Baseline Synthesis

Transforming Cities Fund
National Evaluation

INDUSTRIAL STRATEGY

TRANSFORMING CITIES FUND

transport for quality of life

sustrans

UWE Bristol University of the West of England

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Image credit

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Notes for the reader

Local area codes used herein

CAM Cambridgeshire & Peterborough *
DER Derby & Nottingham
DOR SE Dorset
GM Greater Manchester *
LEI Leicester
LIV Liverpool City Region *
NE North East
NOR Norwich
PLY Plymouth
POR Portsmouth & SE Hampshire
PRE Preston
SHE Sheffield City Region
SOU Southampton
STO Stoke on Trent
TV Tees Valley *
WE West of England *
WM West Midlands *
WY West Yorkshire

* Indicates Mayoral Combined Authorities at the start of the Fund, allocated funding on a per capita basis. All other local areas originally allocated funding based on a competitive bidding process.

Terminology & dates used herein

The use of 'local area' herein refers to a place awarded Transforming Cities Fund (TCF) funding (as these may encompass more than one local authority or city).

A 'locality' is a smaller geographical area within a local area, such as a specific local authority area, travel to work area, neighbourhood or site where activities are focused.

'Schemes' are individual projects that local areas are delivering, which, taken together, comprise the overall TCF 'programme' they are delivering with DfT funding.

The term 'the Fund' refers to the national TCF initiative - comprising all 18 programmes being delivered by the local areas receiving funding.

Year ranges written using a dash (i.e. 2016-17) typically indicate averaged values from data collected across multiple calendar years. For example, a 2016-17 value would indicate an averaged value of data collected in 2016 and 2017.

Year ranges written using a slash (i.e. 2016/17) mean a single 12-month period, typically aligned to a financial year. For example, 2016/17 would indicate data for the period April 2016 to March 2017.

Impact of contextual factors on Fund scale & scope

The TCF programmes were designed prior to March 2020. In addition to varying local factors in TCF areas, subsequent global events, including the Covid-19 pandemic and the conflict in Ukraine, have impacted supply chains, scheme costs and delivery timescales of the Fund as a whole, which has made it necessary to adapt local TCF programmes. These adaptations will affect both the scope and scale of what the Fund delivers overall and the timelines within which local programmes will be completed (originally intended to be by March 2023).

This baseline report is based on the data that was supplied by local areas between July 2021 and May 2022, which reflected the ambition and timelines of each local programme at the time of data supply. Any changes to the final scope, scale or timeline of the Fund will be reflected in the national evaluation's final report, which will update these baseline findings.

City Region Sustainable Transport Settlement funding

In 2022, it was announced that eight TCF areas (now all Mayoral Combined Authorities) would be awarded City Region Sustainable Transport Settlement funding for the financial years 2022/23 to 2026/27. In part, this funding replaced the TCF funding allocations for these areas for 2022/23. Decisions are currently pending about whether schemes with TCF and CRSTS funding will be included within the final TCF evaluation. How this will be accounted for across the TCF and CRSTS evaluations is to be confirmed.

SUMMARY

The Transforming Cities Fund is a Department for Transport (DfT) fund investing in local transport capital projects in cities and city regions. It includes investment in public transport projects; cycling and walking infrastructure; traffic management; electric vehicles; and other new technologies. The Fund was originally designed as a five-year initiative, to be delivered between 2018/19 and 2022/23, though subsequent events, including local factors, the Covid-19 pandemic, the conflict in Ukraine and the development of the City Regional Sustainable Transport Settlements, mean that the scope and timing of delivery are being adapted.

This report summarises baseline analysis that has been undertaken for the Transforming Cities Fund (TCF) national evaluation, and provides two key types of information:

a. It describes the key research questions that the evaluation intends to answer, and the evaluation framework that has been developed around these, which will be used to produce the final evaluation report.

b. It describes analysis of the datasets that will be used to answer the research questions, including the likely nature of available data, and trends in key metrics in the TCF areas prior to the beginning of TCF, as context for understanding subsequent trends.

Nature of the evaluation framework

The first part of this report outlines the **objectives** of the Transforming Cities Fund and presents **logic maps** explaining how the Fund is expected to meet its objectives. It sets out 12 **research questions** which the evaluation is intended to answer, relating to the causal chains defined in the logic maps, in order to assess whether the Fund meets its objectives.

Data collection and analysis has been structured as eight **work packages**, defined in relation to particular topics and data sources. For example, Work Package 2: TCF Local Area Analysis deals with all national secondary data sources available at local authority district or county level, whilst Work Package 7: Cycling focuses very specifically on individual cycle counter data available for routes affected (and not affected) by TCF.

These work packages will be used to answer the research questions. Some work packages, like Work Package 4: Town & City Centres, which deals with data available from town/city centre cordons, inform a number of the research questions. Other work packages, such as Work Package 6: Rail, only inform one research question.

There are various **key features of the analysis:**

- It is focused on the main types of expenditure (rather than an evaluation of every single scheme).
- It takes place at a number of different geographical scales, with the intention that any changes at area-wide level can then be linked to changes observed in more specific locations.

- More than one source of data is used to look at each research question where possible.
- Secondary data is used where possible.
- Control data is used where possible – specifically, in Work Packages 2, 5b, 6, 7 and 8, which should enable the use of difference-in-difference analysis. This is important given the turbulence to travel patterns created by the Covid-19 pandemic, economic trends and other policy measures. Where this is not possible, descriptive comparisons will be made with other data.
- Local area judgement has been used as a key basis for identifying and selecting intervention and control sites, with selected locations then checked against objective data sources where possible, and iterative discussions held with local areas as required.
- Careful account is taken of the timing of schemes.
- The nature of any data supplied by local authorities has been checked as far as possible (without undertaking a direct audit of primary data collection).
- In some cases, particularly to answer research questions about productivity, indirect measures of impact are used as well as direct measures.
- Sample sizes for site-specific evaluations are reasonably large, to enable analysis to assess changes in the *distributions* of results, not simply changes at individually-paired intervention and control sites, given the large number of confounding factors that are always at play.

Baseline results

Baseline results are presented in relation to each of the research questions. These are based on information that was supplied by local authorities between July 2021 and May 2022. Data relating to specific TCF schemes is likely to change by the final analysis, as local programmes are adapted. Nonetheless, the information provided gives an indication of the nature of analysis that should be possible.

At the time of baseline analysis, anticipated DfT TCF spending comprised £2.3 billion, with total spending on schemes estimated to be £3.6 billion. For the whole Fund, spending was relatively evenly spread across different sustainable transport modes (rail, light rail, buses, active travel and multi-modal), with comparatively less spending on cars, vans and traffic management. However, individual TCF local area programmes were each focused very differently, in line with local priorities and opportunities.

A long list of transport improvements were expected to result from the spending, including new rail and metro stations; rail improvements; better, cleaner bus services with improved ticketing and information; more park-and-ride schemes; active travel routes; public bike hire services; more pedestrian-friendly neighbourhood and city centre areas; improved traffic management; more charging points for electric cars; and low carbon ferries.

Trends in travel and related metrics were analysed using a variety of data sources, for the baseline period of 2009-11 to 2015-17, where possible. General

trends are described below, although there was often considerable variation between specific locations.

As a broad overview, during the baseline period, levels of walking and cycling were largely stable or increasing slightly; bus use was mostly declining; rail use was generally increasing; and use of light rail systems was mixed (with two systems showing an increase and two showing a decline).[1] Traffic levels in the TCF areas were mostly increasing. Travel by both car and non-car modes into town and city centres was, on average, falling. In all cases, changes in population and inward commuter flows may have affected observed trends, as well as changes in choices by existing residents.

Per capita road traffic casualty rates were mostly falling (though were, at best, stable for cyclists). Bus punctuality was often improving, though service provision was often declining. Light rail performance was relatively stable, albeit with some periods of significant disruption, and more variability on some systems than others.

For the TCF areas as whole, job numbers, the employment rate (measured as jobs per person) and productivity were increasing, whilst unemployment had fallen (specifically between 2013 and 2016).[2] Compared with a set of comparison areas, for the TCF areas as a whole, job numbers and the employment rate were increasing faster. However, in absolute terms, unemployment (measured by benefit claims) was higher (though showing a similar trend to the comparison areas), whilst productivity was lower, and had been increasing more slowly.

For the TCF areas as a whole, during the baseline period, vehicle emissions had not reduced in absolute terms, but had reduced on a per capita basis. Population had been increasing.

Local areas were expecting a substantial number of housing growth areas and air quality management areas to benefit from TCF schemes. The Fund had also been a source of employment, with estimates from 17 local areas suggesting that it had been directly responsible for over 450 FTE jobs in local authorities in the financial year 2020/21, together with many jobs being supported in related roles (such as public transport operation or infrastructure construction).

Final analysis will concentrate on drawing together the results from the different data sources to comment both on general trends, and on the experiences of particular TCF local areas, both in their own terms and in relation to trends in comparison areas.

[1] There was a change of light rail operator in the West Midlands in 2018/19, meaning trend analysis could not be undertaken.

[2] This was also the case for all TCF areas individually, with the exception of one where productivity had not increased.

1. INTRODUCTION

After the **overview of the Transforming Cities Fund** (TCF) and its objectives below, this document is structured as follows:

- **Section 2: Logic maps** of how the TCF is expected to meet its objectives, and the **research questions** to be answered through this evaluation.
- **Section 3:** An **overview of the national evaluation framework** intended to address the research questions, including the key principles used to create it.
- **Section 4:** Details of the **work packages** feeding into the overall evaluation, including the **methodologies and data sources** used to answer the research questions.
- **Section 5:** Insights from **baseline data analysis** relevant to the research questions.
- **Section 6: Conclusions**.

1.1. Overview of the Transforming Cities Fund

The Transforming Cities Fund is a Department for Transport (DfT) fund aimed at investing £2.45 billion into local transport capital projects. It has included two rounds of investment (Tranche 1 and Tranche 2) and ring-fenced £92 million for 'Future Transport Zones'. Funded schemes include investment in public transport networks, routes, interchanges, vehicles and ticketing; cycling and walking infrastructure; traffic management; electric vehicles; and other new technologies. TCF was originally designed as a five-year fund, to be delivered between 2018/19 and 2022/23. It is targeted at cities and city regions.

The headline objectives of TCF are:

1. **Supporting local productivity:** For example, by delivering improved capacity on commuting trips; access to employment centres, enterprise zones and development sites; improved reliability of transport; and support for economic growth.
2. **Supporting sustainable travel:** For example, reducing carbon emissions by bringing about an increase in the volume and proportion of journeys made by low-carbon sustainable modes, including walking and cycling.

Where possible, local area programmes were also asked to contribute to four further objectives:

1. **Supporting housing delivery**.
2. **Improving air quality:** particularly to support compliance with legal limits in areas where NO_2 exceedances have been identified.
3. **Delivering wider social and economic benefits for the community:** For example, improving skills and use of apprenticeships; accessibility and social inclusion; reducing area disparities and deprivation.

4. **Aligning with the Future of Mobility Grand Challenge:** For example, schemes that are robust to a range of futures, given wider societal and technological changes such as urbanisation and the uptake of connected and autonomous vehicles.

Funding was allocated to 18 local areas. At the time of funding award, six of these local areas were Mayoral Combined Authorities that were awarded funding on the basis of a per capita formulation. Collectively, these were awarded £1.08 billion. Individual awards to these Mayoral Combined Authorities ranged from £75.5 million to £321.5 million.

Twelve other local areas were awarded TCF funding on a competitive basis. Of these, two have become Mayoral Combined Authorities since the start of the TCF period. The competitively funded authorities were awarded a share of £1.22 billion of Tranche 2 funding; with funding awards for individual areas ranging from £29 million to £317 million.

In 2018/19, ten of the competitively funded areas received a share of an additional £60 million of Tranche 1 funding for 'quick win' schemes.

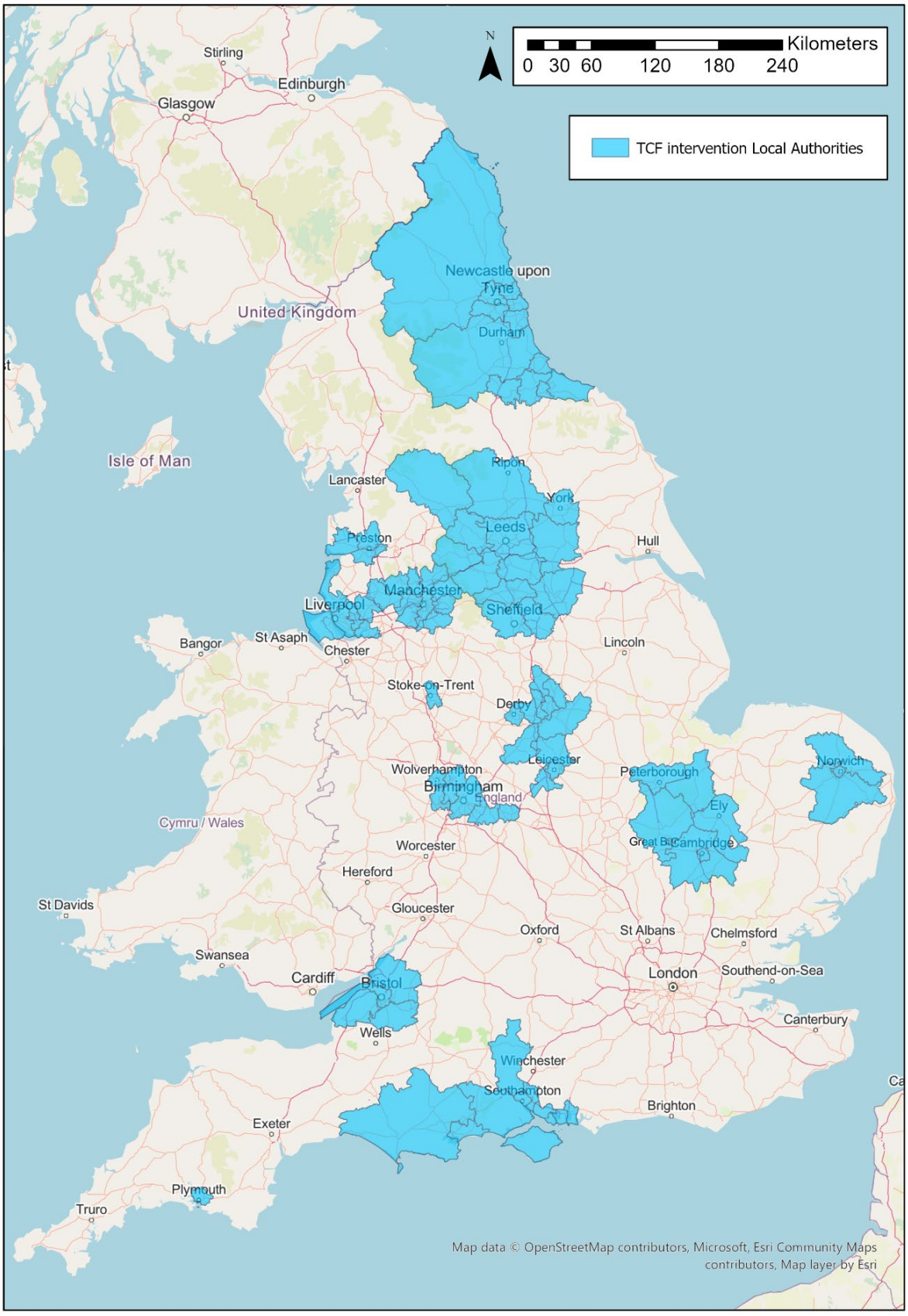
The separate sub-pot of £92 million for Future Transport Zones was allocated to four of the areas and is being evaluated separately.

The **aim of this evaluation** is to review the impact of the main funding received by both the Mayoral Combined Authorities and the competitively funded areas between 2019-20 and the end of the Fund (i.e. excluding Tranche 1 activities and the funding for Future Transport Zones). It is intended to provide an assessment of the effects of the Fund as a whole, and to complement local monitoring activities which the local areas were also required to undertake to demonstrate the effects of their programmes.

As a result of global events, including the Covid-19 pandemic, the conflict in Ukraine and associated issues with supply chains, together with varying local factors in TCF areas (e.g. changing political control, outcomes of public consultations and practical issues encountered during construction), the costs of some schemes, and the delivery timescales of the Fund as a whole, are changing. The final report for this evaluation will reflect the final shape of the Fund.

The geographical locations of the 18 TCF areas are shown in Figure 1.

