LOCAL TRANSPORT DATA DISCOVERY

Department for Transport

northhighland
WORLDWIDE CONSULTING

Table of Contents

FOREWORD

Data is a critical resource for enabling more efficient and effective public services. Opening up data and removing barriers to effective data use across the public and private sector needs to be a priority as we look to evolve and improve England's transport services. However, the sharing and use of local authority transport data across England is currently limited.

In January 2018, North Highland was asked by the Department for Transport to conduct an independent review of the local transport data landscape to help support the Secretary of State for Transport, Chris Grayling's, priority around 'Making Britain the best place in the world to do transport digitally'.

The following report sets out our findings, which include both the benefits of opening local transport data and, inversely, the implications of not doing so. The report also outlines the key barriers to open data for local authorities—and makes a series of recommendations on what the Department for Transport, local authorities, government bodies, universities and the public sector can do to overcome these barriers.

At North Highland, we believe this is only the beginning. We need to plan today for tomorrow's world—and better access and use of data is critical to increasing our resilience to congestion, disruption, security challenges and increasingly unpredictable weather.

The Department for Transport are now considering the next steps they need to take to harness the momentum built through this discovery to provide local authorities with the direction, focus and leadership required to achieve their future ambitions.

Chris Lamont - Vice President, Transport Sector Lead

North Highland

Our transport system is vital to the way we lead our lives and the success of our economy—yet digital transformation is rapidly changing the way we travel on our roads and how we provide and maintain our infrastructure. Transparent transport data is not only critical to help maintain and enhance the effective delivery of services but is also a key government priority.

In January 2018, the Department for Transport (DfT) commissioned North Highland to undertake a user-centric 12-week discovery project to identify the opportunities and challenges for key user groups to maximise the benefits of local authority transport data across England. Local authorities are a significant provider and manager of transport services in their areas, and are responsible for 97% of the national road networks. Over the course of the project, the team engaged with 173 individuals working for 94 public and private sector organisations.

The key findings from this discovery are as follows:

- Publishing open transport data offers potential commercial and societal benefits—as demonstrated by Transport for London[1]—but there is currently limited commercial value associated with most local authority data outside London.
- There are pockets of excellence within local authorities, but much of the market is dominated by the private sector.
- Early case studies are demonstrating the mutual benefits of collaboration across local authorities, the private sector, universities, and other government departments.
- Significant amounts of local authority data are currently closed—and there are barriers which need to be removed before the full benefits of open data can be realised.
- There is operational value in the data for managing road networks—and traffic data should be a priority dataset to open up.
- Investment is required to improve data quality and standardisation for operational and future commercial exploitation.
- A significant volume and breadth of local transport data exists, which enforces the importance of a targeted approach to opening key datasets.
- Local authorities have not fully developed their approach for using transport data for land use planning, prioritising road maintenance investment and to support connected and autonomous vehicles.
- There is significant enthusiasm within local authorities to progress the open data agenda, but guidance and support is needed to realise potential opportunities.

1. https://tfl.gov.uk/info-for/media/press-releases/2017/october/tfl-s-free-open-data-boosts-london-s-economy

This report contains the findings from the discovery, as well as a set of detailed recommendations to progress the open data agenda in transport.

The discovery identified the following benefits from opening up local authority data:

- Improved transport network efficiency and cost reduction
  Greater access to local, national and private sector datasets enables local authorities to better plan and manage their own transport networks, as well as improve operational efficiency.
- Improved air quality and reduced emissions
  Enhanced ability to regulate traffic according to environmental policies and increased access to multimodal transport services.
- Improved citizen experience
  Improved citizen experience. Better information to plan journeys and travel more easily. Access to enhanced local transport services.
- Inspires and supports more innovation
  Increased innovation around customer-facing products, infrastructure maintenance, operational systems and tools to support traffic management.

The recommendations are grouped around the following five themes:

1. Local authorities should be helped to focus on making more high quality data open.
2. The Department for Transport should sponsor identified data projects which encourage and foster better local authority transport services.
3. More effective investment in infrastructure to harvest local authority data, and open data initiatives to improve data sharing.
4. Promote training and skills development within local authorities to develop internal capability.
5. Improve collaboration between local authorities, Highways England and the private sector.

The discovery has highlighted the importance of taking more responsibility for promoting open data across all public and private sector transport organisations—as these recommendations cannot be delivered by the DfT alone.

INTRODUCTION

1.1 Context for the discovery

Data is vital for enabling efficient and effective provision of services, and transparent, open data is a government priority. In a paper published by Transport Systems Catapult, it was estimated that not sharing, and not making transport data open, could result in £15bn in lost direct and indirect benefits to the UK by 2025[2]. In fact, open data has already been identified as a key enabler for the government's digital transport strategy.

In January 2018, the Department for Transport (DfT) commissioned North Highland to undertake a user-centric 12-week discovery project[3] to identify the opportunities and challenges for key user groups to maximise the benefits of local authority transport data across England.

The key goals for the project were to:

- Test the hypothesis that there is benefit in greater sharing of local authority transport data;
- Provide a comprehensive view of the different user groups and their transport-related data needs;
- Identify and prioritise data based on user needs; and
- Provide recommendations and next steps based on user needs.

Local authorities create and store a significant amount of static and real-time transport data. This project aimed to understand where opportunities to exploit open data might lie, and what challenges local authorities will need to overcome to realise greater benefits from this data.

1.2 Value of transport data

In order to understand what data has the most value to different user groups, we needed to identify the different forms of 'value'. We have used the categories below to help illustrate how value could be achieved through better access to local authority data, or improved data quality.

