

# Quarterly Research and Publication Review

**Issue 7**

**January – March 2020**

Compiled by the Policy, Strategy  
and Innovation Directorate

# Introduction

Welcome to the seventh issue of TfWM's quarterly research and publication review, which is produced by the Policy, Strategy and Innovation Directorate.

Our directorate ensures that WMCA's transport policies and strategies are informed by robust evidence and research. We work with industry partners across the private and public sector to promote and engage in the research and development that drives forward transport innovation. Through our efforts, we aim to shape the development and management of the transport system to achieve better outcomes for the West Midlands.

Our quarterly publications provide a selection of highlights including:

- The development of insight tools that will help us to understand the integrated transport system better;
- TfWM's primary research and insights; and
- Relevant research from others - close to home and around the world.

Links for further reading, contacts and research opportunities are also provided.

# Contents

A Transport Policy Analysis of COVID-19	1
COVID-19 Data Analysis	4
Analysing freight movement in Birmingham’s central business district (CBD); a guest article from Aston University	8
Assessing the quality of HGV road incidents data	11
Data Insight Service – Year 2	13
West Midlands 5G Enabled Road Sensor Network	15
ITS World Congress 2024 bid	17
West Midlands Bike Life Report: a guest article from the Cycling and Walking Team	19
One App Discovery Research	22
Journey Assistance User Report	25

# A Transport Policy Analysis of COVID-19

The UK and its transport sector is facing its biggest crisis in modern times as the coronavirus (COVID-19) pandemic impacts on all parts of our daily lives. Unprecedented steps have had to be put in place, following strict Government public health guidelines, for passengers and commuters to limit non-essential travel and avoid social interaction. This has resulted in significant reductions in bus and rail services, by operators, throughout the West Midlands.

## Understanding impacts and developing policy responses

**Operators across the West Midlands and TfWM have stated that the pandemic is leading to huge reductions in passengers and a significant impact on revenue.** This in turn is creating uncertainty for the viability of many operators and putting their businesses' futures at risk. Road traffic volumes have also dropped dramatically.<sup>1</sup> Footfall at major rail stations has declined across the country, and at Birmingham New Street station, was 86% lower than usual by the start of April.<sup>2</sup> Furthermore, TfWM are directly impacted by falling patronage on the Metro as the impact on farebox revenue poses risks to future borrowing for future expansion programmes and investment in the existing line.

Transport usage across all modes has declined considerably since February meaning people are now living quite significantly different lives than usual. This change may not just be in the short-term however, and it is believed that the crisis may result in longer-term changes to the way we live, work and travel.<sup>3</sup>

## Short term response/ implications of COVID-19

Measures by Government, as well as Local Transport Authorities, has resulted in a fundamental shift in the role for public sector authorities (national/regional/local) in transport provision:

- Clear advice not to travel/avoid making journeys;
- Punishment for those who do not comply with this advice;
- Increased levels of subsidy for the transport service providers i.e. local bus and rail services;
- Increased management of services; in effect temporarily nationalising passenger rail services; with £3.5bn funding to ensure vital rail services continue to operate now and, in the future<sup>4</sup>; and
- The relaxing of regulation i.e. driver hour rules and extend MoT's time periods.

<sup>1</sup> BBC, <https://www.bbc.co.uk/news/explainers-52229828>

<sup>2</sup> BBC, <https://www.bbc.co.uk/news/explainers-52229828>

<sup>3</sup> BBC, <https://www.bbc.co.uk/news/science-environment-52137968>

<sup>4</sup> UK Gov, [https://www.gov.uk/government/news/chancellor-provides-over-14-billion-for-our-nhs-and-vital-public-services?utm\\_source=df5b5a7a-062f-436f-b854-7bbbe4300434&utm\\_medium=email&utm\\_campaign=govuk-notifications&utm\\_content=immediate](https://www.gov.uk/government/news/chancellor-provides-over-14-billion-for-our-nhs-and-vital-public-services?utm_source=df5b5a7a-062f-436f-b854-7bbbe4300434&utm_medium=email&utm_campaign=govuk-notifications&utm_content=immediate)

The message relating to public transport is overwhelmingly towards encouraging people not to take journeys, though it is vital that public transport services remain in place for key workers, especially those on the frontline in the battle against COVID-19.

In response to the challenging environment faced by the rail industry, the Department for Transport temporarily suspended normal franchise agreements, and transferred all revenue and cost risk to the government for an initial period of 6 months. This was done to ensure that trains necessary for key workers and essential travel continue to operate, though at an agreed reduced service.<sup>5</sup> Outside of London however, bus and light rail services operate in a deregulated market, and therefore responses are more challenging to coordinate or implement in comparison.

The government, as well as TfWM, have recognised the importance of maintaining bus services for key workers on the frontline of the battle against COVID-19 and additional financial and policy measures were put in place for bus services. Support measures included:

- Government committed £200m of existing funding, under the Bus Services Operators Grant (BSOG) scheme to be continued to be paid as normal to operators, even if not all services are currently running. This is also extended to subsidised services provided by TfWM<sup>6</sup>;
- Ministers committed new funding of up to £167m under a new COVID-19 Bus Services Support Grant (CBSSG) to ensure sufficient bus services continue to operate in the right places and at the right times of day during the COVID-19 outbreak<sup>7</sup>;
- TfWM were granted emergency powers by the Office of the Traffic Commissioners to manage short term service changes with operators;
- TfWM put in place a financial support package over a three-month period for operators, including waiving bus station departure charges, maintaining subsidised service contract payments and paying predicted reimbursement levels of ENCTS travel (at the equivalent time period in 2019);
- TfWM supported NHS workers by facilitating free bus and tram travel for all NHS staff and using Ring and Ride services to shuttle frontline staff between hospitals and free Park and Ride sites;
- TfWM lifted peak time restrictions on concessionary tram and bus passes during the early morning rush hour to make it easier for the region's older citizens and disabled people to get their shopping; and
- TfWM, with the support of Urban Transport Group, are working with DfT on a finance support package for Metro.<sup>8</sup> These interventions in the short term represent a fundamental shift in policy, but may also provide some longer-term policy considerations.

<sup>5</sup> UK Gov, <https://www.gov.uk/government/news/government-ensures-ticket-refunds-and-protects-services-for-passengers-with-rail-emergency-measures>

<sup>6</sup> UK Gov, <https://www.gov.uk/government/news/almost-400-million-to-keep-englands-buses-running>

<sup>7</sup> Transport Committee, <https://committees.parliament.uk/committee/153/transport-committee/news/145819/minister-questioned-on-coronavirus-implications-for-transport/>

<sup>8</sup> UTG, <http://www.urbantransportgroup.org/system/files/general-docs/FAQ%20Briefing%20-%20What%20urban%20transport%20authorities%20need%20from%20Government%20on%20COVID-19%20%28200406%29.pdf>

## Long-term implications of COVID-19

It is too early to provide a clear steer on this policy direction, but a number of key questions should be considered:

- Will this state intervention continue, and will it present a new model for managing and integrating local transport networks?
- Will sub national government be as enthusiastic for taking on the risk associated with a greater role on bus and rail in the financial aftermath / after the experience of the crisis?
- How will the government seek to address increased borrowing and likely economic downturn?
- Will public transport patronage rebound to pre-COVID-19 levels, or will fewer people choose to travel?
- Will large scale infrastructure projects (HS2, road building, Heathrow etc.) be totems of recovery, or victims of tighter fiscal policy?
- Will the identified fragility of public transport operators influence the future role of the local and national public sector in public transport delivery?

## Credit and references

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# COVID-19 Data Analysis

The 9th February 2020 marked the 4th recorded case of COVID-19 (Coronavirus) in the UK. By the 12th March the Government was offering stay at home guidance, and by April the phrases “social distancing” and “furloughed” were in common use. The world rapidly changed and TfWM Data Insight Team, along with a variety of TfWM analysts, were tasked with providing daily updates on the impact on the West Midlands transport network. In addition to managing our own working from home arrangements, we were updating daily the TfWM leadership team on the rapidly declining use of transport and then monitoring the network to see any signs of people moving in spite of the government advice.

This then evolved quickly to a website, <https://maps.tfwm.org.uk/portal/apps/sites/#/covid19>, to make it available to more people, albeit with copy and pasted Excel charts. Then it became interactive, enabling users to filter the statistics to answer specific queries to enable comparative monitoring on a day to day or week to week basis.

Within 2 weeks Data Insight Team had helped to collate the data, produced a website of statistics and then developed further analysis tools to support the transport planning around getting key workers to the essential services destinations, reflecting the reduced frequency of public transport.

