news release describes member country tourism officials as cooperating to mitigate COVID-19’s impact on the tourism industry and ‘charting the way towards recovery’. The APEC Tourism Working

Group expects COVID-19 to reduce international tourist arrivals by 58 percent to 78 percent in 2020. The Asia-Pacific region accounted for about a third of all global tourism arrivals in 2017 and tourism is an important driver of growth in the region.

There is work underway to promote sustainable and inclusive tourism within APEC. This includes aligning policies, facilitating travel and improving coordination. Given current developments, the group is reviewing the existing work plans and goals in the light of COVID-19, 'including exploring the best solutions to conform to the new normal within the tourism industry'. The group wishes to make tourism more resilient by 'incorporating risk and emergency management measures, enhancing information flow for sharing best practices and encouraging more collaboration'.

1.3.5 INT – Electric vehicle outlook 2020

Bloomberg NEF (New Energy Finance)

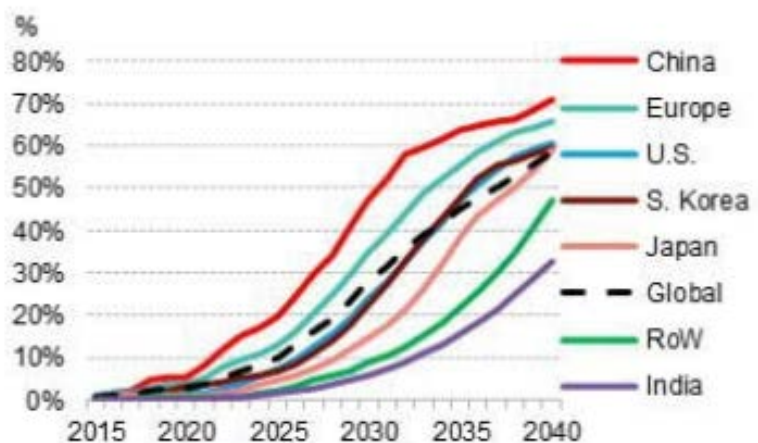
<https://bnef.turtl.co/story/evo-2020/page/2/2?teaser=yes>

<https://bnef.turtl.co/story/evo-2020/page/1?teaser=yes>

#private-transport

#news-media #completed

Bloomberg NEF produces an annually updated report *Electric Vehicle Outlook*. In the wake of COVID-19 it expects global passenger vehicle sales to reduce by 23% in 2020, and EV sales to drop by a lower amount (18% to 1.7 million in 2020). The lower drop for EVs is attributed to 'a backlog of orders, new models, and supportive policy in Europe and China in particular' and 'the long-term outlook for EVs remains bright, as fundamental cost and



technology improvements outweigh the short-term impacts of the pandemic'. EV's 2020 share of global sales is expected to be around 3% and is expected to rise to be 10% by 2025, 28% by 2030 and 58% in 2040. The forecasts indicate EVs to account for 58% of new passenger car sales by 2040. By that time, they expect 31% of the cars on the road to be electric along with 67% of municipal buses, 47% of two-wheeled vehicles and 24% of light commercial vehicles.

Longer term growth predictions of EV penetration are shown below for several markets and globally (see graph right).

BNEF's analysis suggests that global sales of internal combustion engine, or ICE, cars peaked in 2017 and will continue their long-term decline after a temporary post-crisis recovery. BNEF sees overall new passenger vehicle sales peaking in 2036 as changing global demographics, increasing urbanisation and more shared mobility outweigh the effects of economic development – though the fleet size keeps growing.

1.3.6 INT – Google community mobility reports

Google

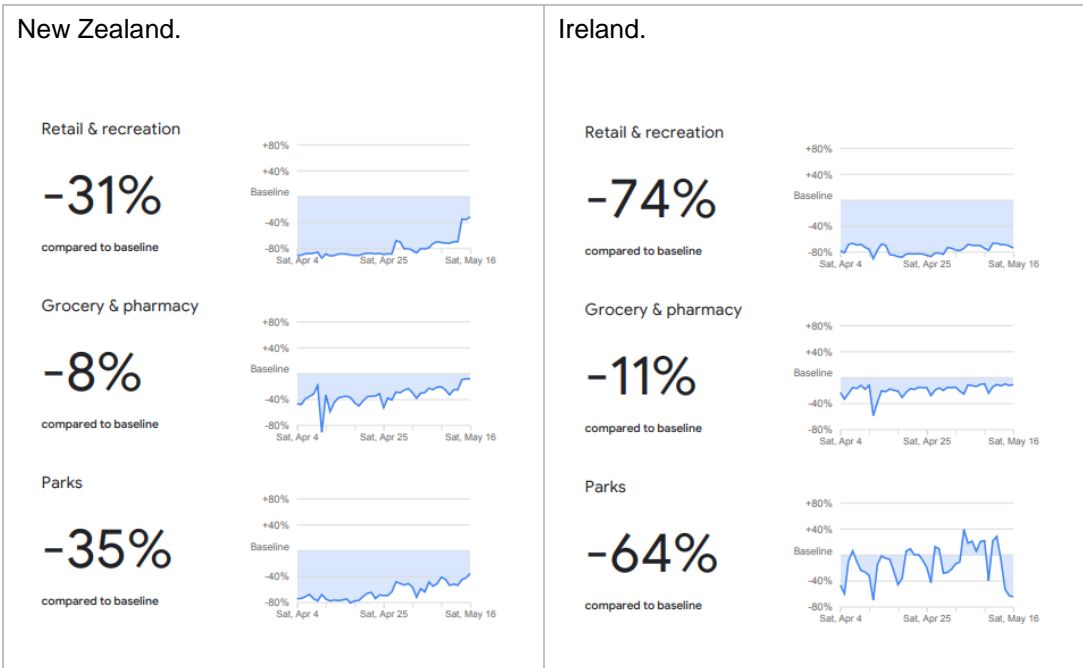
<https://www.google.com/covid19/mobility/>

#public-transport #private-transport #tourism-leisure

#news-media #ongoing

Using cell-phone location data Google tracks a large sample of users’ travel behaviour (retail and recreation, grocery and pharmacy, parks, transit stations, workplaces, residential movements) internationally. Comparative, near real-time data is available.

For example, comparing travel behaviour in New Zealand and Ireland between 4th April and 16th May:



1.3.7 INT – PIARC COVID-19 webinar May 2020

Permanent International Association of Road Congresses (PIARC); Denis Ganendra (REAAA) (Malaysia), Roberto Aguerrebere (Mexican Institute of Transport, IMT) (Mexico)

<https://www.piarc.org/en/News-Agenda-PIARC/Coronavirus-PIARC-and-Covid-19>

#public-transport #construction-maintenance #remote-working

#news-media #completed

In this webinar COVID-19 safety measures discussed in relation safe road operation during the pandemic (eg tolls, maintenance. construction; Mexico), in addition multiple jurisdictions report falling public transport ridership as a result of ‘stay at home orders’.

The Malaysia section is presented by a member of the Road Engineering Association of Asia and Australasia (REAAA), who recommended short term and long-term measures are advocated, namely:

Short term measures to:

- increase public transport capacity to meet near normal travel demands while maintaining social distancing
- improve travel information regarding congestion on public transport services
- consider service provider contractual obligations regarding safety and health, potentially a COVID-19 Act, and
- increase frequency of environmental monitoring to map location and quantum of environmental damage due to reopening sectors.

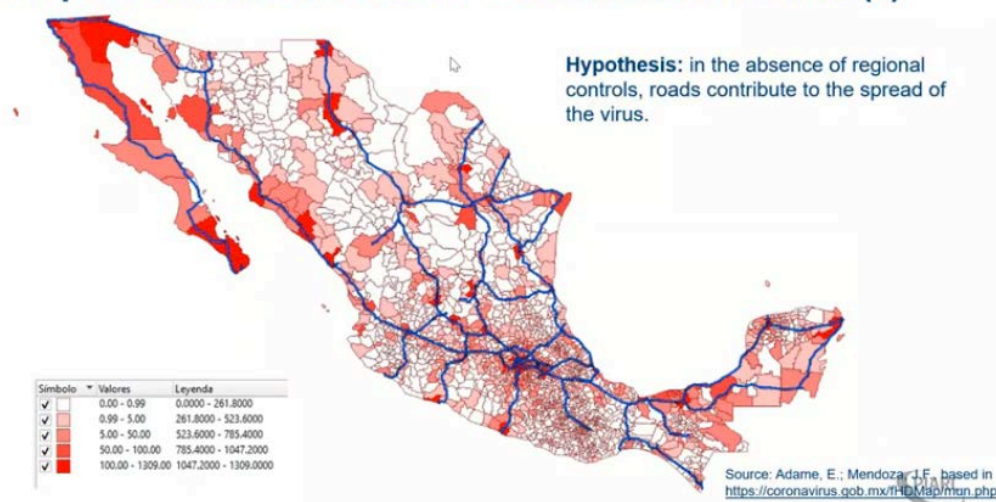
Long term measures include (1) research to assess long term impacts on travel demand for each mode of transport, (2) reinforcing less labour-intensive construction methods, and (3) promotion of the e-economy (**note** - Malaysia has a greater reliance on manual transactions and physical commerce for a variety of reasons including cultural ones).

Again, in the Malaysia context, the presenter predicts trends toward:

- work from home culture
- enduring social distancing, trend away from large events and crowded spaces
- trend toward micro-transport, active travel and private transport over public transport.

Finally, the spread of COVID-19 around Mexico appears to be correlated with road transportation corridors, with implications for monitoring and health-safety control within New Zealand. Mexican authorities have used this data to predict where travel activity can be reopened. Analysis of road interconnections showed patterns of higher or lower infection according to the number of arterial roads or alternative access, such that movement controls were effective.

Transport corridors and COVID-19 Pandemic in Mexico (1)



Note – due to perceived necessity, individuals will avoid health-safety measures despite the social good. This aligns with economic and behavioural theory in general, although group norms and social pressure are effective methods to counter this. This has implications as New Zealand restrictions on activity are removed, and when New Zealand opens to overseas travel.

1.3.8 INT – Recovery: transforming cities through subnational leadership

Local Governments for Sustainability (ICLEI)

https://iclei.org/en/covid19_resources.html

<https://www.youtube.com/watch?v=0bDe3NjKIVM&feature=youtu.be>

<https://sdg.iisd.org/commentary/guest-articles/how-can-voluntary-local-reviews-contribute-to-the-sdg-decade-of-action-an-assessment-of-vlrs-to-date/>

#news-media #webinar #completed

Discussion on sub-national leadership in the pandemic recovery process, with speakers from (1) New York City Mayor's Office for International Affairs, (2) Executive Office of the UN Secretary General, Sustainable Development Unit, (3) Chief of Urban Practices, UN-Habitat, (4) City of Bonn, Head of International Relations Department, (5) Mayor, City of Quelimane, and (6) ICLEI Africa Secretariat, Climate Change, Energy and Resilience.

Participants describe pre-and-during pandemic activity and policy regarding testing, containment, stay-at-home orders, alongside ongoing actions and recommendations.

Pertinent examples:

- importance of pre-existing planning and policy for effective crisis action
- potential impact of pandemic response on achieving the UN SDGs (eg climate action, reducing inequalities, sustainable cities and communities, responsible consumption and product or recycling).
- need for whole-of-society response, in addition to well-resourced local governments who can respond to local conditions.

Some local authorities found themselves constrained, unable to respond to local conditions due to restrictive budgetary or financial scope, at the same time some central governments relied on local authorities to respond.

Note – as such they point to risks where a lack of cooperation occurs between organisational levels or decision-makers are not closely responsible for decision-outcomes. About pre-existing planning, policy, and cooperation there may be opportunities to embed these and positive transport user behaviours which engender greater resilience in the event of future pandemics.

1.3.9 INT – Communication to prevent the spread of COVID-19

United Nations Office for Disaster Risk Reduction (UNDRR)

<https://www.undrr.org/event/webinar-risk-communication-prevent-spread-covid-19-counteracting-infodemic>

#news-media #webinar #completed

Several central themes are of interest are (1) misinformation, (2) using multiple communication styles, and (3) catering to uneven access to information sources.

Speakers discussed the need for trusted, official communication to take the place of informal misinformation.

From a behavioural perspective we observe that where there is an information void the general public will fill it, and informal misinformation tends to thrive where it finds a dearth of trusted or reliable sources (eg in ad hoc or young social media communities). Multiple communications styles are pertinent in that they cater to individual's varying capacity and preference for learning. For example, health and safety

information presented only in an official tone via government sources will tend to connect with only a portion of the community, whereas multimodal communication (eg working with community leaders, or media that specific communities prefer) is likely to be more effective. By extension, infographics as a mixed media communication tool have been used to communicate erroneous COVID-19 information with substantial effect.

1.3.10 INT - COVID-19 briefing note March 2020 ‘predicting recovery’

McKinsey & Company

<https://www.mckinsey.com/~media/mckinsey/business%20functions/risk/our%20insights/covid%2019%20implications%20for%20business/covid%2019%20march%209/covid-19-briefing-note-march-9-2020-v5.ashx>

#public-transport

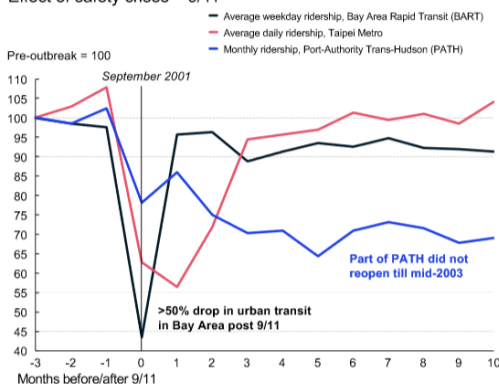
#news-media #completed

March review of COVID-19 impacts in terms of health and risk, followed by an outline of two ‘possible future scenarios’ (delayed recover, prolonged contraction) and their estimated world-wide impacts, particularly China and East Asia, US and Europe. The (1) delayed recovery scenario predicts rapid spread of the virus globally, blunted by seasonality and strong public health responses. The (2) prolonged contraction scenario posits global spread without seasonal decline as mutation results in rolling infections, and economies instigate stricter and longer lasting quarantines with greater negative economic impacts. The scenarios are rated as ‘pessimistic’.

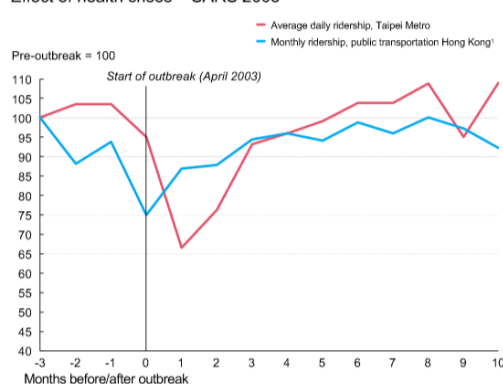
Charts decline in public transport ridership, referring to sources cited elsewhere in the ‘research notes’ (eg ‘large declines in ridership’ and ‘government funding sources may be impacted if connected cyclical sources (eg sales tax)'). Of interest, the authors chart the impact of previous ‘health and safety’ shocks on ridership over extended periods (eg post-SARS 2003 ridership recovery took approximately six months in Taipei and Hong Kong) (see below).

Impact of historical crises on urban transit ridership

Effect of safety crises – 9/11



Effect of health crises – SARS 2003

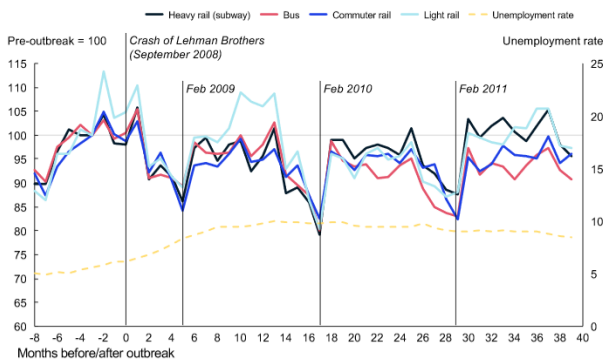


1. Includes various modes of transportation, such as bus, rail, and ferry; does not include taxi
Source: Bay Area Rapid Transit, Taipei Metro, New York State Open Data (data.ny.gov), Hong Kong Census and Statistics Department

The following graph speaks to the negative effect of unemployment on public transportation ridership, with a more gradual decline in ridership and corresponding recovery (seasonal effects are present, see below).

Impact of 2008/09 financial crisis on US urban transit¹

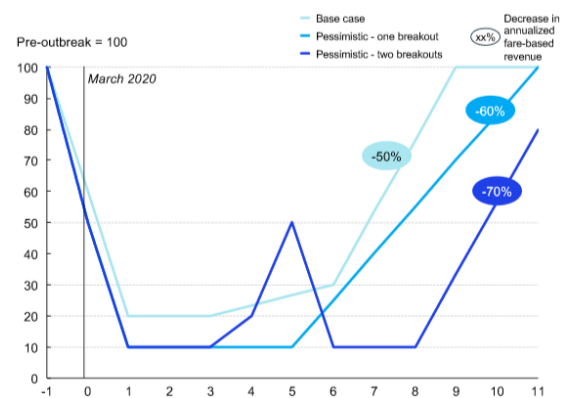
By mode of transportation, average monthly ridership, in %



1. Includes New York, San Francisco, Washington DC, and Boston metro areas
Source: National Transit Database (NTD), Bureau of Labor Statistics (BLS)

Potential scenarios for ridership development during COVID-19 crisis

% of base level ridership (previous year)



Note – SARS 2003 recovery behaviour observed in Taipei and Hong Kong may mirror recovery in New Zealand COVID-19. A short, sharp shock for New Zealand, characterised arguably by fewer negative health impacts, however, featuring greater and more enduring economic impacts. Therefore, the pattern observed in the US in response to the 2008/2009 financial crisis may be relevant (implying a relatively short recovery period based on the health issues alone, but a longer, shallower recovery overall driven by regional unemployment changes). Indeed, McKinsey predicts a prolonged recovery over 11-12 months (in the right-hand graph) (however, we understand current ridership data from Metlink suggests a quicker recovery in Wellington compared to the McKinsey scenario).

The report observes that reduced services have not resulted in lower Opex ‘reducing services by 25% can save 1-4% of operating expenses’. Regarding emerging responses, the authors query whether there are (1) opportunities to pilot strategies for the Future of Mobility and (2) whether agencies can institute new fare and ancillary revenue strategies to recoup losses, and they recommend (3) engaging proactively with community to build customer loyalty and regain ridership, (4) adapting to future workforce needs and building agility, and (5) accelerating capital projects on a reprioritised program. Finally, they suggest a ‘not exhaustive’ framework for considering potential future scenarios and actions (see table below).

Actions to consider

Not Exhaustive			
Customer safety and operations	Workforce management	Capital program	Financial impacts
<ul style="list-style-type: none"> Implement new service patterns based on ridership scenarios being down 50 – 70% Conduct workforce modelling on impact of working from home and school closures impact on network ridership Determine supply chain exposure and mitigation plan Develop communication strategy to inform riders as operating models and safety notices are adapted 	<ul style="list-style-type: none"> Determine critical employees (e.g., network control), develop contingency plans for their sickness, and liaise with health authorities to prioritize testing approach Produce a workforce plan that considers the new service patterns Reassess safety procedures and revise guidelines to ensure worker safety as service levels are adapted Assess current workforce policies and determine revisions needed 	<ul style="list-style-type: none"> Take stock of current capital program, noting local regulations (e.g., stop-work orders) to understand what projects need to stop and their knock-on effect on scheduled capital spend Reprioritize capital program based on the ability to perform work under the new service patterns and available workforce 	<ul style="list-style-type: none"> Understand the long-term financial impacts, including the impact of additional expenses from our response, declining revenue, and high fixed costs Prepare for stimulus and create a plan for allocating stimulus funds

Note – the McKinsey briefing notes have been placed in the #news-media section as original sources are largely obscured or referred to only generally (eg data reported in one case as the result of a ‘lit review’ is an uncited copy from a single data source in which the current author swapped x and y axes).

1.3.11 NZL – March ridership: starting the descent

Greater Auckland Inc.

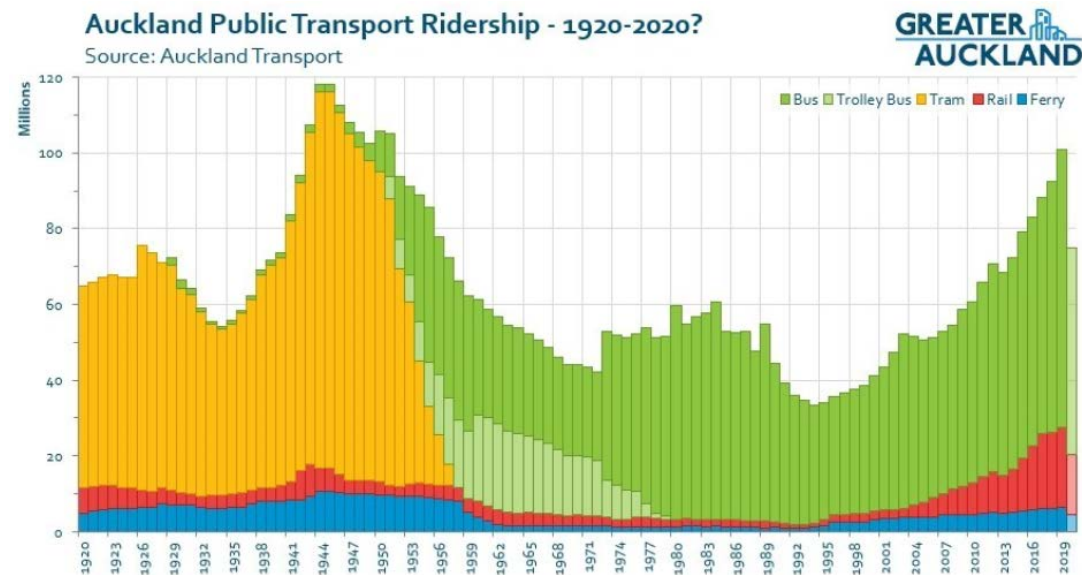
<https://www.greeterauckland.org.nz/2020/04/23/mar-20-ridership-starting-the-descent/>

<https://at.govt.nz/about-us/reports-publications/at-metro-patronage-report/>

#public-transport

#news-media #completed

The advocacy group draws on Auckland Transport data, tracking decrements in public transport ridership during March. They report million trips in March (including six days during which no ‘lock down’ was in effect), down from million trips the same time 2019—decrements which the authors advise are similar, percentage-wise, to those seen in Sydney and Perth, Australia, in the same period. See March right, and 1920-2019 data below.



The authors point to uncertainty regarding ridership recovery, anticipating that both societal changes and individual preference changes as a result of the crisis may also have an impact (**note** - there is no discussion on what these changes might be). Despite this (implying a belief that some travellers may prefer a shift to personal transport) the authors observe that physical constraints on existing infrastructure will limit mode shift away from public transport, meanwhile pre-existing cases for public transport development haven’t changed.

1.3.12 NZL – What longer-term transport impacts might COVID-19 have?

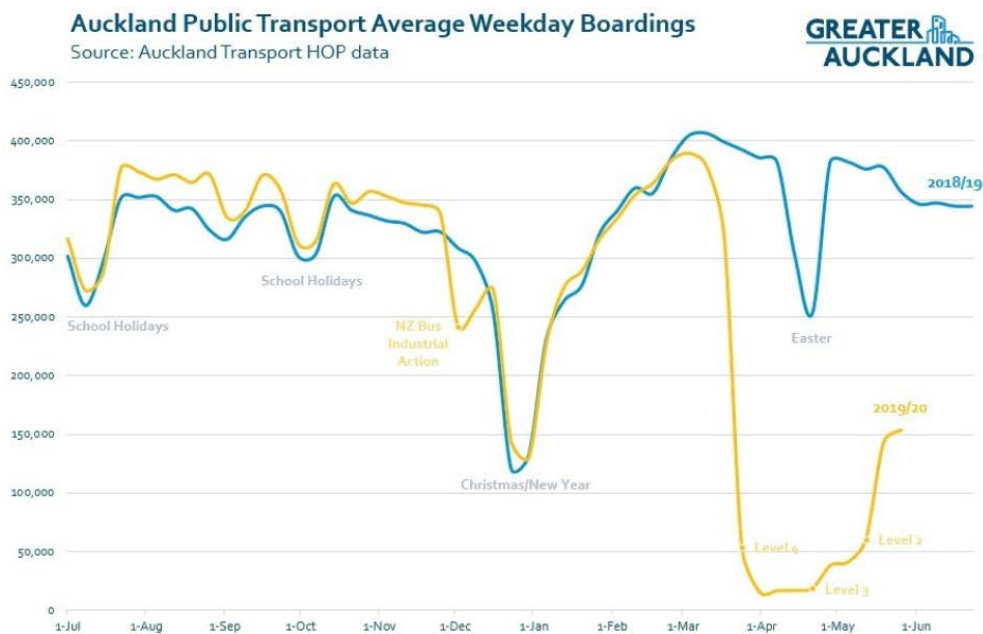
Greater Auckland Inc.