Figure 1: Location & geographical extent of TCF local areas



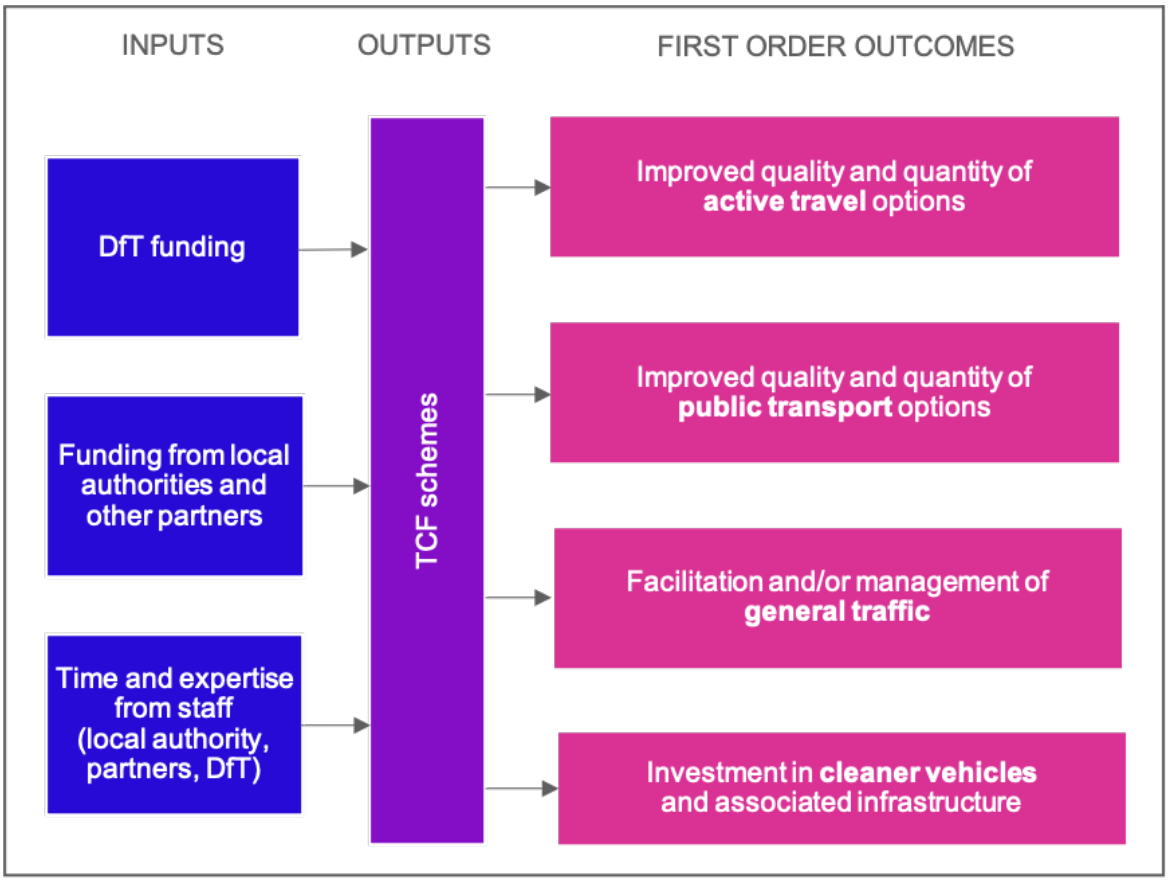
2. LOGIC MAPS & RESEARCH QUESTIONS

2.1. Logic maps

Given the complexity of the Fund, a series of simple logic maps (Figures 2-5) were created to ensure the national evaluation focuses on the TCF's key objectives. First order outcomes are shown in pink. Second order outcomes are shown in dark green, whilst light green shading indicates wider impacts. For simplicity, wider impacts are only shown on one logic map each.[3] In practice, all of the logic maps below are linked. For example, the reduction in car use intended to result from supporting sustainable travel (shown in Figure 3), in turn, is part of the way in which the Fund will reduce vehicle emissions (shown in Figure 5).

These logic maps have been used to define the following 12 research questions. These research questions will not test all of the links shown in the logic maps but focus on those that are most important for the Fund.

Figure 2: Logic map – core of the TCF



[3] While presenting a single logic map for the Fund overall is possible, the number of different interactions would make the diagram overly complex and reduce its usefulness.

Figure 3: Logic map – understanding how TCF supports sustainable travel

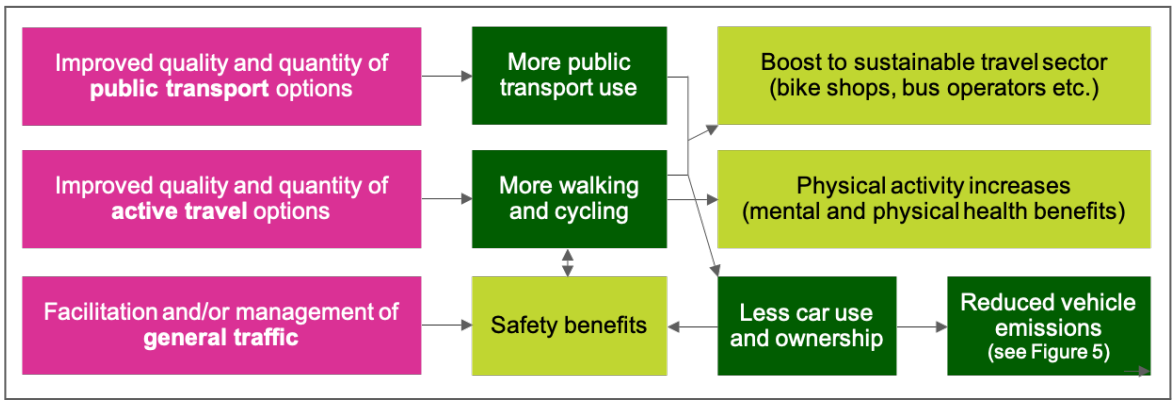


Figure 4: Logic map – understanding how TCF supports productivity

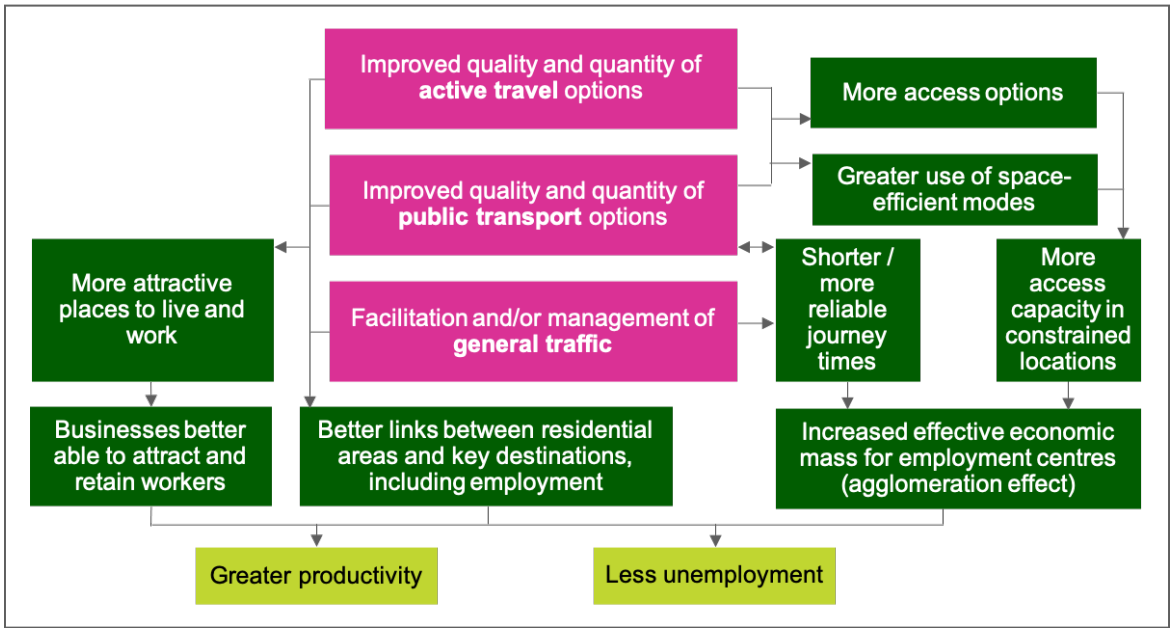
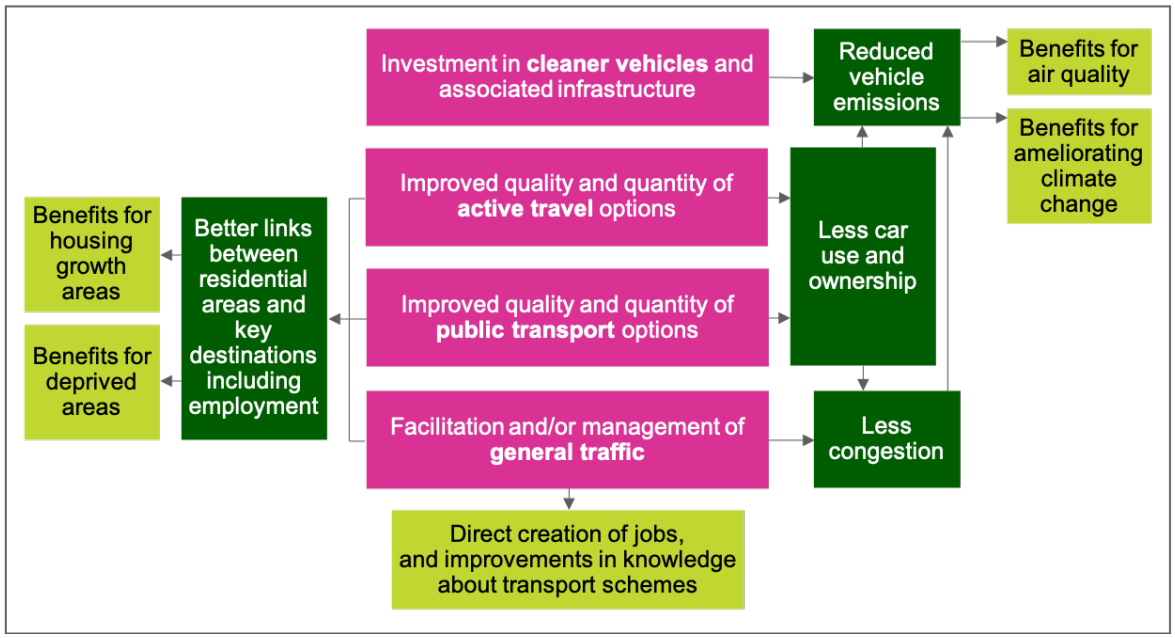


Figure 5: Logic map – understanding how TCF supports other objectives



2.2. Research questions

RQ1. **What were the financial inputs to the TCF?**

Supporting sustainable travel

RQ2. **What improvements to sustainable travel options resulted from TCF spending?**

RQ3. **Did the TCF schemes increase levels of walking and cycling**, compared with what might otherwise have happened, and were there associated effects on pedestrian/cyclist safety?

RQ4. **Did the TCF schemes increase use of public transport**, compared with what might otherwise have happened?

RQ5. **Were there the effects on car ownership/use**, compared with what might otherwise have happened?

Supporting productivity

RQ6. **Did the performance of bus and light rail services improve**, overall and in particular locations?

RQ7. **Did TCF schemes change the number or share of people accessing town/city centres by non-car means**, compared with what might otherwise have happened?

RQ8. **For those living near new public transport infrastructure, how did access to jobs via public transport (plus walking) change**, and were there associated effects on unemployment?

RQ9. **Did the TCF areas experience increases in productivity (as measured via Gross Value Added) and employment** compared with non-TCF areas?

Supporting other objectives

RQ10. **Did TCF schemes reduce vehicle emissions,** compared with what might otherwise have happened?

RQ11. **Did deprived localities benefitting from TCF schemes experience lower rates of unemployment,** compared with what might otherwise have happened?

RQ12: **Did TCF spending support wider objectives** relating to housing growth, air quality, direct job creation and the Future of Mobility Grand Challenge?

3. OVERVIEW OF THE EVALUATION APPROACH

3.1. Key principles

Evaluating the TCF is challenging for a number of reasons. It is a large, complex initiative, consisting of many different strands of work, with different areas all implementing somewhat different programmes of schemes. It is taking place in a rapidly changing context, due to both global factors (including the effects of the Covid-19 pandemic and the conflict in Ukraine), and a range of new policy initiatives, which often have complementary or overlapping aims. Many of the areas will have benefitted from other initiatives (such as the Active Travel Fund), and are supplementing their TCF funding with funding from other streams. For these reasons, the overall evaluation approach has been formulated in accordance with the following ten principles:

1. **Focusing on the main types of TCF expenditure**. This is not straightforward as the Fund is split across a large number of scheme types. However, the focus on new public transport infrastructure (including new park-and-ride provision), upgrades to existing rail stations, bus priority corridors and cycle schemes reflects elements common to many of the local area programmes. Measures to facilitate or manage general traffic receive relatively little attention, as they are not a major part of the Fund overall.
2. **Use of secondary data wherever possible.** This is in order to minimise the data collection burden on local areas, and to maximise data standardisation across local areas.
3. **Use of control data wherever possible** – specifically, in Work Packages 2, 5b, 6, 7 and 8, which should enable the use of difference-in-difference analysis. This is important given the turbulence to travel patterns created by the Covid-19 pandemic, economic trends and other policy measures. Where this is not possible, descriptive comparisons will be made with other data.
4. **Use of local authority judgement about intervention and control areas**, in conjunction with guidance from the evaluation team about area selection, and (where appropriate) additional objective data (for example, on levels of deprivation). Local area knowledge was prioritised when selecting areas, given that the authorities delivering TCF were best placed to know where their schemes are likely to make a difference, and which places are likely to be most similar to those benefitting but will not be receiving equivalent interventions (either through TCF or other initiatives). This is discussed further in Section 3.3.
5. **Analysis at several different geographical scales**, in order to understand whether the local areas as a whole have experienced change, and to assess whether there has been change in smaller localities within each local area that are most likely to benefit from TCF schemes, which should provide clearer evidence about cause and effect. Given the range of different factors that will affect observed outcomes, being able to focus on changes in particular localities and authorities, as well as at a more macro level, will be key in terms

of assessing how far any area-level changes may be due to the TCF schemes.

6. **Triangulation between different data sources.** Where possible, research questions have been addressed using more than one data source, on the basis that if the results from several different data sources tell the same story, we can have greater confidence in the findings.
7. **Understanding the timing of when schemes are likely to cause change**, so that changes in trend can be assessed to understand whether they appear directly linked to changes in travel options.
8. **Looking at both direct and intermediate measures of interest.** This is particularly the case for evaluating productivity. Specifically, as indicators that TCF may have enhanced productivity, the evaluation will focus on measures relating to public transport performance; changes to travel into town and city centres; and changes in access to employment for residents living near new public transport infrastructure; as well as looking directly at GVA (Gross Value Added) and a potential covariant measure, unemployment. This is because evidence from the direct measures may be relatively uninformative in the timescales available for evaluation. Given the causal chains set out in the logic map (Figure 4), if there have been improvements to these 'intermediate' measures, it is highly plausible that these would contribute to productivity improvements.
9. **Quality checks of data collected**. For the data collected from local areas (with the exception of the 'headlines data' for Work Package 3: Local Headlines) consistency has been ensured as far as possible by providing local areas with guidance documents including definitions of data required. All data has been checked for gaps or inconsistencies, including visual inspection and automatic processes to identify data values in time series data that seem incorrect (e.g. unexpected spikes in data from automatic cycle counters). The on-going relationship, primarily between the TCF areas and the national evaluation team's Regional Coordinators, has enabled clarifications and corrections to be sought as necessary. However, auditing of primary data collection processes has not been undertaken.
10. **On-going revision of the evaluation approach to reflect latest developments.** For various reasons, at both the local and national levels, the nature and timescales of what the Fund will deliver are in flux. In addition, some of the data sources are also changing over time – ranging from strategic changes to national survey designs (notably the National Rail Passenger Survey) through to dramatic changes in some of the data being collected (for example, with sharp changes in flows recorded at some cordon surveys as a result of Covid-19). The processes developed in the evaluation, including the use of control data, the inclusion of a wide range of data sources and schemes at baseline stage, and the development of documentation for tracking schemes and outputs, mean that it should be possible to produce robust conclusions in the final evaluation. However, the final details of the number of schemes evaluated in each work package is likely to change at that point.

3.2. Work packages overview

In order to address the research questions in an efficient way, the analytical tasks have been organised into eight **work packages**.[4] These work packages are as follows:

- **Work Package 1 – Schemes & Outputs:** Details of TCF schemes and expected outputs, based on local area information
- **Work Package 2 – TCF Local Area Analysis:** TCF area-level analysis of outcomes, based on secondary data
- **Work Package 3 – Local Headlines:** Review of key transport data series collected by TCF local areas
- **Work Package 4 – Town & City Centres:** Analysis of travel into town and city centres in TCF local areas, based on cordon and screenline data
- **Work Package 5a – Light Rail:** Analysis of TCF impacts on the use of light rail, based on local area information
- **Work Package 5b – Buses:** Analysis of TCF impacts on the use of buses, based on bus company data
- **Work Package 6 – Rail:** Analysis of TCF impacts on the use of trains, based on secondary data
- **Work Package 7 – Cycling:** Analysis of TCF impacts on cycling, based on automatic counter data
- **Work Package 8 – TCF Locality Analysis:** Site-specific analysis of TCF outcomes in areas of deprivation and near major public transport schemes, based on secondary data

The data sources and methodology for each work package are briefly summarised in Section 4.

Work packages vary in terms of which research questions they relate to. Some, such as Work Package 2: TCF Local Area Analysis, are relevant to many of the research questions, whereas others, like Work Package 7: Cycling, are relevant to only one. For reference, Table 1 maps the work packages against the research questions.

For continuity across all work packages, as far as possible, average data for 2009-11 (or similar financial years) has been used as a 'pre-baseline' period, whilst average data for 2015-17 has been used to generate a 'baseline', with the change between these two time points used to indicate the pre-TCF trend. However, other baselines have been used where required by data limitations.

[4] Work Package 5 has been split into two separate reports – part a on light rail and part b on bus use.

Table 1: Work packages & research questions

	WP1 Schemes & Outputs	WP2 TCF Area Analysis	WP3 Local Headlines	WP4 Town & City Centres	WP5 Light Rail & Buses	WP6 Rail	WP7 Cycling	WP8 TCF Locality Analysis
RQ1: Financial inputs?	✓							
RQ2: Travel improvements?	✓							
Changes in:								
RQ3: Walking and cycling levels and safety?		✓	✓	✓			✓	
RQ4: Public transport use?		✓	✓	✓	✓	✓		
RQ5: Car ownership and use?		✓	✓	✓				✓
RQ6: Public transport performance?		✓	✓		✓			
RQ7: Travel into town and city centres?				✓				
RQ8: Job access near new public transport?		✓						✓
RQ9: Productivity and employment?		✓						
RQ10: Vehicle emissions?	✓	✓						
RQ11: Unemployment in deprived areas?								✓
RQ12: Factors relevant to wider objectives?	✓	✓						

Note: WP = work package RQ = research question

3.3. Selection of schemes & controls

Work Packages 1 to 3 are aimed at gathering data for the TCF areas (or their component local authority districts) as a whole. Work Packages 4 to 8 are focused on specific places and schemes. The approach for selecting these has been similar across the work packages.