## What did we learn?

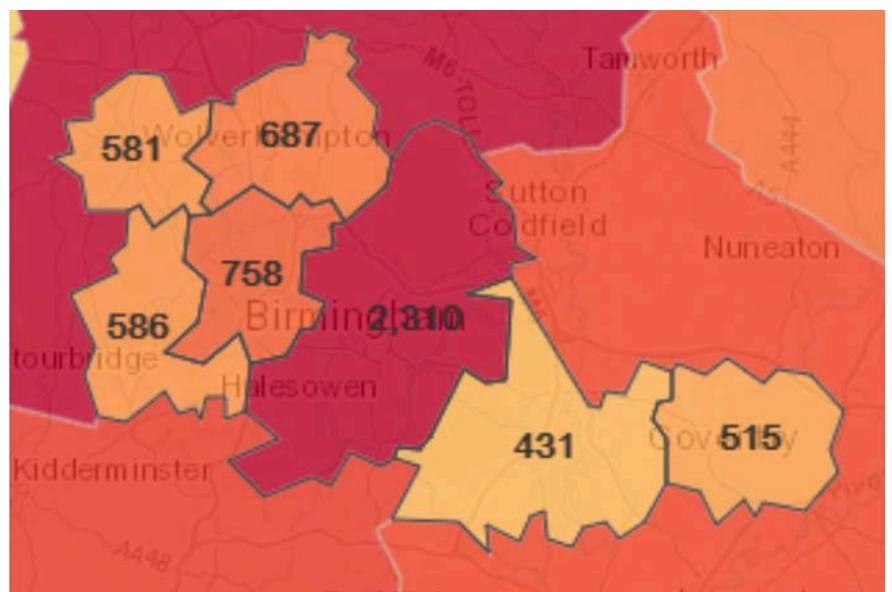
### Rapid Development

The first version of the daily updates was released to TfWM leadership team on the 19th March, consisting of a simple PDF with statistics on transport usage, relevant news items as and key messages delivered by TfWM. It was quickly pulled together and it did the job, keeping the Mayor abreast of the changes and impact.

### Data Used

The impact on the transport network was based on the data available within TfWM, which had not previously been brought together for daily updates. This was combined with the national available datasets to provide an overall situation picture. The key data sets used are:

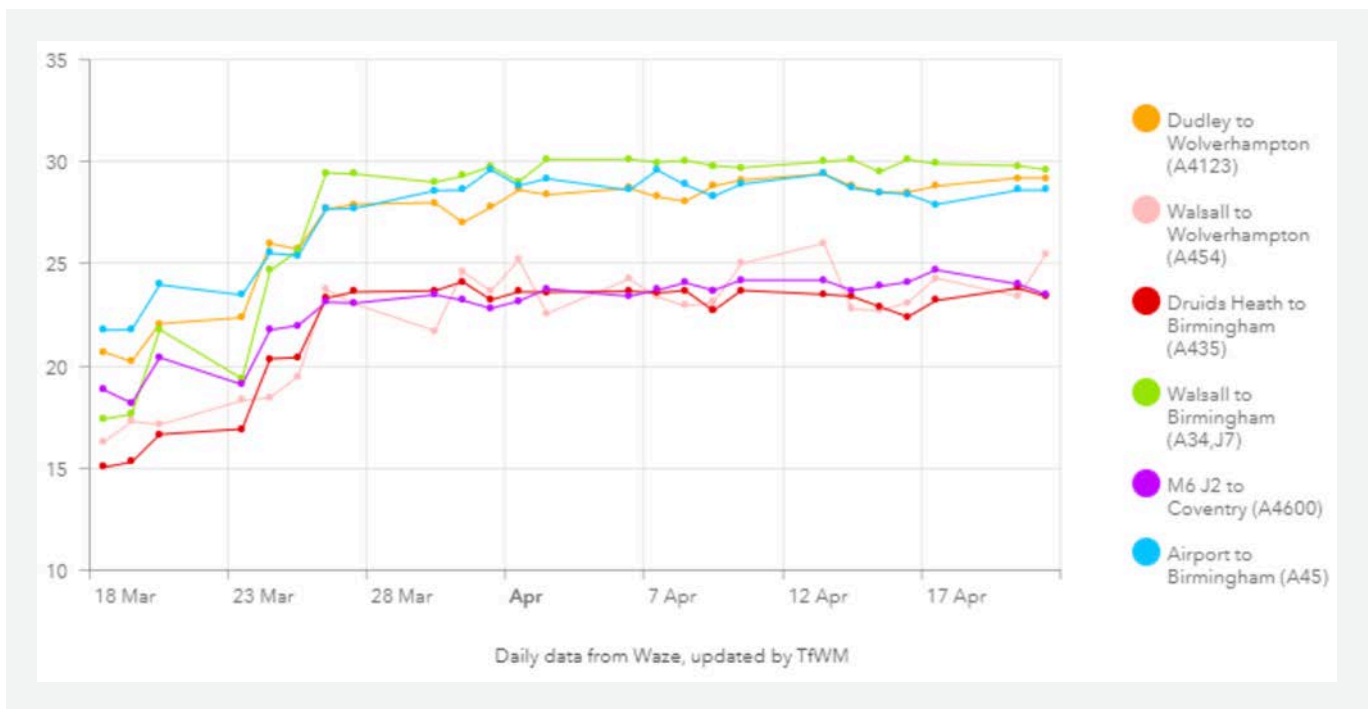
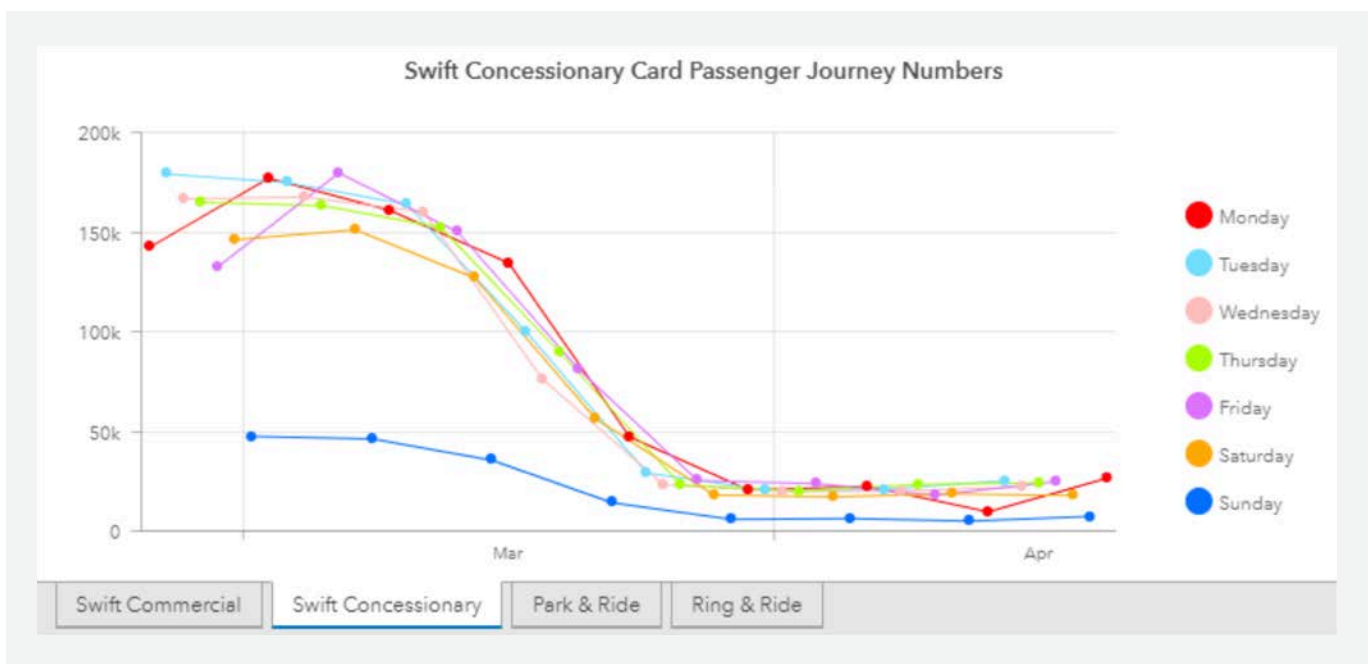
Public Health England data – a direct feed of the daily cases and deaths was built into the dashboard. The values across each Local Authority was also tracked.



Public Transport usage – The Swift card data, the smart card used across the West Midlands, was produced daily and used to reflect the public transport impact across bus, Metro and trains – broken down into commercial and concessionary usage. This showed a 90% drop compared to the normal usage.

The data obtained across the public transport network was compared to the transport operator data to validate the drop and ensure the smart card data was a reliable proxy for the different modes.

Highways usage – TfWM is signed up to the Waze for Cities program, <https://www.waze.com/ccp>, across the West Midlands. This provides real-time highway disruptions, jams and abnormal traffic situations. The program allows the monitoring of speeds based on a selected area, 6 corridors on the Key Route Network were chosen to monitor, whilst the data does not provide vehicle counts the speeds were monitored for 2 reasons; to understand the easing of congestion and to understand any speeding issues with reduced traffic.





The A34 from the M6 junction towards Birmingham has an AM peak average speed of 17mph, reflecting the West Midlands wide average mentioned in the Congestion Management Plan, by the 26th March the average speed had risen to 29.4mph.