<https://www.greeterauckland.org.nz/2020/06/04/what-longer-term-transport-impacts-might-covid-19-have/>

#public-transport #private-transport #tourism-leisure

#news-media #completed

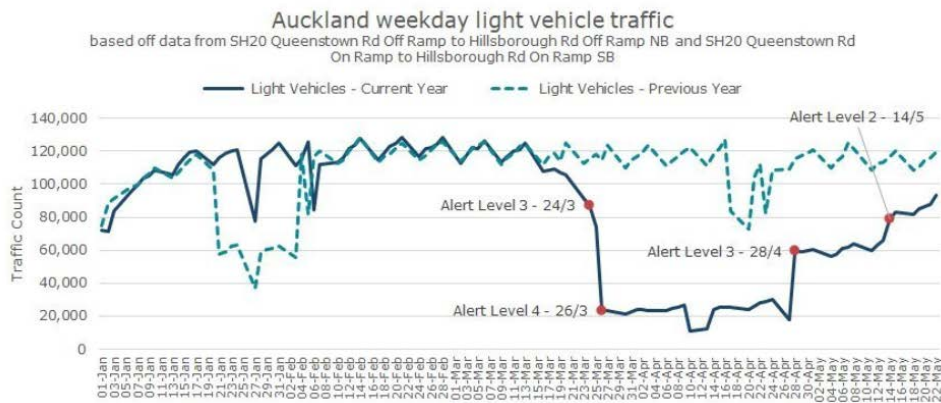
Discussing long-term effects of COVID-19 on public transport, the authors observe that ridership in April fell 94% compared to 2019 (although a partial recovery was swift, see below).



Outlines influences on recovery:

- 1 many people currently working or studying from home will return to their offices/university, but some who return may only do so partially, continuing to work remotely for at least part of the working week
- 2 economic uncertainty or recession if it occurs may have a larger impact on travel behaviour than COVID-19 over the long-term
- 3 fewer international visitors, and tourists will result in fewer transport journeys overall, 'although it's not clear how much those groups used PT [public transport]'.
- 4 greater capacity on public transport as social distancing measures are relaxed into level 1.

Note - the authors suggest that improved public transport capacity after relaxing social distancing alone will engender greater confidence among users due to lower congestion and greater journey reliability.



Greater Auckland anticipate travellers who have switched from public transport to private are likely to switch back gradually as road congestion rises ‘just over a week ago traffic counts were back to about 80% of normal’. Nonetheless, they suggest that ridership may not recover for ‘a few years’ in Auckland, impacting funding, where service cuts could lead to a ‘death spiral’ in ridership. If services remain at the pre-COVID level, then they predict lower overall ridership as a result of low travel demand in general (**note** - they do not specifically state why they believe demand will fall in general).

Speculation – Predicting a general decline in public transport demand may be pessimistic. Given the stated ‘geometric’ constrains, congestion is likely to discourage an enduring shift to personal vehicles wholesale, meanwhile some users’ travel choices are driven by financial factors which incentivise public transport. There is a lack of data and discussion here to draw a conclusion.

Finally, several **active travel observations**, notably, a missed opportunity for Auckland if proposed budget cuts to safety and cycling projects go through.

Speculation –this ‘missed opportunity’ contradicts an apparent trend for urban centres to emphasise active travel responses in the face of COVID-19 (reported elsewhere in the ‘research notes’). From a behavioural perspective, the COVID-19 experience may provide a valuable behavioural impetus to improve uptake of active travel, which Auckland City may be best positioned to take advantage of. In terms of population and density it offers similarities with other cities globally who are working on both short and long-term active travel responses prompted by COVID-19, not to mention a relatively forgiving climate.

1.3.13 SWE – Latest information regarding how the Corona Virus affects SJs trains

SJ (government-owned, national rail operator)

<https://www.sj.se/en/about/about-sj/latest-info-coronavirus.html>

#public-transport

#news-media #completed

National rail official update on measures to protect rail passenger health and measures. Mainly, reduced frequency of services to allow greater capacity per train journey which enhances social distancing measures and accounts for reduced ridership.

1.3.14 USA – How might personal transport behaviours change, and implications for policy

ENO, Center for Transportation

<https://www.enotrans.org/article/how-might-personal-transportation-behaviors-change-as-a-result-of-covid-19-and-what-does-that-mean-for-policy/>

<https://www.enotrans.org/>

#public-transport #active-travel

#news-media #completed

References news media for data, discusses relevant psychological phenomenon and their impact on travel behaviour. It describes transportation choices as primarily influenced by (1) societal factors and (2) psychological factors. Respectively, geography, political and economic forces that influence users, and episodic events (eg COVID-19); and individual motivations, habits and emotions.

The authors observe short-term shifts in transport behaviour, such as an approximately one-week delay before MTA rail ridership fell after the first publicised cases of COVID-19 in New York, followed by a sharper fall as workers began transitioning to remote-work arrangements (down 87% compared to 2019). They note that ridership began to fall before mandated closures and stay-at-home orders.

Risk factors for public transit:

- 1 **Ripple effects:** US public transit operating models predominantly rely on passengers to fund operations, as a result falling ridership and rising hygiene costs are impacting the commercial viability of public transit. The authors comment on 'ripple effects' impacting supply chains linked to public transit and air transit operations, with negative implications for restarting or maintaining services
- 2 **Forced alternatives:** If service provision is slow to rebound or unable to provide sufficient quality of service then users may lose confidence and seek out alternatives
- 3 **Fear and low trust:** Psychological factors, namely fear may reduce individuals' willingness to return to public transport. **Note** - March 2020 survey cited by authors indicated 48% of Canadians believe public transit poses a high health risk due to COVID-19. The same survey indicated low trust in air-travel and low trust in airlines' willingness to protect users.

The authors discuss a potential uptick in active travel behaviour 'some bike shops have begun to see increases in sales and repairs' and noting post-9/11 decrements in air-travel, the authors predict long-term decrements in public transit and air-travel.

Note – in terms of behaviour change and the psychological-emotional factor we see New Zealand initiatives such as temporary electronic signboards in the Wellington region displaying 'keep calm, be kind' type messaging. In the same vein of commercial marketing, sustained messaging of this nature has the potential to shift behaviour both overtly and subtly over time. Previous messaging or long-term messaging has the potential to prime pro-social, pro-health behaviours in the case of future events through learning processes (ie 'resilient behaviour' change). Conversely, population-level learning is likely to be lost unless reinforced over time.

2 Behaviour change for recovery

2.1.1 AUS – COVID-19 and public transport: from response to recovery

<https://www.wsp.com/en-GL/insights/covid-19-and-public-transport-from-response-to-recovery>

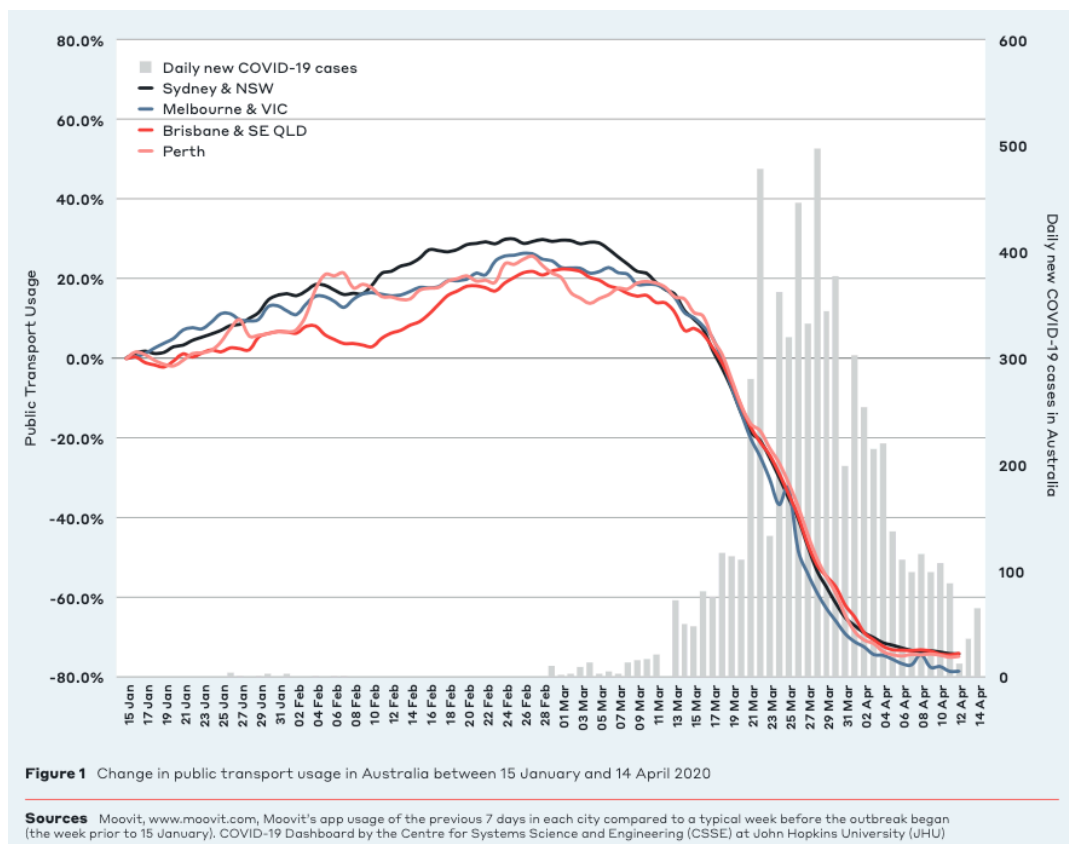
https://www.wsp.com/-/media/Insights/Australia/Documents/WSP---PT-and-COVID-19-white-paper_280420.pdf

#public-transport

#publication #completed

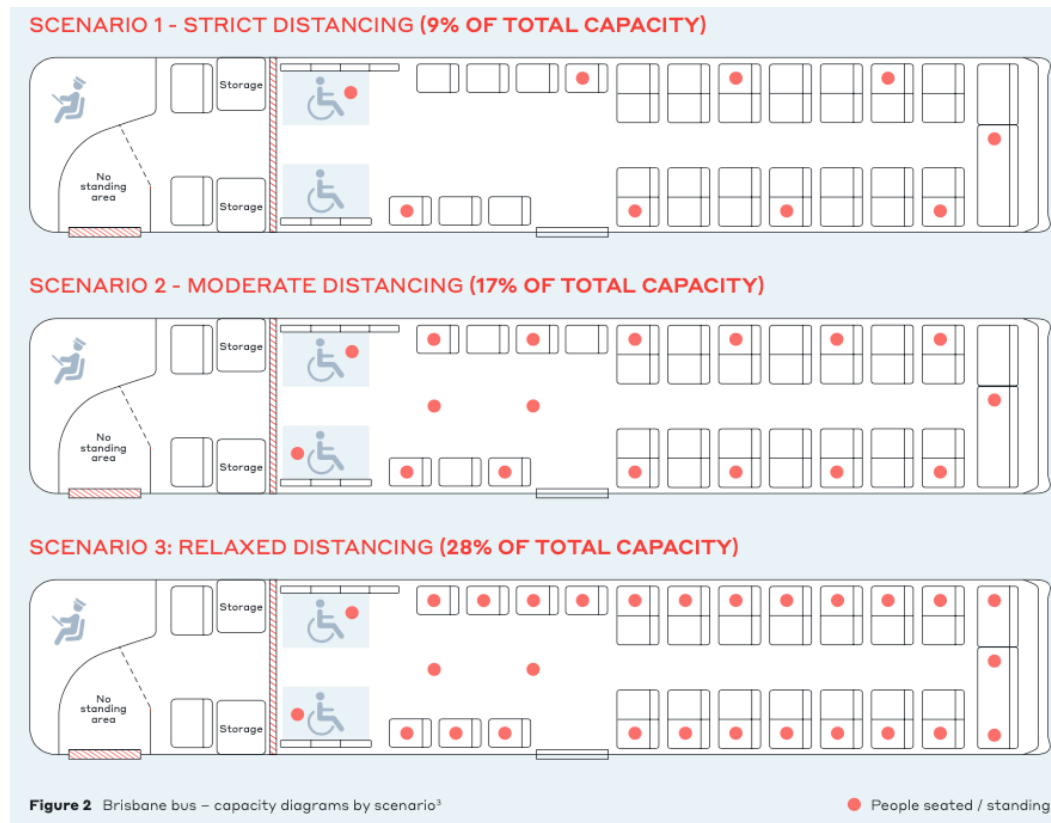
Identifies (1) three stages of progression and recovery from COVID-19 (lockdown, transition and new-normal), (2) discusses changes in people’s attitudes toward using public transport and associated behaviours, (3) describes three scenarios for social distancing on public transport, (4) demand and supply-side measures to manage capacity and health-safety, and (5) operational considerations regarding passenger behaviour.

Impact on public transport, Sydney & NSW, Melbourne & VIC, Brisbane & QLD, Perth:



The authors predict that behavioural changes among users in the long term will depend in part on public transport experiences during the pandemic and individual’s responses to the fear of contracting COVID-19. They predict psychological, physical and technology changes in general as a result of COVID-19 (eg preference to maintain social distancing impacting future travel choices, move away from public transport, rise in active travel).

Three social distances scenarios for bus transit (strict, moderate and relaxed distancing):



Resulting impact on bus capacity:

	TOTAL PASSENGERS	% OF SEATED CAPACITY	% OF TOTAL CAPACITY
Scenario 1 – Strict Distancing	9	16%	9%
Scenario 2 – Moderate Distancing	17	32%	17%
Scenario 3 – Relaxed Distancing	28	53%	28%
Seated capacity	53	-	54%
Total (seated and standing) capacity	98	-	100%

Table 1 Brisbane bus – capacity summary by scenario

Impact on rail carriage capacity for equivalent scenarios:

	TRAILER DRIVER CARRIAGE (X2)	TRAILER CARRIAGE (X2)	MOTOR CARRIAGE (X4)	TOTAL PASSENGERS*	% OF SEATING/ TOTAL CAPACITY
Scenario 1 – Strict Distancing	52	56	128	236	26%/20%
Scenario 2 – Moderate Distancing	76	80	184	340	38%/28%
Scenario 3 – Relaxed Distancing	136	144	304	584	65%/48%
Seated capacity	202	220	472	894	100%/74%
Total capacity (seated +35%)	272	297	637	1,206	100%/100%

* Maximum capacity with no wheelchair, mobility scooter, prams or equivalent users.

Table 3 Sydney train – capacity summary by scenario

On balance the authors predict adequate social distancing will impact public transport capacity at most between 30% and 50% of total capacity depending on the strictness of approach. They do predict challenges for metropolitan areas or services which experience considerable crowding, and who rely on standing room in walkways.

The authors describe two transport scenarios and their impacts on bus and train ridership and rider experience, in addition to demand management initiatives which are currently being trialled (eg Tripview app, see right).

Mapping network demand, they show where strict and moderate social distancing strategies are available, and where no social distancing is possible with current demand and capacity (see examples below).

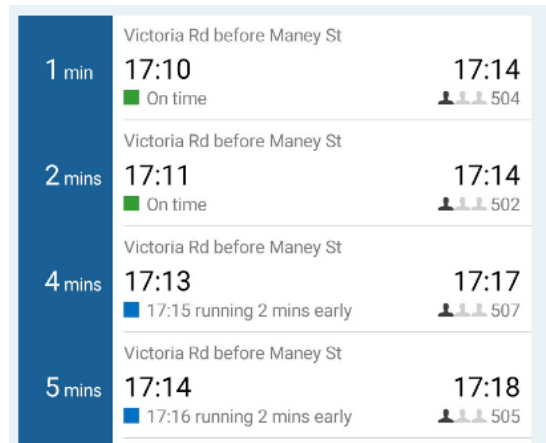


Figure 5 Screenshot of the TripView app showing real-time Sydney CBD bound bus arrivals at a bus stop in Rozelle on 24 April 2020

Sydney bus services:

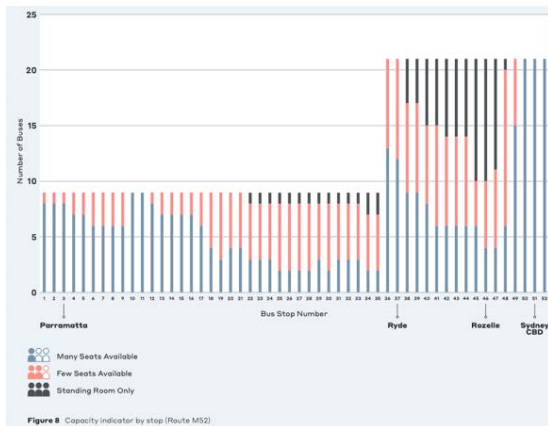


Figure 8 Capacity indicator by stop (Route M92)

Capacity icons show how full the service is:

- 1 filled person - seats are available
- 2 filled people - few seats are remaining
- 3 filled people - standing room only

Figure 6 Opal system capacity icons

Newcastle bus services:

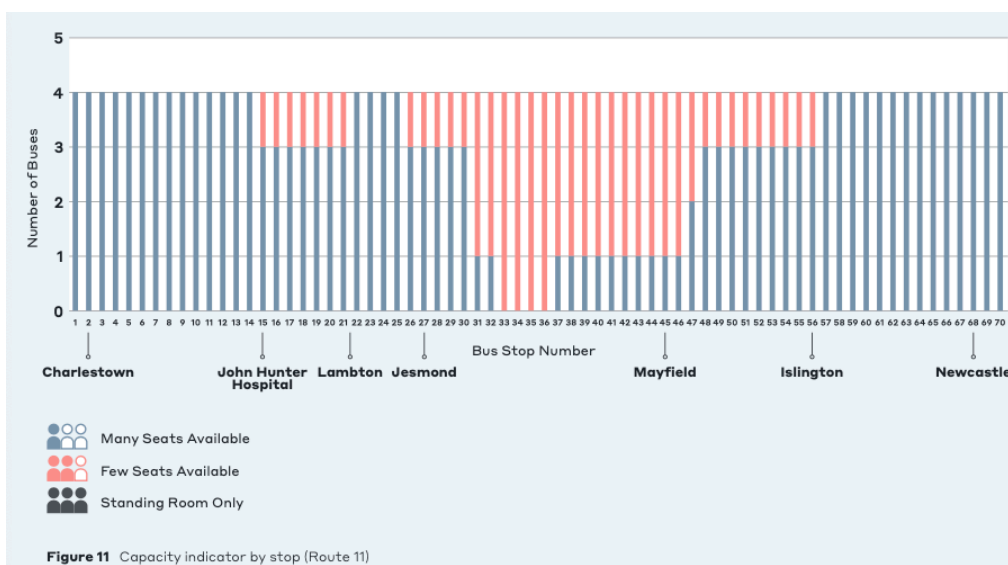


Figure 11 Capacity indicator by stop (Route 11)

In terms of moderating demand on transport infrastructure, the authors recommend (1) staged return of the workforce, (2) peak spreading (ie encouraging users to travel during off-peak), (3) use of integrated

travel cards (payment cards) to confidentially track users movements and notify them should they be at risk, (4) improving information for users (eg Tripview showing service congestion so that users can make informed choices about when to travel).

Note – the Tripview congestion function is currently in trial and estimated to be released end of May.

For future initiatives the authors recommend attempting to ‘lock in’ current shifts to active travel (which may be more challenging as New Zealand transitions into winter) and provisions for micro-mobility. Examples include temporary cycleways, temporary footpaths, as is being done in Auckland as part of Waka Kotahi’s Innovating Streets for People pilot².

2.1.2 EUE –United Nations and UN Cycle and Pedestrian Task Force setup

United Nations Economic Commission for Europe Information Unit

United Nations Department of Global Communications (DGC)

<https://www.unece.org/info/media/presscurrent-press-h/transport/2020/governments-in-pan-european-region-launch-un-task-force-to-make-post-covid-19-pandemic-mobility-more-environmentally-sound-healthy-and-sustainable/doc.html>

<https://www.un.org/en/coronavirus/un-eyes-bicycles-driver-post-covid-19-%E2%80%98green-recovery%E2%80%99>

#active-travel #tourism-leisure

#news-media #ongoing

European countries have set up a taskforce under the auspices of the UN to support walking and cycling as activities during the COVID-19 crisis and beyond with the objective of helping make ‘post-COVID-19 mobility more environmentally sound, healthy and sustainable’. Public transport usage in Europe has fallen significantly as people choose to walk or cycle to avoid crowded public transport and better achieve physical distancing. There has been a tendency towards the private car for the same reasons, which countries do not wish to see continue for sustainability reasons. The taskforce was launched under the Transport, Health and Environment Pan-European Programme (THE PEP). This is a joint venture of UNECE and the World Health Organization (WHO) Europe. The PEP is to recruit experts through its focal points and stakeholders. The work will also be a key part of UNECE’s Sustainable Mobility and Smart Connectivity activities.

² 15/04/2020

<https://at.govt.nz/about-us/news-events/at-welcomes-funding-for-temporary-cycleways-and-footpaths/>

2.1.3 EUE – European Commission COVID-19 response database

European Commission

https://ec.europa.eu/transport/coronavirus-response_en?modes=3849&category=All

#lists-policies-implemented

#publication #ongoing

Being a database of EU Member State COVID-19 responses, which restrict transport. The database is searchable by mode (air, rail, road, water), category (service facilities, supply-chain measure, travel advice, border measure, medical measure, traffic suspension, driving times, weekend ban, driving license and CPC, roadworthiness, seafarers, certification, other), and country (comprising the EU and European countries). The database appears to be focused on current events and actions, and a sample of entries did not reveal future-oriented initiatives or behavioural insights immediately relevant to the search.

For example, in Ireland, guidance provided to supply chain workers in March stated that ‘hauliers and other key supply chain staff are exempt from the Government’s advice against all non-essential travel overseas’ (road, supply-chain, Ireland). In May the Finnish government moved to reduce border traffic restrictions in cross-border traffic across the Schengen internal borders.

Noted here as this may be a good source of emerging initiatives.

2.1.4 GBR – Contactless cards reinstated on more than 1000 London buses

Intelligent Transport (EUE focused urban public transport sector information service)

https://www.intelligenttransport.com/topic_hub/covid-19-transport-news-analysis/

#public-transport

#news-media #ongoing

Transport for London (TfL) announced reintroduction of the requirement for contactless payment on metro bus services. Previously payments had been suspended to ensure driver safety, but the service will phase in contactless payment immediately. The metro service is requesting that riders use a ‘face covering’ and masks are being provided to all drivers. This represents an easing of hygiene measures a continuation of heightened measures in general.

2.1.5 GBR – Logistics and transport: good practice guide for COVID-19

Chartered Institute of Logistics and Transport (CILT), Freight Transport Association (FTA)

<https://www.ciltinternational.org/analysis-events/covid-19-best-practice-response-cilt-and-fta-launch-working-good-practice-guide/>

#commercial-transport

#publication # completed

The Chartered institute for Logistics and transport (CILT) UK and the Freight Transport Association (FTA) have jointly released the *Good Practice Guide* for COVID-19. The aim of this document is to furnish practical advice on how logistics businesses can ‘restart their operations safely, effectively and quickly as the nation emerges from lockdown’. It is designed to dovetail neatly with the UK’s government guidance on safer workplaces, and covers key areas including: risk assessment, workplace social distancing,

workplace cleaning, PPE and face coverings. Companies including DHL, Wincanton, Maritime and Hermes have contributed to the guide.

2.1.6 INT – TUMI COVID-19 outbreak and implications for sustainable urban mobility

Transformative Urban Mobility Initiative (TUMI)

<https://www.transformative-mobility.org/news/the-covid-19-outbreak-and-implications-to-public-transport-some-observations>

#public-transport #private-transport #active-travel

#publication #completed

Observations regarding COVID-19 and public transport and shared-mobility, including an in-depth country observation on Brazil.