First, local areas were asked to identify **locations or schemes where TCF initiatives are anticipated to lead to an observable effect on travel choices**. Local areas were given guidance in undertaking this task to ensure a consistent approach.

Second, local areas were asked to identify '**control' locations – i.e. locations that are similar to the places where change is expected, but that will not receive comparable investment during the TCF period**. Guidance was also provided on criteria for matching locations.

For both interventions and controls, the research team reviewed the locations identified by the local areas to ensure that choices were consistent with the guidance that had been provided.

Locations or schemes vary in the degree of anticipated impact. *A priori* rationales for dividing locations by the intensity or nature of interventions proved unfruitful, given the wide range of schemes being implemented. Instead, the final evaluation will identify which interventions have performed best (compared with their controls), and seek to understand whether there are particular features which plausibly explain high performance.

Considerable care was taken to identify appropriate control locations. Where possible, locations were checked against objective sources (e.g. the Indices of Deprivation when identifying 'deprived areas' or data on rail station patronage to assess comparability). In addition, across all work packages, trends during the pre-baseline period at control locations were compared with trends at intervention locations. Extreme examples were (or will be) queried with local areas, and, where relevant, a more appropriate match will be found.

For each work package, the proportion of intervention/control pairs with better pre-baseline trends at the intervention location is largely similar to the proportion with better pre-baseline trends at the control location; and, where data from intervention/control pairs has been combined, the pre-baseline intervention trend is largely similar to the control trend. In the final evaluation, our expectation is that **the distribution of differences will change.** Consequently, although not all intervention sites may outperform their respective control sites, averaged across all sites, this should be the case.

As a 'sensitivity test', within each work package, an analysis of the performance of the sub-group of the pairs which appeared most well matched at baseline will be conducted, to see if results are similar to the combined results for the full datasets.

4. WORK PACKAGE DETAILS

This section summarises the data sources and methodology for each work package. The detail of each work package and its baseline analysis is contained within one of nine technical annexes to this report.

These technical reports are available from DfT on request (by sending an email to local.evaluation@dft.gov.uk). Readers should note that they were based on the best available information supplied by local areas at the time of data collection (July 2021 - May 2022) and do not reflect the final packages of schemes to be delivered by local areas. The specific lists of schemes to be evaluated, and the baseline analysis for each work package, will be updated as part of the final work package reports.

Work Package 1: Schemes & Outputs

Purpose

This work package collates programme management information relating to the programme being delivered in each of the local areas, including details of the **schemes**, the **inputs and outputs** involved and the **wider context**.

Methodology

For each TCF area, three key documents have been created and completed, via collaboration between the local areas and the national evaluation team. These are:

1. **Local Area Summary** – describing the programme in each local area.
2. **Schemes Spreadsheet** – containing details of each individual scheme (or scheme 'element', e.g. a section of cycle route).
3. **Outputs Spreadsheet** – providing a consistent way of monitoring the outputs from all local areas.

These documents are underpinned by two key sets of definitions[5]:

1. **Fund typology** – which has been used to categorise all of the schemes being undertaken by the local areas.
2. **Output definitions** – which aim to ensure that the outputs spreadsheets are completed in a consistent manner.

Available data

The local areas' individual schemes spreadsheets have been compiled into a master 'schemes spreadsheet', in which all schemes being delivered across the TCF areas are reported as separate elements, almost all of which have a cost and a date assigned. At the time of providing the information, local areas identified 603 separate scheme elements. A master 'outputs spreadsheet' has also been compiled, providing mostly complete information for 46 output indicators across the 18 local areas.

It should be noted that completion of these documents has not been straightforward, not least as the real world is complicated: not all schemes and outputs fit neatly within definitions; schemes and programmes are constantly being adapted; local areas provided information at different times; and information provided is not always unambiguous.

[5] These are given in full in the technical annex *'Work Package 1: Schemes & Outputs - Baseline Report - Overview & Initial Analysis'.* This is available on request.

Work Package 2: TCF Local Area Analysis

Purpose

Work Package 2 focuses on evidence from **national secondary datasets** about the impacts of the Fund at the **local authority district level** (or higher levels of geography, where local authority district data are not available).

Methodology

A group of **82 local authority districts**[6] were identified as the **'intervention group' of TCF areas**. These areas were expected to benefit sufficiently from TCF investment for an area-wide impact on relevant outcomes to be plausible.

A sub-set of **48 of these local authority districts** receiving concentrated TCF interventions were additionally identified as an intervention group of **'TCF intensive areas'**. They were identified on the basis of the nature of the activities being undertaken in each area, and the extent to which these were expected to have a substantial impact on a high proportion of their populations. In all of the intensive intervention areas, an estimated £65 per head or more was expected to be spent on TCF schemes.[7]

A group of local authority districts was then defined that could potentially provide an appropriate **'comparison group'**. Several approaches to defining the comparison group were trialled, using one of the metrics available at local authority district level (transport carbon emissions) to assess similarity. The final comparison group chosen, which showed the greatest similarity of trend to the intervention group, comprised **all non-London urban local authorities in England that are not receiving TCF interventions**. An important limitation is that the comparison group contains a majority of smaller urban areas whereas the TCF intervention areas, particularly the TCF intensive areas, contain a majority of larger urban areas. This is an inherent limitation given that all England's largest cities (apart from London) have been TCF beneficiaries. An approach to mitigating this limitation is described below.

Available data

As given in Table 2, 12 different metrics, taken from 11 national datasets, have been analysed in the baseline report. Given the predominance of larger urban areas in the intervention group, their absolute values are often more favourable than those for the comparison group.[8] Therefore, analysis has focused on the change they are managing to achieve, from their baseline conditions, rather than focusing on the end states they reach (which might be partly determined by starting conditions). However, absolute values are also given for context.

[6] Equivalent to 88 local authority districts in 2011. A further six local authority districts within TCF areas were excluded from the intervention group. Of these, three were only expected to benefit by a relatively small amount, one had its scheme cancelled and two were only expected to benefit from feasibility studies.

[7] This includes both DfT and non-DfT spending on TCF schemes.

[8] Here and throughout the report, 'favourable' is used as a shorthand for 'changes that align with TCF aims'.

Table 2: Measures investigated in Work Package 2: TCF Local Area Analysis

Topic	Source and url	Measures
Walking & cycling	Sport England Active Lives Survey	• Average weekly duration of walking • Proportion of people doing any cycling in past four weeks
Bus patronage	DfT bus statistics	• Passenger journeys on local bus services by local authority (BUS0109a)
Light rail & tram	DfT light rail and tram statistics	• Passenger journeys on light rail and trams (LRT0101)
Traffic kilometres	DfT national road traffic estimates	• Car traffic by local authority (TRA8905a)
Traffic injuries	DfT Stats19	• Number of Killed and Seriously Injured, by mode
Bus reliability	DfT bus statistics	• % non-frequent bus services running to time (BUS0902)
Population	ONS mid-year population data	• Trends in population size • (Used to standardise some other datasets)
Employment	ONS annual population survey	• The total number of employed individuals, and the employment rate
Unemployment	DWP alternative claimant count employment statistics	• Number of claims, which can be related to the population aged16-64 to give unemployment rate
Productivity	ONS Gross Added Value	• The 'balanced' measure of GVA, adjusted for inflation†
Transport carbon dioxide emissions	DESNZ estimates of carbon emissions within local authority influence	• Transport CO_2 emissions within the scope of local authority control‡, both absolute and per capita
Bus provision*	DfT bus miles operated	• Local bus miles operated
Car/van ownership*	Bespoke request of DfT vehicle stats team	• Car/van ownership per capita
Share of cars/vans that are electric*	Bespoke request of DfT vehicle stats team	• % cars/vans that are electric
Travel diary* (*provisional)*	DfT National Travel Survey	• Bespoke data request to DfT will seek to contrast TCF and non-TCF areas in aggregate, with an additional urban filter (published data analysed in brief in Work Package 4: Town & City Centres)
Journey time statistics* *(provisional)*	DfT journey time statistics	• Travel time, destination, and origin indicators for employment centres by public transport (JTS0401), if data are of a suitable time period for final analysis

Note: * These measures may be included in the final report, but have not been analysed at baseline.

† This is the version that has been awarded National Statistics status. 'Chained volume measures' estimates will be used, as these allow for inflation (but not different regional price levels).

‡ Transport in the scope of the local authority defined by adding columns: I. Road Transport (A roads) + K. Road Transport (Minor roads) + M. Transport Other

Work Package 3: Local Headlines

Purpose

Work Package 3 investigates key transport data series that local areas already collect and report for their area as a whole (and/or for component local authority districts) and that differ from the information given in national data sources, and from data provided by local areas for other work packages. It does not aim to compare areas on a standard basis – rather it aims to capture all **the headline stories which areas are using locally to represent what is happening in their locality**, if they are not captured elsewhere in the national evaluation. This information can then be compared and contrasted with that from the other work packages, to assess consistency of findings.

Methodology

Local areas were asked to supply a single annual figure for a single headline metric for 2009 to 2020, where possible, in relation to traffic, cycling, walking, bus use, bus performance and light rail use.[9]

From these data series, time series charts were created for each data series and TCF area using all years of data supplied. These were indexed to the first year of data. Unlike other work packages, local areas are not directly compared with each other, nor with a comparison group.

Data availability

The amount of available data from local areas varied significantly. In many cases, the local authorities did not have many additional data sources to provide, since their major metrics were already being captured through the other work packages. Additional data were available as follows:

- **Walking** – Greater Manchester and the West Midlands
- **Cycling** – Derby & Nottingham, Greater Manchester, Liverpool City Region and West Midlands
- **Bus use** – Greater Manchester, Leicester, North East, Sheffield City Region and West Midlands
- **Traffic** – Derby & Nottingham, Greater Manchester, North East, Portsmouth & SE Hampshire and West Midlands
- **Bus performance** – Greater Manchester and Sheffield City Region

[9] Light rail data were supplied by three areas but further clarification is needed to understand how the figures supplied relate to information supplied for Work Package 5a: Light Rail.

Work Package 4: Town & City Centres

Purpose

This work package uses **cordon and screenline data**[10] collected by the local areas, relating to travel in and around urban centres – in order to understand changes in the numbers and share of people travelling by different means into towns and cities.

Methodology

Local areas were asked to provide all cordon or screenline data that they regularly collect, that provides insights into travel into towns and cities within their area, together with clarification about whether that travel is likely to be affected by TCF, and details about the data collection methodology. Data templates and guidance were provided. Data received was checked, and, in some cases, simplified (by combining inbound and outbound flows and/or different time periods). Where local areas did not supply occupancy data for vehicle flows, standard multipliers were used to convert vehicle numbers into people numbers. Modal shares could then be calculated on a more consistent basis across all cordons (although some cordons exclude certain modes altogether).

Trends over time were plotted for both total flows of each mode and modal share. Modal share values were averaged, whilst modal flows were indexed to 2015-17, before averaging (to avoid distortion caused by different sized cordons). Trends were calculated for:

a. **Combined cordon data** – all cordon data (not necessarily complete for all years)

b. **Continuous cordon data** – cordons with all years of data available

Data availability

The final simplified dataset consisted of 76 cordons or screenlines from 13 TCF areas. Of these, there were **64 cordons or screenlines, relating to 52 places, which were expected to be affected by TCF**. Most data are generated annually or every two years, and date back to at least 2009. Most include estimates of pedestrians and/or cyclists, however authorities reported that only about half were thought to fully capture all pedestrian and cyclist movements. About two-thirds are two-way, whilst the remainder measure inbound flows. About two-thirds are 12-hour counts, with the remainder relating to morning flows. Manual counts are the most common way of collecting data, though many cordons are derived from a mix of methods.

Following baseline analysis, the **12 cordons/screenlines relating to places not likely to be affected by TCF** were not considered to provide a suitable control group for the full dataset. Instead, National Travel Survey (NTS) will be used to provide evidence on more general changes in urban travel (possibly drawing on future analysis to be undertaken in Work Package 2: TCF Local Area Analysis). Some preliminary analysis of published NTS data was undertaken as part of the baseline analysis.

[10] Cordons generally comprise a ring of data collection points, to monitor movements into and out from an enclosed area, whilst screenlines involve a line of data collection points, to capture movements crossing that line. For example, for movements between the east and west of a city. There were only four screenlines in the dataset.

Work Package 5a: Light Rail

Purpose

This work package aims to examine changes in the patronage and performance of **light rail systems** in the TCF areas. as well as to examine the impact of **new and substantially upgraded light rail stations** on passenger numbers.

Methodology

Data was requested from the five TCF areas which have light rail systems, namely:

1. Derby & Nottingham – Nottingham Express Transit
2. Greater Manchester – Manchester Metrolink
3. North East – Tyne & Wear Metro
4. Sheffield City Region – Sheffield Supertram
5. West Midlands – West Midlands Metro

Guidance on the data required and a template for completion were provided. **System-wide monthly (or four-weekly) patronage and performance data** were requested (to complement the annual data considered in Work Package 2: TCF Local Area Analysis), together with **boarding data for new or upgraded stations**.

As there is not an appropriate light rail system in England to use as a control, pre- and post-data comparisons will be undertaken within each local area, carefully related to the timings of schemes. Whilst identifying the effect of station-specific changes is likely to be possible, the contribution of TCF to system-wide changes will largely be discussed in the context of general trends.

Data availability

All areas were able to provide both patronage and performance data, with performance data mostly relating to the percentage of scheduled services operated and the punctuality of those services. TCF schemes to be assessed include:

a. New stations

b. Major increases in parking at existing light rail stations

c. Various other schemes to improve the performance of systems – including an improved contactless payment system in Nottingham; the Metroflow scheme in the North East; and the purchase of new light rail vehicles, together with improvements to supporting infrastructure, in Greater Manchester

Work Package 5b: Buses

Purpose

This work package uses **bus company data**, supplied via the local areas, in order to examine the impacts of selected TCF bus schemes.

Methodology

All local areas were asked to indicate whether they were funding **new bus services**[11]; **new park-and-ride sites**; **upgrades to existing park-and-ride sites** and/or **new or upgraded major bus hubs**.[12]

Where appropriate, they were also asked to nominate **two 'high dose' bus routes** that were benefitting from relatively intensive measures such as corridor upgrades, and **two 'low dose' routes** that could act as controls.[13]

Together with an area-wide events diary, local areas were then asked to supply, for at least 12 months prior to construction (and ideally as far back as 2015):

a. Monthly boarding data – for existing park-and-ride sites and major bus hubs
b. Monthly patronage, journey time and punctuality data – for high and low dose routes
c. Monthly patronage data for specific localities[14] – that could provide context for new or upgraded services or facilities (where relevant)

At final reporting, for new bus services and new park-and-ride sites, the focus of the analysis will be on the trajectory of use after opening. For upgraded park-and-ride sites and major bus hubs, before-and-after analysis will be conducted. For the high dose routes, trends will be compared with the matched low dose routes. Where locality data are provided, this will be used to provide additional context.

Data availability

16 areas (excluding Cambridgeshire & Peterborough and Greater Manchester) nominated schemes. 11 local areas nominated new bus routes, major changes to park-and-ride and/or changes to major bus hubs. 14 local areas nominated high and low dose routes for consideration, comprising a total of 27 paired routes. As of September 2022, data had been supplied for 23 paired routes. Data for major bus hubs, or for localities, was largely unavailable by that time, which may require adjustment of the approach at final reporting.

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[11] In practice, three entirely new services and three services that were created from previous services were nominated.

[12] Originally, local areas were asked to specify 'new' and 'upgraded' major bus hubs separately. However, even where a new bus station is being built, it usually replaces an existing facility, so these have been merged.

[13] The term 'low dose' route is used because city-wide bus service improvements (e.g. branding, marketing campaigns and ticketing innovations, implemented as part of TCF or independently) might be expected to affect all bus services across an urban area.

[14] These localities could be at a settlement or local authority district level.

Work Package 6: Rail

Purpose

This work package examines the effects of the Fund on the use of trains, including changes to patronage, satisfaction and modes of accessing stations. Specifically, it aims to compare **changes at existing rail stations** benefitting from TCF with changes at rail stations that are not receiving similar improvements; and to assess the **performance of new or re-opened rail stations** in TCF local areas.

Methodology & available data

Three datasets will be used for the analysis:

1. Office of Rail & Road's annual **Estimates of Station Usage** – to assess changes in patronage)
2. Office of Rail & Road's **Station Concourse Footfall Survey** – to assess changes in station concourse footfall)
3. **Rail Passenger Survey** data collected by Transport Focus – to assess changes to access mode and other aspects of passenger satisfaction)[15]

At the time of baseline analysis, an **'intervention group' of 78 existing rail stations**[16] was identified, which were expected to benefit from TCF schemes, either because the stations themselves were being upgraded or because there were schemes in their vicinity which would improve access, egress or links to other public transport hubs. They included a mix of station types, including city centre, suburban and rural stations (on urban feeder lines).

For the **Estimates of Station Usage** dataset, two approaches were developed for defining appropriate comparison groups:

1. The identification of at least one **matched control station** for each intervention station, based on a station of similar size and characteristics where no substantial improvements were planned over the TCF funding period.
2. The use of a **set of 'all controls' stations**, which included all stations in England, outside London, excluding the intervention stations and those with missing data for the baseline period. This set of 'all controls' will be used for making comparisons overall; by patronage bands (A-F, as defined by Network Rail); and by region.

The **Station Concourse Footfall Survey** is only conducted at large stations. For this analysis, data are available for two **intervention stations** (Bristol Temple Meads and Leeds). A **control group** of four stations was identified, defined as the other English stations outside London with data from 2015 onwards.