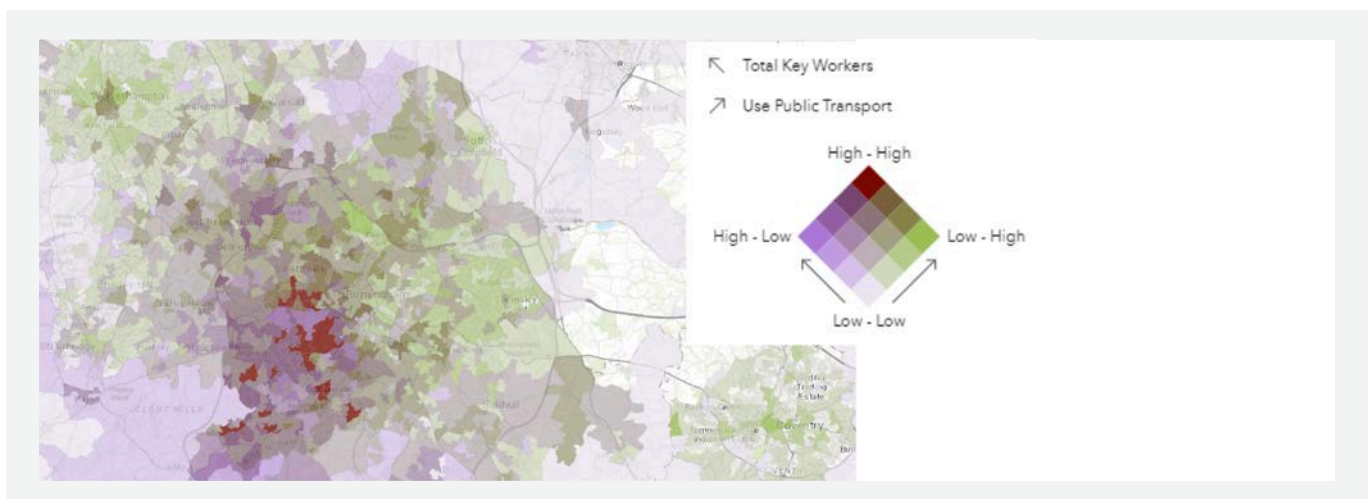
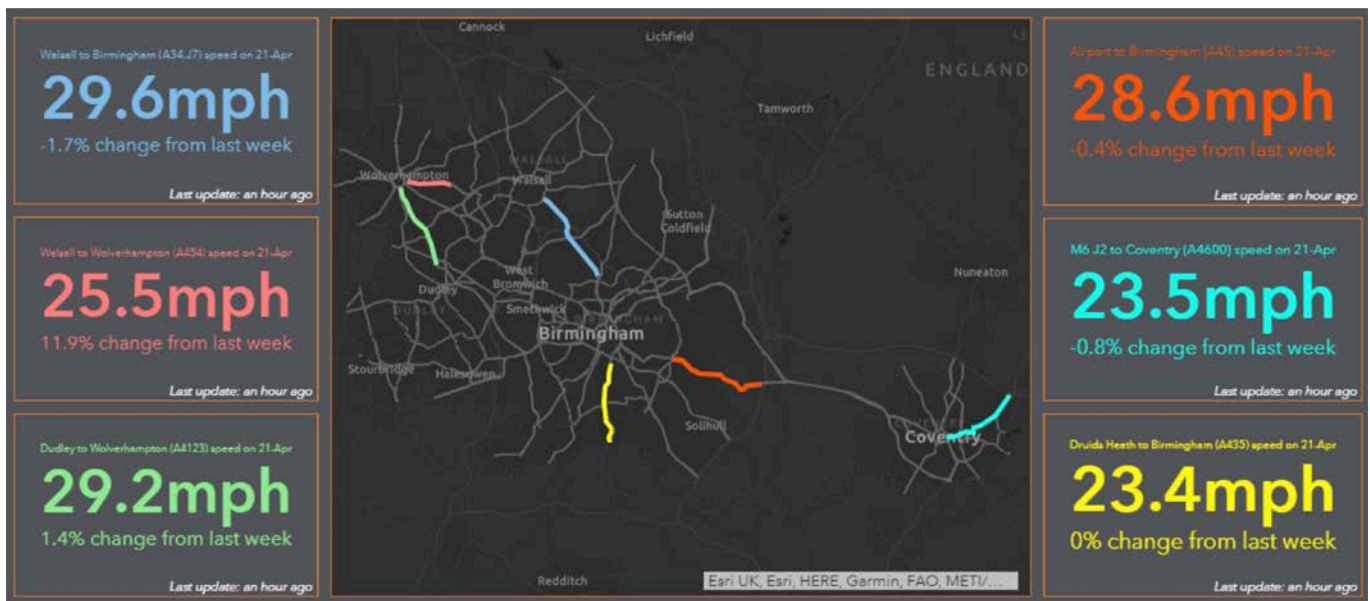
Additional data – as well as these core datasets, the dashboard incorporates ring and ride patronage, park and ride occupancy levels, rail station footfall and metro patronage and revenue levels. All of these data sources providing a holistic view on a daily basis of the state of the network.

### Essential Services and Workers

The response to the rapid growth in COVID-19 cases soon shifted focus to supporting the key workers and those on the frontline. This included not only NHS staff but also Local

Authority workers. The transport network still had a huge part to play in getting the right people to the right place as part of the overall national effort to deal with the pandemic.

The home locations of key workers, provided by the essential service institutions and by relocated staff themselves using online forms on the West Midlands Network website, along with data provided by the contacts of the TfWM directors and Network Resilience travel choices team, was collated and mapped into zones to protect anonymity but to also identify areas of high public transport dependency. This combination of spatial data added to the changes in transport provision helped the operators to plan and prioritise services operated and even led to the re-purposing of ring and ride buses to provide help.



## Sharing with Partners

Once the dataflow was well established and the website was being regularly updated it was ready to be used beyond TfWM. Over 260 West Midland Local Authority employees were given access, Network Rail, Highways England and the Department for Transport data analysts were also given access. This enabled those organisations to view the changes in context of their own individual needs, be that analysing the impact of a pandemic, through to working with the vulnerable sectors of society.

## What does this mean for the West Midlands?

The collective effort during the crisis has enabled rapid development of a daily dashboard on the state of the transport network, accelerating the next phase of the use of information in the Regional Transport Coordination Centre, whilst also providing evidence for the policy team to use in researching impact and identifying approaches to the recovery.

The next steps are to improve the automation of data flows, to ensure the most up-to-date data is available at the fingertips of all those with access. This will start to incorporate data from partner organisations, Data Insight Team are working with Birmingham City Council and will take advantage of the TfWM innovation projects to bring in more real-time data sets.

The legacy is the ability to continue to monitor the transport network on a daily basis, allowing TfWM to understand the next phases of recovery from the crisis. The data, the systems and the analysis will continue to operate and will improve the region's ability to identify and respond to other planned and unplanned events or major crises. The key legacy benefit is the improvement of the business as usual processes, which help provide nearer to real-time data and intelligence for the Network Resilience team. Their role in managing the impact of disruption, especially as part of an accelerated economic recovery investment in infrastructure and the recent notice to proceed for HS2, will enable the planning support for peoples travel choices in a post COVID-19 world.

## Credit and references

This article was written by Stuart Lester, Strategic Lead – Transport Intelligence ([stuart.lester@tfwm.org.uk](mailto:stuart.lester@tfwm.org.uk)).

# Analysing freight movement in Birmingham's central business district (CBD); a guest article from Aston University

This article was generously written by Professor Ed Sweeney, (Professor of Logistics and Systems at Aston University and Director of Aston Logistics & Systems Institute), Sreemoyee Chowdhury (Postgraduate Researcher, Aston Logistics & Systems Institute, Aston University) and Alan Braithwaite (Chair, Freight and Logistics Policy Group, Chartered Institute of Logistics and Transport). Please contact Ellen Peacock ([ellen.peacock@tfwm.org.uk](mailto:ellen.peacock@tfwm.org.uk)) for queries relating to this article, who would be happy to provide a relevant contact. The study was supported by Birmingham City Council (BCC), Transport for West Midlands (TfWM), the Chartered Institute of Logistics and Transport (CILT) and the RAC Foundation.

Urban freight is primarily concerned with the so-called “last mile” delivery to businesses and consumers located in city centres. The National Traffic Survey does provide insights on both HGV and LGV traffic; the combined share in urban areas is reported as around 20% and surveys show it is closer to 30% at peak times in the mornings.<sup>9</sup> Statistics from Transport for London show these movements contribute between 20% and 40% of emissions.<sup>10</sup> They are also a significant contributor to the national costs of congestion reported by Inrix at £31 billion for all motorists.<sup>11</sup>

Van traffic makes up more than 80% of urban and city goods vehicle traffic and there has been a steady increase in the number of vans on the roads to around 4 million units. This growth has been summarised by the SMMT<sup>12</sup> who, in the same report, also show the economic significance and range of applications for vans. Their evidence shows that businesses have increased their use of vans because of favourable driving and licensing regulations (i.e. compared to lorries) and for cost reasons in relation to the payload carried. However, the SMMT report points to the most rapid growth in the use of vans being in construction and servicing, where a combination of tools, equipment and materials are carried. The versatility of van design and their special adaptations for businesses are also remarkable.