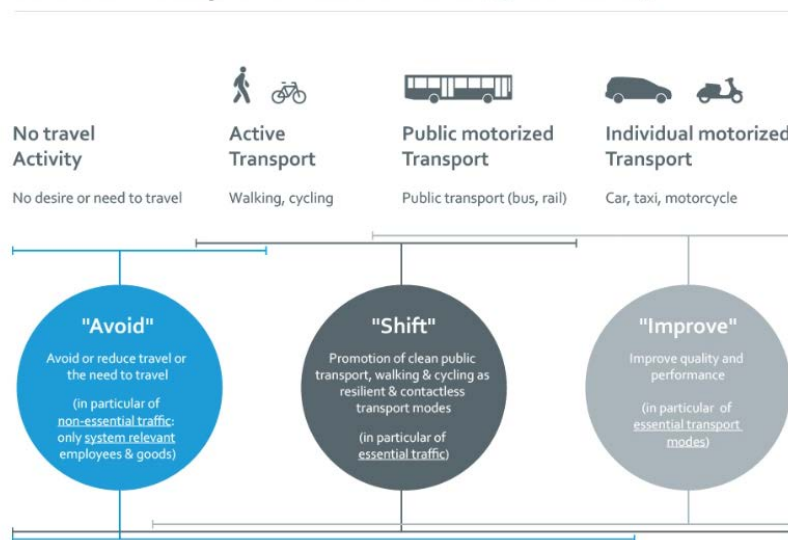
This report details recommended foci for enhancing public transport coordination, improved health-safety provisions for users and staff, and improved communications to ensure preferred behaviour among users and staff. A need for coordinated demand management is cited, alongside concern that a decrease in passenger demand puts the public transport sector at risk—reduced ridership impairs financial operating performance, harms the business case for investment and risks long-term negative perceptions of public transport.

The authors warn against rebound effects (eg higher passenger density due to schedule changes combined with social distancing) (cited case in Jakarta where supply and demand mismatch caused excessive crowding). ‘An essential element of the strategy is the sequencing of measures’.

Shared mobility (ride-hailing, bike-sharing, car-sharing and micro-transport) services have face challenges in terms of health-safety for contract workers with fewer legal protections, impaired service to the public, and difficulty protecting both drivers and passengers. The report outlines a variety of consequences for shared mobility operations during the pandemic.

TUMI advocates a range of initiatives based on a ‘shift’, ‘avoid’ and ‘improve’ framework for active, public, and private transport (see image below).

Avoid Shift Improve – Instruments @ COVID-19*



Bans/Restrictions	Other Policies	Planning/Engineering Instruments	Quality of public transport/taxis	Information Instruments
<ul style="list-style-type: none"> - Active differentiation between essential and non-essential transport - Travel bans - Entry bans to countries - Curfews/lockdowns - Reduction of shopping, recreation, school services, etc. - #StayHome 	<ul style="list-style-type: none"> - Teleworking/ Flexible work schedule - Expansion of E-government services - Virtual meetings and conferences - Local 3D-printing - Develop emergency action plans for future use - Allow certain services to become freight providers or combined offers (such as buses) 	<ul style="list-style-type: none"> - Expansion of (temporary) bike routes - Priority schemes for quality public transport - Dedicated services for essential travellers - Prioritise delivery of most essential and important goods - Reflect needs of women and children to support their activities & journeys - Enhance epidemiological safety of private car use - Reallocate street space for freight, e.g. convert parking to dedicated delivery/pick up zones 	<ul style="list-style-type: none"> - Sanitation / Cleaning - Provision of additional space/reduction of crowding - Free bike sharing schemes - Demand management at PT stations/entrances to reduce crowding - Reduced contact points through digital ticketing & payment procedures - Social distancing measures - Speed reductions to reduce injury rates - Encourage bicycle taxis/ bicitaxis - Medical support in intermodal stations 	<ul style="list-style-type: none"> - Public awareness campaigns - Mobility management - Marketing schemes - Co-operative agreements

* All measures to be aligned with general health recommendations and rules of conduct as of: 20/03/2020

Illustration based on:
Dallmann and Brömmgen (2020), A. In: Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities, Article 94, Transport and Climate Change, 612. http://dx.doi.org/10.1007/978-98-14-98888-8_94
Böhl, S., Heilmann, H., Wagner, A. (2020) The COVID-19 outbreak and implications to public transport – some observations. TUM website: <https://www.transformative-mobility.org/news/the-covid-19-outbreak-and-implications-to-public-transport-some-observations> (accessed: 28.04.2020)

TUM Initiative
transformative-mobility.org

Finally, two initiatives in public transport and active travel are briefly described:

- 1 **A public transport initiative in Beijing, China**, sees subway users choose appointment times to enter the busiest stations during peak times. Appointment is by app and QR-codes are scanned at entrance.
- 2 **Cycling initiative:** Bogotá has allocated additional road space as ‘emergency bike ways’ for active travel only.

2.1.7 INT – Rail and the effects of the COVID-19 pandemic (part 2)

WSP whitepaper

<http://cdn.wsp-pb.com/415648/swedish-white-paper-rail-and-the-effects-of-the-covid-19-pandemic.pdf>

#public-transport

#publication #completed

Noting interventions of varying intrusion and ethical implications, mitigation methods are mapped:

India, South Korea, China	Infrared cameras on subways and at train stations, people with fever rejected from stations or assisted to testing and medical care
China	Facial recognition cameras commonplace nationwide, upgrading to scan crowds with infrared for fever and identify individuals without masks.
Beijing	Travelers can use a GPS app (AutoNavi) to see how crowded each transit station is
Shenzhen, Wuhan	Contactless payment: Subway travellers are required to scan a QR code placed in each subway car as a ticket.
All	New cleaning and disinfection routines for trains, stations and staff

The authors outline innovations around cleaning (eg ultra-violet bus washing, use of computer vision to identify contact/hygiene hotspots). They predict future facilities and transport design changes, such as alternative materials on contact/hygiene hotspots, flexible fitout allowing public transit to provide dynamic

capacity or switch from people to cargo transit, digital tools for payment and public information showing crowding or carrying capacity).

2.1.8 INT – United Nations steps to improve the COVID-19 related supply chain

United Nations Department of Global Communications (DGC)

<https://www.un.org/en/coronavirus/supply-chain-and-covid-19-un-rushes-move-vital-equipment-frontlines>

#supply-chain

#news-media #ongoing

In early April, the United Nations launched the COVID-19 Supply Chain Taskforce – coordinated by WHO and the World Food Programme (WFP). The objective was to massively scale up procurement and delivery of personal protective equipment (PPE), testing and diagnostics supplies, and biomedical equipment like ventilators and oxygen concentrators. This was to allow those without the ability to pay large sums to benefit from these supplies. The philosophy is that medical supplies are a ‘global good’ that must be accessible. The task force membership includes the World Bank and the Global Fund³, and leverages its combined expertise to better identify needs and negotiate with suppliers.

After negotiating allocations, the Taskforce guarantees funding. WHO is expecting to ship a minimum of 100 million medical masks and gloves; up to 25 million N95 respirators, gowns and face-shields; and up to 2.5 million diagnostic tests each month during the crisis.

2.1.9 INT – NACTO streets for pandemic response & recovery

National Association of City Transportation Officials (NACTO)

Global Designing Cities Initiative

<https://nacto.org/streets-for-pandemic-response-recovery/>

https://nacto.org/wp-content/uploads/2020/05/NACTO_Streets-for-Pandemic-Response-and-Recovery_2020-05-21.pdf

#private-transport #active-travel

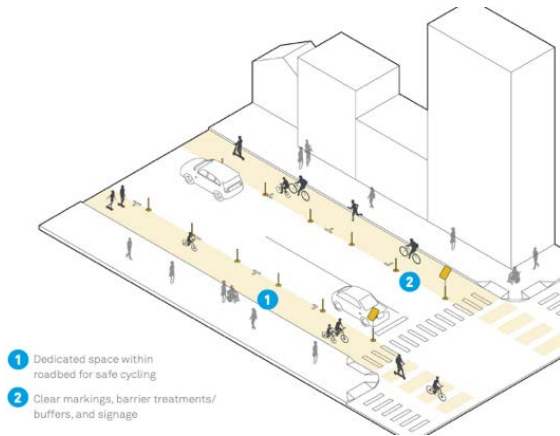
#publication #completed

Synthesis of emerging transportation and street design in response to COVID-19 which is organised into ‘implementation sheets’. The focal points are (1) moving safely, (2) accessing food and essential services, (3) mental, physical and immunological health, and (4) space for social services. Although they target measures which will ‘allow cities to safely reopen’, implicitly they capture design philosophies which would impart greater resilience in the case of future pandemics. The document then describes and diagrams street layouts for a variety of purposes (eg cycling, markets, transit), which will ‘allow people to safely access essential services without travelling long distances’ and ‘to help people maintain physical distance while moving around the city’.

Post COVID-19 policy is described at neighbourhood street, main street, major urban and edge street levels, including sidewalk widening, enhanced cycle lanes, and open space expansion, and measures to separate commercial loading activities from pedestrian corridors to assist active travel and social distancing.

³ <https://www.theglobalfund.org/en/>

Repurposing vehicle corridors to cycle lanes to provide additional active travel corridors (Paris, France; Minneapolis, USA; Tirana, Albania):



Credit: @ParisBeauAVelo

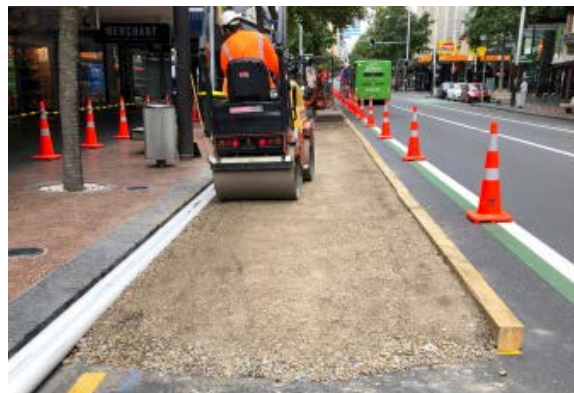
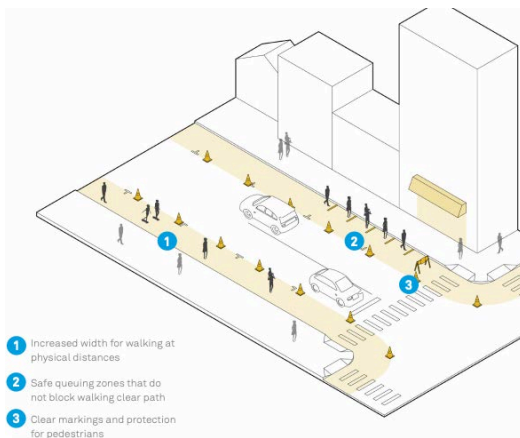


Credit: Minneapolis DPW



Credit: Kledina Skendo

Providing additional space for social distancing while walking or waiting (Auckland, New Zealand; Milan, Ital; Brookline, USA):



Credit: Auckland Transport



Credit: AMAT Officina Urbana/Comune di Milano

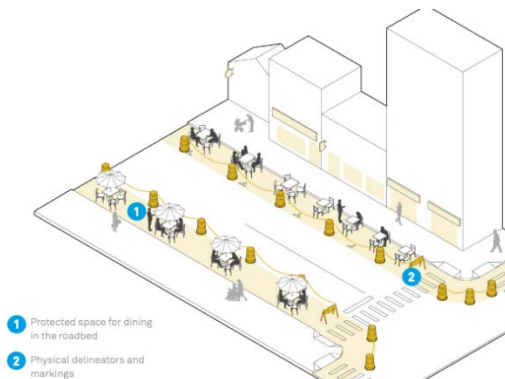


Credit: @BLineTransport

Note – Milan announced it plans on repurposing 35km of city streets for #active-travel during the Italian summer (eg temporary cycle lanes, new and widened pavements, low speed limits for vehicles, and pedestrian/cyclist priority streets).

https://www.theguardian.com/world/2020/apr/21/milan-seeks-to-prevent-post-crisis-return-of-traffic-pollution?CMP=Share_AndroidApp_Tweet

Repurposing streets for outdoor dining so that restaurants can comply with social distancing (Vilnius Lithuania; Cincinnati, USA; Tampa, USA):



Credit: Go Vilnius



Credit: Albert Cesare/The Enquirer



Credit: Tampa Downtown Partnership

In addition:

- expanding transit lanes for public transport to ensure mobility as private transport use rises (Buenos Aires, Brazil; London, UK; Miami, USA)

- ‘slow streets’ for local traffic which mix micro-transport and private-transport (Brussels, Belgium; Oakland, USA; Dunedin, New Zealand)
- dedicated pick-up and delivery zones (most relevant at restaurants, laundromats, pharmacies and other essential services) (Raleigh, USA; Seattle, USA; Alexandria, USA)
- expanded footprint for community markets to maintain social distancing (Kalaw, Myanmar; Goiania, Brazil; Dallas, USA)

Note – regarding street-side dining for restaurants and eateries – see night market in Cuba Street, Wellington and weather challenges during winter season. What opportunities are there for temporary shelters?

2.1.10 INT – COVID-19 transport brief: Re-spacing our cities for resilience

International Transport Forum (ITF)

<https://www.itf-oecd.org/sites/default/files/respacing-cities-resilience-covid-19.pdf>

#public-transport #private-transport #active-travel

#publication #completed

The opening section of the report focuses on travel patterns and crisis-centred observations, for example: Reports Apple data showing travel routing request fell March-April in public transport, walking and driving journeys (see figures below).



Routing requests are a proxy for travel demand and do not include most habitual trips. They give an indication of the scale of travel demand contraction where Apple devices are present and Apple routing services are used. Source: ITF based on Apple Mobility Trends

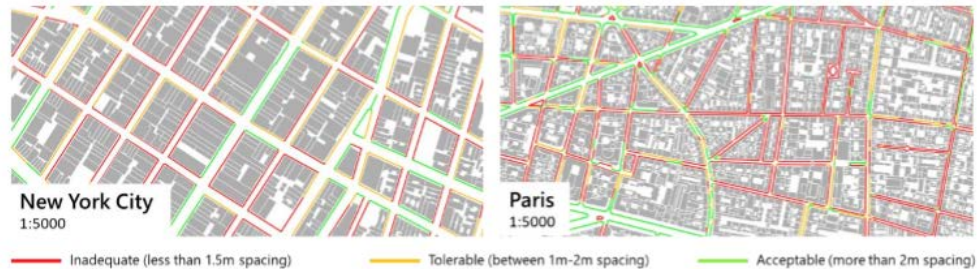
Note - the authors report this as a proxy for ‘everyday mobility’, although elsewhere in the ‘research notes’ we have suggested this is a proxy for ‘exploration behaviour’ as routing requests point to novel or unfamiliar journeys.

Some observations from the publication:

- 1 **Shorter travel journeys are associated with fewer overall road injuries** in France and California—interesting but may not be relevant to the post-lock-down or post-COVID-19 scenario.
- 2 Illustrates **the severe impact of social distancing measures on public transport** bus services (see ‘COVID-19 and Public Transport: From Response to Recovery’ research note for more detailed discussion on this topic).
- 3 **‘Shared micromobility has helped ensure everyday mobility** during the crisis where it has continued to operate” and “cities have recorded increased use of shared micromobility as people abandoned public...’. However, most operators scaled down due to either falling demand, unnamed limitations to shared micromobility business models or due to onerous regulatory approaches.

- 4 **‘Cities are not adapted to current physical spacing guidelines’,** but ‘many cities have rapidly repurposed streets to provide safe room’. Per image below, many existing routes are not suitable for social distancing, but ‘emergency cycle lanes’ ‘act as safety valves which make essential travel possible and safe for those displaced from public transport’.

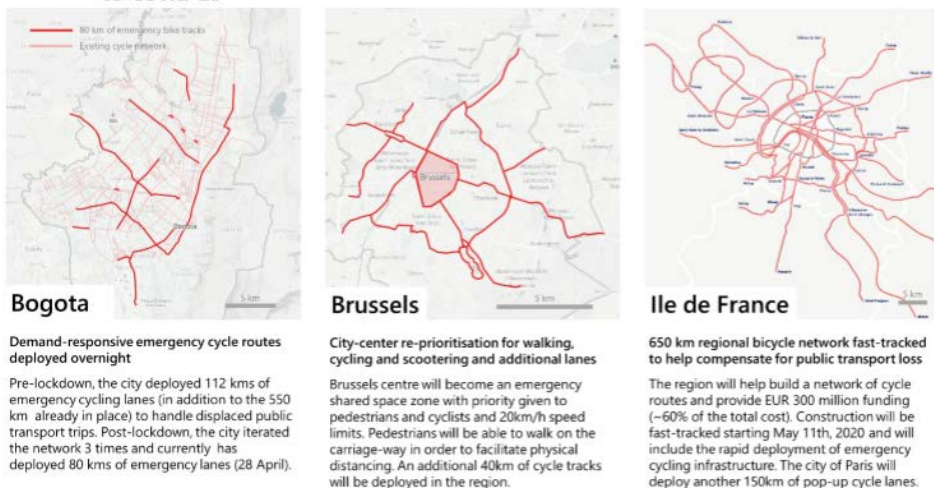
Figure 3 **Space Walk: sidewalk conformity to physical spacing requirements**



Source: ITF based on OpenStreetMap, WHO, CEREMA, APUR, City of New York, Meli Harvey, Ville de Paris, OpenStreetMap

- 5 **Light Individual Transport (LIT)** infrastructure resulting from tactical urbanism interventions has expanded in Seville, Spain, and New York, USA. ‘The introduction of LIT infrastructure has alleviated pressure along vital corridors or improved access to specific locations like hospitals—as in Berlin, Budapest, Dublin, Grenoble, Montpellier and Tirana’. The authors give an overview of other permanent or temporary LIT globally. Notably, not all initiatives are temporary, with Brussels, London and Paris leveraging COVID-19 to accelerate pre-existing active travel plans. New Zealand was also mentioned, which is gratifying.

Figure 5 **The new space race: large-scale street space re-allocation initiatives in response to Covid-19**



- 6 **Post-COVID-19 travel** Citing Chinese experiences, public transport recovery has been linked to the severity of COVID-19, meanwhile active travel has grown at the expense of public transport (shared bicycle use has almost tripled in Beijing and doubled compared to pre-COVID-19 levels in many other cities following the end of travel restrictions).

Caution – the authors link growth in Wuhan, China, car sales to surveys which suggest private cars may replace trips. After reviewing their reference, the evidence is minimal. Several interviewed car dealers suggested that a switch to smaller cars was evidence of families buying a second vehicle. No

data on is provided on Wuhan car sales and the Bloomberg reference itself reports statistics which are not present in their source.

- 7 **Increasing resilience:** The foci for resilience appear to be mixed transport networks where micromobility and active travel capacities are expanded.

‘The heart of the urban mobility system will continue to be public transport. But it will be an expanded and diversified form... It will be more demand-responsive and agile...’. And part of the process of increasing resilience in cities will ‘require rethinking and recalibrating the ways in which street space is allocated. More space will be given to citizens who choose to walk, cycle or scoot...’.

2.1.11 INT – Emerging practices for cities

National Association of City Transportation Officials (NACTO)

<https://nacto.org/covid19-rapid-response-tools-for-cities/>

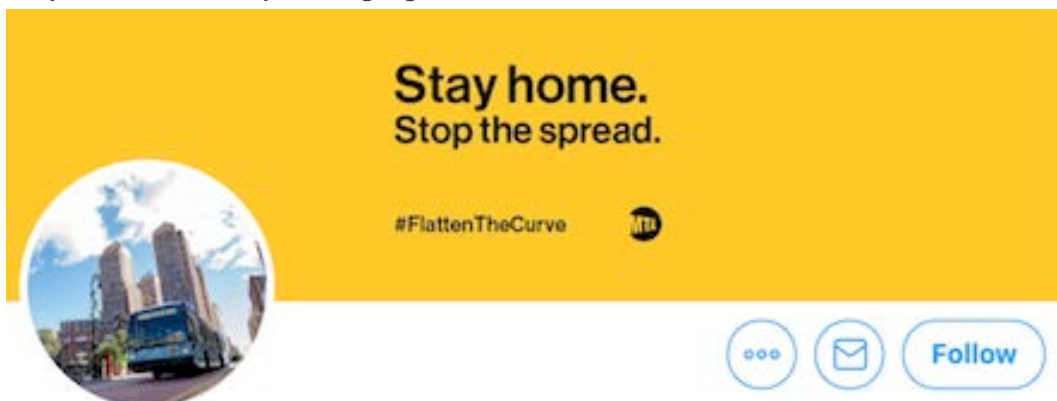
#public-transport #private-transport #active-travel

#publication #completed

Provides and overview, links on and photographs showing a range of emerging COVID-19 interventions, including:

- public transport - cleaning protocols, social distancing initiatives
- active travel – pop-up bike lanes, bike-shops classified as essential services, enlarged walking and cycling spaces, restricting routes where safe travel is not possible
- private transport – temporary slow speed zones for shared corridors
- policy – staggered work start times, protocols for safe delivery and pickup, and public messaging design.

Simple instructions in plain language:



NYCT Bus Says: Stay Home. Stop the Spread. ✓

@NYCTBus

24/7 bus service alerts, but only if you need them. If you can stay home, please do. If you need to travel, feel free to @ or DM us before you go.

In addition, New York City (USA) has repurposed underutilised taxi fleets to deliver groceries and medicine to vulnerable populations, and Detroit (USA) has arranged transport to testing stations and for urgent medical care where people do not have access to transport.

2.1.12 INT – Recommendations on COVID-19 policy decision-making

World Conference on Transport Research Society (WCTRS)

<https://www.wctrs-society.com/wp-content/uploads/2020/04/Recommendations-on-COVID-19-Policy-Decisions.docx>

<https://www.wctrs-society.com/>

#active-travel #public-transport

#publication #competed

The WCTRS Task Force formed in April has developed a list of issues and recommendations for optimising transport networks exiting lock-down and post-pandemic.

Relevant excerpts:

- 1 **Due to likelihood of increased private vehicle dependence being sustained after lock-down:** (i) improve transit services to allow physical distancing, (ii) continuing promotion of work-from-home measures during transition, (iii) staggered commuting times to manage demand and congestion, (iv) resist pressure to reduce parking fees (potentially raise private vehicle costs to manage demand and incentivise active travel), (v) subsidise public transport (in recognition of health and climate benefits).
- 2 **Increase role of active travel:** (in recognition of enduring health benefits and greater ongoing transport resiliency) (i) reallocate road space to accommodate active travel and safe social distancing, (ii) support e-bike initiatives for longer distance travel, (iii) communicate ongoing health, safety and resilience benefits of active travel.

The authors recommend that when government entities invest in transport firms, they should seek non-voting shares rather than purchase bonds, to better recover investments but allow firms decision-making latitude. Further, they recommend that government support firms to retain staff through payroll subsidies, such that on reopening operations can restart immediately (which the New Zealand government has done). Finally, observing uncertainty regarding enduring travel behaviours and potential mode shifts: 'the outcomes we see will be the result, in significant part, of the policy choices we make over the coming months and years'.

2.1.13 TWN – Taiwan loosens travel restrictions

Focus Taiwan (CAN English News)

<https://focustaiwan.tw/society/202005150023>

#public-transport #tourism-leisure

#news-media

On May 15 the Ministry of Transportation and Communications (MOTC) detailed a plan to loosen travel and transportation restrictions. The plan has three stages:

May 27 to July 31

- A group of local tourism operators will travel along the West Coast Expressway on May 27 to demonstrate safe methods of travel.
- The Ministry will provide guidelines to the public on how to travel safely under the threat of COVID-19.

- From June 1 passengers on regular trains and high-speed rail will be able to eat onboard as long as social distancing is maintained, but they will still have to wear masks during other times.
- From the June 25-28 Dragon Boat Festival weekend, standing will be allowed on regular trains and non-reserved seats will be available for the high-speed rail. Neither are currently allowed during holiday periods to avoid crowds.

August 1 to Oct 31

- Subsidies for certain group and individual travel packages.
- Promotion of domestic travel with local governments.
- No restrictions on eating and seating arrangements on regular trains and high-speed rail.
- Likely that people will not have to wear masks, have their temperature taken, and keep social distancing when they use public transportation, depending on how the pandemic unfolds.

Oct. 1 to Dec. 31

- Taiwan will start to open to overseas travel first encouraging travel to countries where COVID-19 is under control.
- Border control measures could continue to be relaxed, including restrictions on certain flights and bans against arriving passengers using mass transportation.
- International cruise tourism, cross Taiwan-Strait air and marine travel will likely resume.

The plan is subject to Central Epidemic Command Center approval.