COMMUNITY & ENVIRONMENT
Contributing to wider societal and behavioural change, such as improving air quality and accessibility of services

OPERATIONAL / EFFICIENCY
Streamlining the way that individuals and organisations work to improve cost efficiency

USER EXPERIENCE
Users receiving an enhanced or improved service through enriched information

COMMERCIAL
A revenue stream derived from either an existing or a new product or service

SAFETY / REGULATION
Ensuring that information is clear and accessible, and local authorities are compliant with public legislation

ECONOMIC GROWTH
Helping to keep people, goods and services on the move to the benefit of the wider economy

2. The case for government involvement to incentivise data sharing in the UK Intelligent Mobility sector —Transport Systems Catapult 2017
3. https://www.gov.uk/service-manual/agile-delivery/how-the-discovery-phase-works

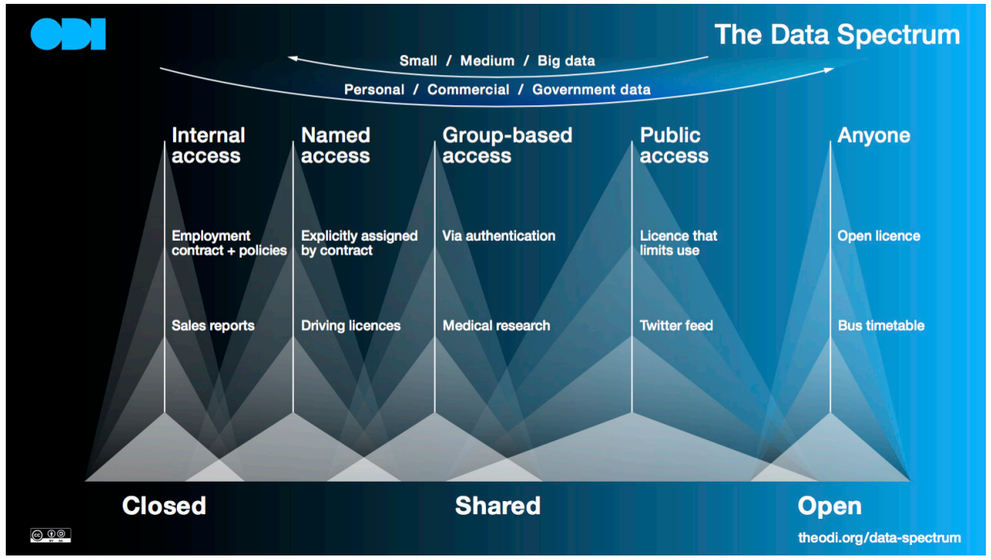
1.3 Methodology

The project was delivered over a 12 week period—with the primary focus on user research with key user groups across the public and private sector. The discovery used a number of different research techniques to gather input from key user groups, as well as supplementing the qualitative insights with a technical assessment of the current data landscape.

Over the course of the discovery project, the team spoke with 173 individuals in 94 public and private sector organisations. All English local authorities were invited to take part in a survey, and in-depth interviews were held with 65 individuals in 28 local authorities.

For the purpose of this study, we have used the Open Data Institute (ODI) definition[4] that states:

> "Open data is data that is made available by organisations, businesses and individuals for anyone to access, use and share."[4]



4. https://theodi.org/about-the-odi/the-data-spectrum/

THE CURRENT TRANSPORT DATA LANDSCAPE

This chapter sets out the general context of open data in the transport sector with regards to its availability, current use and value. It also looks at the challenges and benefits of open data.

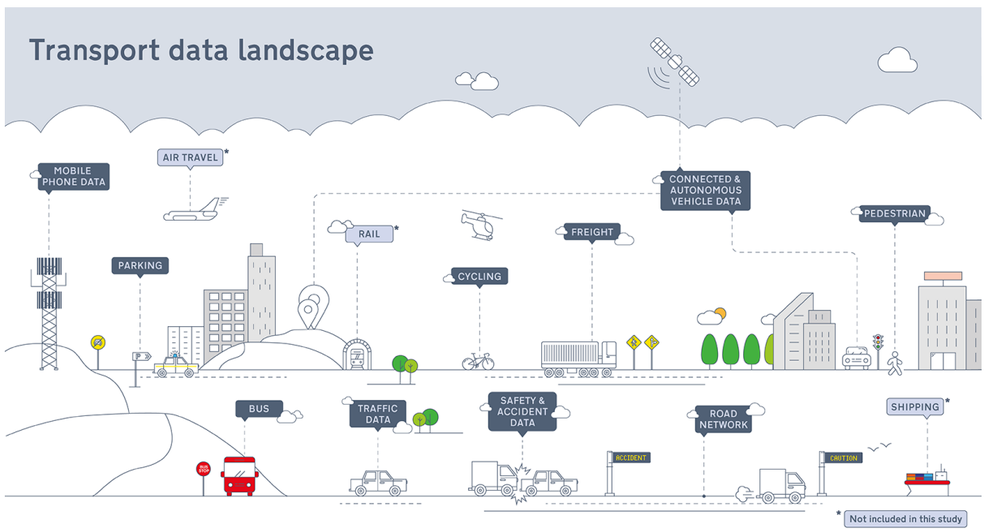
2.1 Transport data landscape

The transport data landscape in England is currently complex and fragmented, with large amounts of data being collected and stored in silos by local authorities and the private sector. Whilst the benefits of publishing open data have been demonstrated by Transport for London, where the release of open data has been shown to be generating annual economic benefits and savings of up to £130m a year[5]—this success has not yet been replicated by other local authorities.

Furthermore, most local authorities currently have incomplete access to transport data on their own transport network—particularly when this relates to mobility services provided by the private sector—including:

- Bus GPS positioning and patronage
- Private parking data
- Journey origin-destination data
- Pedestrian and cycling data
- Neighbouring local authority / Highways England data that directly affects their local road network

The key transport datasets considered as part of this study are shown below:



5. https://tfl.gov.uk/info-for/open-data-users/open-data-policy

2.2 Data trends shaping transport

Digital transformation is rapidly changing the way we travel on our roads, and how we provide and maintain infrastructure. The transport sector is affected by societal trends in demographics, technology and social attitude. Emerging technology is providing access to vast amounts of data which can support improvements to the way traffic networks are planned and managed.