<sup>9</sup> Analysed and cited by Braithwaite, A, (2017) The implications of internet shopping growth on the van fleet and traffic activity, RAC Foundation accessed via <https://www.racfoundation.org/research/mobility/the-implications-of-internet-shopping-growth-on-the-van-fleet-and-traffic>

<sup>10</sup> Ibid

<sup>11</sup> Inrix, 2016 Global Traffic Scorecard, accessed by: <https://inrix.com/resources/inrix-2016-traffic-scorecard-uk/>

<sup>12</sup> Society of Motor Manufacturers and Traders. (2019) Light Commercial Vehicles – delivering for the UK economy, accessed from <https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-Light-Commercial-Vehicles-Delivering-for-the-UK-economy.pdf>

## Aston University study on Birmingham CBD

In these contexts, the study undertaken by Aston Logistics & Systems Institute in 2019 focussed on both heavy and light goods vehicles [HGV and LGV] activity in Birmingham's CBD. This district was chosen as it contains a good mix of different types of business, residential and other properties and is quite self-contained in traffic terms. The primary objective of the study was to generate a good understanding of freight flow patterns in the CBD. This could then be used to help more informed policy decision-making.

Both local businesses and vehicle drivers were interviewed as part of this study. The aim was to understand the types of products delivered, delivery frequencies and types of vehicles used. From this part of the research, it was evident that each business has different freight needs and delivery frequencies. The latter depends on two factors. The first is the type of goods being delivered; for example, perishable goods delivered to restaurants and pubs have more frequent deliveries than non-perishable items. The second is the nature of the contracts that businesses have with their suppliers. For example, suppliers deliver materials to many construction sites every day regardless of whether there is a just-in-time requirement.

The drivers of vehicles serving these businesses were also interviewed to gain insights into the industries they serve, and the distances travelled every day. These findings showed that vehicles serving the CBD not only deliver products but also provide services e.g. telecoms. In such cases, drivers not only travel to the service locations but are also responsible for completing a range of on-site tasks.<sup>13</sup>

There are some critical discoveries from the work for policy makers. **The first is that the delivery profile not only varies by sector but also by outlet size and management control.** For example, large restaurants and pubs are generally controlled by chains who consolidate deliveries into fewer drops per week in larger vehicles (mostly HGVs) and can do this because their larger outlets have more storage capacity. In contrast smaller outlets are mostly SMEs and take multiple deliveries daily, almost always in vans from wholesalers, food service providers and couriers. This variation by outlet size and operating model creates quite different access and parking needs. Cross referencing the data generated from the study with the traffic and parking requirements derived from the TRICS database (Trip Rate Information Computer System) identifies major discrepancies, with the needs of SMEs being seriously under-represented.

**The second is that the delivery timing for goods is conditioned by the outlets being serviced. Mainly deliveries occur in the morning hours with many taking deliveries before normal business hours; this is particularly the case for SME's because owner-managers' work schedules require it.** In some cases they make the collection and do the delivery, so logistics is an integral part of their work. Larger businesses sometimes spread their deliveries throughout the day depending on where the goods are coming from; some large businesses are able to organise for their supplies to be delivered at night to avoid traffic and facilitate easy parking. Service vehicles appear to prefer to arrive during the afternoon when the traffic is comparatively light and parking spaces are more readily available.

<sup>13</sup> This is consistent with the SMMT findings which showed that almost 500,000 people drive vans as a part of their jobs and do not classify their work as 'van driving'

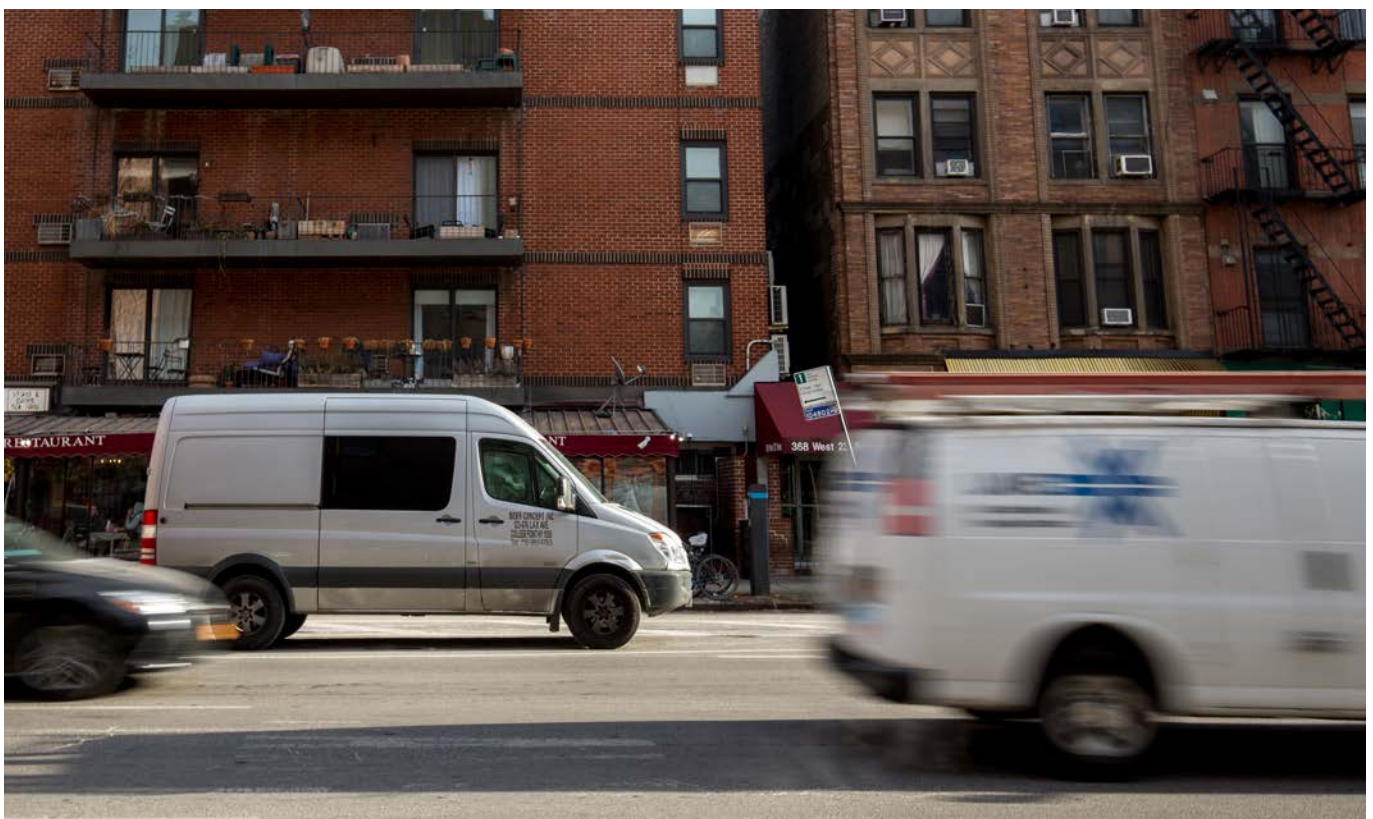


**Third, the large number of ‘servicing’ vans could not be captured well through the interviews and questionnaires with premises holders as they mostly never see the vehicle in which the tradesman arrives.** This is due to the person arriving on foot having first parked. The same data gap is apparent in the TRICS data.

**Finally, it was observed that most businesses did not offer parking spaces to delivery vehicles.** However, some of the businesses that had spaces did so on a time-sharing basis, requiring the scheduling of deliveries during allotted parking times.

The implications for planning our future city centres exposed by this project, in the context of enabling a net zero future, are profound:

- Goods vehicle parking will still be needed as the last mile world goes electric.
- The varied profile created by the diversity of businesses to be served must be supported; city planners need to recognise this and proactively provide HGV and LGV parking capacity including charging points. This should be given equal or greater priority to the provision of car parking.
- Planners would be unwise to rely on historic trip rate generation statistics; there is an urgent need to upgrade this planning standard.
- There is a smart city digital opportunity to manage goods and servicing vehicle flows through an access and parking booking system – this potential was identified by some of the informal practices observed.
- Pricing both access and parking resources with a dynamic system would (over time) stimulate a range of traffic reduction and smoothing measures including load consolidation.
- Strategic initiatives by local authorities need to involve all key stakeholders to ensure that a holistic approach is adopted and one which is not discriminatory against SMEs, which the study has shown behave differently. This is a practical route to the concept of ‘delivery and servicing plans’.





# Assessing the quality of HGV road incidents data

The police have been collecting and providing road traffic collision information to local authorities in the West Midlands for over 20 years. In 2018, the management of the provision of this information was taken in house to the WMCA Data Insight Service. Along with a host of other big data services, the Data Insight Service now provide updated road traffic collisions information every month to the ‘Road Safety Dashboard’ on Tableau Server, available to all WMCA members. This data comes directly from the West Midlands Police CRASH database and is not altered in any way before being processed into the dashboard.

We decided to evaluate one particular road safety concern that had been highlighted at a recent Construction Logistics and Consumer Safety (CLOCS) presentation regarding the increase in vulnerable road user casualties that had been killed or seriously injured following a collision with a Heavy Goods Vehicle (HGV) in the West Midlands region.