2.1.14 USA – COVID-19 transit operations: Public transit responses to coronavirus situations

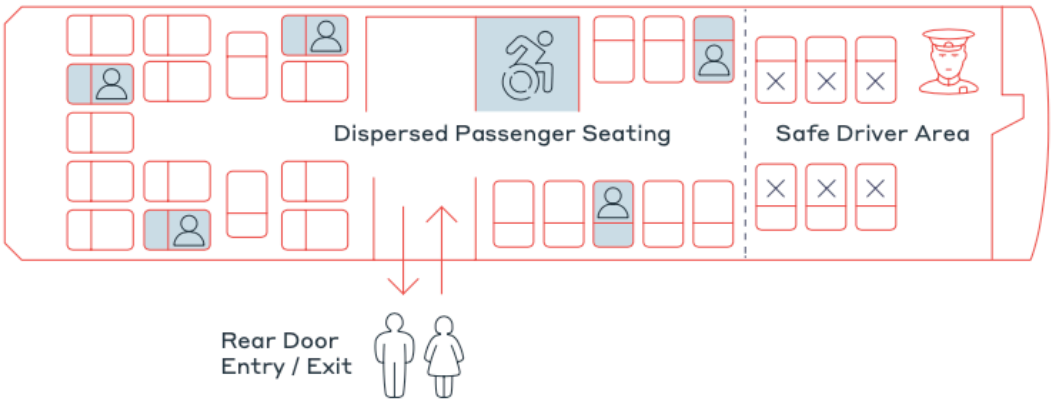
WSP Whitepaper

<https://www.wsp.com/en-GL/insights/can-we-reduce-covid-19-on-public-transit>
<https://www.wsp.com/-/media/Insights/Canada/Documents/2020/Transportation WhitePaper COVID Response-v2.pdf>

#public-transport

#publication #completed

The whitepaper describes enhanced cleaning methodology for COVID-19, garage screening procedures in case of driver or rider infections for processing at station facilities, and bus seating arrangements for



physical distancing. Due to reduced ridership social distancing is assisted, implicit though is that if ridership rises operators will face increasing capacity and safety challenges. This whitepaper advocates for a ‘safe driver area’ as a buffer between driver and passengers.

In addition, risk factors and transit operator initiatives are listed:

Public transport risk factors	Current initiatives by transit agencies
<ol style="list-style-type: none"> 1. Large number of people in shared, confined spaces for extended periods with limited ventilation 2. Elderly and individuals with mobility impairment and other medical conditions who rely on conventional and specialised transit are at high risk 3. Common high-touch surfaces (eg handrails, buttons, ticket kiosks) 4. No existing control or health pre-screening methods in place 	<ol style="list-style-type: none"> 1. Increased surface cleaning 2. Transit route and service modification to facilitate social distancing 3. Social distancing seating protocols 4. Enhanced communication with staff and customers 5. Risk assessments focused on supply chain and health-safety 6. Urgent continuity planning

2.1.15 USA – How our cities can reopen after the COVID-19 pandemic

Brookings Institution (US-based public policy organisation)

<https://www.brookings.edu/blog/the-avenue/2020/03/24/how-our-cities-can-reopen-after-the-covid-19-pandemic/>

#general-policy-advice

#news-media #completed

Professors Richard Florida and Steven Pedigo from New York University and University of Austin Texas, respectively, propose a 10-point plan of post-COVID initiatives (transport relevant items are listed below). The discussion as it were giving an overview but little detail.

Note - the proposals appear targeted toward a scenario where COVID-19 is an ongoing presence requiring sustained, heightened health-safety measures. The initiatives might be implemented to improve resilience in the case of a resurgence or future pandemic-like events.

- 1 **Pandemic-proof airports**, with updated signage and facilities (eg stanchions and painted lines) to improve social distancing.
- 2 **Modify vital infrastructure**, such as public transit stations to improve social distancing measures and hygiene measures, both temporary and permanent features such as spaced seating.
- 3 **Embrace telework** cites the ‘Tulsa Remote’ initiative which pays remote workers a relocation grant.
- 4 **Ensure main street survives**. Citing substantial economic harm should CBD shopping precincts fail; the authors propose financial support only. **Note** – other transport measures, including education, facility enhancement might support ‘main street’ shopping such that transport users are willing to return more quickly and feel protected in the case of any resurgence in COVID-19.
- 5 **Protect less advantaged communities**. Refers to negative economic impacts, access to medical care.

Note – relevance of less advantaged communities, whose travel behaviours may be more stable due to price and income factors, fewer options for remote working and alternative transport modes, particularly private transport. Active travel, in turn may be the next best alternative to public transport where incomes are constrained.

2.1.16 USA – COVID-19 public transportation responds: Safeguarding riders and employees

American Public Transportation Association (APTA) and WSP

<https://www.wsp.com/-/media/Insights/US/covid-19-apta-report/covid-19-pandemic-public-transportation-responds.pdf?la=en-US&hash=AF0DB252D6FEC531E07129AF8352D504DD5361C0>

<https://www.wsp.com/en-US/insights/2020-covid-19-apta-transit-report>

#public-transport

#publication #completed

Public transport operator guidance on how to safeguard riders and employees; a ‘strategies and tactics’ guide. Firstly, recommended PPE for employees and passengers and cleaning per US CDC guidelines are covered, followed by guidance for (1) workplace resiliency, (2) staff, vehicle and facility quarantine, (3) general facilities (eg call centres, stations, operator cabins), (4) field supervision, (5) internal communications, (6) protection of public transport users, (7) safety assurance programme, (8) external communications initiatives.

The external communication guidance includes:

- 6 rear door only boarding for buses to minimise driver-public contact
- 7 automated station and vehicle messaging (ie calming and information bulletins describing safety precautions being taken by the operator)
- 8 developing a COVID-19 ‘rider responsibility’ and ‘rider education’ campaigns:

Create a COVID-19 “Rider Responsibility” campaign, using all available media, centered on the following messages:

- o Do not ride if you have any indication that you might be ill or have been exposed to COVID-19; if riding transit is your only way to get help, wear a mask, cough into your elbow, and minimize touching surfaces with your hands.
- o During any local “stay-at-home” period, only use public transit for essential trips.
- o Wear a cloth mask
- o Social distance from other customers.
- o Avoid interactions with the operator/conductor/engineer and respect his/her need to distance from passengers.
- o If you feel uncomfortable on a specific vehicle for whatever reason, get off and take the next vehicle.



New Jersey Transit advertisement to riders (April 2020)

Create a COVID-19 “Rider Education” campaign including:

- o Precautionary measures the agency is taking
- o Encourage use of masks and gloves (see PPE section below)
- o Encourage passengers to carry alcohol-based hand sanitizer (at least 60% alcohol) and alcohol-based wipes (at least 70% alcohol) for disinfection of frequently touched surfaces
- o Expectations for social distancing/spacing
- o Fare expectations
- o Lost and Found information if regular protocols have been suspended

3 Update 1 of 2

3.1.1 DEU – How COVID-19 is affecting car sales and consumer attitudes

Capgemini (international market research and IT consulting company)

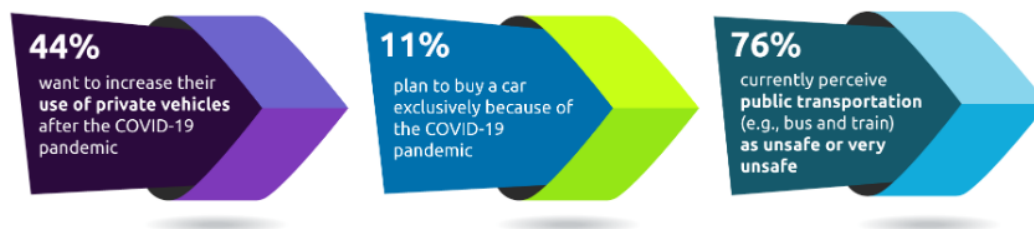
<https://www.capgemini.com/2020/05/how-covid-19-is-affecting-car-sales-and-consumer-attitudes/>

#private-transport

#publication #completed

Capgemini surveyed 800 people in Germany, querying their consumer, investment and mobility behaviour, and what expectations they had in terms of mobility and future vehicle purchasing behaviour. Reportedly, 58% would postpone the purchase of a car (40% due to financial uncertainty), 89% were hesitant to purchase.

The desire for individual mobility is increasing



The authors predict that the pandemic will have a strong and enduring impact on buying behaviour and private motor vehicle consumer preferences, notably both a preference for private transport and a reluctance to make new purchases (note – which may lead to pent up demand in the case that future conditions improve). More specifically, they predict:

- 1 Due to the high level of uncertainty among customers, demand will be slow to recover
- 2 Customers won't return to the car dealerships in large numbers immediately
- 3 The digitalization of the customer and purchase experience must be greatly accelerated, and
- 4 Incentives to buy are important, but it's crucial to offer more flexible buying options

3.1.2 GBR – Coronavirus consumer report June

Appinio Hamburg

https://www.appinio.com/hubfs/Appinio%20fourth%20Coronavirus%20consumer%20study%20UK.pdf?utm_campaign=corona-study-uk&utm_medium=email&hsenc=p2ANqtz-o0t-hfRQF1HraVUzBIWXN1A-Tm4kJMAleRV3h9v0dbtldHFTpFpQpwUTHmhdroioAuUU-WieK-tElihNs3kr63vFRIw&hsmi=85173483&utm_content=85173483&utm_source=hs_automation&hsCtaTracking=5f744cc5-3a28-4241-9235-f8e279d20ea1%7C6d007302-95ed-4de0-9320-440db649810a

<https://www.appinio.com/en/uk-coronavirus-report#>

#public-transport #private-transport #active-travel

#survey #ongoing

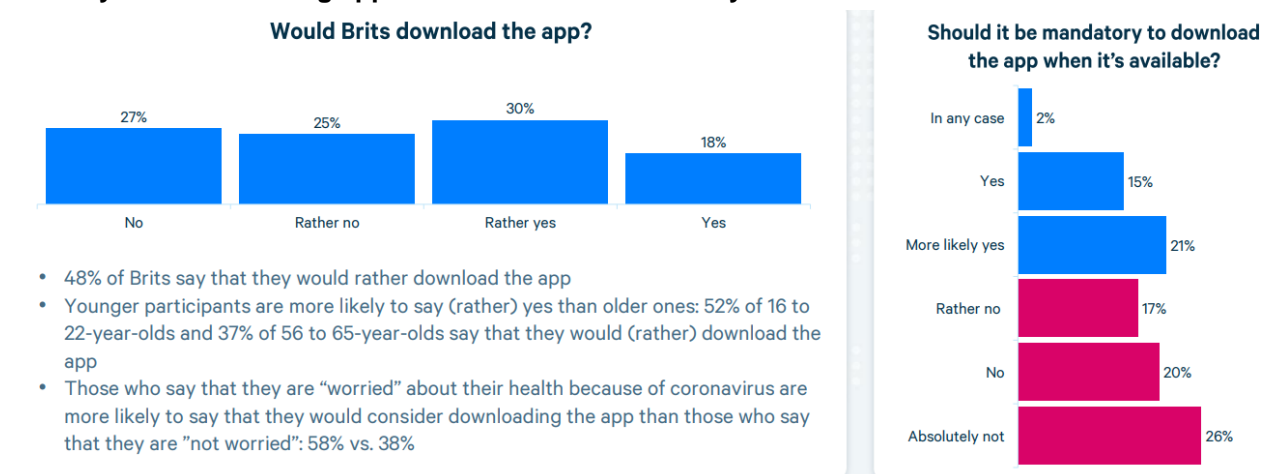
The fourth wave of Appinio’s consumer surveys captured self-reports from one thousand respondents aged 16-65 years of age, covering (i) information channels for news about coronavirus, (ii) main concerns about the virus, (iii) life satisfaction, (iv) preventative measures, (v) changes in leisure activities, (vi) changes in consumption and means of transport (including motor vehicle purchasing behaviour), (vii) brand loyalty and (ix) ads related to coronavirus.

Despite the wide spread of COVID-19 in the UK respondents reported diminishing concerns regarding their health-safety (falling up to 7%), meanwhile working from home is still up (57% of the working population, 42% “imagine doing most of their work from home even after the pandemic is over”). Respondents are also washing their hands more regularly (82%), avoiding crowds (78%) or public transport (70%). Although online shopping behaviour overall has increased compared to pre-COVID (63% are buying more online), since the previous survey waves respondents are buying less clothing online (-30%).

Note – it is unclear whether the marginal change has been subject to a statistical test of significance, therefore there may be no real change in concern. Nonetheless, diminishing concerns suggest that even in the face of an ongoing pandemic, risk is becoming normalised in public perception. Whether this is due to a general psychological response which normalises risk or the result of active, autonomous behaviour change (more handwashing or self-care behaviours) which imparts a greater sense of security is unclear. In the transport context we anticipate increased hygiene measures which riders have control over, therefore autonomy, may also impart a greater sense of security compared to no measures.

Note – public transport buses have been reported as common vectors for the spread of contagious pathogen. For example, tuberculosis⁴, MRSA⁵, acute respiratory infection⁶. We understand from other sources that infectious viruses can survive in excess of nine hours in bus air conditions systems, based on research in the United States.

Would you use a tracking app and should it be mandatory?



⁴ Feske, M. L., Teeter, L. D., Musser, J. M., & Graviss, E. A. (2011). Including the third dimension: a spatial analysis of TB cases in Houston Harris County. *Tuberculosis*, 91, S24-S33. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/22094150/>

⁵ Conceição, T., Diamantino, F., Coelho, C., de Lencastre, H., & Aires-de-Sousa, M. (2013). Contamination of public buses with MRSA in Lisbon, Portugal: a possible transmission route of major MRSA clones within the community. *PLoS One*, 8(11), e77812. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/24223124/>

⁶ Troko, J., Myles, P., Gibson, J., Hashim, A., Enstone, J., Kingdon, S., ... & Van-Tam, J. N. (2011). Is public transport a risk factor for acute respiratory infection?. *BMC infectious diseases*, 11(1), 1-6. Retrieved from <https://bmcinfectdis.biomedcentral.com/articles/10.1186/1471-2334-11-16>

Privacy concerns (48%) and belief that the app was unnecessary (i.e. lack of understanding regarding its benefits) (39%) were the two main reasons respondents gave for refusing to use the application. In contrast, users cite 'wanting to help' (pro-social motivation) (40%) and personal safety (27%) as their primary motivation for using the application.

Information channels for news on COVID-19

Predominantly TV news (75%), then online news (49%), government websites (39%), family and friends (33%), finally radio (26%) and social media channels (26%). Word-of-mouth via family and friends, and social media remain substantial information vectors which are vulnerable to misunderstanding or distortion. 'Trusted' news sources are also reported, with TV news most trusted (70%) followed by government websites (56%). Word of mouth and general google search sources were least trusted (23% and 20%, respectively; still trusted by a substantial portion of respondents).

Motor vehicle consumer purchasing behaviour

Overall, respondents reported motor vehicle purchases down 17% offline, with only 4% shifting online (i.e. fall of 13%).

3.1.3 GBR – Mandatory face coverings on public transport comes into force in England

Transport Focus UK

<https://www.transportfocus.org.uk/news-events-media/news/mandatory-face-coverings-on-public-transport-comes-into-force-in-england/>

#public-transport

#news-media #completed

As of June 2020, public transport users must wear face masks, however Transport Focus cite a need for greater clarity for users; whether masks are required at stations and bus-stops, not only onboard. Transport Focus's latest survey reported 67% of respondents stated they "would not be happy using public transport unless passengers are required to wear face masks or covering".

3.1.4 GBR – End of the Monday-Friday Commute?

Transport Focus UK

<https://www.transportfocus.org.uk/news-events-media/news/end-of-the-monday-friday-commute-transport-watchdog-calls-for-urgent-rail-fares-reform/>

#public transport

#news-media #completed

Transport watchdog calls for urgent rail fares reform as a result of shifting user behaviour during the pandemic. As users report a preference for work-from-home arrangements, alongside existing frictions when using public transport, Transport Focus is advocating for fare and system reform to simplify payment for riders.

"... Travel patterns have changed and are unlikely to return to the typical Monday-Friday commute any time soon" and "half of people in the survey of 2000 people expect to work from home more often in the future and more than a third (36 per cent) think their job will be home based with limited travel to their workplace".

Note – the need to minimise frictions while increased hygiene measures are in place (i.e. increased frictions) has been cited elsewhere in the research notes.

3.1.5 GBR – UK Public transport survey [July update]

Transport Focus UK

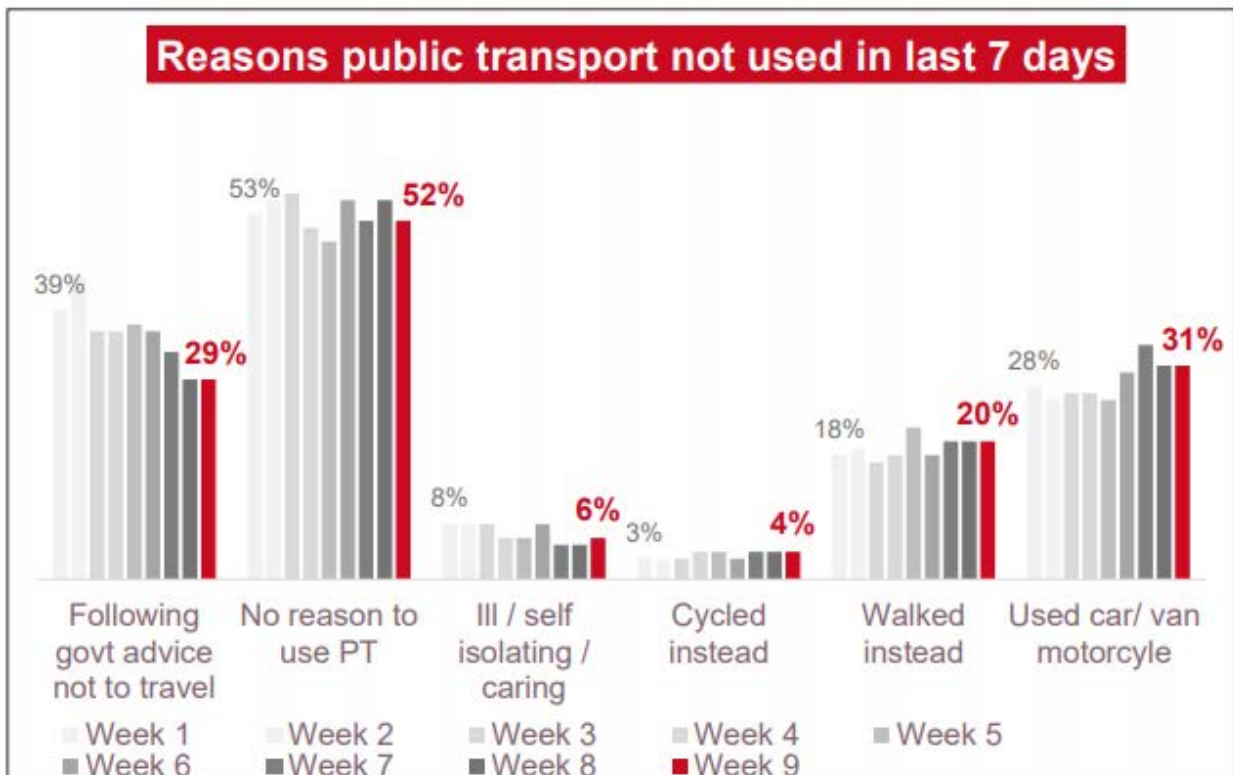
<https://www.transportfocus.org.uk/research-publications/publications/travel-during-covid-19-survey-week-9/>

<https://d3cez36w5wymxj.cloudfront.net/wp-content/uploads/2020/07/02172024/Travel-during-Covid-19-survey-%E2%80%93-week-9.pdf>

#public-transport

#survey #ongoing

During the nine-week period of this rolling survey, respondents have reported uneven public transport use, initially low, rising into weeks 7-8 then falling in week 9. In contrast, private vehicle travel has reportedly risen consistently (transport used in the last 7 days, 51% in week one, 59% in week nine). Moderate to heavy traffic has risen accordingly, suggesting a wider shift toward private vehicle transport generally. In contrast, the survey reports minimal change in other transport modes (walking, bicycle, taxi).



Those respondents who previously used public transport cited safety (won't use for any reason until I feel safe, 33%) and government instructions (27%) as the drivers behind their behaviour change. Only 7% cited remote working or employer instructions as the reason for cessation. In turn, the main drivers for renewing ridership are reportedly (1) opening stores (10%), (2) when it is permitted to visit friends and family (13%) and when public entertainments re-open (10%). Younger demographics are more relaxed regarding personal safety and more likely to report public transport ridership.

Table 3. Happy to use public transport once restrictions are lifted.

Group	Average	18-24	25-34	35-44	45-54	55-64	65+
Percentage	24%	34%	29%	25%	21%	25%	19%

The majority (63%) agree that face coverings will improve feelings of safety when using public transport. Two thirds (65%) say they won't use public transport unless social distancing is in place. Note – we assume this is based on regular riders or potential returnees as opposed to all travellers, however this is unclear from the report. Finally, 44% report they are more likely to use a private motor vehicle “for journeys where they previously used public transport”, similarly, 27% reported they were more likely to cycle and 48% were more likely to walk.

3.1.6 GBR – Quarantine exemption for Taiwanese travellers

Government of the Republic of China (Taiwan)
 Focus Taiwan (CNA English News)
<https://www.taiwan.gov.tw/content5.php?p=27&c=42>
<https://focustaiwan.tw/politics/202007040004>
<https://focustaiwan.tw/politics/202007090010>

#tourism-leisure
#news-media #completed

Taiwan has been included by the United Kingdom in its safe travel corridors from which travellers to England will no longer need to self-isolate for 14 days upon arrival beginning July 10, according to a notice posted on the U.K.'s government portal.

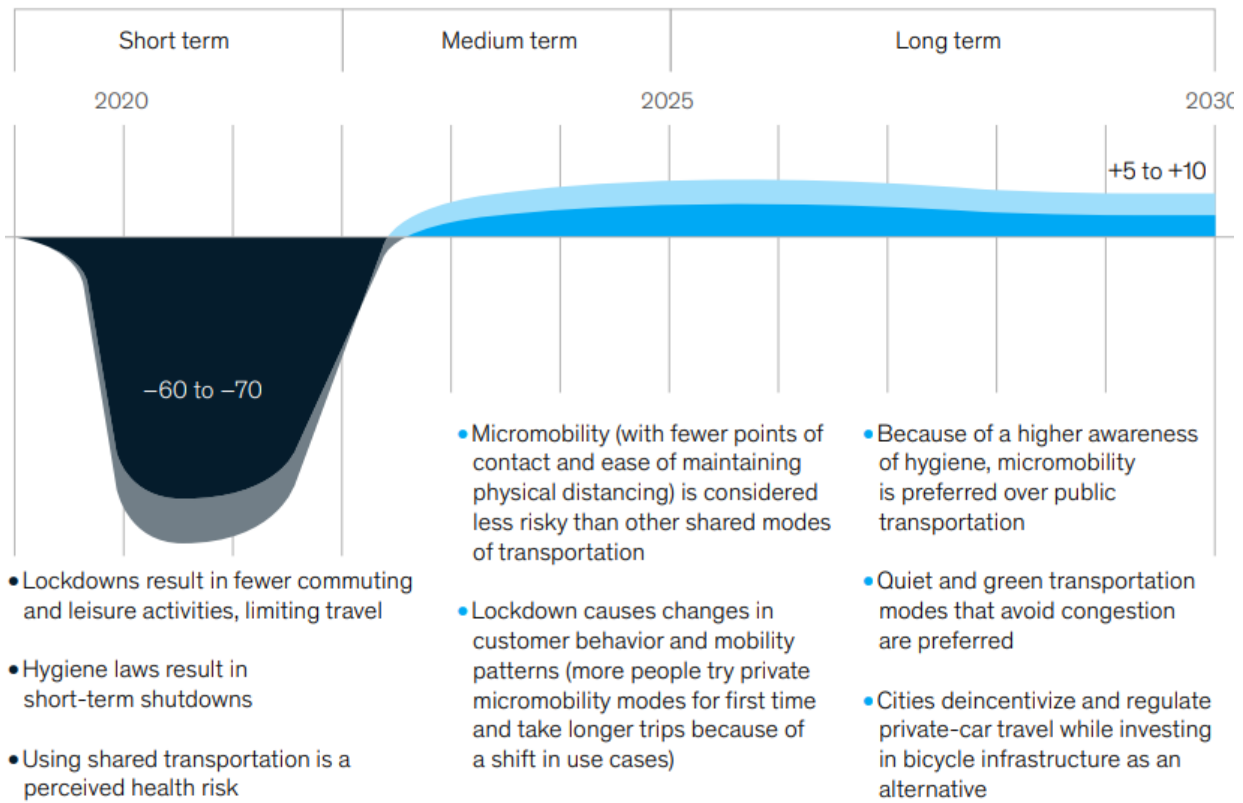
On July 9 the restriction was partially lifted by Scotland, allowing Taiwanese in as long as provided they have not been in a non-exempted country in the previous 14 days. Travelers arriving to Wales and Northern Ireland are still subjected to the U.K.'s 14-day self-isolation rule and face penalties if they do not comply.