Some of the key trends identified through this study include:

Technological innovation & connected devices	Devices are increasingly connected to each other, enabling large amounts of data to be collected and analysed, and allowing transport systems to be better understood and planned. Furthermore, this real-time data can support traffic decisions (e.g. automated traffic flow management and 'Green Zone' vehicle restrictions).
Private sector transport disruptors	Private sector companies across technology, data and infrastructure are changing the transport landscape, bringing new business models and more personalised services for users.
Connected and autonomous vehicles	A rise in the number of connected vehicles has significantly increased the amount of data being captured and received, which can be exploited to improve the planning and maintenance of road networks. Gartner forecasts that one in five vehicles on the road worldwide will have some form of wireless network connection by 2020[6].
Increasingly connected citizens	Road users and public transport passengers are increasingly demanding more real-time information around transport services. Data derived from mobile phone use is helping us to understand peoples' travel activity, including origin-destination data, which was previously collected manually via census surveys, roadside interviews and household surveys.
Mobility as a service (MaaS)	Building on the integration of payment across transport modes—such as London's Oyster card and various contactless payment and smart ticketing systems—MaaS will see the rollout of more integrated and personalised services for users. MaaS has the potential to provide transport authorities with rich data to help them manage their transport networks.

6. https://www.gartner.com/newsroom/id/2970017

Whilst these overarching trends are consistent factors impacting the transport sector across England, there are nuances at a local level which can influence a local authority's ability and desire to share and use transport data effectively.

This is largely driven by the level of rurality within local authority districts and unitary authorities[8], and other strategic and policy decisions, which can impact budget and priorities. The focus on new services and transport modes associated with urban mobility are not financially possible in rural settings, and the lower population density makes it a less appealing market for private sector transport service providers such as Uber and Citymapper.

2.3. Barriers to data sharing

Analysis of our research with local authorities, central government and the private sector has identified a number of barriers to data sharing in the UK transport sector. These barriers not only restrict the ability to open up transport data but also impact local authorities' ability to capitalise on the benefits that open data can provide, even if it was available.

Concerns around data privacy and GDPR compliance

Concerns exist that making data available – even in anonymised and aggregated form – may contravene current data protection legislation, on the basis it could be interpreted as misuse of an individual's sensitive personal data when not covered by existing terms and conditions.

> 30% of survey respondents cited 'adherence to privacy & security regulations' as their biggest concern[9]

Difficulty accessing data stored or maintained by third parties

Many local authorities have experienced challenges around accessing 'their' data when using private sector technology. There is often disagreement around ownership once data has been cleaned and processed leading to some local authorities having to buy-back their own data to support local operations.

Complexity around data ownership within the local authority

It is difficult to get a complete view of what data exists and who is responsible for it within the local authorities. Different teams have responsibility for capturing and analysing data, so there is often no single owner for transport data.

> Only 18% of survey respondents have a dedicated team responsible for data and analytics across their local authority

Local authorities don't want to lose control of their transport network

Private sector companies such as Google, Uber and TomTom, for example, are increasingly influencing the movement of people and goods across the UK. Local authorities want to ensure that they remain in control of the road network within their region but appreciate the benefits that these products and services provide users.

Lack of standardisation and consistency in key transport datasets

There is a lack of standardisation across some public and private data (e.g. parking data, digital traffic regulation orders) making it difficult and time consuming to access, clean and process key datasets. It also limits the commercial value of the data to the private sector, who need to invest time and effort into the raw data before they can use it.

Lack of evidence and case studies on the value of open transport data

There are currently limited examples (outside of London) where open local authority transport data has been used to drive commercial value. Benefits are indirect and difficult to quantify.

It is therefore difficult for authorities to create a compelling business case for 'opening up data'.

> 30% of survey respondents cited the cost involved in making open data possible as their biggest concern around sharing data openly

Shortage of skills and expertise within local authorities

The technology, tools and data skills within local authorities are limited, and it can often be difficult to attract and retain the right talent. Local authorities are lacking the in-house skills they need to create data feeds using common data formats. Many are partnering with third party contractors and universities to support them with complex data analysis in order to overcome this challenge.

8. https://www.ons.gov.uk/methodology/geography/geographicalproducts/ruralurbanclassifications/2001ruralurbanclassification/ruralurbanlocalauthoritylaclassificationengland
9. Local Transport Data Discovery Survey

2.4 Benefits of open transport data

The effects of the use of open transport data can be translated into direct and indirect benefits for key user groups, including local authorities, private sector and the general public. The high level benefits, summarised below, result from improved quality and wider sharing of transport data:

Improved transport network efficiency

Increased visibility of data across the transport network, including both private sector transport (buses, trains etc.) and the wider network (other local authorities and Highways England), will support better transport network management planning and operations both within local authorities and across the private sector.

> Survey respondents cited cost savings, efficiencies and improved planning as the most commonly expected benefits from improved data sharing

Improved air quality and reduced emissions

Improved transport data will allow for a better understanding of the impact of environment policies on transport behaviour e.g. passenger modal shift and the ability to proactively monitor and regulate vehicle speed and efficiency. It will also help to inform multimodal journey planning—to support sustainable transport modes such as cycling and walking.

> 'There is a lot of potential benefit beyond transport from linking up multimodal journey planning and optimising it.' Local Authority

Improved user experience

Open data allows for better information to plan journeys, allowing users to travel more easily and take more journeys. It will allow a more seamless and connected experience for users across multi transport modes, including integrated payment. Proactive management by users will help reduce their travel time due to better travel information and reduced congestion.