## What did we learn?

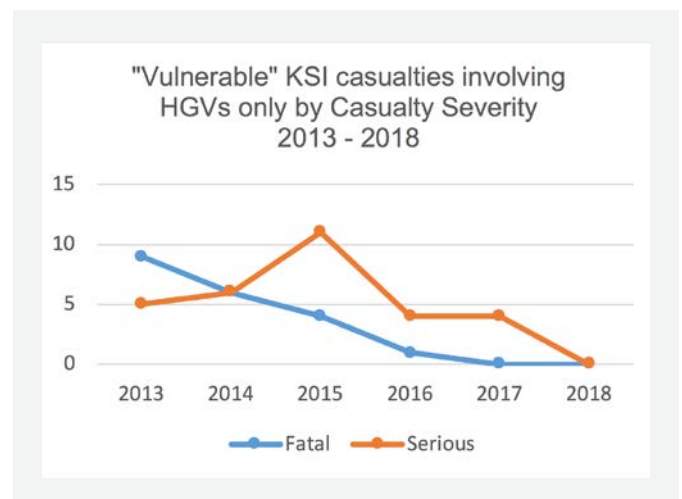
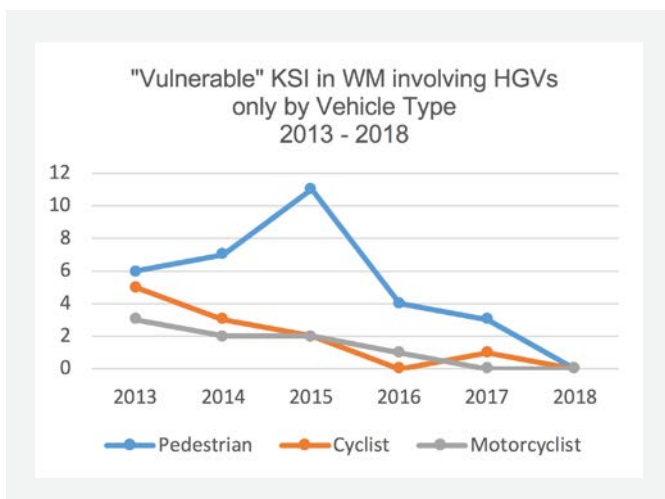
Initially, when looking at the data it appeared that KSI vulnerable road user casualties involving a collision with a heavy goods vehicle have been decreasing steadily since 2013.

This graph indicated that there were no recorded casualties from incidents involving a pedestrian, cyclist or motorcyclist fatality or serious injury after colliding with a heavy goods vehicle in 2018 despite there being a number of known incidents that year from other sources.

When looking at incidents split by casualty severity too we saw that there had been no recorded fatal casualties involving a pedestrian, cyclist or motorcyclist collision with a heavy goods vehicle in either 2017 or 2018 despite their being known fatalities from other sources.

To understand where the issue lay we extracted all fatalities recorded from 2017 and 2018 years to find some of the known incidents in question.

As can be seen in the example below, the issue was identified as a lack of coding for the goods vehicle weight meaning it was left out of the analysis for heavy goods vehicles (coded as ‘Goods over 3.5t. and under 7.5t’ or ‘Goods 7.5 tonnes mgw and over’).



Year	Incident ID	Vehicle Type	Road 1	Fatal	Serious	Slight
2017	S27975517	Goods vehicle - unknown weight	A441 Pershore Road (A441) at Junction with Priory Road (B4217)			
2017	S27975517	Pedal cycle	A441 Pershore Road (A441) at Junction with Priory Road (B4217)	1		

To get an extent of the problem, we ran an analysis of incident casualties where a vulnerable road user had collided with a vehicle with an unknown weight, i.e. those which had not been coded a weight.

The chart shows a sharp rise in unknown weight goods vehicles from 2015 across all vulnerable road user groups.

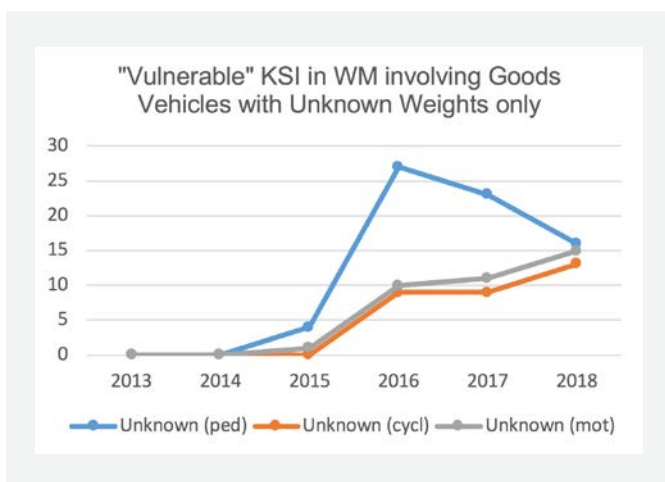
When re-running the analysis therefore on vulnerable road user KSI casualties involving heavy goods vehicles and goods vehicles with unknown weights it showed a very different trend with vulnerable casualty levels increasing since 2015.

It is difficult to identify, however, which of these uncoded goods vehicles were in fact heavy goods vehicles (over 3.5 tonnes) and which were light goods vehicles (under 3.5 tonnes). So, we cannot derive an accurate insight into the potentially increasing danger heavy goods vehicles pose when crossing pedestrians, cyclists and motorcyclists on West Midlands roads.

## What does this mean for the West Midlands?

This research illuminates the importance of comprehensive coding of road traffic collisions loaded into the police CRASH database to avoid the misuse, misinterpretation and inaccurate presentation of information. As incidents involving vulnerable road users and HGVs have been highlighted as a safety priority issue among road safety champions, adequate vehicle classification is paramount to identifying the extent of this issue in the West Midlands. Vehicle classification is an attribute therefore that we would recommend police prioritise when collecting and loading information regarding incidents.

This research also identifies that we cannot confidently separate and derive insights for heavy goods vehicles compared to ‘other’ goods vehicles and so should choose to use all ‘unfiltered’ goods vehicles when seeking to understanding trends.



## Credit and references

This article was written by Charmaine Swann, Principal Data Analyst ([Charmaine.swann@tfwm.org.uk](mailto:Charmaine.swann@tfwm.org.uk)).

# Data Insight Service – Year 2

The Joint Data Team contract was in-sourced from Mott MacDonald to TfWM, with delivery of the service beginning in April 2019. The Data Insight Service (DIS) provide a host of data services for users across the WMCA and Local Authority partners. In addition to this, we carry out various research projects and reports to align with the organisational and political annual objectives and, where possible, make this insight easily accessible via our online business insight and mapping tools.

## What did we learn?

Like the tricky 2nd album, the 2nd year of Data Insight delivery is also hard! Consolidating the transition work of Year 1, this year's has undertaken a lot of behind the scenes work that is helping to lay the platform for rapid future developments.

### Data collection

The 2nd year of delivery has continued the bi-annual cycle of cordon counts and the 700 point traffic survey. In addition the team has supported Local Authorities with ad-hoc survey requests, helping to raise tenders and analyse the resulting bids. The Housing and Employment Land use data continues to be collected in October each year, engaging with districts as well as the core metropolitan Local Authorities, in particular in Warwickshire.

### Data provision and analysis

The products used to access and analyse the data have been upgraded to the latest stable versions, allowing users to begin to take advantage of new features. The new additions over the last 12 months are the cycling dashboard and the Road Traffic Collision tool, the first of the web applications to start to move into the core GIS platform.

### New Services

The launch in December 2019 of the Regional Transport Coordination Centre, marked the first DIS product to work with real-time data. It was updated and used in the RTCC response to the rail strikes and flooding in the West Midlands. There will be continual improvements as new data sources become available from the RTCC, 5G and Future Transport Zone projects.

### Modelling

The team has managed to open up the approach to modelling after 20 plus years of a single supplier, bring on board expert help, grow the management and oversight of the model with a more intelligent, client-led approach and begin detailed and innovative approach to designing the new strategic transport model. This has included increasing access to PRISM and new model development to capitalise on new modelling techniques and data (funded by the Future Transport Zone) and a new advisory panel framework.

### Project Work

Commonwealth Games – The Spectator and Workforce Access Tool has been brought in-house to support the assessment of the public transport capacity uplift needed to service the Games and Park and Ride requirements.

ConVEx – The project to provide a data marketplace that supports the CAV sector will act as a supplier of data into the DIS, and also a recipient of data for further exploitation.

## Development Work

Data Science for Social Good – Working in partnership with the University of Warwick and the Turing Institute a team of 4 PhD students built and tested an accessibility tool to help understand the access to services by those in need.

BCU - The DIS, in partnership with Birmingham City University's Digital Media Technology Lab looked at commercially available smart cameras for traffic volume analysis and for benchmarking against current Automatic Traffic Count infrastructure. The results indicated that off-the-shelf object detection models can be successfully adapted to perform accurate traffic counting. Phase two currently being explored.