3.1.7 INT – Future of micromobility ridership and revenue after a crisis

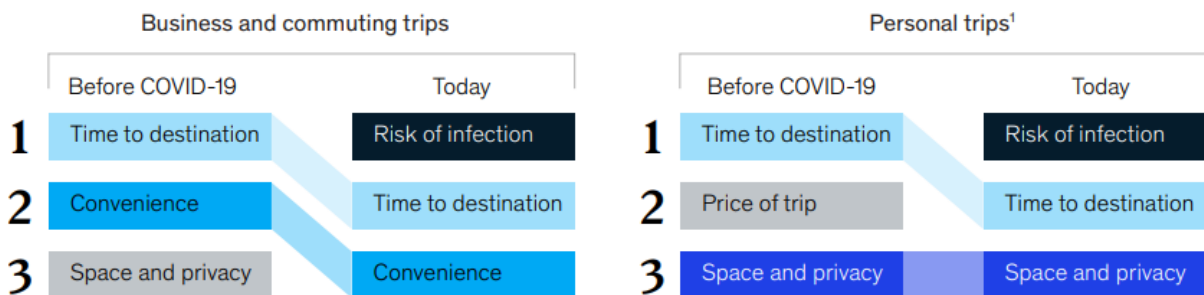
McKinsey & Company
<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-future-of-micromobility-ridership-and-revenue-after-a-crisis>

#active-travel #public-transport
#survey #completed

McKinsey & Company the American based global business consultancy has published (July 2020) an analysis of the future of micromobility. Modelling indicated a strong recovery after a very pronounced post-COVID downturn in use, driven by lockdowns limiting travel, hygiene laws precluding use, and a popular perception that use of shared transport modes increased risk of contracting covid-19. This is illustrated by the following chart. The changes in the chart relate to percentage changes in passenger kilometres travelled and the presumed primary drivers of change are listed below the chart.



A consumer survey conducted in May 2020 provided input for the analyses. The survey included more than 7,000 respondents from seven global markets—China, France, Germany, Italy, Japan, the United Kingdom and the United States. Some pertinent results of this survey were an assessment of respondent’s main concerns when choosing shared mobility (ranked by number of respondents):



It is notable that for both business and personal travel, risk of infection had displaced time to destination as the main concern—with time to destination demoted to second place.

The consumer survey indicated that micromobility use might increase. The number of respondents willing to use micromobility regularly in the next ‘normal’ was greater by 9% for private micromobility and 12% for shared micro mobility relative to pre-crisis levels.

3.1.8 INT – Will cruise lines survive COVID-19?

University of Sydney, United States Study Centre

<https://www.ussc.edu.au/analysis/will-cruise-lines-survive-covid-191#challenges-for-the-post-covid-19-world>

#tourism-leisure

#news-media #completed

An article with the above title was published on 24 April 2020 by Justin Wastnage, a Non-Resident Fellow of the United States Studies Centre at the University of Sydney. The article points out that after more than 1,000 confirmed cases of novel coronavirus (COVID-19) onboard cruise ships, the industry is on hold and tens of thousands of passengers were stranded at sea for weeks for want of a port which would allow them to disembark. This has been followed by lawsuits and a criminal investigation in Australia into whether the industry was honest about the extent of the virus's spread.

The share prices of Carnival, Royal Caribbean and Norwegian Lines, the world's three largest cruise operators dropped by around 35% in a week in early March, The US State Department and the Centers for Disease Control (CDC) both advising against cruising. Ports closed to cruise liners en masse with uncertainty about when they would be allowed back.

The writer postulates that post COVID new markets may exist in less risk averse younger demographics than the predominantly older pre-COVID customers of cruise lines with "71 per cent of millennials holding a more positive attitude about cruising in 2019 than in 2017".

He considers that to attract this demographic they will need to pay greater attention to environmental impacts. This means looking at fuel (high-sulphur maritime diesel is dirtier than jet fuel) and black water, grey water, hazardous waste, bilge water and ballast which all represent dangers to marine life. Action in this direction is happening with LNG slowly replacing diesel, three-quarters of ships now having exhaust gas cleaning systems and wastewater treatment systems being included in all new builds.

3.1.9 INT – IATA Survey of air travellers [July update]

International Air Transport Association (IATA)

<https://www.iata.org/en/publications/store/covid-passenger-survey/>

#commercial-transport

#survey #ongoing

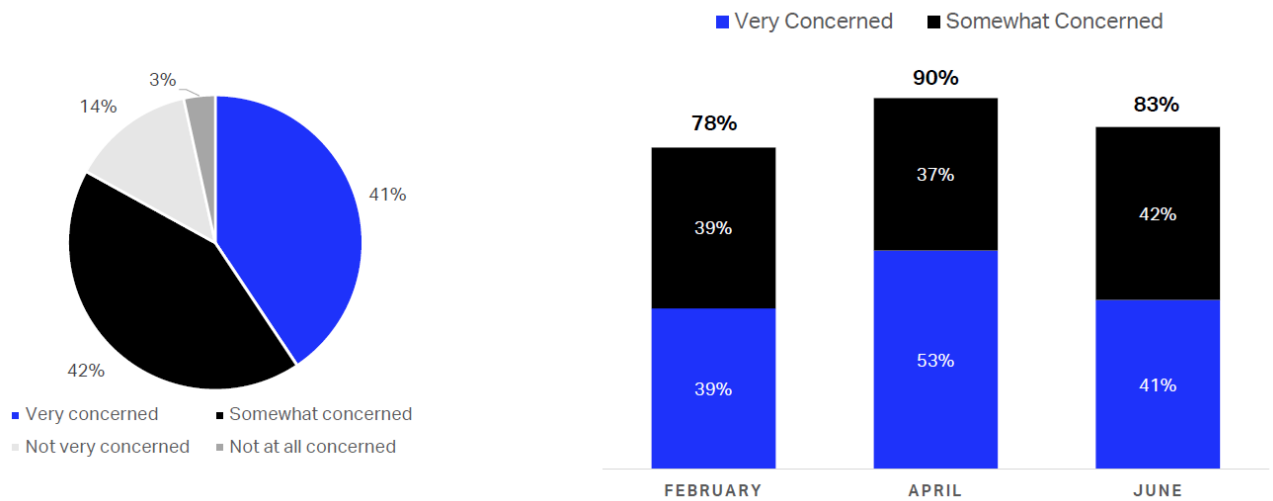
This survey of recent air travellers was commissioned to elucidate the impact of COVID-19 on self-reported perceptions of the industry and future travel behaviour. IATA wanted to:

"better understand what passenger trends to expect in the near future which would help shape guidelines for the industry recovery".

The survey was conducted in 3 waves, on 22-25 February 2020 and on 6-9 April 2020 and in 29 May -2 June 2020. The survey featured 4,700 panel members from eleven countries (Australia, Canada, Chile, France, Germany, India, Japan, Singapore, UAE, UK and USA) who travelled in the last 9 months. Some selected results from the June wave are detailed below. These are different from results previously reported from the February and April waves.

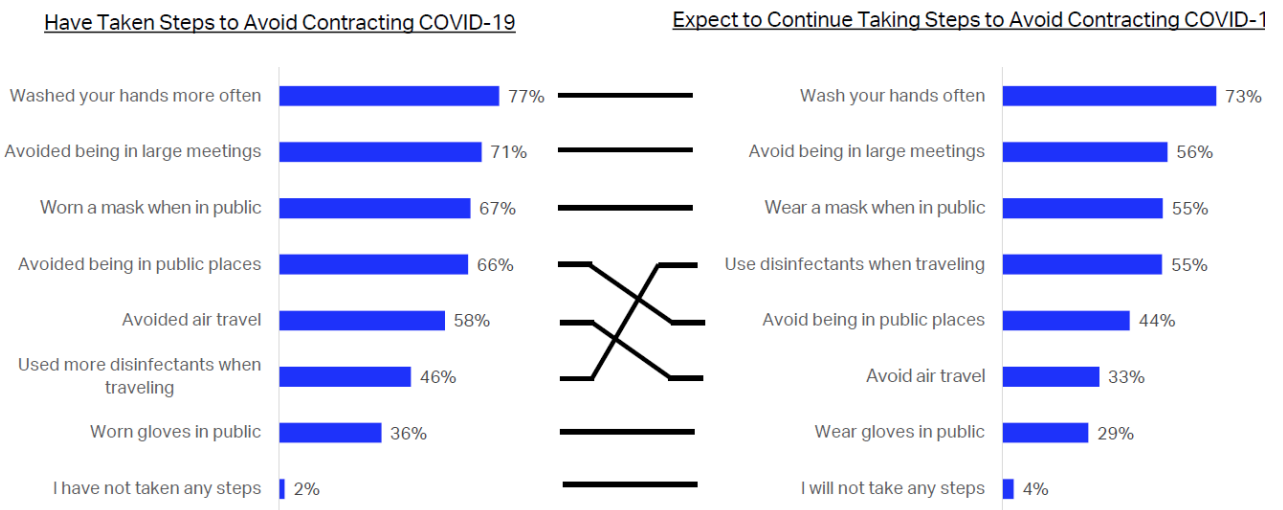
Concern about contracting the virus

As can be seen below this peaked in April with a decline in June There is a high level of continuing concern.



Personal Virus avoidance measures

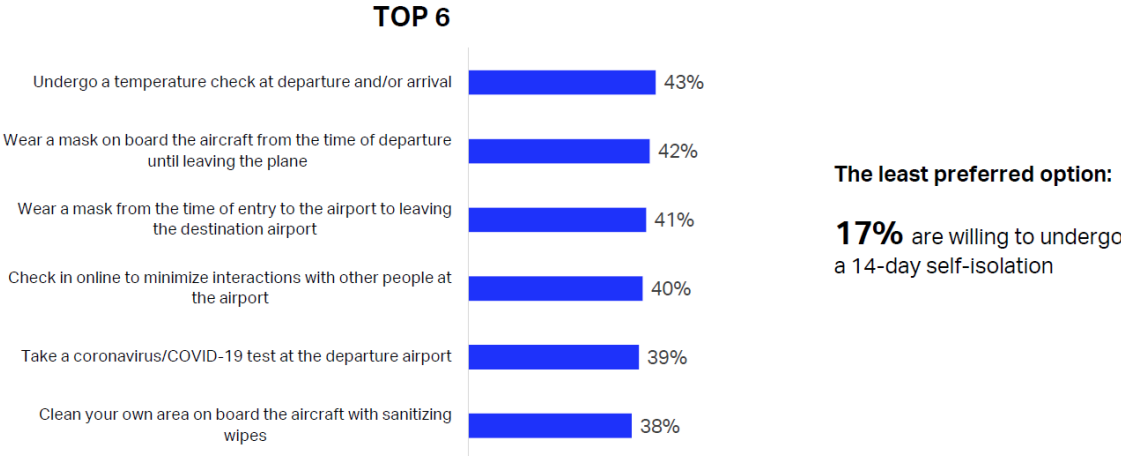
The diagram below compares precautions reported as already taken with precautions travellers expect to take in the future.



Generally, willingness to take future precautions was down on reported prior practice. The changes highlighted indicate reduced avoidance of public places and air travel and an increased willingness to use disinfectants when traveling. Not highlighted was a large drop in willingness to avoid large meetings.

Willingness to adopt new measures on return to travel

The 6 measures that travellers were most willing to adopt are shown below, with all them having between 38 and 43% willingness to adopt. The least preferred option was 14 days self-isolation with 17% willing to undergo it.



Top concerns regarding contracting COVID-19

At the airport	On board the aircraft
TOP 3	TOP 3
59% Being in a crowded bus/train	65% Sitting next to someone who might be infected
42% Queueing at check-in /security /border control /boarding	42% Using restroom /toilet facilities
38% Using airport restrooms /toilet facilities	37% Breathing the air in the plane

All the above relate to situations involving direct physical closeness to others or using toilet facilities which may have been previously used by an infected person.

IATA document on medical evidence for strategies to mitigate COVID -19 during the air journey

This document is based on various strategies discussed at a 9 June 2020 meeting of the IATA Medical Advisory Group. Those included are listed below along with the advisory Group’s summary comments on each one.

- **Temperature screening** has deficiencies and should be undertaken with appropriate precautions. It may be of some benefit, applied selectively along with other measures
- **Symptom screening** is a useful adjunct to other measures but has significant limitations.
- **Use of masks and PPE** for passengers along with suitable PPE for crew and other airline staff are a useful element of a multi-layered protection strategy.
- **Physical distancing** on board can be achieved to a large degree especially during the airport processes and boarding but leaving large numbers of empty seats on a routine basis is probably unsustainable.
- **Cleaning and disinfection procedures**, in excess of the previous norms, are part of the range of measures required in a restart process.

- **Rapid point-of-care testing** is an important potential extra layer of protection. Technology for rapid on-site PCR tests, molecular tests and alternative antigen tests, is advancing rapidly, and if validated by a reputable scientific organization could be an additional layer of protection. Suggested requirements are that this testing be:
 - validated by a reputable National scientific, therapeutic, or public health agency, to achieve less than 1% false negatives and the lowest possible false positive rate compared with PCR;
 - deployable in an airport setting, preferably using saliva and able to be sampled without use of PPE;
 - capable of scaling to achieve hundreds of tests per hour, with results well inside one hour.
- **Antibody Testing** is not yet a reliable tool other than for epidemiological study. It has potential when validated and supported by major health bodies such as WHO, and with further experience.
- **Immunity passports** have limited potential unless global spread continues to a large proportion of the population. Some risks as ongoing immunity is not assured; unwise at the current time.
- **Measures, procedures and technologies for contact tracing** are likely to be part of the suite of required measures.
- **Measures and procedures for crew** in flight and during layover are likely to be a significant part of the required measures to allow restart.
- **Treatment** (which drastically and reliably reduced the mortality and severity of disease) is potentially a major help but not yet available.
- **Vaccination** is the best solution, being vigorously pursued, but not yet in sight.

3.1.10 INT – New database COVID Mobility Works, catalogues over 500 transport responses

New Urban Mobility Alliance (NUMO)

<https://www.numo.global/news/release-new-database-covid-mobility-works-launches-catalogs-over-500-transportation-responses>

<https://www.covidmobilityworks.org/>

#private-transport #public-transport #active-travel #commercial-transport

#news-media #ongoing

“Over 500 responses from nearly 250 cities have been initially collected on COVID Mobility Works, and the partners plan to add new entries monthly through Spring 2021. These responses — ranging from actions taken to safely continue mobility services for essential workers to addressing the provision of transportation services to identifying modifications to critical infrastructure — represent public, private and nongovernmental organization efforts to ensure the movement of people and goods during the novel coronavirus pandemic response and recovery”.

Data

506

Initiatives






245

Cities

20%

initiatives fueled by multistakeholder partnerships

Recently added mobility responses

<p>Revel provides free rides for healthcare workers New York, United States</p>	<p>APPROACH</p> 
<p>Lime launches LimeAid program to provide free rides to critical workers Austin, Baltimore, Boise, Calgary, Charlotte, Columbus, Dallas, Detroit, Edmonton, Indianapolis, Los Angeles, Louisville, Nashville, Norfolk, Oakland, Oklahoma City, Orlando, Portland, Roanoke, Salt Lake City, San Francisco, Tulsa, Washington, D.C., United States</p>	<p>APPROACH</p> 
<p>Free Spin Rides for Healthcare Workers Baltimore, Denver, Detroit, Los Angeles, Portland, San Francisco, Tampa, Washington, D.C., United States</p>	<p>APPROACH</p> 
<p>Detroit mobility pilot provides essential workers with e-bicycles and e-scooters Detroit, United States</p>	<p>APPROACH</p> 
<p>Montevideo launches car-free boulevard on Sundays Montevideo, Uruguay</p>	<p>APPROACH</p> 

COVID Mobility Works

Home Find mobility responses Insights Act About

Find mobility responses to COVID-19

Search initiatives by keywords (New York, transit, delivery...)






And/or browse by Type Purpose Approach Mode type +

- Any
- Economic recovery
- Equity
- Moving goods
- Moving people
- Public engagement
- Public health
- Safety

506 initiatives

Share this list

Listed alphabetically

<p>#DistanceWhileDistancing campaign on social media while using public transport Kochi, India</p>	<p>APPROACH</p> 
<p>#MOVID19 Hackathon Bogotá, Colombia</p>	<p>APPROACH</p> 
<p>#WeAllMove Global</p>	<p>APPROACH</p> 
<p>1,600 bikes made available for students Amsterdam, Netherlands</p>	<p>APPROACH</p> 
<p>130 km of temporary bicycle lanes to support safe travel in Mexico City Mexico City, Mexico</p>	<p>APPROACH</p> 

3.1.11 INT – New Mobility Atlas

New Urban Mobility Alliance (NUMO)

<https://www.numo.global/news/new-mobility-atlas-update-july-1-2020>

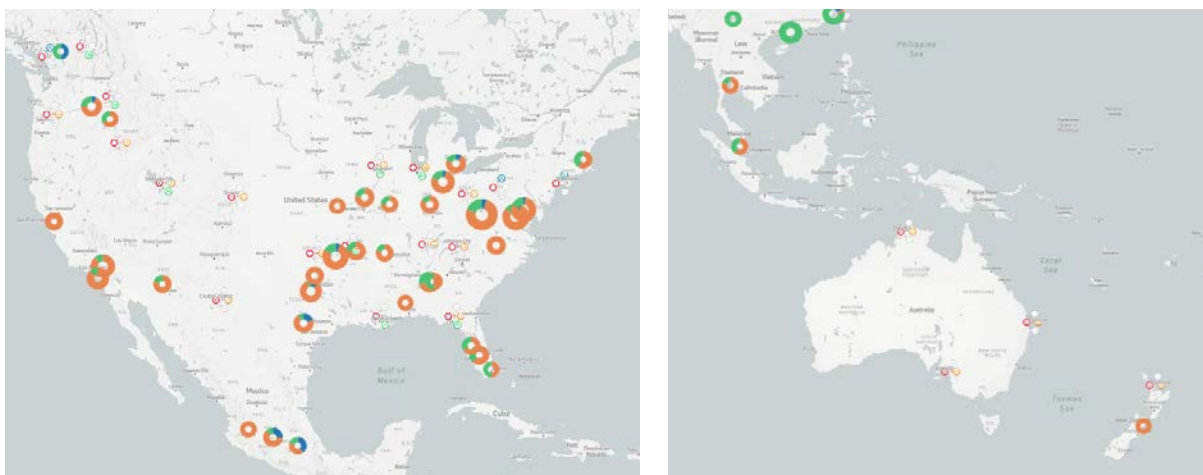
<https://www.numo.global/new-mobility-atlas#3.29/-8.81/77.28>

#active-travel

#survey #ongoing

The New Mobility Atlas tracks the operation of ride-sharing services, including ride-hailing services such as Uber, e-scooters and e-bikes. The data appears to be uneven, with no data for Australia as of 08/07/2020. The authors report that 56 operations ceased to exist since April, 2020, 285 remained suspended and 137 operations relaunched as of July, 2020.

Figure 8. New Mobility Atlas: USA and Australasia.



3.1.12 INT – Automotive purchase intentions driven by social distancing concerns

Ipsos (international market research company)

<https://www.ipsos.com/en/automotive-purchase-intention-driven-covid-19-social-distancing-concerns>

#private-transport

#publication #completed

Forecasting predicts a decline in light passenger sales in 2020 (down 20-25% globally), however, consumer intentions mapped through international surveys suggest that demand will bounce back post-crisis, potentially at a higher level due to a shift in consumer preferences toward private-transport over public-transport. More than half of respondents (55%) in an Ipsos international survey reported feeling safer and more protected from the virus when driving their own vehicle than any other mode of transport.

Figure 9. Vehicle purchase intention after COVID-19 outbreak.

n=2,891



3.1.13 INT – Consumer car buying and mobility behaviour amid COVID-19

McKinsey (international general consulting company)

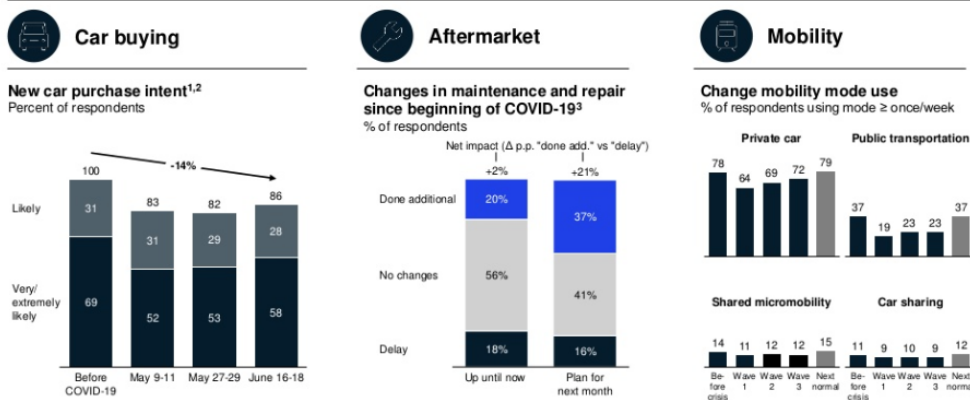
<https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/how-consumers-behavior-in-car-buying-and-mobility-changes-amid-covid-19#>

#private-transport

#publication #completed

The consultancy reports car purchasing intentions in the China, Europe, Japan and the United States, drawing on a series of ‘pulse’ surveys from May to June. Reportedly purchasing “intent is still 14 percent below pre-COVID-19 levels”. This is more pronounced in the US and the UK where economic conditions are worse, relatively. In China purchase intent is close to pre-COVID levels, while in Europe purchase intent remains down 12%. The effects are also more pronounced in the new car market, whereas demand for second-hand vehicles is higher, particularly in the US and Japan (note – as such, this suggests that we should attend to both new and second-hand vehicle purchase data. Trademe data could be of interest). A set of PowerPoint slides are attached to the webpage. Finally, the authors use the data to predict a ‘new normal (see image below).