> The sharing and release of data through APIs by Transport for London (TfL) has supported the development of over 600 apps saving TfL and Londoners time and money.[10]

Support transport growth and innovation agenda

Open data encourages and facilitates increased innovation within the transport sector e.g. increase in apps and services to support improved journey planning. It encourages the data to be used for wider purposes outside of transport such as urban planning. It will also ensure transport networks are able to support new modes of transport as they are introduced (e.g. electric vehicles, autonomous vehicles).

> 'I need to have a view of the amount of commuters coming into my city to plan appropriately for the doubling of my city's inhabitants.' Local Authority

10. https://tfl.gov.uk/info-for/media/press-releases/2017/october/tfl-s-free-open-data-boosts-london-s-economy

The way in which these direct and indirect benefits are being realised can be illustrated through a number of specific use cases, which demonstrate the mutual benefits of opening up transport data through collaboration across local authorities, the private sector, universities and other government departments.

Benefit	Activity	Example Use Cases
Improved transport network efficiency	Event management	oneTRANSPORT integrated transport data for the F1 Grand Prix and MotoGP events at Silverstone, using a dashboard to provide a consolidated view of live data for event organisers to actively manage the transport and parking for the event.
	Operational decision making and road network maintenance	Data driven initiatives, such as the Local Highways Maintenance Incentive Fund, reward councils for demonstrating the practical application of data and technology to improve asset management, prioritise workload, and make evidence based decisions. Questions are designed to enable authorities to assess their progress on the journey to the implementation of good practice.
	Congestion management	The Collaborative Traffic Management (CTM) is a trial programme to demonstrate how the exchange of data between Highways England and local authorities can deliver better network management. For example, management at Dartford around the Tunnel ensures route strategies being provided to motorists when high levels of congestion occur.
	Improved visibility of transport services	Catch! is a real-time, crowdsourcing data service to provide transport professionals with next-generation data to solve transport problems. This granular, multimodal data helps to better understand existing infrastructure use and citizen demands and deliver more accessible, timely and cost-effective services.
Improved air quality and reduced emissions	Air quality through traffic flow	Greenwave, in Birmingham, is a user facing app which delivers real-time traffic light data to city centre drivers. It aims to transform fleet driver behaviour by allowing motorists to better navigate the lights in order to reduce stop and start traffic.

Benefit	Activity	Example Use Cases
Improved user experience	Multimodal journey planning	Delivering a seamless experience for users in Birmingham and the West Midlands, through Mobility as a Service app 'Whim', by combining transport services to allow customers to make multimodal journeys using bikes, buses, trains and taxis.
	Improving access to transport data	A partnership between Kent County Council, DfT, Highways England and Transport for London, the A2/M2 London to Dover Connected Vehicle Corridor will demonstrate how connected vehicle data can be exchanged to provide better traffic management and improved information to the user across the partnership.
	Parking efficiency	Westminster City Council opened up their parking sensor data. The data was used to provide a solution which allows drivers to locate free spaces, and then pay for them with a 'One Click' connected system. Motorists now have a much better chance of finding an available parking space quickly, ensuring a better driver experience.
	Real time journey planning	Transport API is a digital platform for public and privately owned transport services that companies can incorporate into their own systems to assist their customers' travelling needs, using open data feeds from key industry sources.
Support transport growth and innovation agenda	Flood management	A collaborative project, part funded by Innovate UK and National Environment Research Centre, focusing on improving the quality and quantity of data available from urban water infrastructure. Through improved accuracy of data, it allows an increased understanding of how to maintain the network to reduce flooding on the Highway.
	Urban planning	Uber Movement provides free and public access to travel times data, averaged and aggregated, to be used by urban planners. Through partnering with cities around the world, Uber Movement analyses and maps travel times to assess the impact of events, rush hours and road closures on urban mobility.

2.5. Implications of not opening transport data

Whilst there are clear benefits of more open transport data, the discovery also looked to understand the implications of a 'do-nothing' approach for local authorities—with the primary implication being on the transport sector's ability to capitalise on the increasing amounts of data available on road networks, from connected vehicle data to mobile data.

Local authorities will have less influence over their own transport network

Conflicting investment priorities within local authorities (such as social care, health, housing) impacts their ability to invest in transport assets and open data initiatives. There is, therefore, a risk that transport is 'de-prioritised' and investment in assets and infrastructure is not sustained. This will result in a reliance on poor quality data or private sector transport datasets to inform network behaviour—impacting local authorities' ability to proactively manage traffic and maintenance priorities on their network. Consequently, investment is required to improve data quality for operational, safety and future commercial exploitation.

Network performance and citizen experience will be suboptimal

Passengers are increasingly relying on journey planning apps and navigation systems to get real-time information on their travel routes from private sector products. Many of these products don't accurately cover the entire English transport network—limiting access and services for some users. Furthermore, the private sector solutions lack the granularity of data that only local authorities can provide (e.g. roadworks, incidents, height and weight restrictions).

Innovation will continue—but will not accelerate

Local authorities need to be able to keep pace with innovation in the transport sector—including the introduction of autonomous and connected vehicles—and the potential opportunities around Mobility as a Service (MaaS). There is a risk that a lack of high-quality, open data will restrict innovation within the sector, limiting the potential benefits to citizens, the environment and the economy.

2.6. Opening up key Local Authority datasets

A targeted approach to open data

The significant volume and breadth of local authority transport data highlights the importance of a targeted approach to opening key datasets which are of high value to the key user groups.

The types of local authority data that is most valued by the private sector is data with a level of granularity or uniqueness that the private sector cannot obtain by any other means (e.g. through connected vehicle and mobile data).