12 new or reopening stations were also identified, which will also be considered if patronage data becomes available during the evaluation period.

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[15] This will be used if on-going revisions to the survey permit such analysis.

[16] There are five more stations that were expected to benefit substantially but were unlikely to do so in time to include in analysis, and nine more stations where benefits might occur but which were expected to be relatively minor. Only eight of the 78 stations were solely benefitting from improvements to buildings or facilities.

Work Package 7: Cycling

Purpose

This work package uses data from automatic cycle counters (ACCs)[17] to examine the impacts of TCF on cycling, in selected locations in all TCF areas with substantial cycle schemes.

Methodology

Where relevant, each local area was asked to supply **data from five pairs of ACCs**, together with supporting information, with each pair consisting of an intervention counter (from a location where one or more TCF schemes were expected to have a substantial effect on cycling) and a control counter. Guidance was provided to ensure similarity of the paired counter locations. Counter data were checked and cleaned, and two key metrics were produced for each:

1. **Pre-intervention Average Daily Total (ADT)** – the average daily count of cycles at each counter, using the most recent time period before the start of TCF construction, up to a maximum 365-day total.[18]
2. **Pre-intervention trend** – the annual percentage change in cycling volumes at each counter, before the intervention. This was estimated using multiple negative binomial regression[19] where at least 200 days of data in each of at least two calendar years were available for the counter.

For both metrics, the time periods used vary *between* counter pairs, but are constant *within* counter pairs. Equivalent post-intervention metrics will then be generated, and used to calculate:

a. **The cycling 'level change'**– the difference between the paired control and intervention counters in the change in the level of cycling pre/post-intervention.

b. **The cycling 'rate change'** – the difference between the paired control and intervention counters in the deviation in annual trend pre/post-intervention.

Data availability

At the time of baseline analysis, 82 counter pairs (comprising 164 counters) had been nominated from 17 of the 18 local areas. As of September 2022, data had been received for about half the counters. 50 were still awaiting installation, and data had not been received for a further 26. At that time, it seemed likely that 92 counters (from 53 pairs) would have some pre-intervention data, and 25 counter pairs would potentially have full pre-intervention data.

[17] The terms 'ACC' or 'counter' are used to refer to any technology that provides continuous counts of cyclists, including camera-based technology. Data supplied has been captured using a range of technologies.

[18] Values were only calculated if there was a period of at least three months of data, each with at least 20 days of data and with one or fewer months between each data month.

[19] School holidays and term times have been included as terms in the regression to account for the effect of seasonality in the year-on-year trend.

Work Package 8: TCF Locality Analysis

Purpose

This work package examines the localised impacts of TCF schemes on (a) **areas of deprivation** and (b) **areas near major public transport schemes**.[20] For both types of location, effects on levels of **unemployment** and **car ownership** will be explored, together with impacts on journey times to employment.[21] This work package focuses on sites where the greatest changes are expected.

Methodology

Selecting suitable intervention sites, together with similar sites nearby that could act as controls initially involved interviews and mapping with representatives of TCF local areas. Areas were defined using LSOA units.[22] Following initial discussions, some filters were used: specifically, areas were only included within the 'deprived' dataset if they fell within the 40% most deprived areas in the country; and there were discussions as to whether public transport enhancements were of sufficient scale for inclusion. Further discussions with local areas were held and final maps were then produced. A 'national control' group of non-intervention LSOAs largely outside TCF local areas, and outside London, was also defined. Geographical data were then exported and joined with other datasets for analysis.

Data availability

National secondary datasets used for this work package comprise:

a. Ordnance Survey Boundary Line dataset – which defines LSOAs
b. 2019 English Indices of Multiple Deprivation (DHLCG)
c. Alternative Claimant Count employment statistics (DWP)
d. Car ownership data (DfT)
e. ONS mid-year population estimates – which were used to convert the claimant count and car ownership data into per capita figures

All 18 TCF areas nominated deprived areas where substantial improvements in travel options were expected. At the time of baseline analysis, these consisted of 119 sites, comprised of 987 LSOAs, with 268 LSOAs within the TCF areas nominated as controls.

13 TCF areas nominated major public transport schemes where substantial improvements in travel options were expected in the surrounding areas. At the time of baseline analysis, 46 sites were identified as beneficiary areas, comprising 332 LSOAs, with 150 LSOAs within the TCF areas nominated as controls.

[20] In some cases, areas were included within both groups.

[21] If this dataset becomes available for a relevant time period. The release of DfT journey time statistics can take two years.

[22] 'LSOA' stands for Lower Super Output Area. These are small areal units defined for the Census, designed to be reasonably consistent in population numbers and to encapsulate neighbourhoods that are similar in terms of socio-demographics, to the extent that this is possible. They usually contain between 1,000 and 3,000 residents, representing 400 to 1,200 households.

5. KEY BASELINE FINDINGS RELATED TO RESEARCH QUESTIONS

This section provides insights from the baseline data analysis relevant to each research question.

5.1. Anticipated financial inputs

Research Question 1 asks *"What were the financial inputs to the TCF?"*

Baseline data for this research question is available from Work Package 1: Schemes & Outputs, and was supplied by local authorities between July 2021 and May 2022. Final data are likely to differ, as local programmes change.

In total, at the time of baseline analysis, **anticipated DfT TCF spending comprised £2.3 billion, with total spending on schemes estimated to be £3.6 billion**. Other contributions expected to support the Fund were therefore equivalent to approximately 50% of additional funding.

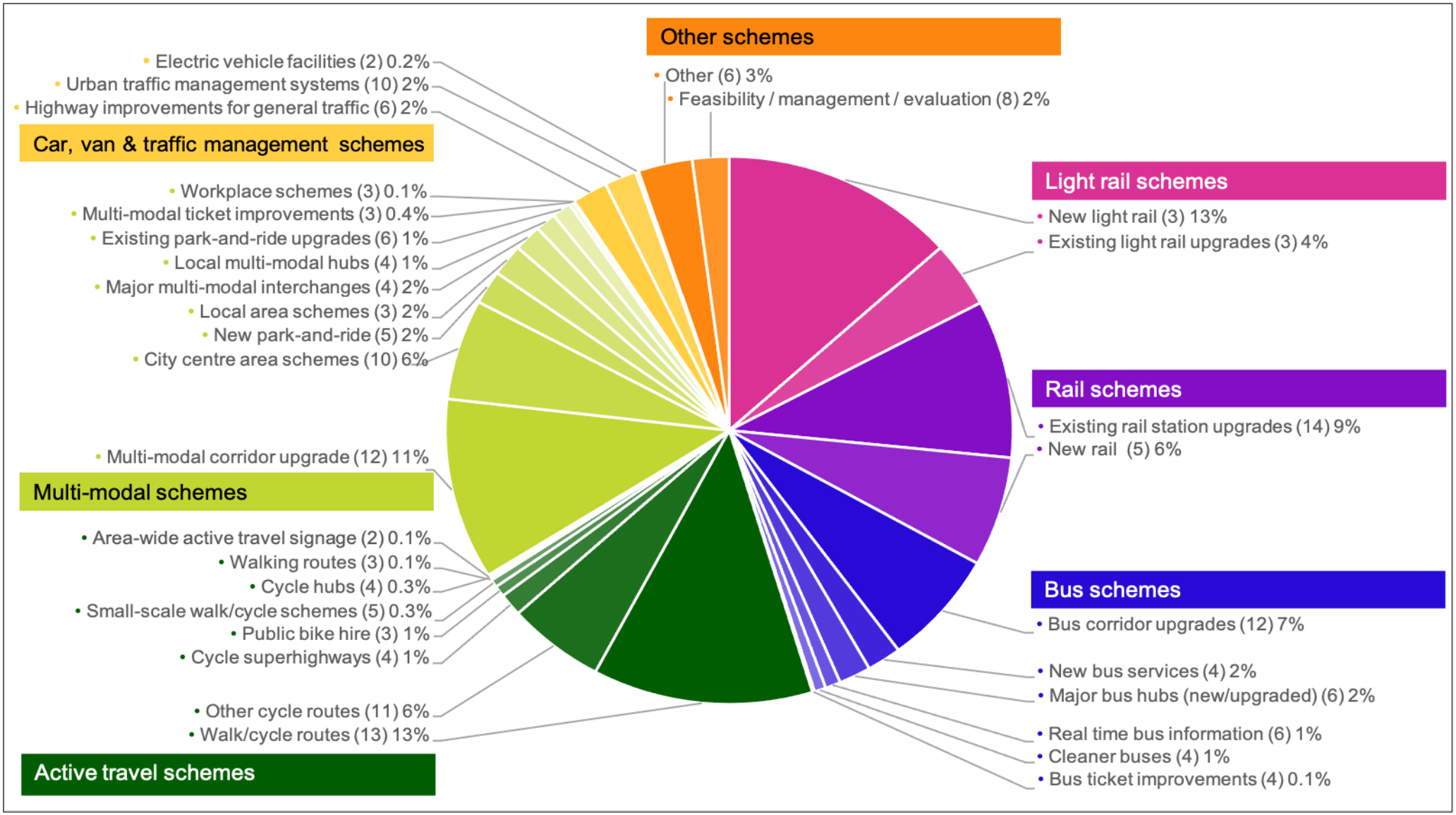
The proportion of anticipated additional contributions that were reported ranged significantly across local areas. However, this partly depended on how local areas chose to view their TCF funding – as a specific stand-alone programme, or as a component of their wider spending. Some areas had used TCF funding to leverage other spending for most of their schemes. Others had primarily used TCF funding for TCF schemes, but might still be introducing complementary schemes which were being fully funded from other sources (such as the Future Transport Zones work). Consequently, differences do not necessarily reflect the totality of complementary spending that was taking place in the areas.

For the whole Fund, spending was relatively evenly spread across different sustainable transport modes (rail, light rail, buses, active travel and multi-modal), with comparatively less spending on cars, vans and traffic management. Light rail and rail schemes typically comprised relatively large stand-alone components, whereas active travel schemes were typically either smaller, or being delivered in smaller elements.

However, different TCF local area programmes were focused very differently. For example, Greater Manchester had a high proportion of funding and schemes focused on active travel; the Tees Valley had considerable funding devoted to rail; while the West of England had considerable funding dedicated to buses.

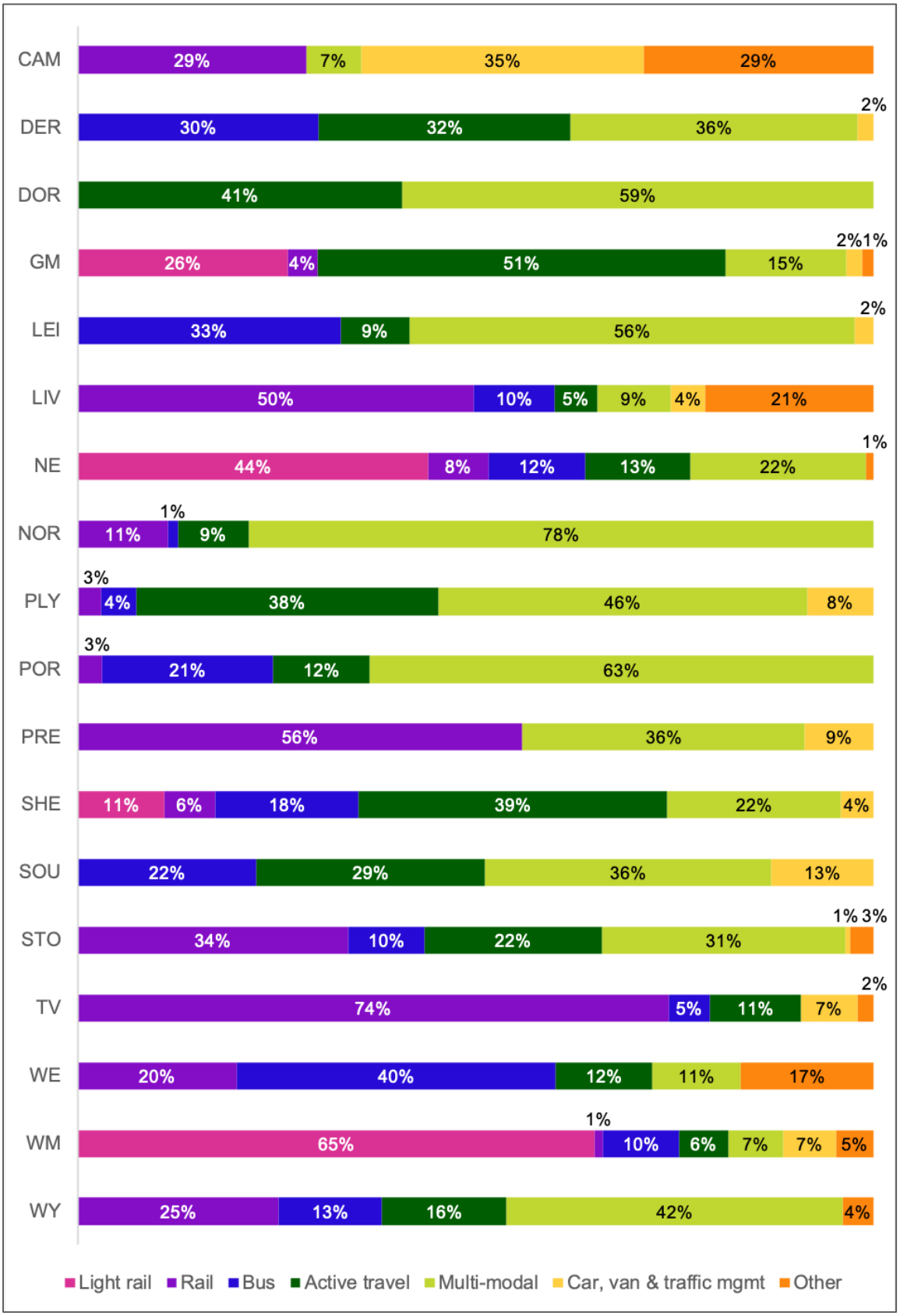
Figure 6 and Figure 7 demonstrate how the anticipated DfT-funded spending broke down for the Fund as a whole, and for each TCF area. It should be noted that providing this breakdown is inevitably a simplification. For example, the multi-modal category captures schemes which could be considered primarily, say, 'bus' or active travel' schemes and, equally, some of the mode-specific schemes will have multi-modal benefits. For example, some rail schemes benefit other access modes.

Figure 6: Anticipated TCF spend by mode & scheme type



Note: Numbers in brackets indicate the number of TCF areas with schemes of that type. Local and city centre area schemes often involve public realm work.

Figure 7: Anticipated proportional spend by mode (across TCF areas)



Note: In LIV, funding allocated to 'other' largely relates to the Mersey ferry scheme; in CAM and WE, it relates to feasibility and design work on schemes to be delivered by other means. Totals may exceed 100% due to the rounding up of investment <1%. In some places, all bus schemes form part of multi-modal projects. In many cases, projects allocated to one category may have had benefits for other modes (e.g. rail schemes may also bring benefits for access/egress modes like buses and active travel).

5.2. Anticipated improvements to sustainable travel options

Research Question 2 asks *"What improvements to sustainable travel options resulted from TCF spending?"*

Baseline data for this research question is available from Work Package 1: Schemes & Outputs. Anticipated outputs from TCF programmes were supplied by local authorities between July 2021 and May 2022. Final data will differ, as programmes change. In particular, increases in costs mean that total outputs are likely to be fewer than those listed here. Nonetheless, capturing the expected outputs at baseline is considered helpful for giving an understanding of the general shape of the Fund.

At the time of baseline analysis, estimated outputs from the Fund overall were as follows.[23] Example schemes delivered, or in delivery, by December 2021 are given in Table 3.

Rail

- **12 new or reopened rail stations** (across 5 TCF areas), linked into the existing rail network by either line extensions or new stops being added to existing services.
- **83 existing rail stations** where there would be **substantial improvements to access or to station facilities** (across 16 areas), and a further **9 existing rail stations** where there would be **some improvements to access or facilities**.
- **120km of rail track** in Liverpool City Region that would benefit from a Train Connectivity and Information System that aims to improve operational effectiveness and passenger experience.
- **Various service improvements** in the West of England, which would benefit both new and existing stations, together with a new service serving Middlesbrough station (Tees Valley).

Light rail

- **16 new light rail stations**, comprising the Magna Tram Train stop in Sheffield City Region (with associated park-and-ride facilities) and 15 new stops in the West Midlands, as part of the Wednesbury to Brierley Hill Metro Extension.
- At least **6 existing light rail stations where there would be significant benefits**, in terms of parking increases (and, in some cases, other improvements to facilities), and **some benefits to at least another 3 existing stations** (across 4 areas).
- **160km of light rail track** where the quality or number of services should be significantly improved (including track in the West Midlands, the North East and Greater Manchester).

[23] Use of 'at least' indicates missing or ambiguous data from one area or more.

- An **improved contactless payment system** in Nottingham.

Buses

- At least **122 km of bus lanes** (across 14 areas) and **643 junction improvements** for buses (across 16 areas).
- **19 new bus routes** (across 6 areas, including new electric bus services serving city centres).
- **24 improved bus routes** where services would operate more frequently or for longer hours (across 5 areas).
- **19 major bus hubs** that would be introduced or upgraded (in 10 areas).
- **Real-time bus information** in at least 10 areas, **and improvements to ticketing** in 8 areas.
- **Upgrades to at least 3,857 bus stops** (across 15 areas).
- The introduction of at least **38 electric buses**, together with **24 hydrogen buses, and 15 conventional buses to be upgraded to Euro VI**.