Consumer’s car purchase intent and mobility below pre-COVID-19 levels but recovering

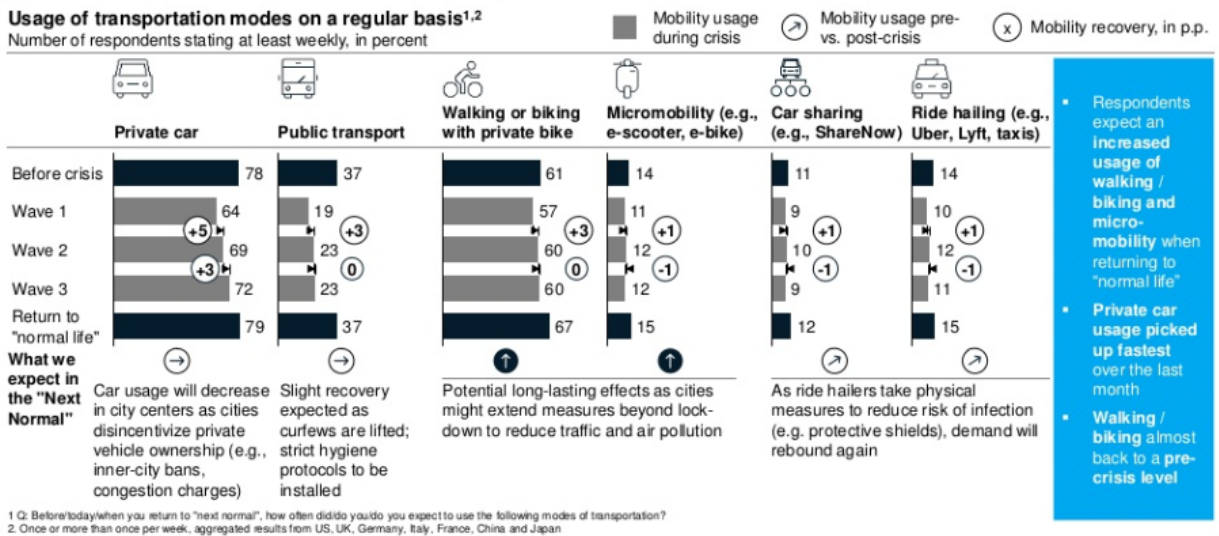


1 Q. Before the COVID-19 / COVID-19 crisis started, how likely were you to buy a new car? 2 Q. During or after the COVID-19 / COVID-19 crisis, how likely will you be to buy a new car?
 3 Q. What type of maintenance, repair and improvement work have you delayed or done additionally?
 Sampled to match gen pop 18+ years within markets; individual markets weighted based on 2019 car market size, figures may not sum to 100% because of rounding
 Source: McKinsey Global COVID-19 Automotive Consumer Survey (May 9-17, May 27-29, June 16-18) McKinsey & Company 5

Walking / biking and micromobility potentially becoming more popular in the modal mix of the "next normal"

Results of wave 1 (May 9-18), wave 2 (May 27-29), and wave 3 (June 16-18)

Usage of transportation modes on a regular basis^{1,2}
Number of respondents stating at least weekly, in percent



Source: McKinsey Center for Future Mobility

McKinsey & Company 17

3.1.14 NZL – COVID-19 transport impact: fieldwork waves 1-13 weekly core report

Ipsos Research New Zealand

https://www.nzta.govt.nz/assets/resources/covid-19-impacts-on-transport/Waka-Kotahi-NZTA-COVID-19-tracking-Core-Report-Wave-13_20200630.pdf

<https://www.nzta.govt.nz/resources/covid-19-impacts-on-transport/>

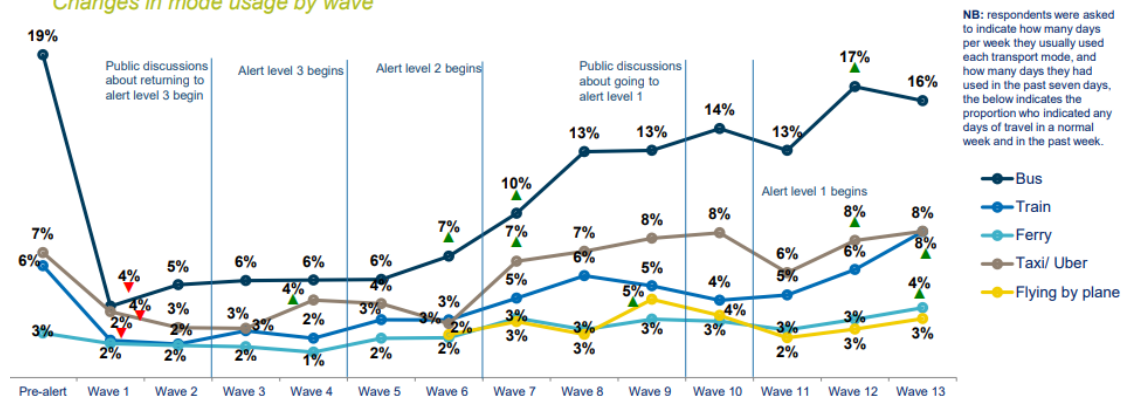
#private-transport #public-transport #active-travel

#survey #ongoing

Ipsos research on behalf of the NZTA is collected on a rolling basis. The following data is taken from Wave 13 (30th June report). The results suggest a return to near pre-COVID travel patterns and potentially rising interest in public transport despite safety concerns.

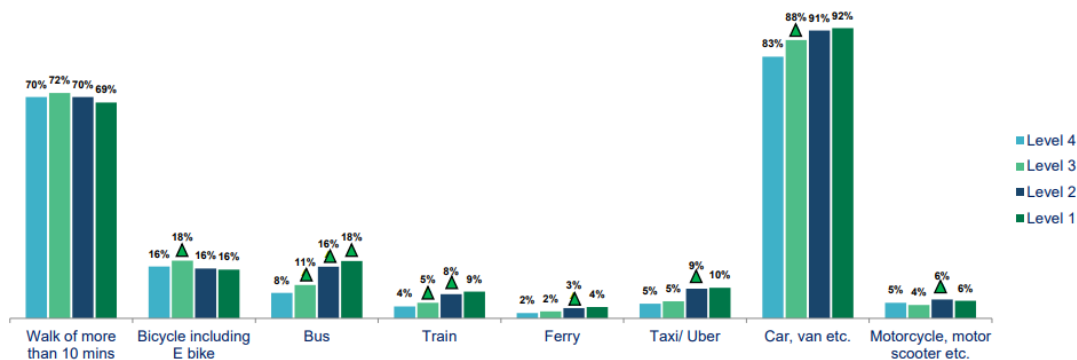
The big changes in public transport travel have been in the proportion travelling at least once a week by train or ferry, with bus and taxi usage remaining stable

Changes in mode usage by wave



Buses are now the only mode to have a statistically significant increase in consideration during level 1 fieldwork

Mode consideration: coming week by alert level



3.1.15 NZL – New CentrePort shipping service will help

CentrePort Wellington

<https://www.centreport.co.nz/information-library/news/centreport-secures-new-shipping-service-to-help-covid-10-bounce-back>

#commercial-transport

#news-media #completed

A press statement from CentrePort Wellington June 10th has announced a new container service to North East Asian ports. The new service provides direct access to Hong Kong, Keelung (Taiwan), Shanghai, Ningbo and Shekou. CentrePort General Manager Commercial Andrew Locke said, “With the economic headwinds presented by COVID-19, this is a timely boost to help Kiwi businesses in central New Zealand lead the recovery,”

3.1.16 NZL – NZTA information on public transport patronage

New Zealand Transport Agency (NZTA)

<https://www.nzta.govt.nz/resources>

#public-transport

#publication #completed

[From a variety of NZTA articles], for the 7 days beginning Monday 8 June 2020, average daily public transport patronage in Auckland, Wellington and Christchurch differed from a pre-COVID benchmark (the week beginning Monday, 9 March 2020) by the following amounts:

- Auckland public transport (including buses trains and ferries) patronage was down 39%.
- Wellington bus weekly patronage was down 24.4%
- Christchurch bus weekly patronage was 19.2%.

This represents a large bounce back from the low levels of patronage in levels 1, 2 and 3, The graphs below also show increases from preceding weeks.

Figure 10. Auckland public transport patronage

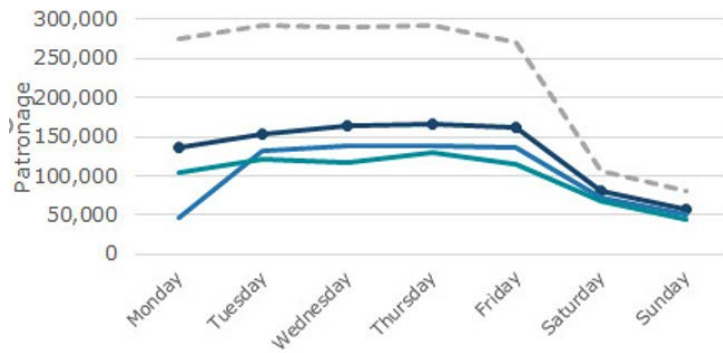


Figure 11. Wellington bus patronage.

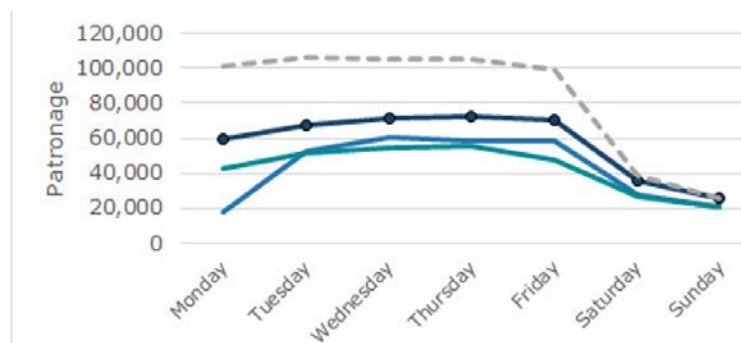
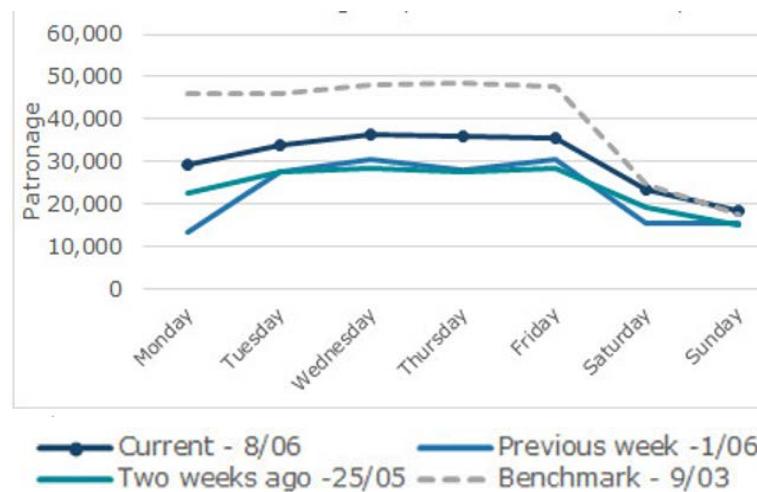


Figure 12. Christchurch bus patronage.



3.1.17 NZL – Cultural values: Explaining people’s travel behaviour and attitudes

Syam, A. (2014). *Cultural values: a new approach to explain people’s travel behaviour and attitudes toward transport mode* (doctoral dissertation, University of Auckland, New Zealand). Retrieved from <https://researchspace.auckland.ac.nz/handle/2292/23559>

#private-transport #public-transport

#publication #completed

Although timewise outside of the scope of the COVID-19 research notes, the researcher revealed cultural variation in travel mode preference and associated safety and risk judgements, which has implications for our current research.

“The study found that people with strong uncertainty avoidance cultural perceptions were 14.3% more likely to... limit their use of public transport compared to those from a masculine culture” (relative to Hofstede’s ‘cultural dimensions’). The author adds the caveat that “consistent with studies in other fields, this study also found that the effects of culture are stronger for attitudes/perception than for [actual] travel behaviour” (i.e. culture is a factor, but there is a gap between reported attitudes and subsequent behaviour, which is common to self-reported attitude and behaviour research in general). Even so, they state “this study provides strong support for the theory that ethnic minority groups have different transport attitudes and perceptions from those of the majority groups, which in turn leads to them having different transport needs”, with implications for behaviour change resulting from stress (e.g. pandemic) or environmental imperatives such as climate change. The author also observes that minority groups may be excluded from transport related communications which are largely communicated in the English language.

Note – minority group behaviour in the COVID context is likely to remain lightly reported except in specific studies.

3.1.18 TWN – Timeframe for COVID-19 testing of foreign nationals

Republic of China (Taiwan), Ministry of Foreign Affairs

Focus Taiwan (CNA English News)

https://www.mofa.gov.tw/en/News_Content_M_2.aspx?n=1EADDCFD4C6EC567&s=CD55A0D12EA00EA7

<https://focustaiwan.tw/society/202007020014>

#commercial-transport #tourism-leisure

#news-media #completed

Upon entering Taiwan, all foreign nationals must present an English-language certificate for a negative COVID-19 test taken within three days of boarding the flight to Taiwan and undergo a 14-day home quarantine period. Visitors of the following categories can be exempted from negative COVID-19 test: personnel on diplomatic or official business, migrant workers, and students (whose entry is managed by the Ministry of Foreign Affairs, Ministry of Labor, and Ministry of Education and who represent manageable risk levels), as well as people coming to Taiwan for emergency situations, and crewmembers on vessels arriving in Taiwan (for whom it may be difficult to obtain a certificate of a negative COVID-19 test).

July 2, the Central Epidemic Command Center (CECC) on slightly relaxed its regulations on the timeframe for COVID-19 testing of foreign nationals traveling to Taiwan. The CECC had stipulated that foreign travellers to Taiwan must show a negative COVID-19 test that had been conducted no more than three days before their departure date, but on Thursday, it changed the timeframe to three business days. The change was made because some foreign nationals whose flights were close to or on a weekend had reported difficulty obtaining the COVID-19 test within the three-day timeframe.

3.1.19 TWN – Easing border restrictions for students

Focus Taiwan (CNA English News)

<https://focustaiwan.tw/culture/202007080021>

#tourism-leisure

#news-media #completed

July 8, Taiwan announced the easing of border restrictions allowing students from 18 countries and regions to return to the nation, whether they are scheduled to graduate this year or not, according to the Ministry of Education (MOE). The 18 countries and regions are Vietnam, Hong Kong, Macau, Thailand, Palau, Australia, New Zealand, Brunei, Fiji, Mongolia, Bhutan, Laos, Cambodia, Malaysia, Singapore, Japan, South Korea, and Sri Lanka.

3.1.20 USA – Detroit mobility pilot proves essential workers with e-bikes

New Urban Mobility Alliance (NUMO)

<https://www.numo.global/news/detroit-new-mobility-pilot-provides-essential-workers-e-bikes-and-e-scooters-covid-19>

#active-transport

#news-media #completed

Reporting a pilot programme in Detroit, USA, which provides essential workers who live within 6 miles (9.7km) of their workplace with e-bikes and -scooters. The stated purpose is to provide “additional commuting options to our residents that are safe, affordable and convenient”.

4 Update 2 of 2

4.1.1 AUS — Melbourne’s public transport use may take years to recover

Monash University Public Transport Research Group

<https://www.monash.edu/news/articles/post-pandemic-gridlock-public-transport-users-expected-to-shift-to-driving-cars>

#public-transport #private-transport #active-transport

#publication #completed

A new report from the Monash University Public Transport Research Group indicates that one-in-five pre-COVID-19 public transport users will not return to it after the pandemic. In addition, it is likely that this will lead to congestion due to more people driving — as 9 percent of public transport users state they will be driving to work instead. This is despite a 6 percent decline in overall journeys (on all modes) as a result of people working from home.

Lead researcher Professor Graham Currie advises that this shift away from public transport is largely due to people’s increased concerns around crowding and infection.

The report also found a significant shift in the number of people who plan to commute by bike, with a predicted increase of 55 percent on pre-COVID-19 levels.

4.1.2 EUR — Regaining the trust of public transport users

European Passengers’ Federation (EPF)

<http://www.epf.eu/wp/covid-19-and-public-transport-regaining-passengers-trust/>

#public-transport

#news-media #completed

The COVID-19 pandemic has led to many changes to Europe’s public transport system, including lower occupation levels and mandatory health inspections. However, despite concerns that using public transport leads to a higher risk of infection it remains a sustainable, accessible, and affordable mobility option. To assess the risks involved and understand the repercussions of the pandemic on passenger behaviour going forward the EPF has been monitoring information about COVID-19 and public transport.

A study conducted on Chinese high-speed trains showed a high level of transmission risk among passengers, which increased depending on the proximity to an infected passenger and the length of time travelling with them. However, the study was conducted during the Chinese Lunar New Year celebrations, a time when many passengers may have been friends or family travelling as groups, and the researchers did not rule out the possibility that infections could have been caused by contact outside public transport. In addition, the widespread use of preventative measures was not yet in place.

Recent epidemiological studies conducted in France, Austria, and Japan show very different results. These studies analysed the origin of COVID-19 clusters, finding that none of them were connected to public transport. Although contrary to popular belief, this points to the fact that the likelihood of infection on public transport may be low. A number of factors can help explain this:

- Unlike the Chinese high-speed train study, these studies were undertaken when preventative measures (such as mask wearing, hand hygiene, and social distancing) were in place.

- Close communication (a primary method of transmission) is not very common between passengers, unless they are friends or family.
- Most public transport is ventilated or partially ventilated.
- Most daily journeys on public transport are relatively short, reducing the time exposed to infected passengers.

Despite this, the risks associated with public transport are still being fully understood, and these studies do not rule anything out (the EPF notes that it is statistically difficult to pinpoint a cluster to public transport).

On a related note, New Zealand introduced mask wearing on public transport in response to an incident where two passengers infected with COVID-19 travelled on the same Auckland bus for about two and a half hours (thereby increasing exposure).⁷

4.1.3 INT — COVID-19 leading to increased transport flexibility

Cities Today

<https://cities-today.com/covid-19-is-forcing-public-transport-to-flex/>

#public-transport #private-transport #active-transport

#news-media #completed

Concerns around the safety of public transport has seen some cities take proactive measures to ensure that efforts put into encouraging non-car transport is not rolled back. A recent Cities Today Institute digital roundtable with mobility leaders discussed how a new level of flexibility is emerging to cope with the changing transport landscape.

A key focus for many cities is focusing on improving multi-modal systems, offering people a range of transport options to reduce pressure on public transport. This includes providing better facilities for pedestrians, cyclists, as well as expanding the range of micromobility options.

There is also work being done around the flexibility and simplicity of ticketing to make getting around easier. In response to the pandemic the City of Lisbon has expanded their public transport passes to provide discounts on scooters and bike-share services, allowing users to more seamlessly switch from one mode to another. Other cities, such as Amsterdam, are employing camera-based technology to help determine when services are full and digital signage to let users know. Amsterdam has also worked with local universities and schools to delay the start time for lessons until after 9 AM, reducing pressure on public transport during the rush-hour period.

The uncertainty COVID-19 has created for working patterns has reduced the attractiveness of monthly pass tickets, as workers cannot predict whether they will get the full use out of them. Scania County in Sweden has responded to this by introducing weekly passes, and by allowing monthly passes to be shared with a friend or family member.

However, for cities that already have well-established systems it can be more difficult to find ways to prevent a shift back to car-based transport, particularly when key tools such as flexible ticketing and multi-modality options have already been fully implemented.

⁷ <https://www.rnz.co.nz/news/national/424334/more-details-around-bus-trip-with-covid-19-emerge>

4.1.4 GBR — Scots still wary of using public transport

Transport Scotland

<https://www.transport.gov.scot/publication/covid-19-public-attitudes-survey-data-wave-7/>

#public-transport #private-transport #active-transport

#survey #ongoing

Transport Scotland has been undertaking an ongoing 'public attitudes' survey to assess people's usage of various transport modes during the pandemic, and their expected changes going forward.

The survey's latest update, Wave 7, found that while there has been an increase in the number of people leaving the house, the vast majority of trips are occurring by private vehicle (with 76 percent of trips to work done using a private vehicle, 16 percent by active transport, and just 5 percent by public transport).

68 percent of people expressed concern about contacting or spreading the virus using public transport, and 61 percent were worried about having enough space to practice social distancing measures. 50 percent of respondents, an increase of 3 percentage points since the last survey round, said that even when restrictions are lifted they will avoid public transport and use their private vehicle more than they did before the pandemic.

Looking at other modes of transport, 65 percent agree that they will walk and cycle more and 58 percent agree that they will travel by air less often than before. Additionally, 41 percent agree that they will work from home more often in the future (up 6 percentage points since the last survey round).

4.1.5 DNK — Face masks mandatory on public transport in Denmark

Forbes

<https://www.forbes.com/sites/davidnikel/2020/08/15/coronavirus-in-denmark-face-masks-required-on-all-public-transit/#27c39cfc25e5>

#public-transport

#news-media #completed

The Danish Government is requiring all people over the age of 12 to wear a mask when using public transport, a move which comes as fear of a second wave of COVID-19 cases across Scandinavia increases. The requirement applies at all times and on all modes of public transport, as well as at stations and stops. Danish Prime Minister Mette Frederiksen also made it clear that the order could be extended to other areas where many people gather if necessary.

4.1.6 INT — Passenger transport companies suffering

International Road Transport Union (IRU)

<https://www.iru.org/>

#commercial-transport

#publication #completed

The International Road Transport Union (IRU) have released a COVID-19 Impact Report which outlines the extent of economic damage caused to passenger transport companies throughout the world.

In the United States, the American Bus Association reports that during the pandemic 3,000 small businesses shut down, 100,000 employees were laid off, and 36,000 vehicles were left unused. A bill has been put forward to Congress to provide financial relief to coach companies but it has not yet been passed.

Netherlands coach operator Koninklijk Nederlands Vervoer told the IRU that turnover losses of 90 percent are now common for coach companies, and many have had to lay off staff. Some relief has been provided, but this only covers 20 percent of ongoing fixed costs, leaving operators to pay the remaining 80 percent. If the current trends continue the best-case scenario is 40 percent of the country's coach companies going bankrupt.

Sweden has been providing a greater level of support for their coach operators, which has allowed many companies to stay afloat. The Swedish government has recently committed to another three months of financial support.

4.1.7 INT — Flights safer when middle seats left empty

MIT Sloan School of Management

<https://www.medrxiv.org/content/10.1101/2020.07.02.20143826v3>

#air-travel #commercial-transport #tourism-leisure

#publication #ongoing

A new working paper by Arnold Barnett (MIT Sloan professor and aviation safety expert) analysed United States domestic flight data from late June 2020 to determine the impact of leaving the middle seat empty on flights.

The study found that leaving the middle seat empty decreased a passenger's risk of contracting the virus by a factor of about 1.8. More specifically, the risk of contracting the virus is about 1 in 4,300 on full flights, and 1 in 7,700 on flights where the middle seats are kept empty.

However, the study also noted that while the overall risk from flying has increased during the pandemic, so has everything else — and the risk from flying is similar to doing other day-to-day activities during the pandemic (such as going to the shops).

4.1.8 NZL — Air New Zealand recovery post-pandemic slower than expected

New Zealand Herald

https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12363768

#air-travel #commercial-transport #tourism-leisure

#news-media #completed

Air New Zealand's Chief Operating Officer has signalled that the airline's international recovery post-pandemic is likely to be slower than initially expected. In response, the company has grounded most of its fleet of Boeing 777 aircraft in North America until at least September 2021. Three 777-300 aircraft will remain stored in Auckland in case they are needed to be returned to service at an earlier date.

The 777 is the airline's largest aircraft and has flown the majority of international routes over the last 15 years. Remaining international routes will be operated by smaller, more fuel-efficient aircraft such as the Airbus A320.

Airlines around the world are in a similar situation, with hundreds of aircraft currently grounded. It is not expected that air traffic will reach 2019 levels for at least three years.

4.1.9 USA — Technology being employed to make flying safer

National Geographic

<https://www.nationalgeographic.com/travel/2020/08/the-future-of-flying-is-going-high-tech-due-to-coronavirus-cvd/>

#air-travel #commercial-transport #tourism-leisure

#news-media #completed

Multiple technology solutions are being employed by airports and airlines to make travel safer during the COVID-19 pandemic.

The aim is to make the experience as hygienic and as contact-free as possible. Even before the pandemic, airports were investing in contactless technology to speed up boarding, but now there is a greater incentive to roll it out. These contactless methods include using facial recognition instead of physical passports, and using mobile devices to interface with kiosks, gates, and other areas that would normally require physical contact.

Health screenings are also being developed beyond the simple handheld thermometer wands currently in use at many airports. Some are trialling the use of walk-through thermal screening cameras, as used since the SARS epidemic at several Asian airports, and more sophisticated technology is being developed. However, as the technology currently stands asymptomatic cases would likely still be missed.

Technology is also being used to disinfect surfaces. At Pittsburgh International Airport, cleaning robots are in operation. These use ultraviolet C (UV-C) radiation to damage the virus's genetic material, stopping it from replicating.

4.1.10 CAN — Freight shipments from Ontario remain strong

Ontario International Airport

<https://www.prnewswire.com/news-releases/freight-shipments-remained-strong-at-ontario-international-airport-in-july-while-covid-19-impact-continued-to-suppress-passenger-traffic-301110650.html>

#commercial-transport

#news-media #completed

Despite passenger volumes at Ontario International Airport falling by more than 60 percent during July this year compared to July last year, air freight shipments have remained strong — increasing by 27 percent during the same period.

E-commerce has become increasingly important during the pandemic, as residents are relying on delivery to obtain goods rather than shopping at traditional retail stores. Ontario has been a key location in the Southern California supply chain network, leading to higher volumes of freight throughout the province. During the first seven months of 2020 Ontario processed on average 21.2 percent more freight than during the same period in 2019.

Ontario International Airport Authority's Chief Executive Officer, Mark Thorpe, sees this as a source of strength and optimism, helping to provide a great 'insurance policy' against an uncertain air travel market.