Traffic data was found to have the highest value across both the public and private sector. Sharing traffic data to build mobility solutions such as journey planners, control systems and connected vehicles can save businesses money by reducing congestion—worth £4bn pa in terms of saved time by 2025, in the UK. In addition, sharing data to optimise network efficiency and improve resilience can also save the UK freight industry at least £0.5bn pa by 2025.[11]

The key transport data areas explored through the discovery and the key benefits and challenges involved in opening up the data are outlined below.

Traffic data

Traffic data is viewed as highly valuable given the potential opportunity to use open data apps, sat navs and other devices to better plan journeys and reduce the amount of time lost due to congestion and delays. Historical traffic data is valuable for modelling and planning activities, as well as for traffic prediction. Real-time traffic data is similarly valuable, influencing navigation and facilitating live transport management.

Benefits

- Passengers will be able to plan their journeys better—adjusting their routes in light of new traffic information.
- The private sector will be able to innovate new solutions which can improve congestion management, benefiting all users and the environment.
- Allows bordering authorities (including Highways England) to better manage incidents and disruption across their boundaries.

Challenges

- Private sector companies are interested in real-time traffic data from local authorities—but getting data from 150+ separate local authorities is a real challenge.
- Data needs to be standardised and sufficiently granular e.g. The Department for Environment, Food and Rural Affairs (DEFRA) need to understand vehicle classifications as well as traffic flow.
- Ageing local authority assets can result in poor quality traffic data.

Parking data

Parking is different from most other transport data as it directly supports commercial and revenue raising activities for local authorities. Under the Traffic Management Act, all revenue from parking must be spent on transport related activities.

Benefits

- Better availability of data will improve parking efficiency, reducing congestion in urban areas and positively impacting air quality and the environment.
- Facilitates the optimisation of parking revenue whilst reducing operational costs around parking enforcement.
- Supports better decision making for users around price, availability, location of public and private parking.
- Open parking data will be an important component of any future MaaS offering for citizens.

Challenges

- Limited access to private parking data due to perceived commercial sensitivity.
- Lack of standardisation around parking data.
- A data and payment platform will be required to support future MaaS requirements, which does not currently exist.

11. The case for government involvement to incentivise data sharing in the UK Intelligent Mobility sector - Transport Systems Catapult 2017

Cycle and pedestrian data

There is, currently, a lack of consistent and reliable pedestrian and cycling data across local authorities, with data often being collected on an ad hoc basis. Whilst developers and shopping centres often undertake pedestrian surveys, this is not shared widely with local authorities and many rely on census data to understand citizens' modes and frequency of travel.

Benefits

- Open data can help join up the first and last mile travel needs of citizens, encouraging alternative sustainable transport modes.
- Ease of access to sustainable cycle and pedestrian transport information, such as routes and travel time, for example, will nudge individual behaviour towards healthy habits.
- Better visibility of multimodal transport trends can help to support air quality programmes and policies.

Challenges

- Automatic Traffic Count sensors are not always able to distinguish between cyclists and motorcyclists.
- Manual cycle and pedestrian counts are expensive and only provide a limited snapshot of the landscape.
- A lack of data prevents a comprehensive understanding of transport usage, inhibiting assessment of multimodal travel and the measurement of the return on investment (ROI) on projects.

Road network data

Asset data is considered one of the most important and frequently used datasets given the high costs associated with road maintenance. The current process to collate static road data is via a combination of local authorities, third party maintenance providers and transport consultancy firms.

Benefits

- Ability to use road condition data to improve operational efficiency and service levels across the road network.
- Better visibility of high risk highway assets that often require emergency and unplanned repairs
- Ability to improve network management through combining static asset datasets with real-time traffic flow data, weather and customer / demographic information.
- Facilitates the creation of high definition mapping data providing high quality information back to users.

Challenges

- Local authorities want the freedom to allocate funding based on data driven business cases.
- Traffic Regulation Orders are not currently in a standardised, machine readable format.

Bus and coach data

Local authorities have had mixed success in obtaining accurate and reliable bus data. Bus networks outside of London are mostly privatised and run by multiple bus operators which complicates the situation as certain datasets are viewed as commercially sensitive (primarily bus patronage and real-time bus locations).

Benefits

- Better information will allow passengers to plan journeys and travel more easily, encouraging greater bus use.
- Data on the patronage of authority-funded routes will allow local authorities to streamline these services, reducing operating costs.
- Improved bus data will give local authorities the ability to measure the success of modal shift initiatives

Challenges

- Limited access to bus data from private sector bus providers.

NB: The DfT Bus Data Discovery is already aiming to address this challenge.

RECOMMENDATIONS

This chapter details recommendations for local authorities, DfT, other public bodies and the private sector to enable better sharing of local authority transport data.

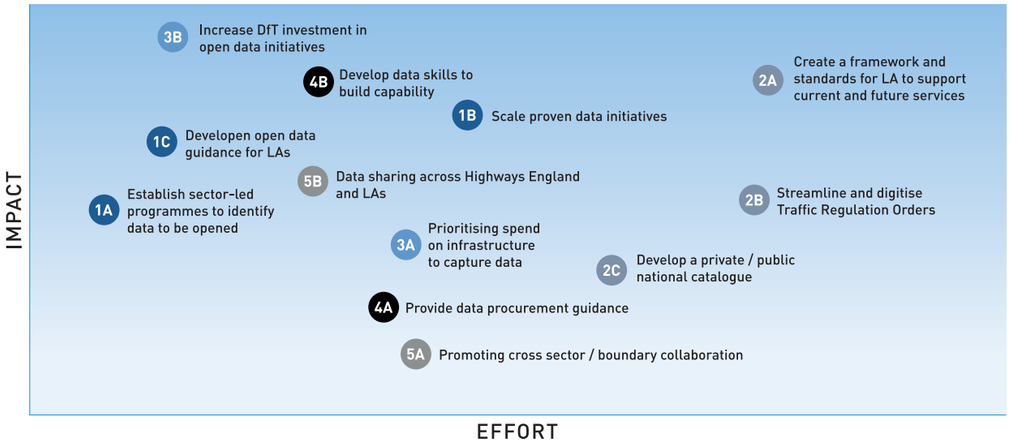
3.1 Recommendation approach

The discovery identified over 90 user needs across the public and private sector organisations who participated in the research. The following recommendations directly address the needs identified and aim to assist all local authorities to progress their open data agenda, regardless of their current levels of data maturity.