Active travel

- **Improvements to at least 344 kilometres of routes for both cyclists and pedestrians** (across 17 areas).
- **Improvements to at least 181 kilometres of routes for cyclists travelling in both directions** (across 16 areas) and **at least 45 kilometres of routes for cyclists travelling in one direction** (across 9 areas).
- The **introduction of public bike hire in 16 town or city centres**, likely to involve at least 5,150 bikes (across 6 areas, including as part of mobility hubs).
- **250 electrically-assisted bikes** purchased for e-bike loans.
- The introduction of **212 stand-alone cycle hubs** (across 7 areas).
- The introduction or upgrading of **area-wide active travel signage** in 6 areas.
- At least **810 improved crossing points for pedestrians** (across 18 areas).

Multi-modal

- A substantial amount of **multi-modal corridor upgrades** (as already captured in the metrics on bus lanes, and upgrades to cycling and walking routes).
- **8 new bus-based park-and-ride sites** (across 6 areas).
- **Upgrades at 19 existing park-and-ride sites**, including those at light rail stations (across 7 areas).
- A total of at least **8,000 additional park-and-ride car parking spaces**, including those at light rail stations (across 9 areas).
- **23 major area upgrade projects** in city centres (across 9 areas).

- **38 residential-area focused projects** (across 9 areas).
- **13 projects to improve links between major public transport hubs** (across 6 areas).
- **58 other multi-modal interchanges** introduced or upgraded (across 4 areas).
- **Multi-modal schemes aimed at workplaces in 3 areas.**

Cars, vans & traffic management

- **Improvements at 39 major road junctions** (in 9 areas) together with **other highway improvements**, including additional slip roads or road widening, usually aimed at reducing congestion and/or smoothing conditions for buses.
- The introduction or upgrading of **traffic management systems** in at least 7 areas, in many cases aimed at improving bus priority.
- The introduction of at least **578 electric vehicle charging points** (in 7 areas).
- **Speed camera digitisation** in Greater Manchester.

Other

- A range of **feasibility and development studies** which may lead to additional investment and new schemes in the future.
- The purchase of **2 new low carbon ferries** for travel across the Mersey, and associated infrastructure enhancements in Liverpool City Region.
- A multi-million programme to deliver **complementary low carbon initiatives** in West Yorkshire.[24]

[24] For final analysis, this programme could arguably be broken into components that fall within other categories, since it includes measures such as electric vehicle charging, electric buses and cycle storage.

Table 3: Examples of schemes delivered/in delivery by December 2021[25]

Rail	• The reopening of Soham rail station, on the Ipswich-Ely line in Cambridgeshire & Peterborough, together with initial enhancements to signage, lighting, customer waiting areas and information at Manea, March and Whittlesea stations. • A first phase of work at Middlesbrough station in the Tees Valley, involving extension of an existing platform and enabling commencement of an LNER service between Middlesbrough and London. • A first phase of work at the main rail station in Norwich, comprising a contraflow system on Thorpe Road to provide cyclists and bus passengers with a better link from the east of the city to the rail station and city centre.
Light rail	• The introduction of an improved contactless payment system on Nottingham's tram network (the Robin Hood Top-up system), enabling payment via a wider range of means for all ticket types. • The beginning of a major upgrade programme to tram infrastructure in Greater Manchester, including Trafford depot expansion and the procurement of 27 new light rail vehicles (with 10 in operation by September).
Buses	• The introduction of the Coventry Ultra Low Emission Bus Scheme in the West Midlands. • The first phase of rolling out bus lane camera enforcement, bus ticket machines and real time information at bus stops in Derby & Nottingham. • The introduction of advanced tap-on tap-off readers on 200 buses and improved real-time bus information in Stoke on Trent. • Carriageway widening and removal of obstructive parking on sections of the busiest bus route between Norwich city centre and the University of East Anglia, to improve bus journey times and reliability. • The electrification of 2 existing park-and-ride routes in Leicester, operating from sites at Meynells Gorse and Enderby, involving 11 electric buses.

[25] Many additional schemes will have been delivered since December 2021 – this table was compiled from information provided during the baseline data collection, to give examples of some of the early outputs from the Fund.

Active travel	• The introduction of a cycle hire scheme operating across the 7 metropolitan areas of the West Midlands, comprising 1,350 pedal and 150 e-cycles. • The introduction of public bike hire in Christchurch (SE Dorset) – extending the existing scheme in Bournemouth and Poole with an additional 600 bikes. • The start of installing new wayfinding totems in SE Dorset, to improve active travel signage, together with grants for improved facilities at 21 schools, estimated to represent about 10,000 pupils and staff. • The beginning of work on an 'Active Travel Zone' in the St Denys residential area of Southampton, aimed at creating a more pedestrian and cyclist-friendly neighbourhood. • The upgrade of 21 sections of route for either cyclists, or cyclists and pedestrians, including 9 schemes in Greater Manchester.
Multi-modal	• Upgrade work in central areas of Norwich and Manchester, together with 4 residential area projects in Greater Manchester. • Work on sections of multi-modal corridor in SE Dorset and Norwich. • The expansion of the Wheels to Work scheme in the Tees Valley. • The on-going provision of capital grants to businesses for sustainable travel infrastructure in Derby & Nottingham. • Improvements to smart ticketing for a range of public transport modes in Liverpool City Region.
Cars, vans & traffic management	• Widening of the A605 Oundle Rd to ease congestion around the Lynch Wood business park, including changes to a major junction and footway improvements (Cambridgeshire & Peterborough). • Introduction of a single hub for the regional coordination of transport networks, to support local authorities, emergency services and transport providers (West Midlands). • The introduction of parking enforcement measures on 4.1km of red routes in Stoke on Trent (the A52 Leek Road and A50 King Street/Victoria Road). • Signalisation to improve pedestrian crossing facilities at the Meadows roundabout on the A689 in the Tees Valley. • The installation of EV charging facilities in the Broadmarsh Centre in Nottingham; and the first phase of expanding the EV rapid charging network. • The development of a traffic control system in Norwich, to enable all buses to benefit from priority measures, thereby improving the reliability and journey times of the public transport network.

5.3. Active travel levels & associated safety data

Research Question 3 asks *"Did the TCF schemes increase levels of walking and cycling compared with what might otherwise have happened, and were there associated effects on pedestrian/cyclist safety?"*

The following three sections look at:

1. Walking
2. Cycling
3. Pedestrian and cyclist safety

Impacts on walking

Baseline data about walking levels is available from Work Packages 2: TCF Local Area Analysis, 3: Local Headlines and 4: Town & City Centres. It comprises:

a. Local authority-level data from the Active Lives Survey about the average duration of walking per week (in hours, taking place in the previous four weeks)

b. National Travel Survey data

c. Data from town/city cordons/screenlines about pedestrian flows and pedestrian modal share in places affected by TCF

d. Alternative measurements of walking from two TCF areas – Greater Manchester and West Midlands

Key findings to date from baseline analysis of the four datasets are summarised below.

a. Active Lives Survey

Local authority-level data about walking duration has only been available from the Active Lives Survey since November 2015. Baseline data (2015/16-16/17) shows relatively little variation between TCF areas in terms of the typical weekly time spent walking (albeit with somewhat higher levels in Portsmouth & SE Hampshire). The average values were the same for: all TCF areas; all TCF intensive areas; and the comparison group – namely, people were walking for an average of 4.2 hours per week.

b. National Travel Survey

National Travel Survey data suggests that, between 2009-11 and 2015-17, pedestrian trips per capita for those living in urban areas changed by +2.7% for those in urban conurbations and -0.3% for those in urban towns and cities. Pedestrian modal share changed by +1.3 percentage points (pp) for urban conurbations and +0.7pp for urban towns and cities.

c. Cordons & screenlines

Of the 37 cordons or screenlines in places affected by TCF with pedestrian data available for 2009-11 and 2015-17, 19 experienced an increase in pedestrian flows, whilst 18 experienced a decrease. Overall, between 2009-11 and 2015-17, an index

of pedestrian flows derived from all these cordons ('combined' data), and, separately, data for 21 places with continuous data series, showed little change (-0.2%; +2.9% respectively). However, there were some large changes in total pedestrian flows prior to TCF in individual places. Looking at TCF areas, in five areas, the overall picture was mixed. However, in Leicester, pedestrian flows had generally shown growth (though with changes in cordon timing potentially being a contributory factor), whilst places in Sheffield City Region and Stoke on Trent had largely experienced declining pedestrian flows.

In terms of modal share, 21 of the 37 cordons with data showed an increase in pedestrian modal share between 2009-11 and 2015-17, and 16 showed a decrease. Across all 37, in 2015-17, the mean pedestrian modal share was 11.2% of the total people flows recorded. Combined and continuous cordon data suggested small increases in pedestrian modal share over the pre-TCF period (+0.6pp for combined data; +1.7pp for continuous data).

d. Alternative measures

The two TCF areas that were using additional local headline data for walking were:

1. **Greater Manchester** – household survey data (collected from c. 2,000 households each year) for the annual number of walking trips by Greater Manchester residents aged 5+ suggested that, after a small decline from 2015 to 2016, the number of trips was gradually increasing between 2016 and 2019.[26] (Separate data were also available for the ten local authority districts.)
2. **West Midlands** – three-year-average special tabulations of the National Travel Survey for West Midlands residents suggested the number of personal walking trips per annum fell between 2009-11 and 2015-17.[27]

Summary of walking data

In the final report, walking levels and changes will be assessed using four different sorts of data. **Baseline evidence suggests that, overall, walking levels and modal share were stable or slightly increasing during the period 2009-11 to 2015-17, and relatively similar between TCF areas as a whole.** At individual locations, cordon and local area data suggest variability in walking trends over time (with roughly similar numbers of locations showing increases and decreases).

Impacts on cycling

Baseline data about cycling is available from Work Packages 2: TCF Local Area Analysis, 3: Local Headlines, 4: Town & City Centres and 7: Cycling. It comprises:

a. Local authority-level data from the Active Lives Survey about the percentage of adults reporting any cycling in the previous four weeks, and the proportion of individuals in different demographic groups who reported any cycling in the past four weeks

[26] Data only available from 2015.

[27] The extent of the drop depends on the way that the 2016 change in NTS methodology for recording short walk trips is accounted for.

b. National Travel Survey data

c. Data from town/city cordons/screenlines about cycling flows and cycling modal share

d. Data from individual cycle counters, relating to cycle schemes in 11 TCF areas

e. Alternative measurements of cycling from four TCF areas – Derby & Nottingham, Greater Manchester, Liverpool City Region and West Midlands

Key findings to date from baseline analysis of these five datasets are summarised below.

a. Active Lives Survey

Baseline data from the Active Lives Survey for cycling participation (2015/16-16/17) suggests that this varied considerably between TCF areas, with the percentage of people doing any cycling in the past four weeks ranging from 8% in Stoke on Trent to 32% in Cambridgeshire & Peterborough. As a whole, cycling participation levels were slightly lower in the TCF areas compared with the comparison areas – on average, 16% of people were doing any cycling in the past four weeks for all TCF areas, compared with 14% in the intensive TCF areas and 18% in the comparison areas.

Baseline data (2015/16-16/17) also showed that in both the TCF areas and in the comparison areas, cycling participation was around twice as high for men as for women, and around twice as high for younger adults (age <55) as for older adults. Cycling participation was also somewhat higher for white than for non-white individuals.

b. National Travel Survey

National Travel Survey data suggested that, between 2009-11 and 2015-17, cycling trips per capita for those living in urban areas changed by -3.6% for those in urban conurbations and +1.4% for those in urban towns and cities. Cyclist modal share changed by 0pp for urban conurbations and +0.1pp for urban towns and cities over the same period.

c. Cordons & screenlines

Of the 41 cordons or screenlines in places affected by TCF with cycling data available for 2009-11 and 2015-17, 28 experienced an increase in cycling flows, whilst 13 experienced a decrease. Overall, between 2009-11 and 2015-17, an index of cycling flows derived from all these cordons (‘combined’ data), and, separately, data for 21 places with continuous data series, showed, on average, cycle flows increasing (+8.7%; +10.1% respectively). Looking at TCF areas, in Leicester, Norwich and the West of England, cycling flows grew. In Southampton, cycling flows decreased. For the remaining local areas with data, the picture was mixed.

In terms of modal share, 33 of the 41 cordons with data showed an increase in cycling modal share between 2009-11 and 2015-17, whilst eight showed a decrease. Across all 41, in 2015-17, the mean cycling modal share was 1.6% of the total people flows recorded. Combined and continuous cordon data suggested a very small increase in cycling modal share over the pre-TCF period (+0.7pp for combined data; +0.2pp for continuous data).

d. Individual cycle counter data

As of September 2022, 'pre-intervention levels' of cycling were available for 28 intervention counters and 39 control counters, from 11 local areas. Generally, most sites chosen had fewer than 400 cycles per day. The intervention sites had slightly higher average cycle flows (mean value of 233 compared with 198 for the control counters), although the distributions of values were similar for the two groups.

'Pre-intervention trends' could be calculated for 17 intervention counters and 34 control counters, from ten local areas. Although the range of values for both intervention and control counters was quite wide, the distributions appeared relatively similar, and showed a mean annual change over the pre-intervention period of +1% for the intervention counters and +5% for the control counters. With the exception of Portsmouth & SE Hampshire (where all counters show a modest decline of 1-3% per annum), the trends at individual counters were generally variable within each local area.

e. Local authority cycling data

Four local areas collected data for cycling that differed from the other data sources:

1. **Derby & Nottingham** – an index of data from monitoring sites across Nottingham (available from 2011) suggested the number of cycles passing over automatic cycle counters increased by +17% between 2011/12-2013/14 and 2015/16-2017/18 but fell substantially in 2020, presumably due to Covid-19.
2. **Greater Manchester** – household survey data (collected from c. 2,000 households each year) for the annual number of cycling trips by Greater Manchester residents aged 5+ suggested that the number of cycle trips per person rose fairly steadily between 2015 and 2019.[28] (Separate data are also available for the ten local authority districts.)
3. **Liverpool City Region** – data from automatic counters reported to be representative of the region showed an +11% increase between 2011-13 and 2015-17, although numbers rose considerably higher than this between those time periods, reaching a peak in 2014. In addition, changes in cycling volumes varied significantly between the component local authority districts.[29]
4. **West Midlands** – three-year-average special tabulations of the National Travel Survey for West Midlands residents suggest the number of cycling trips per annum fell by -11% between 2009-11 and 2015-17.

Summary of cycling data

In the final report, cycling levels and changes will be assessed using five different sorts of data. **Baseline evidence suggests that, overall, cycling levels in the TCF areas as a whole were generally somewhat lower than in the comparison areas. Cordon data and individual counter data suggest that, pre-baseline, cycling was more likely to be growing in the TCF areas, rather than declining**, albeit that it represented only 1.6% of modal share at the cordons. Nominated cycle

[28] Data only available from 2015.

[29] Reasons for this variation will be discussed with this local area at the next stage of data collection.

scheme sites typically had cycling flows of less than 400 bikes per day. All data sources indicated considerable variation between locations in terms of levels and changes in cycling, both within TCF areas, and between TCF areas.

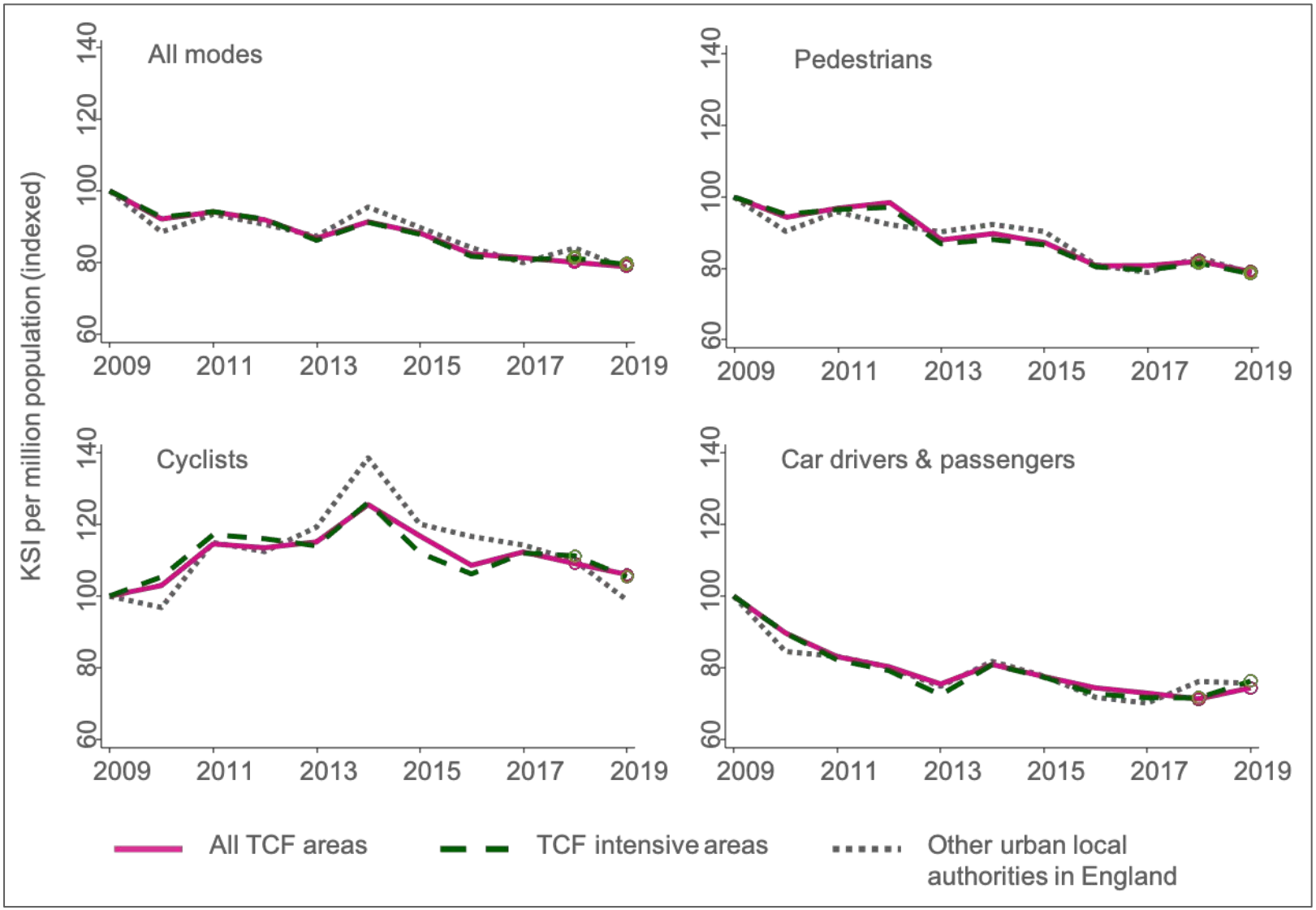
Impacts on pedestrian & cyclist safety

Baseline data for this research question is available from secondary data analysed in Work Package 2: TCF Local Area Analysis. Specifically, information on numbers of road traffic injuries from police-reported Stats19 data[30] has been analysed. The analysis focuses on the 'KSI rate', defined as the number of road traffic casualties who are Killed and Seriously Injured (KSIs) per million people in the local authority.