4.1.11 USA — US international air cargo rose slightly in July 2020

United States Bureau of Transportation Statistics

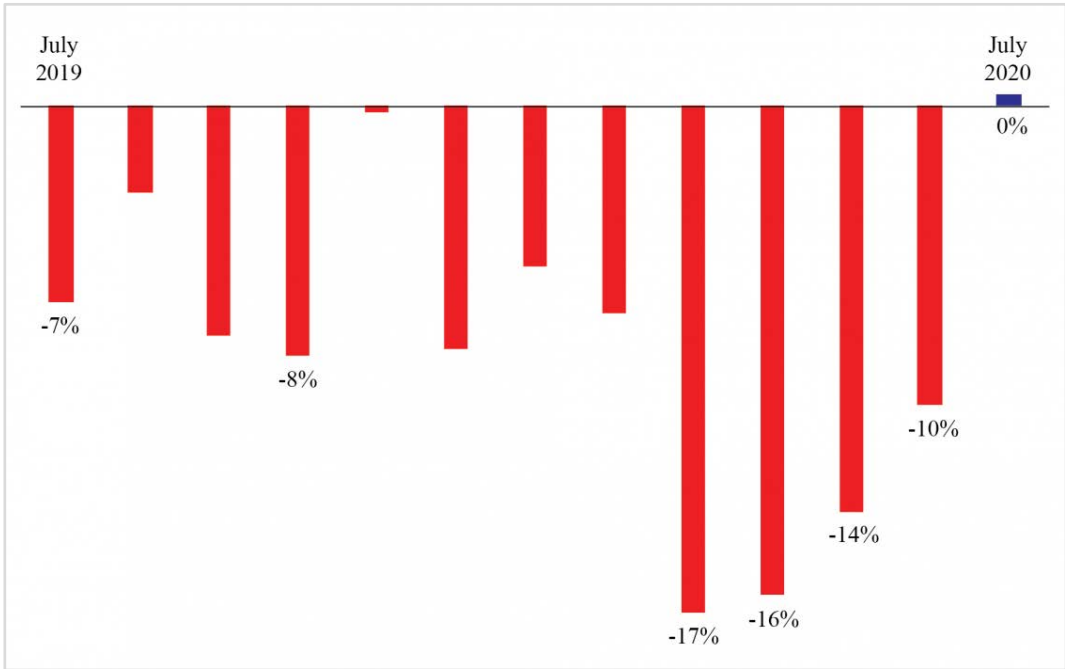
<https://www.bts.gov/newsroom/us-international-air-cargo-rose-slightly-july-2020-july-2019-preliminary>

#commercial-transport

#survey #ongoing

Air cargo between the United States and international destinations rose 0.4 percent (by weight) in July this year compared to July last year, according to preliminary data from the country’s Bureau of Transportation Statistics. This represents the first month without a year-over-year decline since October 2018. Most of this growth was between the US and Asia (19 percent) and Canada (7.5 percent), and although some other markets suffered a decline (air cargo between the US and Europe was down 23.2 percent, and down 4.4 percent for Latin America) these declines were the smallest since January this year.

Figure 13. US international air cargo (by weight) percent change from the previous year, July 2019–July 2020.



4.1.12 INT — Air cargo rates remain high as capacity remains constrained

JOC Group

https://www.joc.com/air-cargo/forwarders-losing-leverage-airlines-adjust-space-agreements_20200811.html

#commercial-transport

#news-media #completed

The stifled air travel market caused as a result of the COVID-19 pandemic has led to a significant reduction in available air freight capacity that is returning at a far slower rate than expected. Traditionally, widebody passenger aircraft provide about half the air freight capacity on the major east-west trading

routes, and airlines sell this space via block space agreements (where a certain amount of space is sold to forwarders several months in advance). However, with many aircraft grounded or underutilised, some airlines are now cancelling or terminating these agreements.

This situation has pushed some forwarders to the spot market. The spot market allows cargo capacity to be purchased as needed, but at much higher rates than through block space agreements, and with capacity already restricted these rates have been even higher than usual. August 2020 spot rates compared to August 2019 spot rates were up 74 percent from Shanghai to North America, up 69 percent from Shanghai to North Europe, and up 83 percent from Frankfurt to North America.

However, there are signs to be optimistic. Edoardo Podestà, Chief Operations Officer at logistics company Dachser Group, noted that some agreements are still valid, and most others have been renegotiated to reflect the limited availability passenger aircraft capacity. He also advised that while total capacity is at about 70 percent of capacity pre-COVID-19, this is an 'acceptable' level given the circumstances. Freight Investor Services (a freight and commodity derivatives broker) noted in its weekly update that within the air cargo industry there is a strong sentiment that the market is heading for good results in Q4.

Figure 14. Average weekly spot rate (USD) per kilogram from Shanghai to North Europe and North America.

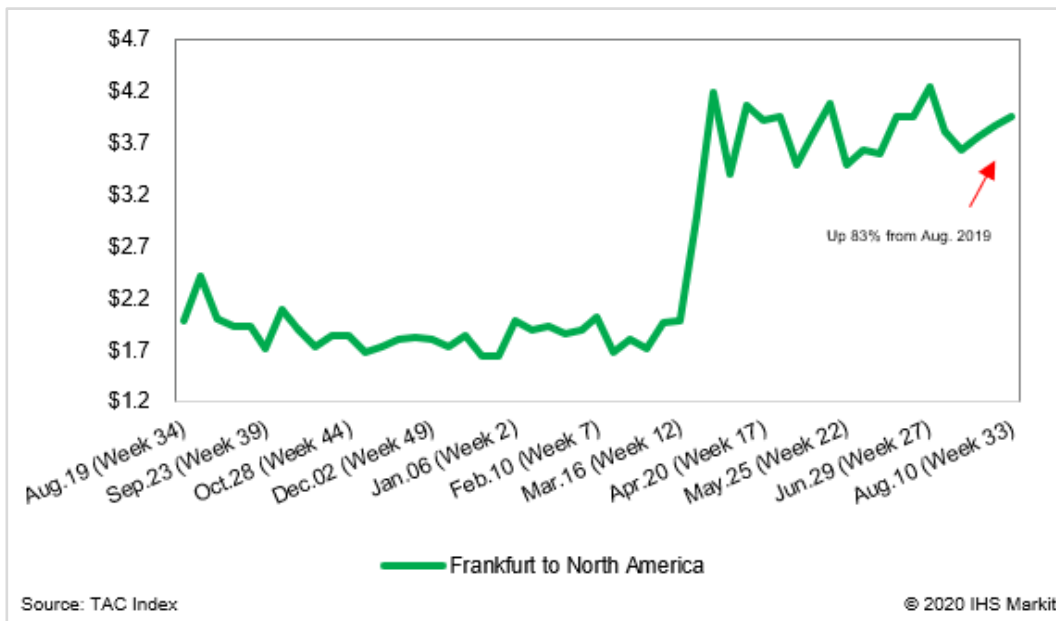
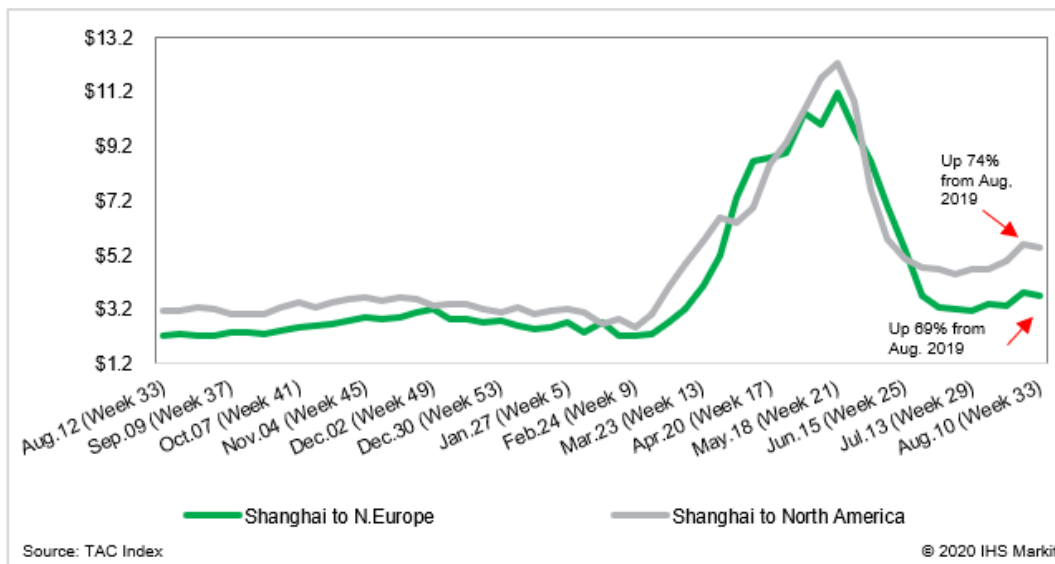


Figure 15. Average weekly spot rate (USD) per kilogram from Frankfurt to North America.



4.1.13 INT — Air freight providing airlines a financial lifeline

The National and American Shipper

<https://www.thenational.ae/business/air-freight-is-providing-a-lifeline-to-cash-strapped-airlines-as-covid-19-saps-travel-demand-1.1072462>

<https://www.freightwaves.com/news/freighters-to-the-rescue-korean-air-posts-q2-profit>

#commercial-transport

#news-media #completed

Air freight is providing a lifeline to cash-strapped airlines who are experiencing significant financial challenges as a result of heavily restricted international travel. In response, airlines are shifting their priorities towards cargo-focused services.

For Qantas, medical freight (such as masks, gowns, and gloves) from China hit a peak during May and June. Qantas Chief Customer Officer, Nick McGlynn, said that in response to a large increase in light but bulky medical products airlines began placing them in their passenger cabins to maximise space efficiency. Now, as initial demand levels out, some airlines — like American Airlines, United Airlines, and Emirates — are pivoting to cargo-only flights. For American Airlines, this marks the first time the airline has flown cargo-only flights since 1984.

For some, pivoting to cargo-only flights means converting existing passenger planes by removing seats and reconfiguring storage space. This is what Singapore Airline’s budget carrier Scoot and Korean Air have done, and for Korean Air, this has allowed the company to turn a profit in Q2.

4.1.14 INT — Container shipments rebound to near pre-COVID levels

CNBC

<https://www.cnbc.com/2020/09/08/container-shipping-stages-sharp-rebound-near-pre-covid-levels-says-ceo-.html>

#commercial-transport

#news-media #completed

The Chief Executive Officer of global shipping company Ocean Network Express, Jeremy Nixon, is cautiously optimistic about the container shipping industry. He is seeing strong signs of recovery, with container shipping volumes sharply rebounding to near pre-COVID levels.

He attributed this rebound to three main factors:

- A demand surge for personal protective equipment and medical goods.
- A build-up of inventory caused as a result of the shutdowns which was now being moved again.
- A shift in consumer behaviour and purchasing decisions as people spend more time at home, spending less on travel and hospitality and more on delivered goods.

However, he noted that there are still many types of goods that are still showing weak demand, such as automobiles. He also cautioned that it is difficult to pinpoint exactly how much of the resurgence is temporary built-up demand, and how much of it is sustainable long term.

4.1.15 INT — Maersk predicts container volumes to return within a year

The Maritime Executive

<https://www.maritime-executive.com/article/maersk-sees-improved-earnings-despite-covid-19-downturn>

#commercial-transport

#news-media #completed

Global ocean carrier Maersk has announced a 25 percent increase in its operating earnings for Q2, despite the global drop in container volumes as a result of the COVID-19 pandemic. Company Chief Executive Officer, Soren Skou, attributed some of this growth to lower fuel prices and higher freight rates.

In addition, he also forecasted that the company will see pre-COVID-19 container volumes return within a year — likely sometime within the first half of 2021.

However, he notes the firm still faces the significant challenge of crew changeover. To reduce the risk of bringing the virus onboard, Maersk currently uses a pre-boarding quarantine and testing programme, but the delays this has created has meant that a third of its currently deployed seafarers are working beyond their contract term. This has led to higher levels of mental fatigue amongst crew.

4.1.16 INT — Global shipping risks intensified by COVID-19

The Maritime Executive

<https://www.maritime-executive.com/editorials/coronavirus-intensifies-global-shipping-risks>

#commercial-transport

#news-media #completed

The COVID-19 pandemic has presented unique challenges for the global shipping industry, according to an article written by Captain Andrew Kinsey, Senior Marine Risk Consultant at Allianz Risk Consulting.

The article highlights a number of risks, including:

- Economic fallout caused by containment measures, which are leading to disrupted supply chains, damaged business confidence, and sharp losses in profit.
- Increased liability for cruise ships. There have been a number of COVID-19 outbreaks aboard cruise ships, and as a result the industry has essentially gone into hibernation. A number of ports have also temporarily closed access to cruise ships.
- Laid-up cruise ships present a sizable cost for shipping companies, and some locations (such as Manilla Bay in the Philippines, where more than 20 cruise ships are stored) are susceptible to risk from natural disaster which could damage vessels.
- Low demand for oil has resulted in many tankers idling around major oil ports in the United States, Europe, and Africa, potentially exposing them to risk caused by extreme weather events and spoiled product.

4.1.17 EUR — Rail freight looks to grow in Europe and China

Lloyd's Loading List

<https://www.lloydsloadinglist.com/freight-directory/news/Asia-Europe-rail-freight-uptake-accelerating-due-to-Covid-19/77286.htm#.X2qDiouxWUk>

#commercial-transport

#news-media #completed

As ocean freight services withdrew capacity in response to COVID-19 lockdowns and air freight prices began to soar, shippers looked to rail freight to provide a stable shipping option between Europe and Asia. Freight forwarding company Flexport noted that while shipping by rail is more expensive than shipping by ocean, it is generally much faster, making it an attractive option — particularly given the backlog of goods coming out of China, including personal protective equipment.

Maritime intelligence publication Lloyd's Loading List reported that demand for China's rail freight has increased to record levels as demand for goods from the area has risen. In July 2020, 1,232 cargo trains travelled from Chinese cities to European destinations. This represents the highest volume of cargo trains travelling along that route in a single month and is a 68 percent increase on the same month a year ago.

4.1.18 USA — US rail freight and truck freight recovering

FTR Transport Intelligence

<https://freight.ftrintel.com/coronavirus>

#commercial-transport

#survey #ongoing

Analysis by FTR Transport Intelligence of the United States rail and truck freight sectors show strong signs of recovery. Using a ‘recovery index’ based on pre-COVID-19 volumes (with ‘100’ being the pre-COVID-19 index value) rail freight is currently at 90.1 after bottoming out at 78.2 during mid-May, and truck freight is at 132.1 after bottoming out at 29.1 during mid-April.

Figure 16. FTR Transport Intelligence recovery index for rail freight.

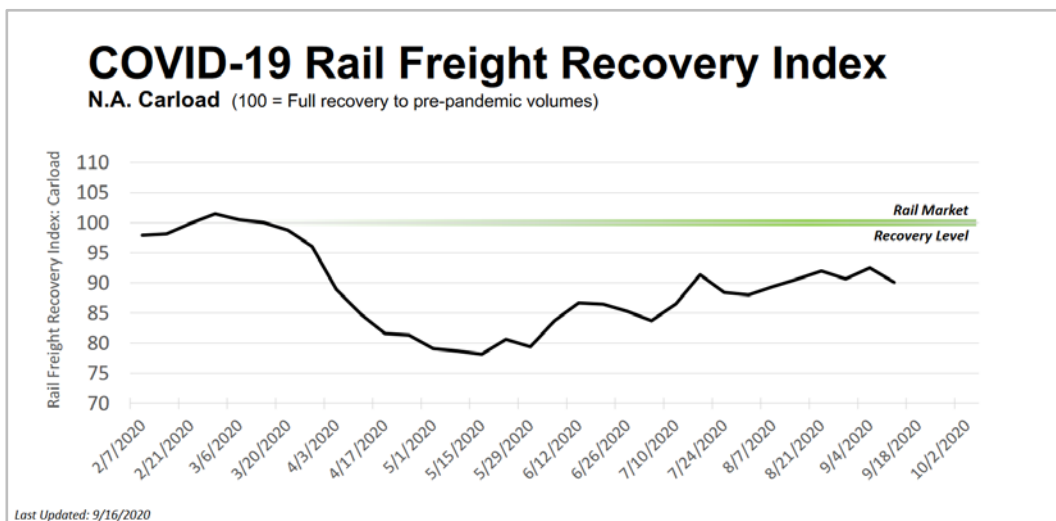
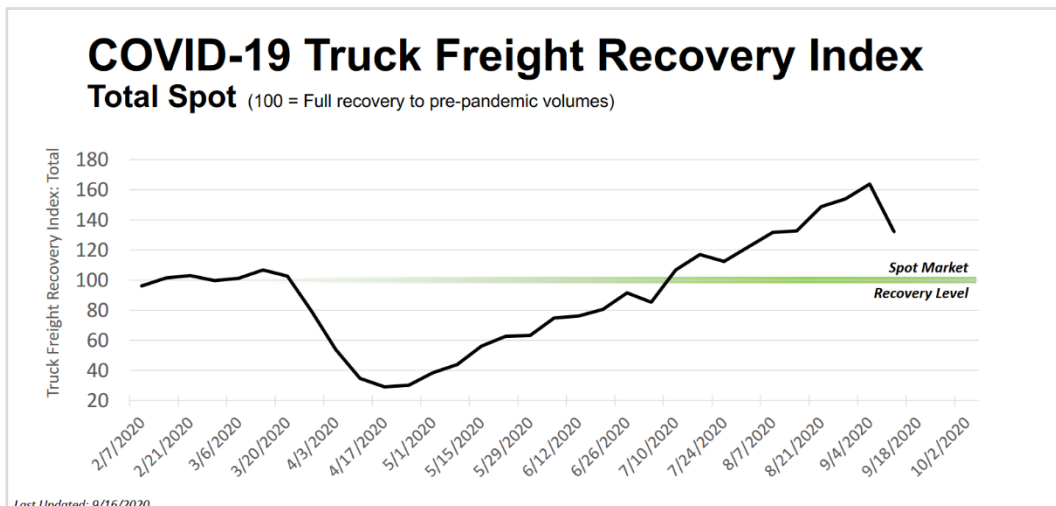


Figure 17. FTR Transport Intelligence recovery index for truck freight.



4.1.19 INT — Governments urged to begin planning for vaccine transport

International Air Transport Association

<https://www.iata.org/en/pressroom/pr/2020-09-09-01/>

#commercial-transport

#news-media #completed

The International Air Transport Association (IATA) is urging governments to begin the necessary planning and preparation work so that COVID-19 vaccines are able to be delivered and distributed effectively when they are available.

Transporting vaccines requires time- and temperature-sensitive systems to ensure they arrive at their destination safely. As there will be very high demand when a COVID-19 vaccine does arrive, the IATA is advising that these systems should be prepared now to ensure they are ready. This preparation work will need to include ensuring the availability of temperature-controlled facilities, arranging security to prevent tampering and theft, and working through border operations to allow vaccines to be cleared and processed as soon as practicable.

In addition, governments will also need to take into consideration the current reduced capacity of air cargo. The World Health Organisation, UNICEF, and Gavi have already reported that they have experienced severe difficulties maintaining their current vaccine programmes during the pandemic, partly due to limited air capacity. The IATA's Director General and Chief Executive Officer, Alexandre de Juniac, stated that the transportation of COVID-19 vaccines represents the 'largest single transport challenge ever' for the air cargo industry.

4.1.20 EUR — New car registrations down overall, but EVs up

James Carroll, Research Fellow in Energy Economics at Trinity College Dublin

<https://www.rte.ie/brainstorm/2020/0827/1161643-electric-car-sales-europe-2020-coronavirus/>

#private-transport

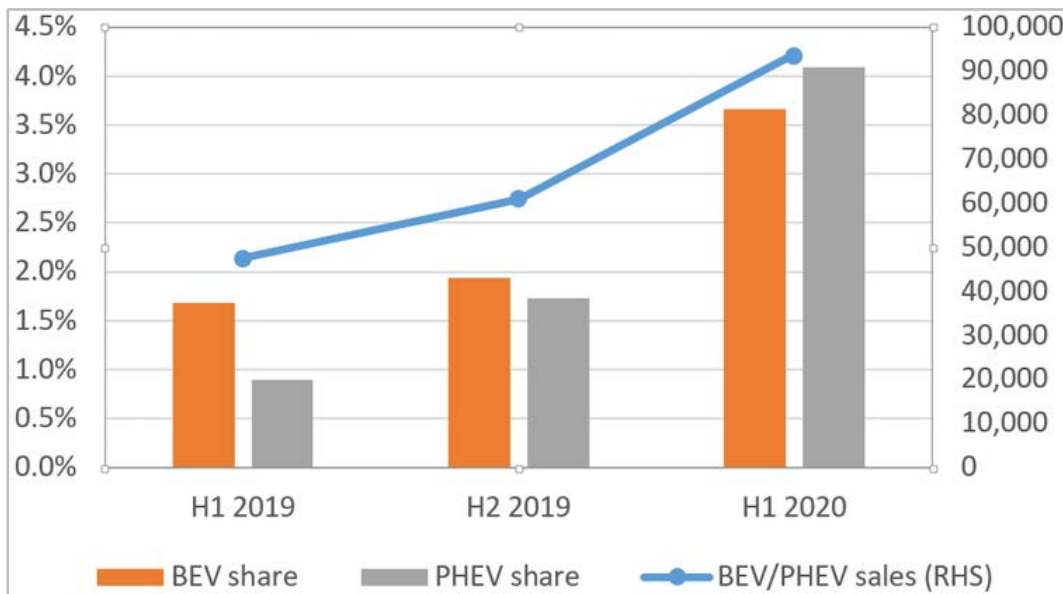
#news-media #completed

James Carroll, a Research Fellow in Energy Economics at Trinity College Dublin writes for RTÉ Ireland's National Television and Radio Broadcaster that European lockdowns reduced car use through work-from-home restrictions, furlough schemes, and job losses.

In Germany, Europe's largest car market — new car registrations in the first half of 2020 declined by 35 percent compared to the same period in 2019. First half sales were even worse in other markets, Spain (-51 percent), UK (-49 percent), Italy (-46 percent) and France (39 percent). However, EVs (both fully electric and hybrid) grew in market share and in absolute terms.

German EV sales increased January to June from 47,584 in 2019 to 93,848 in 2020 with particularly strong PHEV growth. There are similar trends elsewhere in Europe with France shifting even more than Germany.

Figure 18. Electric Vehicle (EV) and Plug-on Hybrid (PHEV) sales — Germany. Data: Kraftfahrt Bundesamt.



Carroll considers that the increase in EV sales may relate to the EV buyers, who tend to be wealthier and thus less hard hit by the crisis than other car buyers. Some government COVID-19 recovery packages including those of France and Germany included grants for EVs, but those grants were too late to explain the above trends. COVID-19 may have increased environmental concern — a Japanese research paper from 2019⁸ shows that environmental concern increases the likelihood that a buyer will choose an electric vehicle.

4.1.21 NZL — New Zealand EV sales recovering

New Zealand Ministry of Transport

<https://www.transport.govt.nz/>

#private-transport

#survey #ongoing

In New Zealand the Ministry of Transport website provides information that EV sales have recovered somewhat to around early 2019 levels after approaching zero during April when the country was in lockdown.

⁸ <https://doi.org/10.1016/j.trd.2019.01.012>

Figure 19. Total New Zealand EV fleet size by type, January 2014–August 2020.