The recommendations are broken down into five key themes:

1. **Local authorities should be helped to focus on making more high-quality data open.**
   - 1A. Establish sector led programmes to identify data to be opened.
   - 1B. Work with local authorities to scale proven data initiatives.
   - 1C. Develop open data guidance for local authorities.
2. **The Department for Transport should sponsor identified data projects which encourage and foster better local authority transport services.**
   - 2A. Create a framework and standards for local authorities to support current and future services.
   - 2B. Streamline and digitise Traffic Regulation Orders.
   - 2C. Develop a private / public national data catalogue.
3. **More effective investment in infrastructure to harvest local authority data, and open data initiatives to improve data sharing.**
   - 3A. Prioritise spend on infrastructure to capture data.
   - 3B. Increase DfT investment in open data initiatives.
4. **Promote training and skills development within local authorities to develop internal capability.**
   - 4A. Provide data procurement guidance.
   - 4B. Develop data skills and capability building.
5. **Improve collaboration between local authorities, Highways England and the private sector.**
   - 5A. Promoting cross sector / boundary collaboration.
   - 5B. Improve data sharing across Highways England and local authorities.

The specific recommendations within each of these five themes have been evaluated and prioritised with the DfT to determine the impact and effort required for successful implementation. Impact is determined by scale, which is the size of the contribution towards the objective to 'increase openness of local authority transport data'. Effort is determined by cost, this is both in terms of the time taken and resource required to undertake the recommendation.



The discovery also highlighted the importance of all organisations across the public and private sector to take more responsibility for promoting open data—as these recommendations cannot be delivered by the DfT alone. The recommendations outline who, as well as what, is required for success.

3.2 Recommendations

1. Local authorities should be helped to focus on making more high-quality data open

> There is a need to lead by example by providing the guidance and use cases that effectively demonstrate to local authorities the 'how' and 'why' to open up local authority transport data.

1A. Establish sector led programmes to identify data to be opened

Use transport community groups to support local authorities in understanding the roadmap and priorities for open transport data, and to learn from proven use cases.

There are over 30 industry groups and bodies involved in the transport data ecosystem across the public and private sector. As a result, there is often confusion resulting from the many forums and groups demanding time and attention from local authorities. The discovery has demonstrated a need to align transport groups around a clear open data agenda—with tangible actions and recommendations to take forward.

How

The DfT needs to identify and work with focused transport groups to progress the combined recommendations and outputs from this discovery report to help shape the overall roadmap and guidance for opening up local authority transport data.

There is also a need to highlight existing open data projects so local authorities can understand how they can progress their own open data journey.

This should start with a consolidation of existing transport data projects across public bodies. A new or existing platform should then be used to create a centralised repository of planned, live and completed projects and initiatives. This will require establishing processes and procedures to ensure that use cases stay up to date e.g. what information should local authorities provide when receiving funding for a project (cost to deliver programme, time, benefits / value realised).

1B. Work with local authorities to scale proven data initiatives

Create a centrally funded team to replicate proven data initiatives to support local authorities in delivering successful data projects.

Whilst there are examples of data initiatives where local authorities are working successfully with the private sector and academic institutions, there is limited evidence of these projects being scaled across local authority boundaries or wider regions. There is a need to create a mechanism by which best practice data projects can be replicated so that more open data projects are successfully delivered and the benefits of open data are realised by a greater number of local authorities.

How

There is an opportunity to create a transport data expert team. This could form part of the remit of the central DfT data team or through publicly funded bodies such as Innovate UK or Transport Systems Catapult. The team should identify what best practice transport data initiative(s) it will focus on, and work with the local authorities to test and scale proven initiatives, as well as producing project documentation and 'how-to guides' to support a wider roll-out. The team should be geographically mobile and their remit should include building local authority skills and expertise as part of the delivery.

1C. Develop open data guidance for local authorities

Create clear and directive open data guidance, which local authorities can use to prioritise their transport data initiatives and investment.

Local authorities need guidance from DfT on the best approach to open transport data. They need to understand what data should be open and where it should be stored so that they can prioritise their efforts in opening their transport data. They also need guidance and support on competition law and privacy restrictions (e.g. GDPR) to ensure they do not prevent the opening up of important transport data due to either a misunderstanding or misinterpretation of privacy restrictions.

> 60% of survey respondents stated that 'adherence to security and privacy regulations' and the 'cost involved with making data open' were their biggest concerns for sharing data openly

How

The DfT should create guidance for local authorities on their transport data to reflect existing government guidance. The guidance should include an assessment on key transport datasets where customer information may be captured e.g. ANPR cameras and car parking enforcement, and advice on how to ensure GDPR compliance. Any guidance should align with ODI best practice, as well as other departmental open data strategies where relevant.

Local authorities should also invest the time to review their own approach towards data – including decisions on prioritisation of key datasets and investment in infrastructure needed to support this. There is an opportunity to use the existing industry groups and forums to support local authorities in defining their approach to open data in a way that promotes collaboration and alignment across regional boundaries.

2. The Department for Transport should sponsor identified data projects which encourage and foster better local authority transport services

> There are a number of key projects which will play a significant role in advancing the open transport data agenda. These projects will need strategic leadership, expert advice and funding from the DfT to ensure they are both sustainable and scalable.

2A. Create a framework and standards for local authorities to support current and future services

Build on existing local authority transport data systems to enable interoperable, integrated and connected transport services.