For the 18 TCF areas collectively, the total KSI rate changed by -12.0% between 2009-11 and 2015-17. This was a larger reduction than the -9.9% decrease in the comparison areas. Looking across the 18 TCF areas, between 2009-11 and 2015-17, eight had achieved a similar or more favourable trend in the KSI rate than the comparison area average, whilst ten had not. It should be noted that, in absolute terms, KSI rates varied considerably between TCF areas, with 2015-17 KSI rates ranging from 327 to 938, and did not always relate to trends. For example, Plymouth's KSI rate had increased during the period, but, in absolute terms, was still one of the lowest of the TCF areas. **Trajectories of KSI rates for the TCF areas, intensive areas and the national comparison group were similar to each other** for (a) all modes, (b) pedestrians, (c) cyclists, and (d) car users, as shown in Figure 8.

[30] https://data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data. Note that from 2016 onwards, figures on the severity of injury have been affected by many police forces changing their reporting systems. To maximise comparability over time, this report uses adjustment factors produced by DfT to model numbers of serious injuries that would have been reported if the new reporting system had been in use from 2009 onwards.

Figure 8: KSI rates by mode at the grouped local authority level (2009-19, indexed to 2009)



Note: Open circles show years when some TCF areas were receiving funding. In absolute terms, KSI rates were similar in TCF areas and the comparison group, with a 2015-17 average KSI rate per million population of 550 in the TCF areas, 536 in the TCF intensive areas, and 544 in other urban local authorities in England.

5.4. Public transport use

Research Question 4 asks *"Did the TCF schemes increase use of public transport, compared with what might otherwise have happened?"*

The following three sections look at:

1. Bus use
2. Light rail use
3. Rail use

Bus use

Baseline data on bus use is available from Work Packages 2: TCF Local Area Analysis, 3: Local Headlines, 4: Town & City Centres and 5b: Buses. It comprises:

a. DfT bus data series BUS0109a

b. National Travel Survey data

c. Data from town/city cordons/screenlines about bus occupant numbers and bus occupant modal share

d. Data from a selection of bus schemes

e. Alternative measurements of bus use from five TCF areas – Greater Manchester, Leicester, North East, Sheffield City Region and West Midlands

Key findings to date from baseline analysis of these five datasets are summarised below.

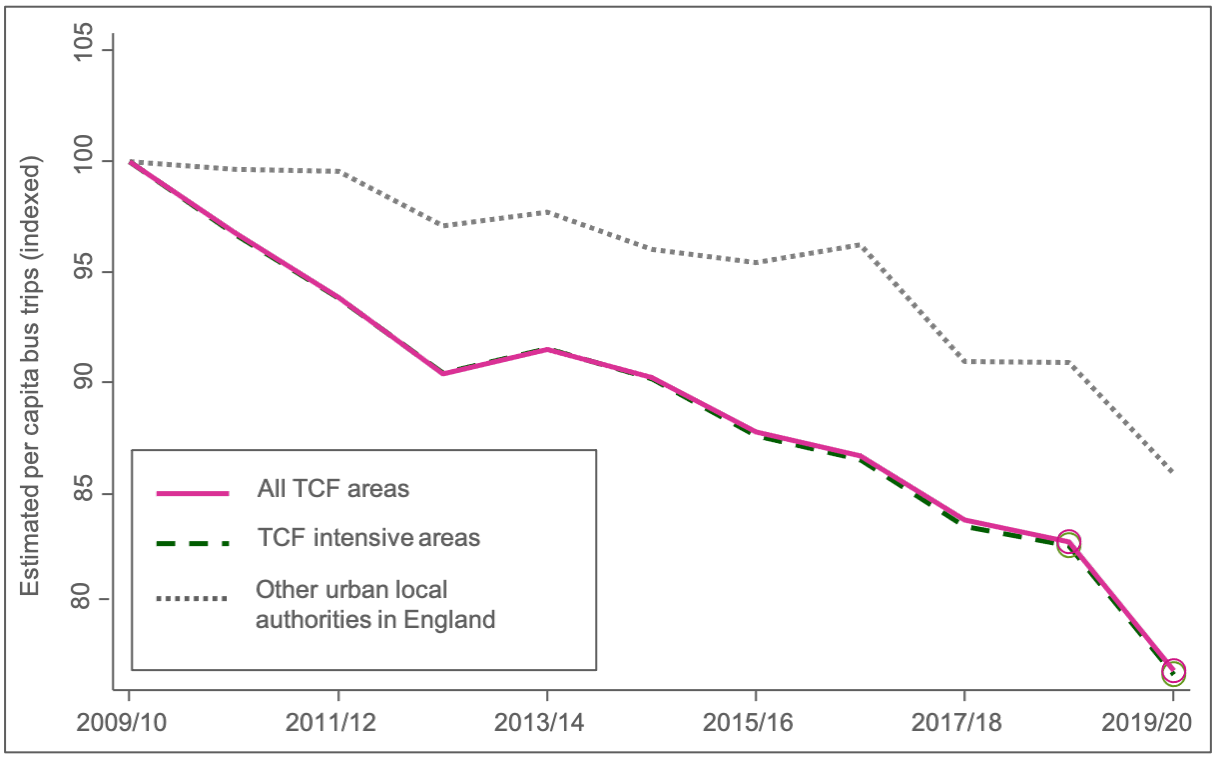
a. Bus passenger data (BUS109a)

DfT bus data series BUS0109a uses bus operator data about numbers of passenger journeys on local bus services by local authority, taken from the DfT Public Service Vehicle Survey.[31]

Overall, absolute numbers of bus passenger journeys changed by -7.4% between 2009/10-11/12 and 2015/16-17/18 in the 16 TCF areas with available data, compared with a decrease in the comparison areas of -0.8%. Meanwhile, overall, per capita bus passenger journeys decreased by -11.1% in the 16 TCF areas between 2009/10-11/12 and 2015/16-17/18, which was again larger than the average decrease of -5.5% in the comparison areas, as shown in Figure 9. In other words, at baseline, bus passenger journeys were generally declining, markedly more so in the TCF areas than in the comparison areas.

[31] www.gov.uk/government/statistical-data-sets/bus01-local-bus-passenger-journeys. This is the only complete national set of patronage data from 2009/10 onwards. There also exists a data series BUS0109b which estimates bus patronage based on direct reports by local authorities. However, the obligation for local transport authorities to report these bus patronage figures was removed after 2009/10, meaning that series BUS0109b has more gaps in the data than BUS0109a.

Figure 9: Estimated bus journeys at the grouped local authority level (per capita, 2009/10-2019/20)



Note: Open circles show years when some TCF areas were receiving funding.

This less favourable trend did, however, come from a baseline level of bus patronage that was twice as high in TCF areas than in the comparison group (73 vs 39 bus journeys per person in 2015/16-17/18). This means that, although the trend was less favourable in the TCF areas at baseline, total numbers of bus journeys per capita were still considerably higher in the TCF areas than in the comparison areas.

These differences are potentially explained by the fact that the TCF intervention areas contain a majority of larger urban areas whilst the comparison group contains a majority of smaller urban areas.

Looking across the 16 TCF areas with patronage data, there were substantial variations in bus patronage levels. Per capita trip numbers ranged from 113 per person in 2015/16-17/18 in Derby & Nottingham, through to 41 per person in 2015/16-17/18 in Stoke on Trent. There was also variation in the trends for bus patronage. Between 2009/10-11/12 and 2015/16-17/18, in absolute terms, bus use had grown by +30% in the West of England, while it had dropped by -29% in Stoke on Trent.

b. National Travel Survey

National Travel Survey data suggests that, between 2009-11 and 2015-17, local bus trips per capita for those living in urban areas changed by -22.7% for those in urban conurbations and -8.0% for those in urban towns and cities. Bus modal share changed by -1.1pp for urban conurbations and -0.2pp for urban towns and cities.

c. Cordons & screenlines

Of the 51 cordons or screenlines in places affected by TCF with bus data available for 2009-11 and 2015-17, ten experienced an increase in bus occupant flows, whilst 41 experienced a decrease. Overall, between 2009-11 and 2015-17, an index of bus use flows derived from all these cordons ('combined' data), and, separately, data for 22 places with continuous data series, showed, on average, bus occupant flows decreasing (-13.9%; -17.2% respectively). Looking at TCF areas, in Derby & Nottingham bus flows seem to have grown but in Greater Manchester, Leicester, Norwich, Sheffield City Region, Southampton, and the West Midlands, bus flows seem to have declined. For the remaining local areas with data, the picture was mixed.

In terms of modal share, 13 of the 51 cordons with data showed an increase in bus occupant modal share between 2009-11 and 2015-17, whilst 38 showed a decrease. Across all 51, in 2015-17, the mean bus occupant modal share was 15.9% of the total people flows recorded. Combined and continuous cordon data suggested a reduction in bus occupant modal share over the pre-TCF period (-2.9pp combined data; -2.2pp continuous data).

d. Patronage data for selected bus schemes

For Work Package 5b: Buses, baseline boarding data were provided for two park-and-ride sites and two major bus hubs, all of which were scheduled for upgrading through TCF at the time of providing data. All showed major dips in use in 2020, but relatively stable use up to that time.

Local areas were also asked to provide patronage data for two examples of bus corridors where there is likely to be a substantial impact from TCF schemes, and to provide the same data for two comparable 'low dose' routes, which will not be affected in the same way. Of the corridor pairs nominated, patronage data enabling an estimation of the pre-intervention trend between 2017 and 2019 was provided for seven corridor pairs (i.e. 14 bus routes) from four TCF areas (Liverpool City Region, Plymouth, Preston and Tees Valley). For these routes, 12 of the 14 routes had experienced a drop in patronage over that time, while two had experienced an increase. Changes were mostly small (i.e. less than 10%) though there were two routes where changes were greater. For the final analysis pre-intervention data may be available for up to 54 routes from 14 TCF areas.

e. Local authority bus data

Four local areas collected data for bus use[32] that differed from the other data sources:

- **Greater Manchester** – area-wide patronage data provided by all operators via a passenger survey with a sample of approximately 1% (excluding free child patronage, external patronage and half cross boundary trips) suggested that bus use fell by -9.3% between 2009-11 and 2015-17.

[32] For final reporting, there should also be bus use data available for Southampton, which suggests increases in bus use between 2011/12 and 2018/19.

- **Leicester** – data from three park-and-ride services suggested that bus use (on those services) fell by -22.5% between 2014/15 and 2015/16-2017/18.
- **Sheffield City Region** – area-wide bus passenger data from operators suggested a drop of about -20% between 2015 and 2019.
- **West Midlands** – area-wide boarding data from all operators in the West Midlands Metropolitan area suggested that bus use fell by -12.6% between 2009/10-2011/12 to 2015/16-2017/18.

Summary of bus use data

In the final report, changes in bus use will be assessed using five different sorts of data. **All data sources suggest that, on average, bus use was declining in the period prior to TCF.** The TCF areas, representing the largest conurbations in the country, started with relatively high levels of bus use, compared with other urban areas, but have also experienced a relatively high degree of decrease. However, both levels and trends in bus use vary between places, with some places experiencing growth.

Light rail use

Baseline data on light rail use comes from Work Packages 2: TCF Local Area Analysis and 5a: Light Rail.

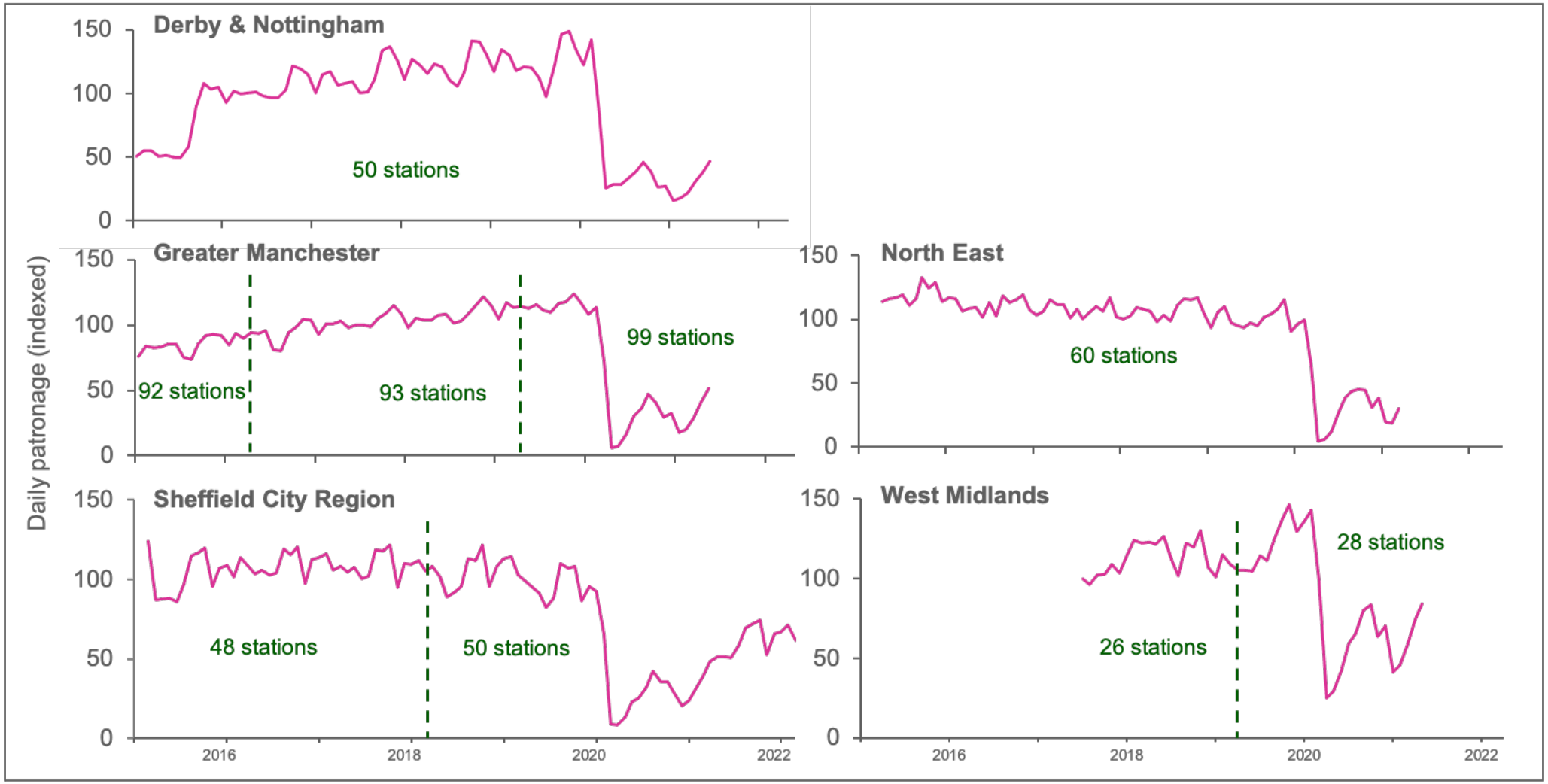
Work Package 2: TCF Local Area Analysis includes analysis of DfT estimates of passenger journeys on light rail and trams (data series LRT0101).[33] This covers the systems in five TCF areas (Derby & Nottingham, Greater Manchester, North East, Sheffield City Region and West Midlands). Per capita trends have been calculated in relation to the whole TCF area.[34] Overall, absolute and per capita numbers of light rail trips have been growing over the past decade in the four light rail and tram systems in TCF areas combined, where there was a sufficient duration of pre-TCF data (i.e. excluding data from the West Midlands, which had a change of operator in 2018/19). However, this overall positive trend masks substantial diversity:

- **Passenger numbers in Derby & Nottingham and Greater Manchester TCF areas grew very rapidly over the past decade**, with per capita number of passenger journeys more than doubling between 2010/11 and 2019/20.
- **Passenger numbers in the North East and Sheffield City Region TCF areas showed a modest decline**.

[33] www.gov.uk/government/statistical-data-sets/light-rail-and-tram-statistics-lrt. Data from Greater Manchester is only used from 2010/11 onwards, and data from West Midlands is only used from 2018/19, as, before these dates, these cities used different calculation methods and/or operators, and therefore the earlier data may not be directly comparable.

[34] Using the population of the whole TCF area provides a stable denominator for looking at changes in numbers of journey per capita across the course of the Fund, particularly if systems change in geographical extent, and means that changes in population are accounted for to some extent. It does, however, mean that differences in levels of per capita use between TCF areas are largely driven by differences in the geographical extent of the systems, rather than providing an indication of differences in how well they are used locally.

Figure 10: Monthly light rail passenger journeys (indexed to July 2017)



Note: Green dotted lines indicate the start of a reporting year where the number of stations operating changed.