## Business Case and Policy Support

The DIS team support in managing access to data for development of the strategic transport model, PRISM, as well as supporting business cases directly. The DIS team have also been working hard to support the Policy Team in gathering evidence for emerging strategies, such as the local transport plan.

Data drop-ins with local authorities - The DIS team support the local authorities through various data drop ins, which help to ensure that the data is easily understood and accessible.

## What does this mean for the West Midlands?

TfWM and the West Midlands local authorities fund one of the most ambitious approaches to transport data in the country. The foundations being laid down now will set the region apart in being able to support business cases, monitor impact, understand the transport network in real-time, adapt to emerging innovations and work collaboratively across the region. More can be done to advertise the service to further widen the usage and increase the value it brings.

The next year will see consolidation of the ICT services, through the introduction of single-sign on, to ease user access (trial currently underway). The continuation of providing access to data and analysis with improved user interfaces will help to meet the differing needs of the customers of Data Insight.

Work is well underway to take advantage of the ANPR data made available via the West Midlands Police, this will provide one of the most reliable datasets for vehicle counting, classification and journey times across routes. There will be increased use of the bus real journey time work, supporting performance dashboards, the real-time view of bus locations and identifying areas of positive and negative impact.

Work has begun on data ethics and privacy, with a gap analysis underway that will capture the current approach and compare it to best practice. This will inform the data sharing agreement work and acceptable use policies to ensure that we have the trust of partners and citizens.

Local authority partners are being engaged in the transport model 'discovery' phase over the summer months, working towards delivery commencing at the beginning of 2021. New processes for authorities to call-off services against the new P5C framework are being rolled out over the Spring 2020 with the support of the Transport Planning Model Guardian team (Stuart Law and Helen Ursell).

The exciting new services to be offered in the next year will be a series of "data drills" focussing on the use of data in emergency response situations, inevitably the first of these will be a post-COVID lessons learned piece of work. There will also be demonstrations of the powerful uses of 3D visualisation to support decision making around infrastructure schemes and public consultation.

## Credit and references

This article was written by Stuart Lester, Strategic Lead – Transport Intelligence ([stuart.lester@tfwm.org.uk](mailto:stuart.lester@tfwm.org.uk)). For the extended version please contact [datainsight@wmca.org.uk](mailto:datainsight@wmca.org.uk).



# West Midlands 5G Enabled Road Sensor Network

West Midlands 5G and Transport for West Midlands are developing a sensor network to improve the planning and operation of the key route road network. This project is joint funded through West Midlands 5G Mobility project and the Future Transport Zone.

## What did we learn?

During the summer of 2019, an initial desktop study was carried out. This identified a potential 800 sites for sensors distributed across the seven local authority areas, primarily at key junctions. This study proposed a range of technologies including the use of high definition video cameras at key sites and a wider coverage of lower cost internet of things type devices such as air quality monitors and Bluetooth traffic detectors.

This enabled West Midlands 5G to develop a business case for the project including the intention of funding the sensors operations for five years. Currently, the key route network is managed using a combination of legacy systems such as CCTV, induction loops and Automatic Number Plate Recognition (ANPR). As these systems age they can become unreliable and they have limited analytics. In addition the coverage of the whole of the Key Route Network is limited, which is made worse while repair is undertaken. Surveys of traffic flows using pneumatic tubes are also undertaken on the key route network but the cost of these surveys mean that surveys are only undertaken on a few days per route.

The aims of this project is to serve as a demonstrator of how 5G based technologies can transform the operational management of the Key Route Network by:

- Introducing a sensor network to provide a granular, real time, 24/7 understanding of the entire key road network within the West Midlands with a specific focus on connected and autonomous vehicle test routes
- Providing insight to enable better management of the transport network, for example through the regional transport coordination centre (RTCC), which will result in better management of accidents and congestion
- Providing a rich set of historic data to develop and prioritise future transport schemes and improvements
- Reducing the need for manual surveys, which only provide limited data, have a revenue implication and only provide an ad-hoc time sample
- Providing additional data insights such as when vehicles turn (turning counts), localised weather and air quality data
- Enable new sensors and technologies to be introduced at a later date
- Supporting third party suppliers wanting to trial new sensor technology and services
- Providing infrastructure that could support future introductions of 5G small cells and support the business case for introduction of open, shared infrastructure.





Key to this project is that it is sustainable beyond the lifetime of the West Midlands 5G project and supplements and supports initiatives being undertaken by TfWM and the Local Authorities under the RTCC programme and other programmes such as Midlands Future Mobility.

## What does this mean for the West Midlands?

We are looking for suppliers who can provide an innovative range of solutions directly from themselves as well as through other third party small / medium enterprises. Specific capabilities (use cases) and priorities to cover include Traffic Monitoring, Environmental Condition Monitoring, Weather Monitoring, Supporting Smart City initiatives, Supporting Connected and Autonomous vehicles (CAV), Network condition monitoring and evaluating User/vehicle behaviour.

Suppliers will propose the most appropriate technology solutions / solution mixes but we anticipate the use of technologies such as ANPR, video analytics, infra-red cameras, Bluetooth detectors, infra-red cameras, radar detectors, air quality monitors and weather sensors.

Insight to be gained from this project includes how to minimise data exchange, what is the total cost of ownership, what is an appropriate density of sensors as well as what are the options around mobile sensors or re-deployable sensors.

Our planned timescales are as follows (subject to monitoring the impact the COVID-19 crisis on the ability to undertake a tender and installation work).

### July 2020 – December 2020

Phase 1 Initial implementation, focused on Coventry (Ring Road; Allesley Old Road / Spon End; Holyhead Road) and Solihull (Lode Lane; Damson Parkway).

Any installation activities will be subject to consultation and permissions with planning teams (if relevant), considering any highways embargos during December.

### January 2021 – December 2021

Phase 2: Wider/ business as usual implementation throughout the seven West Midlands Authorities: consultation regarding installation and discussions with planning teams (if relevant).

### August 2021 – December 2021

Phase 3: Expand the service / nice to have / longer-term use cases including trials of small cells.

## Credit and references

This article was written by John Paddington, Innovation Integration Lead (Public Sector), ([John.paddington@tfwm.org.uk](mailto:John.paddington@tfwm.org.uk)).

# ITS World Congress 2024 bid

## What is the event?

The Intelligent Transport Systems (ITS) Congresses – including both the ITS European Congress and the ITS World Congress – are the two leading events in the field of intelligent mobility. Transport for West Midlands has submitted a bid for the West Midlands to host the ITS World Congress 2024. This is a five day annual event which takes place in different parts of the world every year to bring together the best of ITS (Intelligent Transport Systems) research and technology globally. The last ITS World Congress held in Singapore attracted over 14,000 delegates and 800 speakers. TfWM has a long track history of attending this event.

The event includes seminars, exhibitions, demonstrations, youth development initiatives, a VIP dinner and a mayoral roundtable. In addition there will be substantial fringe events held by ITS Associations, Suppliers and Consultants leading up to, during and following the Congress week. Other cities who will be submitting a bid include Zurich and Dubai.

## Our bid

The venue set to host the event is the National Exhibition Centre (NEC) due to its convenience and connectivity both nationally and internationally and its experience and proven track record.

As part of the bid we have emphasised the significance of the West Midlands as the first of the government's Future Transport Zones as well as the legacy that will be left behind from the 2022 Commonwealth Games. There is also a strong focus on our region as diverse, accessible and green and comparatively great value for money against others submitting applications.

The bid has been produced in collaboration with TfWM, UK Government (DfT) and the NEC and we have received over 40 letters of support from public and private sector partners with several significant indicative platinum and gold sponsors as well as letters of support from ITS associations from many different countries around the world.



## How will this benefit the West Midlands?

This is a great opportunity to showcase the West Midlands as the UK centre for Intelligent Mobility – flaunting the ongoing Future Transport Zones work including CAV and 5G testbeds, and our extensive data platforms to a global audience. This will also offer a great opportunity to allow the world to see what Birmingham and the wider West Midlands has to offer, and how the latest transport developments enhance the tourism opportunities here.

Our region is responsible for a broad range of research and development in intelligent mobility and other related fields and we will be keen to engage our academic and private sector partners to show the tremendous achievements of the region.

If we are successful, hosting the ITS World Congress will attract new business and investment opportunities and allow us to show the world our success stories, developments and key projects that are shaping the world of transport. In addition the timing of the event will mean that the legacy of the 2022 Commonwealth Games can be experienced by delegates. This also provides a unique opportunity to promote tourism to the West Midlands and show our cultural heritage and regional diversity.

## Time frames

The existing time frames may be subject to change due to the Covid-19 crisis which is ongoing. At present the following time lines have been established for the bid related activity:

Bid pitch: June 2020

Site Visits: July 2020

Announcement: October 2020

## Credit and references

This article was written by Emily Perry, Transport Innovation Strategy Officer ([emily.perry@tfwm.org.uk](mailto:emily.perry@tfwm.org.uk)).

# West Midlands Bike Life Report: a guest article from the Cycling and Walking Team

Inspired by the Copenhagen Bicycle Account, Bike Life provides an assessment of cycling in cities and urban areas across the UK and Ireland. Seventeen cities and regions took part in the programme, coordinated by Sustrans. Each report looks at infrastructure, travel behaviour, the impact of cycling, and new initiatives.