Current traffic management standards and infrastructure are not suitable for future innovation and collaboration. A local authority data system is required which supports interoperability between current and future assets and systems, whilst facilitating open data and MaaS.

"Integration with other data sources outside of traffic systems" was cited as the biggest challenge facing local authorities, after ongoing maintenance costs

How

The DfT needs to support the initial scoping of a future mobility platform to ensure that a sustainable business plan and funding model is put in place which maintains the level of standards and equipment going forward. Ways of working and scope of governance for any subsequent phases need to be defined, including relevant public and private user groups to ensure an interoperable and sustainable solution.

It is important to develop a comprehensive view of the landscape of new and existing data systems and platforms across the government and the private sector to clearly understand the different synergies involved (e.g. Highways England CTM Programme).

2B. Streamline and digitise Traffic Regulation Orders

DfT to sponsor a programme of work supporting local authorities in digitising their Traffic Regulation Orders (TROs), whilst also streamlining the current legislative process to implement or amend a TRO.

Traffic Regulation Orders (TROs) are a key transport dataset that would greatly benefit from being open and fully digitised, as the current process for amending and implementing a TRO is labour intensive, time consuming and costly. There is a growing demand for open, machine-readable TROs from both private sector developers, looking to improve parking information for citizens, and freight companies, needing to route their fleets more effectively. There is currently no centralised point of reference for TROs once digitised—as these are being stored on multiple websites / data portals. A lack of digital TRO data is already leading to private sector organisations collecting this information manually, potentially resulting in duplication and misalignment with local authority records.

59% of survey respondents cited that their local authority holds traffic regulation orders locally on a machine or filing cabinet

How

An opportunity therefore exists to work with the parking community to create a common data standard for TROs and identify exemplars for parking. The transport sector should start to share best practice examples and 'where to start guides' for local authorities, based on the use cases and experiences of early adopter local authorities who have already started digitising records. The DfT is also looking to work with the City of York to develop a proof of concept for digitised TROs for a medium sized city and will disseminate the lessons learnt. This will create a 'blueprint' to share with other local authorities.

In parallel, the DfT should look to create an action plan and proposals for legislative changes to simplify the process. And in the meantime, the British Parking Association and other interested parties are looking to produce practice guidance on the current legislative process to amend or implement a TRO.

2C. Develop a private / public national data catalogue

DfT to sponsor a project to understand whether there is a need for a centralised data catalogue which directly links users (OEMs/local authorities/technology providers) to the open data sources.

Local authority transport data is currently hosted in multiple locations (data.gov / third party platforms / local websites) with limited visibility of what data is available—and the quality of those datasets. Consequently, there needs to be an easier method for local authorities, app developers, and the private sector to understand what data is available where.

Many private sector organisations (e.g. OEMs) are willing to share non-brand differentiated data[11] with the public sector. However, there is currently no easy process for this.

How

A project is, therefore, required to understand the feasibility, business case and detailed requirements for a data catalogue in which the public and private sector can exchange data. Work has already begun around a National Access Point, which could be used to demonstrate the value of data sharing and to enable the development of best practice examples and use cases.

The data catalogue should allow for the exchange of different datasets in various formats, provide guidance on these and the standards used, and include both open (free) and commercially available datasets.

11. https://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-CAV-position-paper-final.pdf

3. More effective investment in infrastructure to harvest local authority data and open data initiatives to improve data sharing

> Many local authorities face conflicting priorities (e.g. social housing, urban regeneration and air quality) when considering their local transport strategy, which can impact investment in open data initiatives. Providing procurement and funding support which directly supports an open data agenda, will contribute towards easing this tension.

3A. Prioritising spend on infrastructure to capture data

DfT to support local authorities on infrastructure decisions to ensure the right data is being captured in the most cost efficient way.

The challenges faced by local authorities around the reliability of the assets being used to capture transport data can often result in inaccurate and/or incomplete data, as well as increasing the time required to retrieve and analyse data. This needs to be resolved before any value in opening up transport data can be realised.

> 68% of survey respondents indicated "ongoing maintenance costs" as the biggest challenge facing their traffic system

How

DfT should work with transport industry experts to undergo a review of the products currently used by local authorities compared with the transport assets and infrastructure available in the wider market. This will help to determine whether there are any commercial advantages to local authorities to be made from the collective bargaining of future transport assets and infrastructure, ensuring they obtain both the most cost effective and best in class products currently available.

DfT should also consider the central purchasing of key datasets from private sector providers to remove or supplement the requirement for local authorities to capture this data through owned assets.

3B. Increase DfT investment in open data initiatives

Increasing the number of grants and competitions targeted at opening data to test and validate new projects.

There is a need for DfT to fund open data projects which will increase their visibility of in-flight projects and will enable DfT to spot early opportunities to collaborate across local authorities, speeding up the process of learning what successful projects look like. Providing targeted funding to local authorities to invest in open data initiatives will communicate a strong message around DfT's commitment to the open data agenda.

> 40% of respondents cited "providing funding to improve data sharing" as the most important role for central government in data sharing—more than any other role

How

There is an opportunity to use the existing CONTACT group to coordinate responses to maximise investment opportunities e.g. joint responses across several local authorities. There is a need to provide a clear view on what projects have been funded previously, and whether these projects delivered against the original key performance metrics and business case.

DfT should look to run targeted competitions centred on businesses (primarily SMEs & start-ups) and/or universities working with local authorities on tackling specific transport issues. E.g. series of data-hack / sprint events using local transport data.

Going forward, there is an opportunity to increase DfT funding opportunities that support the open data agenda. This will ensure a lean approach towards testing and validating new projects and initiatives, and will help to enforce the requirement for local authorities to communicate outcomes of data initiatives to ensure the DfT and local authorities can replicate successes and learn from failures.