In Work Package 5a: Light Rail, local areas were asked for more detail about light rail patronage data. Local areas were able to provide absolute patronage data on a monthly or four-weekly basis for all systems, as shown in Figure 10. Analysed annually, this gave the same results as the LRT0101 data series. On a monthly basis, this showed, unsurprisingly, big dips in patronage on all systems in early 2020, and the beginnings of recovery after that point.

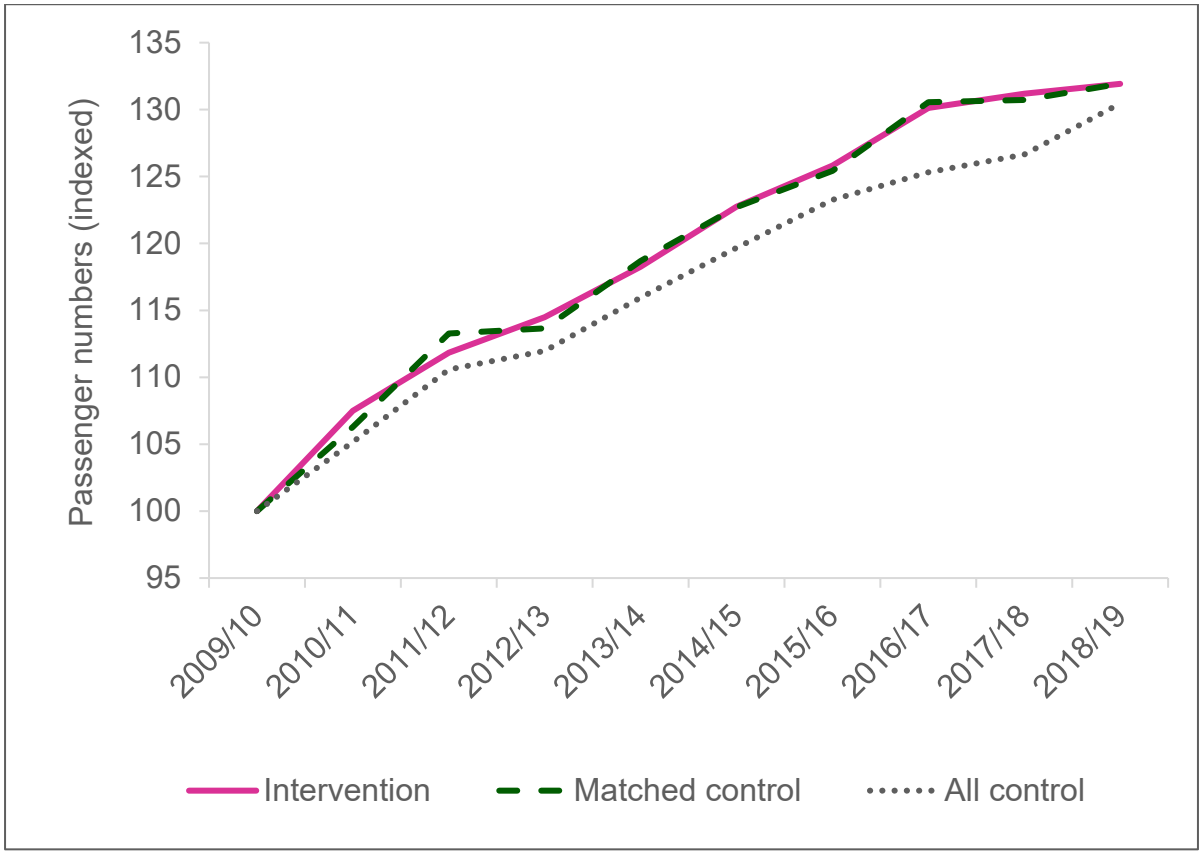
Station level boarding data was also provided for six stations, where major increases in parking (and, in some cases, other upgrades) were planned. None of these stations appeared to be experiencing substantial patronage growth prior to 2020 (albeit that, for three of the stations, data were only available from 2018, making trend analysis problematic).

Rail use

Baseline data on rail use comes from Work Package 6: Rail.

The Office of Rail & Road's annual Estimates of Station Usage have been used to look at changes in patronage for an 'intervention group' of 78 existing rail stations; a 'matched control' group of stations, and a set of 'all controls' stations (where the 'all controls' group includes all stations in England, outside London, excluding the intervention stations and those with missing data for the baseline period).

Figure 11: Trends in passenger numbers for intervention stations, matched control stations & 'all controls' stations (2009/10 to 2018/19, indexed to 2009/10)



Between 2009/10-11/12 to 2015/16-17/18, all three groups of stations showed a similar average increase in patronage, of +21.2%; +19.6% and +19.3% respectively (with the data series for the intervention and matched control stations shown in Figure 11).

Network Rail's 2018 classification of rail stations by passenger numbers was used to break down the intervention and 'all controls' station groups by size, with patronage changes calculated for the same time period. This showed that the greatest growth in patronage over that period occurred at the largest Category A stations (those with over 13,000 daily entries and exits), which grew by +25.8% (intervention stations) or +26.3% ('all controls' stations). For the other five categories of station, the 'all controls' station group suggested growth ranged from +16.2% to +16.9%. (Results for the intervention stations were somewhat more variable, when divided by size category, not least due to the relatively small number of stations in each category.) Growth also varied by geographical region. Between 2009/10-11/12 to 2015/16-17/18, according to the 'all controls' station data, rail growth was lowest in the South East, at +12.2% (relevant to Portsmouth & SE Hampshire, Southampton and SE Dorset) and highest in the West Midlands, at +37.9% (relevant to Stoke on Trent and West Midlands).

Network Rail's quarterly 'Station Concourse Footfall' statistics for the stations it manages provide data from Quarter 3 2015 onwards, and provided an alternative insight on patronage changes at the two largest intervention stations (Bristol Temple Meads and Leeds). Their data was compared with combined data from a control set of four stations comprising the remaining non-London English stations in the dataset with data from 2015 onwards (namely Birmingham New Street, Liverpool Lime Street, Manchester Piccadilly and Reading). Between Quarter 3 2015 and Quarter 4 2019, the control group showed a higher level of growth, though differences mainly seem to have occurred in the last quarters of 2015 and 2019, and the trends appeared relatively similar apart from that.

5.5. Car ownership & use

Research Question 5 asks *"Were there effects on car ownership/use, compared with what might otherwise have happened?"*

Baseline data for this research question is available from Work Packages 2: TCF Local Area Analysis, 3: Local Headlines, 4: Town & City Centres and 8: TCF Locality Analysis. It comprises:

a. DfT estimates of kilometres of car traffic per local authority, data series TRA8905a[35]

b. National Travel Survey data

[35] www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra Note that in August 2020, values from 2010-2018 were revised to adjust for the minor road benchmarking exercise www.gov.uk/government/publications/road-traffic-statistics-minor-road-benchmarking. In general, the revised trend showed a larger traffic increase.

c. Data from town/city cordons/screenlines about car occupant flows and modal share

d. Alternative measurements of car use from five TCF areas – Derby & Nottingham, Greater Manchester, North East, Portsmouth and West Midlands

e. Small area statistics on car ownership

a. DfT estimates of car traffic kilometres

DfT estimates of kilometres of car traffic per local authority (data series TRA8905a) have been analysed, looking at both absolute and per capita changes (generated by dividing the traffic kilometres by the resident population).

Although car kilometres per capita were, on average, lower in TCF areas (5,626 km per person per year compared with 8,135 km in the comparison areas in 2015-17), trends were less favourable. Overall, absolute car traffic kilometres increased by +9.0% in the 18 TCF areas between 2009-11 and 2015-17, a larger increase than the +8.2% increase in the comparison areas. Meanwhile, overall, per capita car kilometres increased by +4.6% in the 18 TCF areas between 2009-11 and 2015-17, which was again larger than the average increase of +3.0% in the comparison areas. However, there were three TCF areas which achieved a reduction in car kilometres per capita over that period (Derby & Nottingham, Leicester and Southampton), though not reductions in absolute car kilometres.

It should be noted that the traffic figures relate to all car use in the area, not simply car use by residents. Given that employment trends were particularly favourable in the TCF areas, and the number of jobs had grown faster than population (as discussed in Section 5.9), these traffic increases may partly relate to people commuting in from outside the TCF areas.

b. National Travel Survey

National Travel Survey data suggests that, between 2009-11 and 2015-17, car driver and passenger trips per capita for those living in urban areas changed by -2.6% for those in urban conurbations and -3.7% for those in urban towns and cities. Car modal share changed by -0.2pp for urban conurbations and -0.6pp for urban towns and cities.

c. Cordons & screenlines

Of the 51 cordons or screenlines in places affected by TCF with car data available for 2009-11 and 2015-17, 21 experienced an increase in car occupant flows, whilst 30 experienced a decrease. Overall, between 2009-11 and 2015-17, an index of car use flows derived from all these cordons (‘combined’ data), and, separately, data for 23 places with continuous data series, showed, on average, car occupant flows decreasing (-7.1%; -11.0% respectively). Looking at TCF areas, in Derby & Nottingham, Sheffield City Region, Southampton and the West of England, car occupant flows decreased. For the remaining local areas, the picture was mixed.

In terms of modal share, 28 of the 51 cordons with data showed an increase in car occupant modal share between 2009-11 and 2015-17, whilst 23 showed a decrease. Across all 51, in 2015-17, the mean car occupant modal share was 61.0% of the

total people flows recorded.[36] Combined and continuous cordon data suggested no major changes in car occupant modal share over the pre-TCF period (-0.1pp combined data; -2.0pp continuous data).

d. Local authority traffic data

Five local areas collect traffic data that differed from the other data sources:

- In **Nottingham** total annual kilometres travelled by all motor vehicles on all roads are estimated from DfT counts carried out on the local authority A-road network and from the authority's own counts carried out at a sample of points on the B, C and unclassified road network. All counts are factored to AADT (Annual Average Daily Traffic) levels using locally derived factors from permanent counters. The data suggest that, in Nottingham, total vehicle kilometres fell by -4.1% between 2009-11 and 2015-17.
- **Greater Manchester** produces an annually-averaged estimate of daily vehicle kilometres (by cars, LGVs and OGVs) on A roads, B roads and motorways. This suggests that, in Greater Manchester, vehicle kilometres rose by +1.5% between 2009-11 and 2015-17.
- The **North East** produces a congestion efficiency figure, based on the peak hour speed divided by the free flow speed, using a weighted mean of observed speeds and link length (on weekdays). This showed a slight improvement of +1.3% at the TCF area level between the first year of data (2014) and the 2015-17 average.
- Data from three traffic counter sites in the city of **Portsmouth,** available from 2018, showed stability of traffic levels between 2018 and 2019.
- The **West Midlands** generates two measures of traffic:
    1. The first relates to the annual daily number of vehicles (car, taxi, bus, coach, LGV) on major A and B roads (with a small section of the A38 Aston expressway motorway) for the Key Route Network. This rose by +4.7% between 2009-11 and 2015-17, and continued increasing after that point.
    2. The second provides a two-year average of weekday vehicle kilometres, for all vehicles, on classified non-principal, trunk and principal roads for the whole Combined Authority area. This showed a small increase of +3% between 2013-14 and 2017-18.

e. Small area data

Work Package 8: TCF Locality Analysis will assess potential effects on car ownership in residential areas, in relation to two types of area, namely:

1. Areas of deprivation which are expected to benefit from TCF schemes.

[36] Note that this is not quite the inverse of the value given in Section 5.7, as that analysis only includes cordons where walking, cycling, car use and bus use were all included, whilst this analysis includes cordons which were less inclusive.

2. Residential areas near the most substantial public transport schemes being delivered by the Fund.

In total, 119 sites (representing 1,690,173 people, according to 2016-17 data) were identified as deprived locations where benefits from TCF schemes were expected; whilst 46 sites (representing 550,216 people, according to 2016-17 data) were identified as residential areas where benefits from major public transport schemes are expected. (These area types are discussed in more detail in Sections 5.8 and 5.11.) Car ownership data for these localities were analysed, together with data for matched control sites, and for a broader national control group.

In general, deprived localities had somewhat lower car ownership rates than those identified as control locations (with per capita rates in 2016-17 being 28.9 cars per 100 people for the intervention sites; 31.4 for the matched control sites and 36.4 for the national control sites) presumably because local areas have partly targeted their interventions at the least well-off parts of their communities, where car ownership is likely to be lowest. However, all three groups showed similarity of trend, namely that there was a gradual rise in car ownership between 2012 and 2017 (representing an increase of about 2.5 cars per 100 people over that time).

Localities benefitting from major public transport interventions, in general, also had lower car ownership rates than those identified as control locations, (with per capita rates in 2016-17[37] being 38.6 cars per 100 people for the intervention sites; 39.0 for the matched control sites and 46.6 for the national control sites), presumably because major public transport infrastructure may also have partly been sited to benefit less well-off areas. However, again, all three groups showed similarity of trend, namely that there was a gradual rise in car ownership between 2012 and 2017 (representing a smaller increase of 2 to 2.3 cars per 100 people over that time).

Summary of car ownership & use data

In the final report, car ownership and use will be assessed using five different sorts of data. Results at baseline are somewhat mixed. **Small area statistics suggest gradual increases in car ownership by TCF residents at particular sites, and national traffic estimates suggest traffic increases in the TCF areas generally. However, NTS data suggests per capita car trips have been decreasing for urban residents** (with traffic increases therefore *potentially* partly explained by increases in inward commuter flows and/or population growth). Data from the cordons and screenlines suggest a mixed picture, though, when averaged, they indicate a reduction in car flows into town and city centres. Other data received from the TCF areas is mixed, with only Nottingham reporting an absolute reduction in traffic flows. In the final analysis, examining data about cars in conjunction with that for other modes, and assessing TCF areas separately, as well as overall, will therefore be important.

[37] Note a small inconsistency with Work Package 2: TCF Local Area Analysis, which has calculated 2015-17 rates. Use of 2015-17 data would have generated somewhat higher values here.

5.6. Bus & light rail performance

Research Question 6 asks *"Did the performance of bus and light rail services improve, overall and in particular locations?"*

The following sections look at this issue separately for bus, and then light rail, performance.

Bus performance

Baseline data for this research question is available from Work Packages 2: TCF Local Area Analysis, 3: Local Headlines and 5b: Buses. It comprises:

a. Bus punctuality data from the DfT data series BUS0902, which estimates the percent of non-frequent bus services running to time, which was available for 15 TCF areas[38]

b. Bus miles operated, from DfT data series BUS02

c. Bus punctuality and journey time data for a selection of intervention and control routes from four TCF areas (Leicester, Plymouth, West Midlands and West Yorkshire)

d. Alternative measurements of bus performance from two TCF areas – Greater Manchester and Sheffield City Region

Key findings to date from baseline analysis of these four datasets are summarised below.

a. Bus punctuality data (BUS0902)

Between 2011/12 and 2015/16-17/18, the percent of non-frequent bus services running to time (weighted by bus journey numbers) improved by +2.2% for the 15 TCF areas with data (to 83%), whilst it fell by -3.3% for the comparison areas (to 84%). Looking across the 15 TCF areas with punctuality data, punctuality improved in 13 of the 15 TCF areas, with a particularly substantial improvement in the Tees Valley (of +14.9%). Results for the TCF intensive areas were very similar to those for all TCF areas, since most (93%) of the bus passenger journeys in the TCF areas were in the intensive areas.

b. Bus miles operated

The BUS02 data series is also relevant to bus performance, indicating the number of bus miles operated by local bus services. Table BUS0207a indicates that, for urban areas in England (excluding London), from 2011/12 to 2015/16-17/18, local bus miles operated fell from 601 million miles to 547 million miles, a drop of -8.9%. This dataset was not analysed in detail at baseline, but will be used in the final analysis.

[38] www.gov.uk/government/statistical-data-sets/bus09-frequency-and-waiting-times Punctuality has been aggregated across local authorities after weighting by the total number of bus journeys as measured in BUS0109a. Data from this series is used from 2011/12 onwards (due to some local authorities having incomparable measures from earlier years). Data were not available for Norwich, Preston or Plymouth.

c. Punctuality & journey time data for selected bus routes

In Work Package 5b: Buses, local areas were asked to provide punctuality and journey time data for two examples of bus corridors where there is likely to be a substantial impact from TCF schemes, and to provide the same data for two comparable 'low dose' routes, which will not be affected in the same way. Of the corridor pairs nominated, punctuality and journey time data enabling an estimation of change between 2018 and 2019 were provided for seven corridor pairs (i.e. 14 bus routes), from four TCF areas (Leicester, Plymouth, West Midlands and West Yorkshire). For these 14 routes, 11 had experienced an improvement in bus punctuality over that period, compared with three which had experienced a decline. All changes were relatively small (i.e. less than 10%). Data for journey times was more mixed – on five routes journey times had decreased, on 2 they had stayed the same, and on 7 they had increased (with three routes where journey times had changed by more than +10%). For the final analysis, pre-intervention data may be available for up to 54 routes from 14 TCF areas.

d. Alternative measures of bus performance

Two local areas provided additional bus performance data[39]:

1. **Greater Manchester** generates a bus services reliability measure. This records the percentage of observed bus departures from a given location compared with the service provision promised to the public, and is derived from manual observations at a sample of locations across the network at set time points, on a weekly basis. The measure showed a small improvement of +0.5pp between 2009/10-2011/12 and 2015/16-2017/18 (from 97.4% to 97.9%).
2. **Sheffield City Region** generates a measure for the punctuality of all services (frequent and non-frequent) that are real-time enabled, which is derived from real-time information. It is broken down to district level. For the region as a whole this improved by +2.7pp between 2009/10-2011/12 and 2015/16-2017/18 (from 82.6% to 85.2%). In 2020, the punctuality of services rose, which was likely to have been an effect of lower traffic levels during the early part of pandemic. In 2021 it returned to 2019 levels.