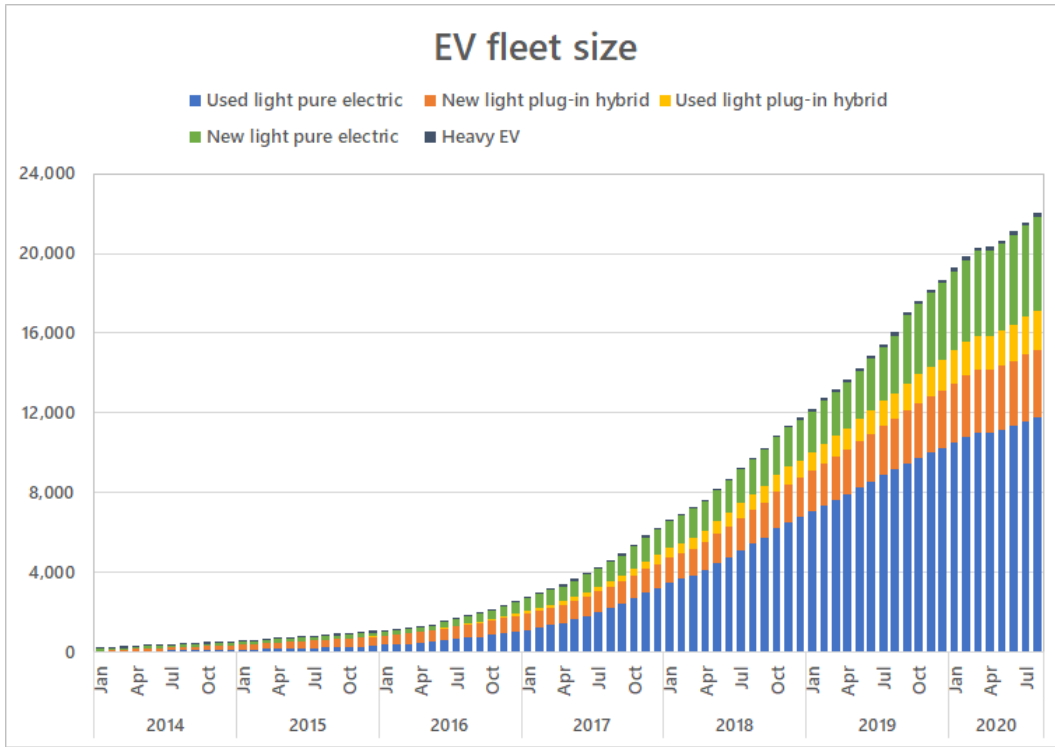
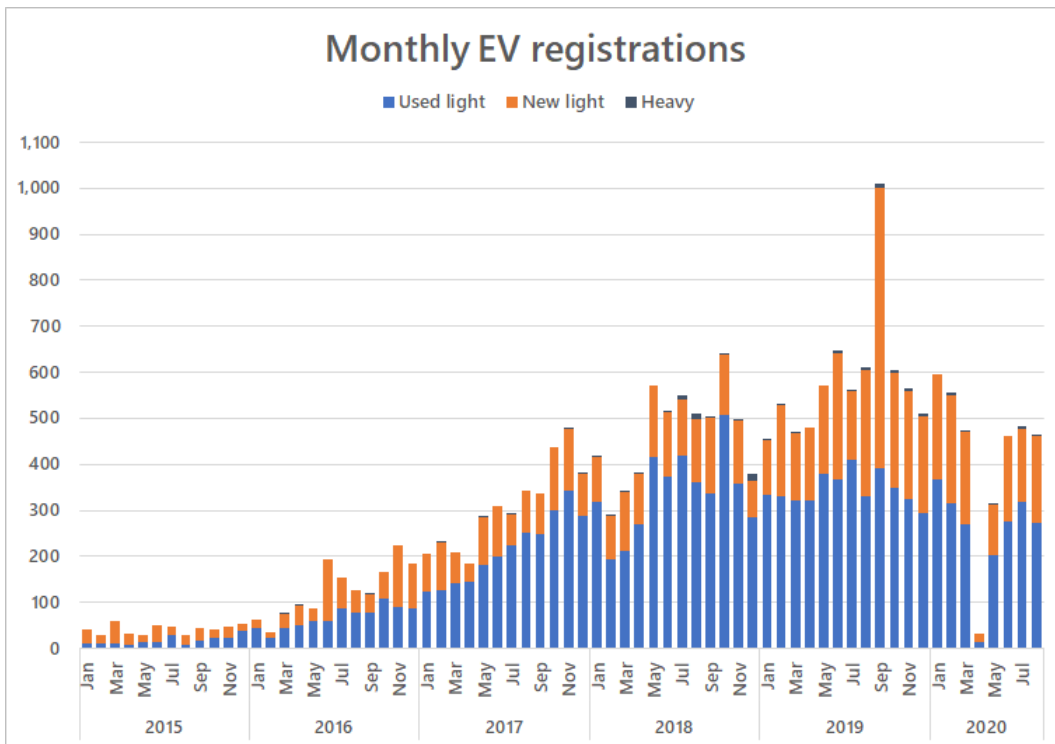
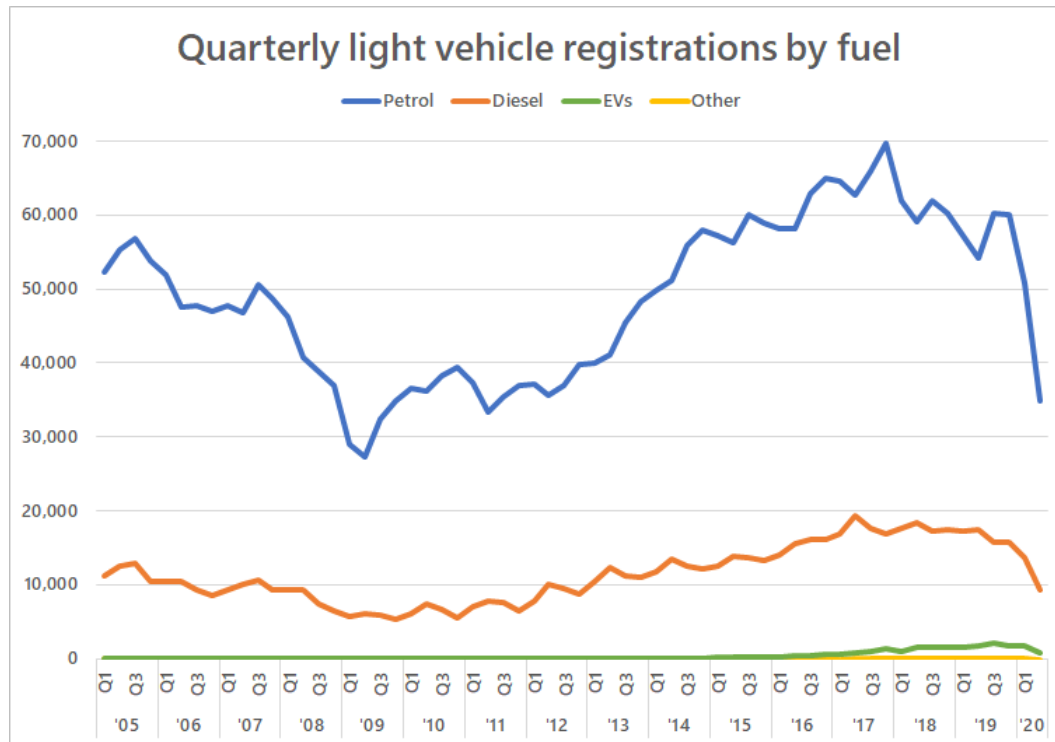


Figure 20. Monthly EV registrations in New Zealand by type, January 2015–August 2020.



The next figure compares EV registrations with vehicles using other fuels. This shows that EV sales (although still a small part of total sales) have held up much better than the overall market.

Figure 21. Quarterly New Zealand light vehicle registrations* by fuel type, Q1 2005–Q2 2020.



*Registrations include both new and used EVs.

4.1.22 INT — Transport mode shifts due to changing priorities

McKinsey & Company

<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/five-covid-19-aftershocks-reshaping-mobilitys-future>

#public-transport #private-transport #active-transport

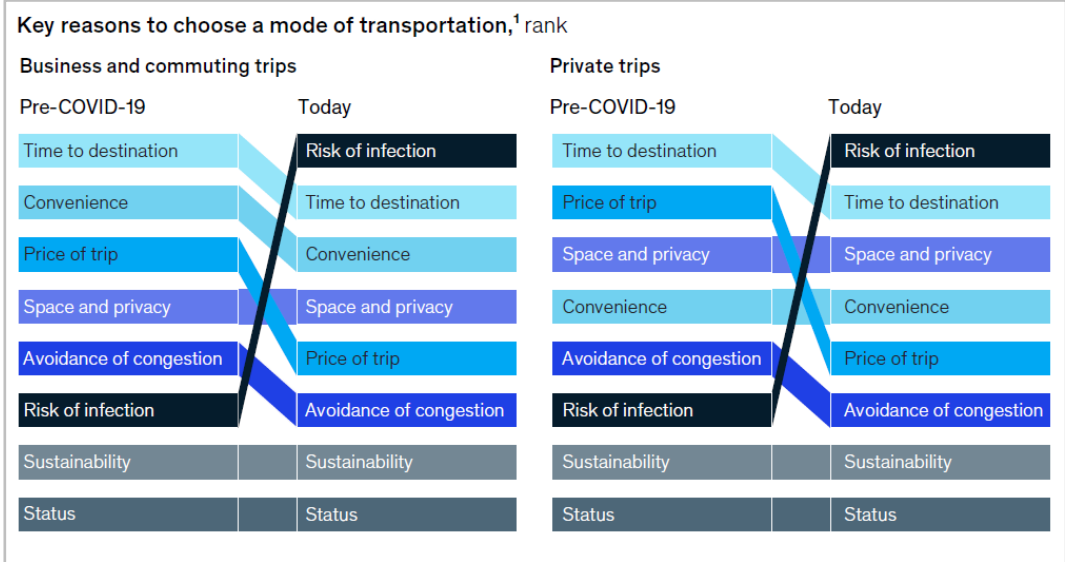
#survey #completed

McKinsey & Company, a US-based management consulting firm, has through its McKinsey Centre for Future Mobility produced an article looking at the future of mobility during and after COVID-19. In an international survey with respondents from China, France, Germany, Italy, Japan, UK, and the US the following question was asked:

What were/are your key reasons to choose a mode of transportation?

Aggregated results ranked by number of respondents produced the following chart.

Figure 22. Key reasons to choose a mode of transportation, ranked by preference pre-COVID-19 and today.



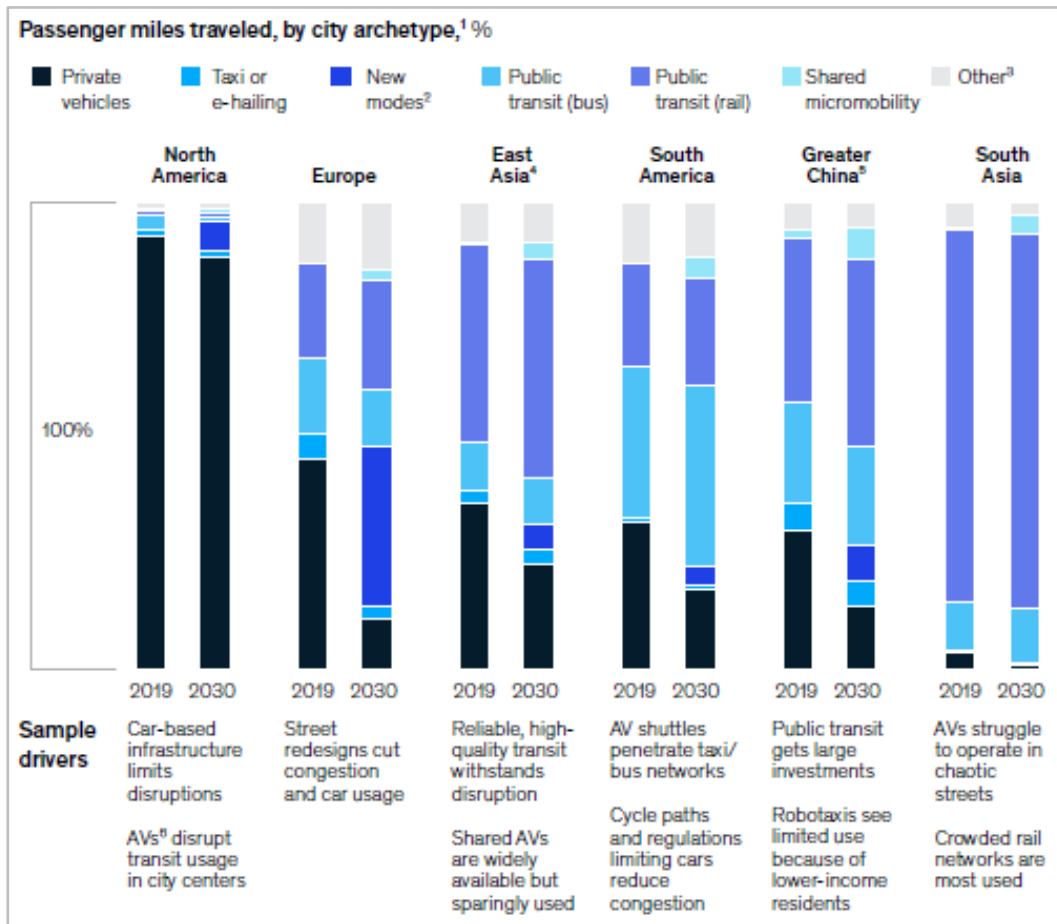
This indicates that for both private trips and business and commuting trips risk of infection now outranks all other modal choice reasons. For both types of trip, it displaces time to destination into second place. Also, although price of trip has dropped ranking for both trip types, it has dropped more for private trips.

Other points made by McKinsey from various surveys were:

- Nearly 70 percent of mobility users in the above countries said they would choose to walk or bike at least weekly after returning to normal life (up 6 percent from pre-COVID-19 levels).
- Car users indicated at least weekly usage would increase 1 percent from 78 percent pre-COVID-19 to 79 percent in the new normal.
- After intense drops in ridership, 40 percent of public transportation users indicated at least weekly usage in the new normal (no specific baseline given).
- At least weekly usage of shared micro mobility, e-hailing, and car sharing would gain 2 percent in the new normal (no specific baseline given).
- In Germany, even if the amount of people working from home once a week were to increase two and a half times, it would only reduce the number of trips taken by 2 percent and the number of kilometres driven by 4 percent.
- About 40 percent of global consumers said they would fly less than before in the next normal, while only 16 percent said they would fly more often.
- 32 percent said they would travel by train less often (versus the 18 percent who said they would more often travel by train).
- 32 percent said they would travel more frequently by private car, while only 13 percent said they would travel less by car. Because of this, distance travelled on roads might increase substantially post COVID-19.

McKinsey has provided the following predictions for 2030 city travel by regional city archetype, with the expected drivers shown at the base of the diagram. The diagram is associated with a policy-guided shift to pooled automatic vehicles and transit scenario.

Figure 23. 2030 travel predictions by geographic area.



The diagram indicates highly reduced usage of private vehicles in cities except in North America, and significant issues associated with Autonomous Vehicles (AVs).

4.1.23 INT — Future travel trends

Skift Research and McKinsey & Company

<https://skift.com/2020/09/22/new-skift-research-the-travel-industry-upside-down-insights-analysis-and-actions-for-travel-executives/>

#air-travel #private-vehicle #tourism-leisure

#publication #completed

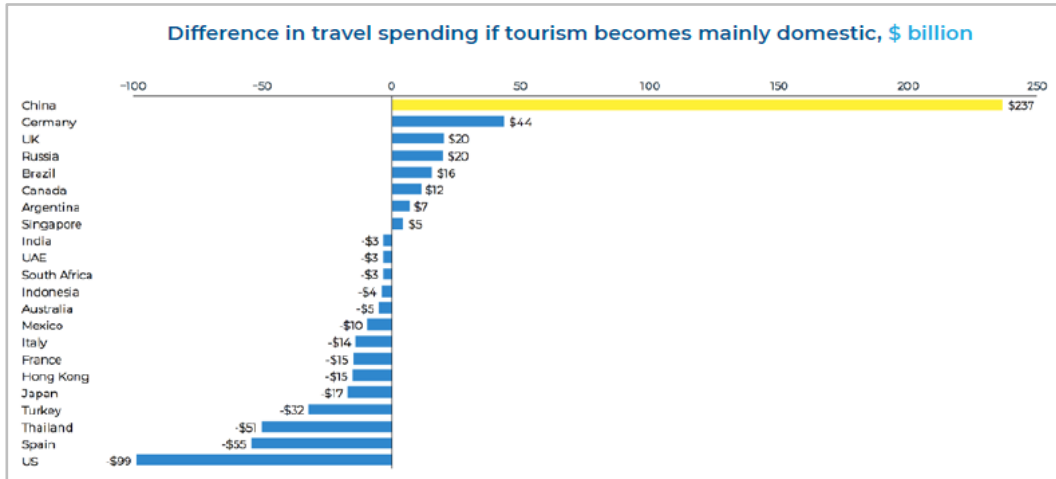
A new report from Skift Research and McKinsey & Company provides an overview of the current state of the travel industry and looks at possible future trends.

Signs of latent demand for travel

Although the ability to travel has been severely reduced as a result of COVID-19 lockdowns and restrictions, there are signs that customers are still interested in and willing to travel when allowed to do so again — even before a vaccine is available. The key standout is China, who has implemented strict measures to control the spread of the virus. As a result, they are now seeing strong domestic travel recovery. Germany, another country who has done comparatively well, is also showing positive signs.

Countries who have not yet effectively controlled the virus are not seeing the same level of recovery, but there are still indications of latent demand — for example, the United States, where a considerable number of searches and advance travel bookings are being placed.

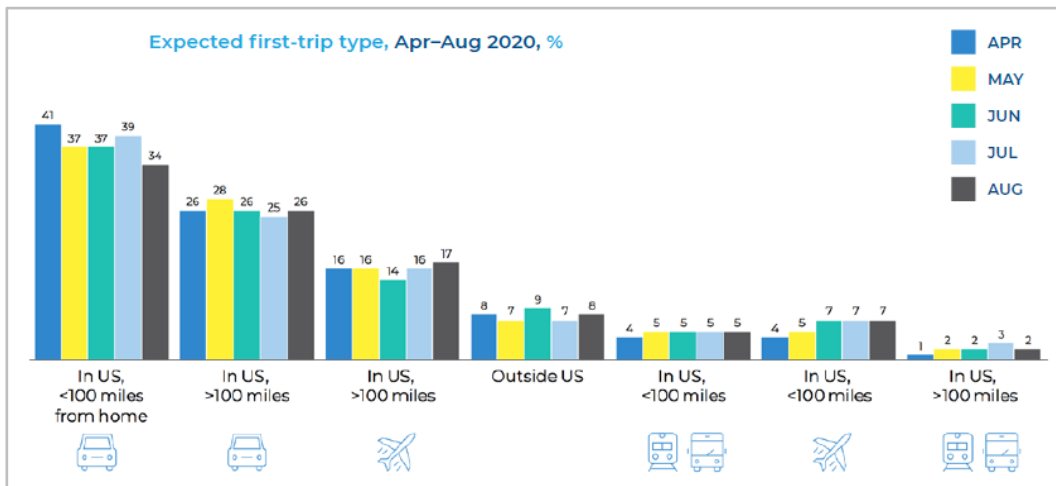
Figure 24. Difference in travel spending if tourism becomes mainly domestic (base data from FY 2018).



Preference to keep initial travel distances short

Skift Research’s July travel tracker poll found that 67 percent of Americans plan to make their first trip since the beginning of the pandemic by car. Chinese travellers are following a similar trend, focusing on self-guided, self-driven activities with family over air travel. Car-based travel is perceived as safer than air travel, given that it provides the benefit of private space.

Figure 25. Expected first trip since the pandemic began by mode, April–August 2020, US residents.












Business travel likely to be slower to recover than leisure travel

Restrictions around business travel are likely to lift at a relatively slow rate, as corporate travel policies aimed at reducing risk to staff and saving costs are likely stay in place for the foreseeable future. Many companies have adapted well to working remotely and moving meetings to virtual platforms.

It is expected that travel for sales and client meetings will be the first type of business travel to fully return, with nonessential travel (such as travel for industry events and conferences) taking much longer to come back.

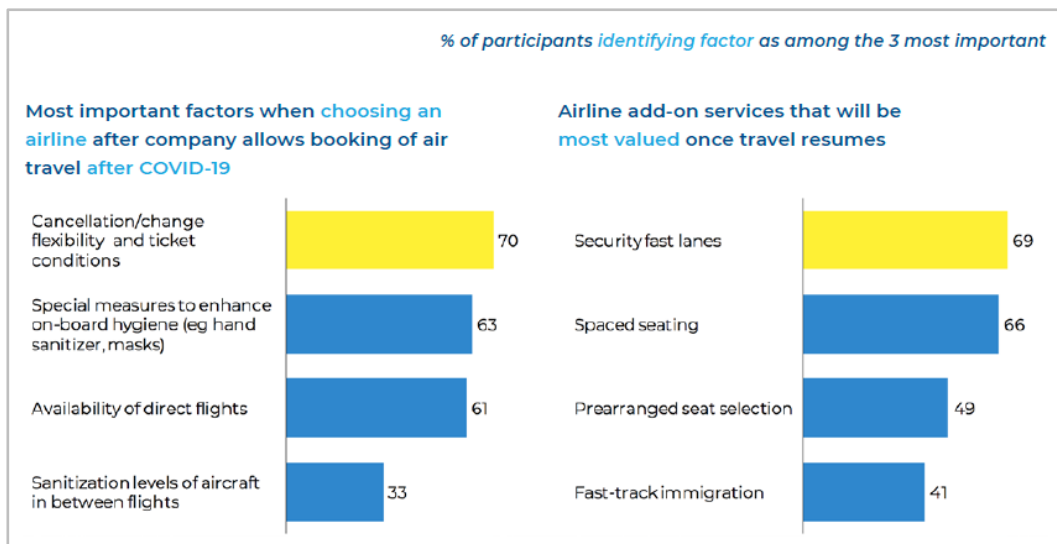
Figure 26. Business travel type by expected recovery time.

	Proximity	Travel reason	Sector
Earlier recovery ↑	 Regional travel that can be completed in a personal or rented vehicle	 In-person sales or client meetings and essential business operations	 Manufacturing, pharmaceuticals, and construction
	 Domestic travel by air or train	 Internal meetings, training programs, and other small-group gatherings	 Tech, real estate, finance, and energy
Later recovery ↓	 International air travel abiding by government regulations and restrictions	 Industry conferences, trade shows, exhibitions, and events	 Healthcare, education, and professional services

Flexibility and hygiene practices identified as important factors when choosing an airline

The IATA’s Corporate Travel Management Survey (August 2020) asked corporate customers what factors would be the most important and most valued when choosing an airline after COVID-19. The ability to cancel or change tickets, board via security fast lanes, have on-board hygiene measures provided, and have pre-arranged spaced seating were identified among the most important factors they would consider.

Figure 27. Most important factors influencing corporate customer airline decision post-COVID-19.



Appendix A

Figure 28. Appinio behaviour change (more)

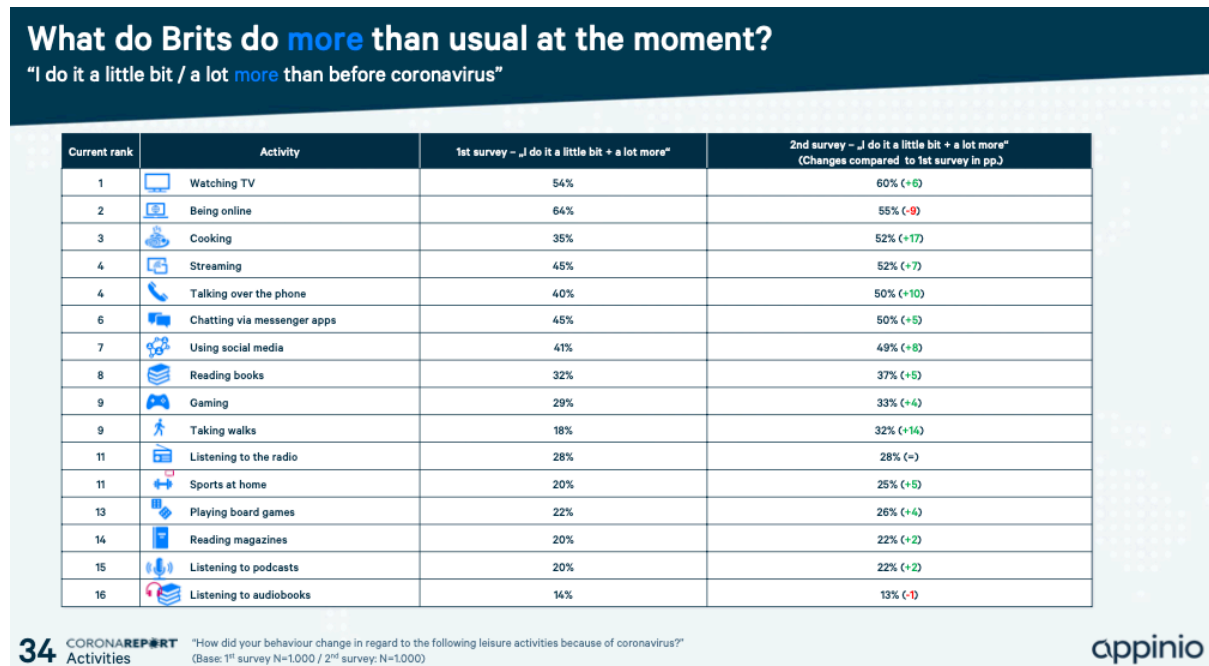


Figure 29. Appinio behaviour change (less)