4. Promote training and skills development within local authorities to develop internal capability

Local authorities recognise the existing skills gap which contributes to their ability to effectively create value from transport data. To tackle this challenge both formal and informal training opportunities can help develop internal capability.

4A. Provide data procurement guidance

Provide more guidance and training to local authorities around data procurement and data ownership rights.

Challenges around the procurement process for transport systems and assets have resulted in local authority data been locked in third party systems, together with limitations on the ability for local authorities to drive innovation and data analysis. Local authorities feel they are not given enough training or guidance on procurement, which impacts their confidence (and willingness to innovate) when investing in new data services and technology.

How

There is an opportunity to utilise the DfT funded research (in collaboration with the Transport Technology Forum and the Institute of Engineering and Technology), which is already underway, to review data procurement in local authorities. There needs to be a detailed understanding of the differing needs of local authorities (urban/rural) to determine the contractual details, for example, the support hours required.

DfT and the local authoritie's procurement functions should work together to provide clear guidance on procurement best practice and data sharing agreements e.g. data ownership and sharing rights and best practice examples of contract types. Training should also be provided to develop knowledge and understanding within local authority procurement functions, either via workshops or online training tools.

4B. Develop data skills to build capability

Develop technical and analytical data skills and capability through provision of effective training for local authorities.

There is a recognition within the public sector that there is a technological skills deficit within transport, and that we need to ensure we are building the next cohort of traffic engineers. There is also an increasing demand for deeper technical and analytical skills and capability to support the adoption of data-driven mobility services.

How

There is an opportunity to use existing training platforms like the EU funded CAPITAL project and the IET Academy to develop a clear training curriculum for transport professionals which covers technical training on specific systems and tools, as well as more general data analysis. DfT should also look to capitalise on the UK government "Year of the Engineer" campaign to inspire the next generation of engineers, and support the longer term plans to tackle the skills gap within the transport sector.

University collaborations have been a major part of many of the local authoritie's journeys, using their deep skills and expertise to effectively use transport data in innovative ways. Recognising the value of these partnerships and formalising the channels will continue to help build internal capability within local authorities.

CASE STUDY The National Innovation Centre for Data at Newcastle University is linking up leading academic talent in universities with industry and the public sector to help them develop the skills they need to solve real world problems using advances in data science

5. Improve collaboration between local authorities, Highways England and the private sector

> The project has looked at opening transport data across England and found variations in data maturity across the country. To truly enable the benefits of open data, a holistic approach is required, which crosses boundaries regardless of who is responsible for them.

5A. Promoting cross sector / boundary collaboration

Use regional groups and incentivisation schemes to promote collaboration and data sharing initiatives across different local authorities and the private sector.

There is recognition by local authorities that a localised view towards funding and data collection can lead to a 'boundary effect' where services and data are not being shared or thought about consistently across the country. Examples of effective communication and collaboration exist in certain regions such as, the A2/M2 London to Dover Connected, but such co-operation varies significantly across different local authorities.

How

There is an opportunity to use grants and funding to financially incentivise cross-boundary projects and procurement contracts where the benefits can be felt across multiple local authorities. Results of these collaborative projects should be clearly publicised to demonstrate the benefits of data sharing across organisations.

Greater use should be made of transport groups such as England's Economic Heartland, Transport for the North, Transport for the South East and Midlands Connect to provide guidance and structure to cross-boundary collaboration e.g. procurement, data sharing platforms.

CASE STUDY From April 2018, Transport for the North will be England's first sub-national Transport Body, overseen by the 19 different transport authorities across the North. As a collective, they are looking to transform road, rail, sea, and air connections to help drive long term economic growth.

5B. Improve data sharing across Highways England and local authorities

Working more effectively across Highways England and local authorities to increase network optimisation and reduce disruption.

The Traffic Management Act 2004 requires neighbouring highway authorities to collaborate for traffic management purposes, including Highways England and adjoining local highway authorities. Local authorities need to understand what is happening on the Highways England network, and vice versa, so that both parties can reduce congestion and disruption and work in a collaborative way to resolve issues.

The discovery has validated the need for improved transport data across both Highways England and local authorities, and highlighted some of the potential opportunities to make this a reality. However, significant further work is required to tackle this issue and help both parties move beyond current ad hoc initiatives.

How

A review and refresh of communication channels and ways of working needs to be established between Highways England and local authorities. There is an opportunity to build on existing initiatives such as the Collaborative Traffic Management (CTM) project to demonstrate the value of data exchange between Highways England and other highway authorities, and to ensure future mobility platforms consider the needs of both local authorities and Highways England from the outset.

Highways England and the DfT should also instigate a roundtable with senior representatives from both organisations to explore opportunities for a formal data-sharing scheme, with the objective of identifying how data can better integrate transport networks.

APPENDIX

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Glossary of terms

ATC	Automatic Traffic Count
CAV	Connected and Autonomous Vehicles
DfT	Department for Transport
DEFRA	Department for Environment, Food and Rural Affairs
GDPR	General Data Protection Regulation
GDS	Government Digital Services
LHAs	Local Highway Authorities
MaaS	Mobility as a Service
MTC	Manual Traffic Count
MVP	Minimum Viable Product
ODI	Open Data Institute
OEM	Original Equipment Manufacturer
SCOOT	Split, Cycle, and Offset Optimisation Technique (Method of traffic signal control)
SDL	Single Data List
SRN	Strategic Road Network
SME	Small and Medium Sized Enterprise
TMA	Traffic Management Act
TRO	Traffic Regulation Orders
UTC	Urban Traffic Control
UTMC	Urban Traffic Management and Control
VMS	Variable Message Signs

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About North Highland

North Highland is a global management consulting firm known for helping clients solve their most complex challenges related to customer experience, performance improvement, technology and digital, and transformation. We add value and support our clients across the full spectrum of consulting, from strategy through delivery. We bring the big ideas, then we make them real.

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