The first two reports in the region (2015 and 2017) were focused on Birmingham. Moving forward, it was agreed to broaden the scope to include all seven of the constituent local authorities of Transport for West Midlands. The West Midlands Bike Like report includes the results of a survey of 1,554 people as well as a summary of cycle facilities in the region. Along with figures, the report includes case studies from across the region, demonstrating the positive impact that cycling can have on everyday living.

The report included the result of a survey of residents in the West Midlands (1,554 people). This is an important distinction, as these views are of people who may or may not cycle generally (and as can be seen below, most people do not cycle).

## What did we learn?

In the West Midlands, 10% of residents cycle once a week for either leisure or commuting, with 80% walking at least once a week. However, 52% use their car 5 days a week or more, compared with 45% for walking, 21% for public transport and only 3% for cycling.

Almost three times as many men than women cycle at least once a week (14% men, 5% women). Only 6% of people from ethnic minorities cycle at least once per week, almost half as many as white people (11%).

There are differences within the socio-economic groups as well. 39% of people from socio-economic group 'DE' (semi-skilled & unskilled manual occupations, unemployed and lowest grade occupations) do not have a car in their household (compared with 7% of the 'AB' group - higher & intermediate managerial, administrative, professional occupations). This group (DE) accounts for 33% of the population – around 950,000 people in total. However, there is interest in taking up cycling with almost a third (31%) of people from group 'DE' interested in starting. There are however several barriers they have identified:

- 43% of respondents in group 'DE' felt concerned about safety
- 24% did not feel confident to cycle
- 20% felt the cost of a suitable cycle was a barrier
- 19% felt cycling was 'not for people like me' – indicating that a person using a pedal cycle can be associated with certain characteristics.

As can be seen from above, cycling levels across the region continue to be quite low. What is stopping people across the West Midlands from cycling more?

- 50% of respondents concerned about their safety
- 27% lacked confidence
- 26% felt poor weather was a barrier.



There is support for cycling in the region, with 47% of residents feeling they should be cycling more. In addition, when it comes to building more infrastructure and facilities for cycling, 65% of residents support building more protected on road cycle tracks, even when this would mean less room for other traffic. Residents also want to see healthier active streets:

- 76% of residents support increasing space for socialising, cycling and walking on high streets
- 59% support closing streets outside schools at peak times
- 58% support restricting through traffic on residential streets.

The report also outlined a summary of facilities in the region:

- 1,782 cycle parking spaces across railway stations in the region
- One public cycle parking space for every 103 people who cycle in the West Midlands
- Only 17% of streets in the region have 20mph speed limits
- 86% of households are more than 125 metres from routes that are traffic free (including canal towpaths, green routes and segregated cycle track):
  - 497 miles of walking and cycling paths away from the road (e.g. canal towpaths and paths through parks)
  - 4 miles of cycle tracks physically segregated from moving traffic.

## What does this mean for the West Midlands?

West Midlands Bike Life provides a strong evidence base to increase investment in cycling and active travel in the region. People are looking for healthier streets, where they can socialise as well as easily and safely travel on foot or by pedal to their local high streets. Residents also recognise that a change is needed where the car dominates around where they live and where their children go to school. While putting forward bold plans that would make significant changes to the landscape tends to draw out objections that are covered heavily by the media, there exists a 'silent minority' who in fact do support the move to healthier active streets in our region.

Overall safety remains to be the biggest barrier to cycling for many people in the region, however people also have other challenges such as confidence using a pedal cycle as well as access to a cycle. This demonstrates the overall importance of a holistic approach to achieving the targets of the Cycling Charter through high quality infrastructure as well as supporting activities such as Community Cycle Clubs which we deliver with Cycling UK and our developing West Midlands Bike Share scheme.

The region is rich in green routes and canal towpaths. There are however few fully segregated cycle routes - Birmingham City Council delivered 4 miles of high quality segregated cycle tracks in 2019. The key point however, is that busy roads prevent access to these routes for most of the population in the region. While some solutions do include segregated cycle ways, speed restrictions as well as quieter neighbourhoods would also address these severances.



The next steps are to ensure that the findings from West Midlands Bike Life are used to support business cases and investment into active travel. The next report is scheduled for 2022 and will provide information on whether interventions are making an impact across the region.

## Credit and References

Hannah Dayan, Cycling and Walking Development Officer  
([hannah.dayan@tfwm.org.uk](mailto:hannah.dayan@tfwm.org.uk)).

The report was prepared in partnership with Sustrans, with data provided and compiled by the TfWM Cycling and Walking Team, Data Insight Team and input from Birmingham City Council, Coventry Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council, Walsall Council and City of Wolverhampton Council. The report was reviewed by officers across sectors: Transport, Public Health and Physical Activity (<https://www.sustrans.org.uk/bike-life/bike-life-west-midlands>).

# One App Discovery Research

Swift is an electronic ticketing scheme developed by TfWM for use on public transport in the West Midlands metropolitan area. Swift One App brings together the transport services that were previously spread across a number of different platforms. Currently the Swift App allows users to view their current balance or products and collect top-ups and products that have been bought through an online Swift Account. TfWM are now working on improving this app by introducing a wider range of new products including:

- Planning travel across the West Midlands
- Buying public transport tickets
- Collecting Swift tickets
- Signing into the Swift account
- Booking and paying for parking, car hire and car club
- Managing the Swift account
- Checking departure information.

To gauge potential users feedback on the design of this App an online survey was sent out to members of the Human Intelligence Respondent Database who have agreed to participate in market research projects. The survey was available for responses for one week during January 2020. In total 237 responses were received.

## What did we learn?

### Unprompted suggestions for what to include on a new Swift App homepage

- A fifth of respondents would like to see some form of journey planner (21%).
- 17% would expect to see information on their commonly made journeys/ favourite journeys, while a further 17% would want to see information on any disruptions/ delays.
- 15% would expect to see Swift account information /account balance.
- 13% would like to be able to view live travel times/live information.

### Most important homepage tasks:

- The most important tasks would be to find a service nearby (e.g. bus stop etc.) to plan a journey or check public transport departures.
- Following this respondents would like to log in or find a ticket.
- Of lowest importance was to learn more about Swift, add a Swift Card to your account or to collect a ticket.

## What does this mean for the West Midlands?

In terms of preference for the new Swift homepage design there was a clear divergence on the basis of age. Younger respondents – the current main group of app users - were more likely to favour Options 2 and 3 which included a map and were considered more visual and familiar to them. While in contrast older respondents, particularly those aged 45-59 tended to favour option 4 which was deemed by them to be clearer and bolder with easier to use buttons.

With two such contrasting views amongst potential user groups the challenge will be to design an App that fulfils the needs of younger respondents who are most likely to use the App and prefer something more visual and not put off use amongst older respondents who will potentially use the App in the future and prefer something more ‘simplistic’.

## Credit and References

This article was written by the Human Intelligence Team. For further information please contact Sara Harte, Principal Insight Analyst ([sarah.harte@tfwm.org.uk](mailto:sarah.harte@tfwm.org.uk)).

## Preference for new Swift homepage screens when not logged in

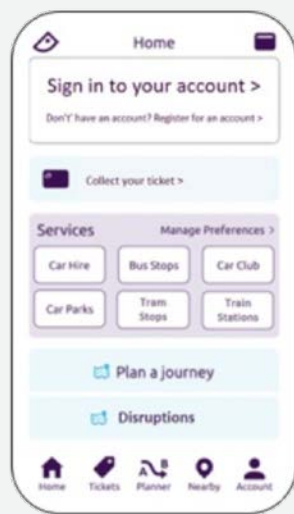
### Option 1

24% preferred

Joint top preference amongst 25-34 (37%)

74% thought it was clear/easy to use, 11% liked the style of the buttons

98% rated layout as very good/good



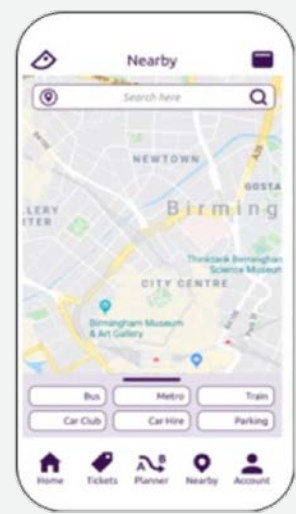
### Option 2

32% preferred

Top preference amongst 18-24 (53%) Joint top preference amongst 25-34 (37%)

68% liked the map; 16% though it more visual

95% rated layout as very good/good

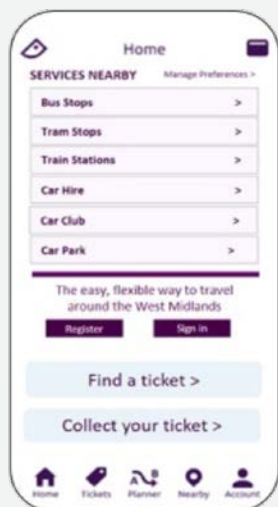


### Option 3

8% preferred

65% thought it was clear/easy to use

95% rated layout as very good/good



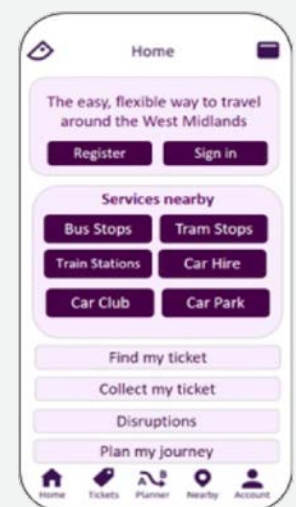
### Option 4

36% preferred

Top preference amongst 45-59 (51%) & 60+ (49%).

48% thought clear/easy to use; 15% thought it was easier to read

94% rated layout as very good/good



## Preference for new Swift homepage screens when logged in

### Option 1

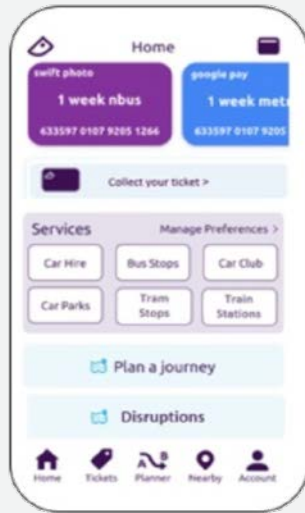
23% preferred

Top preference amongst 25-34 (40%)

29% thought clear/easy to use; 19% like the ticket information area

98% rated layout as very good/good

37% would expect to plan a journey from the homepage; 26% to see a ticket/ manage account



### Option 2

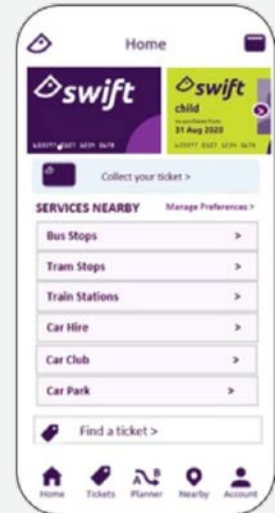
14% preferred

28% thought clear/easy to use

22% liked visual display of tickets

79% rated layout as very good/good

33% would expect to plan a journey from the homepage; 30% to see a ticket/manage account



### Option 3

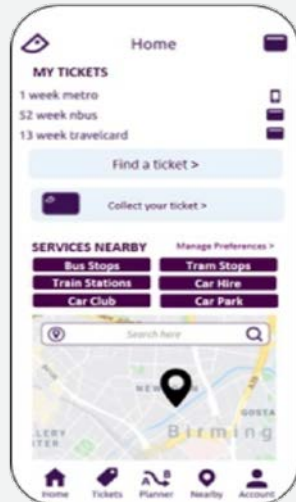
27% preferred

Top preference amongst 16-24 (38%)

60% liked that it included a map, 19% though it was clear/easy to use

92% rated layout as very good/good

48% would expect to journey plan from home page; 18% to see a ticket/ manage account



### Option 4

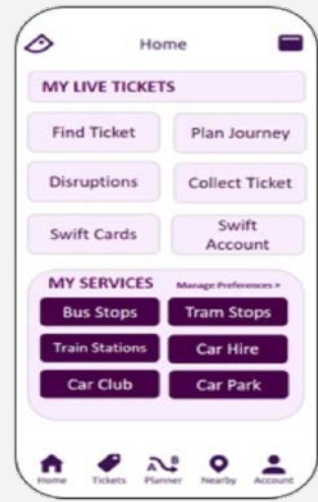
35% preferred

Top preference amongst 45-59 (55%) & 60+ (54%).

54% thought clear/easy to use; 11% like the big buttons

97% rated layout as very good/good

46% would expect to journey plan from homepage, 17% to buy a ticket.





# Journey Assistance User Report

The West Midlands Network's current Journey Planning tool gives users the opportunity to create a personalised journey that suits their needs. To continually provide the best service the West Midlands Network are currently researching how they can improve the users experience of their website along with the apps they provide.

In order to support and help customers find their perfect journey the Swift Team requested research into how and why customers plan their journeys and what features they would like a journey planner to contain. The research findings will help shape a new online journey planning tool.

The survey was conducted via an online questionnaire which was emailed to 23,975 members of the West Midlands Network marketing database. Overall 1,393 valid on-line questionnaires were submitted over the survey period.

## What did we learn?

### Current journey planning habits and planning tool(s) used

- 71% had planned a journey within the last week, with a further 16% having done so within the last month. 6% had done so within the last 6 months, 2% over 6 months ago.
- The main reason for journey planning was having to be at a location at a specific time (48%), to check for delays/ hold ups (22%), not knowing the area (21%) or to estimate a journeys length (20%).
- The majority (62%) had planned their journey the day before travelling, whilst around a third (32%) had done so on the actual day they had travelled.
- 54% had used the internet/online to plan their journey, whilst 48% had made use of a Mobile App. Just 6% had used paper timetables/maps and 5% satnav.
- Internet/online use peaked amongst the older age bands (60+, 58%; 45-59, 57%), whilst Mobile App use reached a high amongst the younger age groups (61%, 25-34; 52%, 16-24).

### Current Journey planning when travelling by public transport or car

- Google maps was the app/website used most often when planning a journey, especially amongst car users (66% car users v 39% public transport users).
- Public transport users also utilised the Network West Midlands App/Website (27%) and National Express West Midlands App/Website (14%).
- While car users also used Apple Maps (8%) and the AA Route Planner (7%), 6% equally used TomTom or Waze.
- Ease of use was the aspect respondents liked most about their chosen websites/apps (83% public transport users; 87% car users). The app being free and accurate was also important to them.
- Ensuring the information is up to date/ accurate information was the most requested improvement to travel apps.
- Over half of public transport users (59%) and car users (51%) would transfer to a different journey planner if it offered a better service.

### Important features for a new on-line journey planning tool

- Arrival/departure time's information was thought to be the most important feature of an online journey planning tool, along with being able to check the fastest way of getting to a destination and being able to see the lowest priced journeys.
- Being able to find the quietest /most scenic route and having a health benefit/fitness calculator were of lowest importance.
- In addition 25% of respondents suggested they would like WhatsApp/push notifications included as part of a journey planner.

### Multiple transport options and relevant transport services

- 79% would like a journey planner that shows multiple transport options.
- In terms of specific modes 31% would like a journey planner to have information on buses, 28% on trains, fewer would like information on walking (12%), private cars (8%), trams or car parking (7% equally).
- Fewer still wanted Taxi Ride-Hailing, Car Hire/Car Share Scheme or Cycle Hire options included in the planner (3%, 2% and 1% respectively).
- Car drivers additionally suggested that a journey planner should include information regarding car parks and the availability of car parking spaces (83%).

### Inclusion of a journey cost and having the ability to pay

- 86% would expect to see the cost of their journey.
- 55% would envisage the cost to be broken down for each part of the journey while 29% would want one single cost for the whole journey.
- 82% would like the ability to pay for travel at the same time as planning a journey.

### What does this mean for the West Midlands?

Potentially an improved WMN travel app could persuade half of public transport and car users who use journey planners to transfer from their current journey planner, however the app would need to encompass some of the suggestions above in terms of multi modal planning, costs and the ability to pay as well as remaining easy to use with a high degree of accuracy.

### Credit and References

This article was written by the Human Intelligence Team. For further information please contact Haley Millard, Senior Insight Analyst ([haley.millard@tfwm.org.uk](mailto:haley.millard@tfwm.org.uk)).

# Future Projects

Engagement in research and evidence building at TfWM never stops. Below is a snapshot of some of the articles which will feature in the next issue of TfWM's Quarterly Research and Publication Review, which is due to be released in July 2020.

## Driverless cars emulsion initiative

Driverless cars emulsion initiatives bring together different people and perspectives around the idea of a driverless cars future. The next edition of the Quarterly Research Paper will include an exciting report on the use of these initiatives in the West Midlands and what they have taught us.

## Micro mobility in the West Midlands

Interested in the role micro mobility in the West Midlands? Rest assured, we will keep you updated on emerging trends in this area. The next edition of the Quarterly Research Paper will include a summary of work around micro mobility and how it is informing the debate about the role of micro mobility across our region.

## Submissions wanted!

Are you a local authority or public sector organisation with an exciting project or a new strategy? Do you want others to hear about your work to help build connections and encourage collaboration? The TfWM Policy and Strategy Team are keen to promote and summarise projects, strategies and policy documents from throughout the West Midlands. So if you have a request for an item that you want to include in the Quarterly Research Paper please get in touch with Ellen Peacock, Policy and Strategy Officer at TfWM ([ellen.peacock@tfwm.org.uk](mailto:ellen.peacock@tfwm.org.uk))





# Get in Touch With Us

If you would like to speak to someone about any of the projects and research showcased in this issue, please contact the respective credited authors/contributors.

If you would like to contact us regarding the content or publication of these Quarterly Research and Publication Review, or if you have an idea for an article in an upcoming issue, please contact Ellen Peacock, Policy and Strategy Officer ([ellen.peacock@tfwm.org.uk](mailto:ellen.peacock@tfwm.org.uk)).