Summary of bus performance data

In the final report, bus performance will be assessed using four different sorts of data. Generally, there was **some evidence that bus punctuality was improving in the TCF areas at baseline**, albeit that most improvements were reasonably small. The mixed data on journey times for the selection of routes suggest that, in some places, this may partly have been achieved by amendments to timetabling, although this cannot be concluded with any certainty. However, **overall service provision (as measured by bus miles operated) was reducing over time**.

[39] There may also be West Midlands data on bus miles operated. This requires clarification with the local area.

Light rail performance

Data on light rail performance comes from Work Package 5a: Light Rail. All five TCF areas with light rail systems have performance measures relating to services operated. Four areas (excluding the West Midlands) have performance measures relating to punctuality. The measures are not always directly comparable between local areas but they can be used for examining the change in performance compared with 2019, which was identified as the baseline year, on the basis of available data.

Between 2017 and 2019, the light rail systems in Nottingham and Greater Manchester appeared to show a small improvement in all of their performance measures. In Nottingham, however, lower performance in 2017 was attributed to July 2017, when just over 90% of tram services operated as a result of a technical fault causing major disruptions which lasted several days. Greater Manchester also experienced disruptions in 2017 due to technical issues in May and July, and a tram crash in November 2017.

In contrast, the North East and Sheffield City Region both saw a small drop in service operation between 2017 and 2019, and there was also a drop in punctuality in the North East. However, the slight drop in the number of kilometres operated in the North East in 2019 was mostly due to fewer services operating in December 2019, probably due to industrial action by drivers that month. In Sheffield City Region, fewer services ran in November 2019, due to a series of heavy rainstorms which resulted in severe flooding. This disruption affected the services which could operate but it did not impact upon the punctuality of the services which did run.

This suggests that, overall, **the performance of the light rail systems was relatively stable prior to the pandemic, albeit with periods of significant disruption and with greater variation on some systems than others.** .

5.7. Non-car travel into town & city centres

Research Question 7 asks *"Did TCF schemes change the number or share of people accessing town/city centres by non-car means, compared with what might otherwise have happened?"*

Baseline data for this research question is available from Work Package 4: Town & City Centres. For this analysis, 'non-car' is defined as the sum of trips by bike, on foot or by bus (since these modes were common to most of the cordons or screenlines studied) and is compared with changes in the car modal share.

National Travel Survey data suggest that, between 2009-11 and 2015-17, there was a small decline in non-car trips by urban residents, due to a reduction in bus use, in the order of five and four trips per person per year (urban conurbations and urban towns and cities respectively), though with a greater decline in the number of car trips, in the order of 13 and 24 trips per person per year (urban conurbations and urban towns and cities respectively). Consequently, the non-car-modal share rose but only by +0.2 and +0.5pp (urban conurbations and urban towns and cities respectively).

TCF areas supplied 37 cordons and screenlines with data for all four modes. For these, between 2009-11 and 2015-17, an index of non-car flows ('combined' data),

and, separately, data from 21 cordons with continuous data series, showed, on average, non-car flows reducing (by -8.8%; -9.7% respectively). Meanwhile, as described previously, on average, car occupant flows also reduced by a similar amount.

In terms of modal share, across all 37, in 2015-17, the mean non-car modal share was 34.5% of the total people flows recorded.[40] Combined and continuous cordon data suggested little change in the non-car modal share over the pre-TCF period (-0.4pp combined data; +0.4pp continuous data).

Both datasets suggest that the non-car modal share was relatively stable during the baseline period, though with total trip numbers into major urban centres reducing.

5.8. Access & employment near major public transport schemes

Research Question 8 asks *"For those living near new public transport infrastructure, how did access to jobs via public transport (plus walking) change, and were there associated effects on unemployment?"*

Work Packages 2: TCF Local Area Analysis and 8: TCF Locality Analysis will both analyse this issue using journey time statistics, if data are available for a suitable time frame (as data release of these statistics usually takes two years). Baseline analysis has not been undertaken of this data, given uncertainties over whether there will be sufficient post-intervention data available for final analysis.

In addition, Work Package 8: TCF Locality Analysis will assess potential effects on unemployment in residential areas near the most substantial public transport schemes resulting from the Fund. Specifically, 13 TCF areas have identified residential areas expected to benefit from major public transport schemes (including new rail stations, light rail stations, park-and-ride sites and major bus schemes). They also identified other residential areas which could be considered similar but which were not expected to benefit in the same way and could therefore act as a control. In total, **46 sites (representing 550,216 people, according to 2016-17 data) were identified as residential areas where benefits from major public transport schemes were expected that should make a difference to access to jobs**.

Unemployment data for these localities were analysed, together with data for their matched control sites, and for a broader national control group. In general, localities receiving interventions had slightly higher unemployment rates than control locations (with per capita rates in 2016-17[41] being 2.9% for the intervention sites; 2.6% for the matched control sites and 1.8% for the national control sites), presumably because new major public transport infrastructure may have been deliberately sited to benefit areas with poorer access to jobs. However, all three groups showed similarity of

[40] Note that this is not quite the inverse of the value given in Section 5.5, as that analysis included some cordons where certain modes were not included.

[41] Note a small inconsistency with Work Package 2: TCF Local Area Analysis, which has calculated 2015-17 rates. Use of 2015-17 data would have generated somewhat higher values here.

trend, namely that there was a substantial decline in unemployment from 2013 to 2016, then relative stability in the following year.[42] This suggests the analysis should be well placed to identify any trend changes generated by TCF interventions.

5.9. Productivity & employment

Research Question 9 asks *"Did the TCF areas experience increases in productivity (as measured via GVA) and employment, compared with non-TCF areas?"*

Baseline data for this research question is available from secondary data analysed in Work Package 2: TCF Local Area Analysis, relating to number of jobs, the employment rate, unemployment and productivity.

When comparing data for the TCF areas (and TCF areas receiving intensive interventions) with data for the comparison areas used for this work package (i.e. other urban areas in England outside London), it suggests a somewhat mixed picture prior to TCF. Compared with elsewhere, **in the TCF areas, job numbers and the employment rate (measured as jobs per person) were increasing faster but, in absolute terms, unemployment (measured by benefit claims) was higher (though showing a similar trend to the comparison areas); while productivity was lower, and had been increasing more slowly (albeit that it was increasing).**

The similarity of trends in the unemployment rate in the TCF and non-TCF areas means that post-intervention comparisons for this metric should be particularly informative. In relation to productivity and job numbers, the data implies there may be some differences in employment structure in the largest conurbations (which are under-represented in the comparison group).

Specific results for the four metrics examined were as follows, with percentage changes calculated between 2009-11 and 2015-17:

1. **Number of jobs:** In all 18 TCF areas, the number of jobs had been increasing, and at a faster rate than population growth.[43] The pooled rate of growth in numbers of jobs[44] was +8.6% in the TCF areas (and +9.0% in the TCF intensive areas) compared with +7.6% for the comparison group.
2. **Employment rate:** In all 18 TCF areas, the employment rate had been increasing.[45] The pooled rate of growth in the employment rate was +5.8% in the TCF areas (and +5.9% in the intensive areas) compared with +5.1% in the comparison group. However, it was somewhat lower in absolute terms (being 71% in TCF areas; 70% in TCF intensive areas; and 76% in comparison areas in 2015-17).

[42] Analysis conducted to 2017.

[43] Number of jobs taken from the Annual Population Survey.

[44] i.e. The change in the total number of jobs in the areas when all the jobs in those areas were added together for each of the two time periods.

[45] Number of jobs per person, with job numbers converted to per capita rates using the ONS mid-year estimates for the number of people aged 16 to 64 years.

3. **Unemployment:** In absolute terms[46], based on alternative claimant count data (available from 2013), the unemployment rate in the TCF areas was somewhat higher than in the comparison group, with a 2015-17 average rate of +3.9% in the TCF areas, +4.3% in the TCF intensive areas, and +2.9% in the comparison group. For all areas, the trend in the unemployment rate was similar, and showed a substantial decline from 2013 to 2016, then relative stability for three years before dramatically spiking in 2020 due to the Covid-19 pandemic.
4. **Productivity:** GVA and GVA per capita had both increased more slowly in the TCF areas than in the comparison areas – with per capita GVA increasing by +4.9% in the TCF areas, +4.5% in the TCF intensive areas and +10.0% in the comparison areas.[47] As well as showing less favourable trends in productivity, the TCF areas also had lower per capita productivity in absolute terms throughout the period examined, with per capita annual values for 2015-17 (2016 prices) being £22,736 for TCF areas; £22,938 for TCF intensive areas and £28,427 for comparison areas.

5.10. Vehicle emissions

Research Question 10 asks *"Did TCF schemes reduce vehicle emissions, compared with what might otherwise have happened?"*

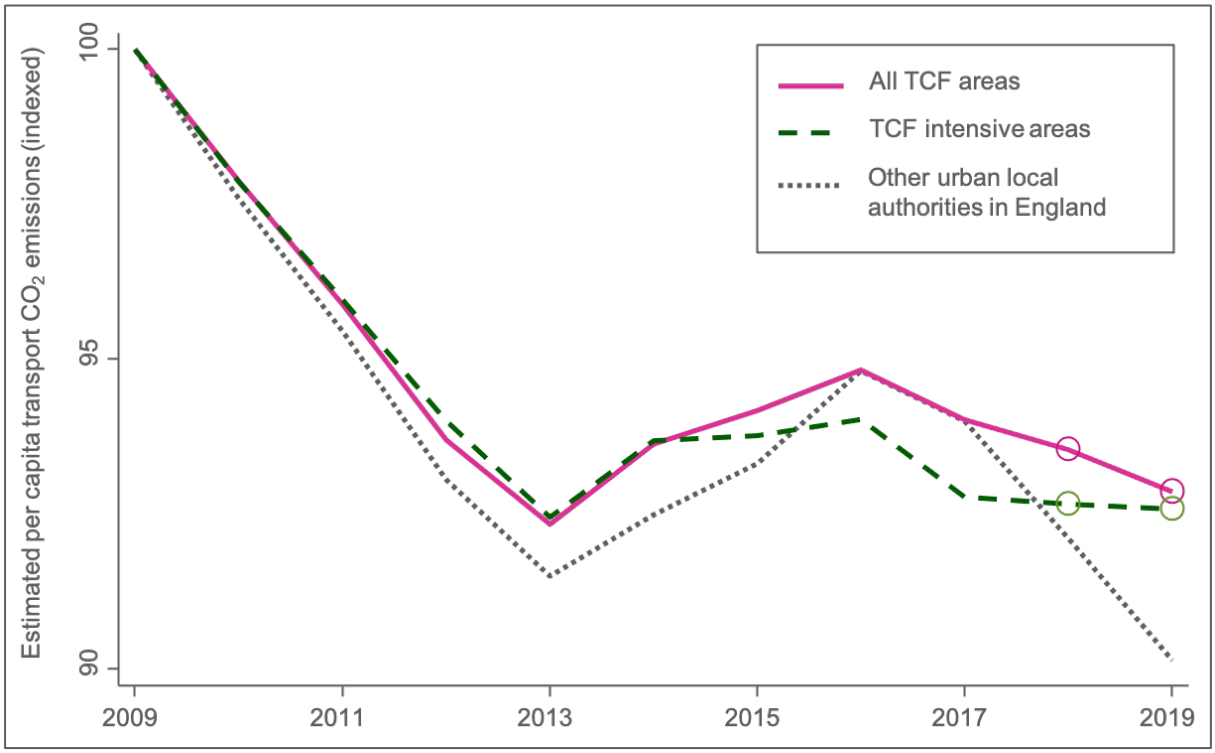
Evidence that will be available about changes in car use has already been discussed in Section 5.5. Additional baseline data for this research question is available from Work Package 1: Schemes & Outputs and Work Package 2: TCF Local Area Analysis.

Work Package 2: TCF Local Area Analysis specifically analyses **DECC estimates of transport carbon dioxide emissions** (within the scope of local authority influence). For the TCF areas as a whole, in absolute terms, these increased by +0.4% between 2009-11 and 2015-17, a slightly smaller increase than the increase in the comparison areas of +0.8%. Meanwhile, overall, for the same period, per capita transport carbon dioxide emissions decreased by -3.6% in the TCF areas, which was similar to the average decline of -3.7% in the comparison areas, as shown in Figure 12. However, the trend in the intensive areas was slightly more favourable (a decline of -4.5% in per capita values) and there were differences in trend for both absolute and per capita values between individual TCF areas.

[46] Alternative claimant count figures used, converted to per capita rates using the ONS mid-year estimates for the number of people aged 16 to 64 years.

[47] ONS 'balanced' measure of Gross Value Added (GVA) 'chained volume measures' used.

Figure 12: Estimated per capita carbon dioxide emissions from transport within the scope of local authority influence at the grouped local authority level (2009-19)



Note: Open circles show years when some TCF areas were receiving funding. In absolute terms, per capita transport CO_2 emissions were somewhat lower in TCF areas than the comparison group, with a 2015-17 average kt CO_2 per 1000 people per year of 1,275 in the TCF areas, 1,168 in the TCF intensive areas, and 1,294 in other urban local authorities in England.

Meanwhile, Work Package 1: Schemes & Outputs will provide insights into the **installation and use of electric vehicle charging points**, and, separately, the **introduction and use of cleaner buses**. As already listed in Section 5.1, at the time that baseline data was gathered, the Fund was expected to deliver over 578 EV charging points and at least 77 cleaner buses.

An early scheme to deliver emissions benefits was the Coventry Ultra Low Emission Bus Scheme, introduced in the West Midlands in 2020. This involved the purchase of ten new electric buses and installation of ten new electric bus chargers at the bus depot. As of March 2021, buses were operating on cross-city routes through corridors with poor air quality – collectively travelling about 50,000km a month.

In the final analysis, Work Package 2: TCF Local Area Analysis will also analyse data about the **take-up of electric cars** in the TCF areas compared with control areas.

5.11.Unemployment in deprived areas targeted by TCF

Research Question 11 asks *"Did deprived localities benefitting from TCF schemes experience lower rates of unemployment, compared with what might otherwise have happened?"*

Baseline data for this research question will be available from Work Package 8: TCF Locality Analysis. All 18 TCF areas identified areas of deprivation[48] which were expected to benefit from their TCF schemes, and other areas of deprivation which would not be benefiting, and that could act as a control. In total, **119 sites (representing 1,690,173 people, according to 2016-17 data) were identified as deprived locations where benefits from TCF schemes were expected to be sufficiently substantial that they could make a difference to access to jobs**.

Unemployment data for these localities, together with data for their matched control sites, and for a broader national control group were analysed. Localities receiving interventions, in general, had somewhat higher unemployment rates than those identified as control locations (with per capita rates in 2016-17[49] being 4.2% for the intervention sites; 3.6% for the matched control sites and 3.2% for the national control sites) presumably because local areas had partly targeted their interventions at the most deprived parts of their communities. However, all three groups showed similarity of trend, which matches that reported in Section 5.9, namely that there was a substantial decline in unemployment from 2013 to 2016, then relative stability in the following year.[50] This similarity of trend suggests the analysis should be well placed to identify any trend changes generated by TCF interventions.

5.12.Contribution of the Fund to wider objectives

Research Question 12 asks *"Did TCF spending support wider objectives, relating to housing growth, air quality, direct job creation and the Future of Mobility Grand Challenge?"*[51]

Baseline data for this research question is available from Work Package 1: Schemes & Outputs and Work Package 2: TCF Local Area Analysis.

According to ONS population data analysed in Work Package 2: TCF Local Area Analysis, prior to TCF, in all 18 TCF areas, the population was increasing, with the pooled rate of growth being +4.2% from 2009-11 to 2015-17. This was slightly lower than in the comparison group (where the equivalent change was a +5.2% increase).

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[48] Areas were only considered 'deprived' if their 2019 Index of Multiple Deprivation score suggested that they fell within the 40% more deprived areas in England.

[49] Note a small inconsistency with Work Package 2: TCF Local Area Analysis, which has calculated 2015-17 rates. Use of 2015-17 data would have generated somewhat higher values here.

[50] Analysis conducted to 2017.

[51] The Future of Mobility Grand Challenge was a Government initiative launched in 2018, aimed at helping the UK to become 'a world leader in shaping the future of mobility'. It has since been subsumed into Build Back Better.

During TCF, all local areas were expecting TCF schemes to benefit **housing growth areas** within their locality, with pooled estimates from these suggesting that at least[52] 140 areas (with more than 197,000 houses) will benefit.

Positive impacts were also expected in relation to air quality (with potential effects on vehicle emissions already discussed in Section 5.10). At least 14 local areas had **air quality management areas** which were expected to benefit from TCF schemes. By March 2021, 11 local areas reported that air quality management areas (in five TCF areas) had started benefitting from TCF schemes.

The Fund has also been a source of employment. Estimates from 17 local areas suggested that, for the financial year 2020/21, it had been directly responsible for over 450 FTE **jobs** in local authorities, with at least 790 FTE **other jobs** identified as being supported by the Fund in related roles (such as public transport operation or infrastructure construction).[53] At least eight local areas were expecting to provide **apprenticeships** as part of their local TCF programme.

Various schemes being implemented through TCF aligned with the **Future of Mobility Grand Challenge**, including EV charging points, electric and hydrogen buses, low-carbon ferries, smart ticketing, real-time information and enhanced traffic management systems. The expected outputs are listed in Section 5.2.

[52] Use of 'at least' in this sub-section indicates missing or ambiguous data from one area or more.

[53] Job numbers relate to full time equivalent roles over the financial year up to March 2021.

6. CONCLUSIONS

This evaluation will look at the effects of the Transforming Cities Fund on transport and environmental policy objectives, and will also seek to understand broader economic and social impacts, particularly impacts on productivity, access to work and the economic performance of cities and city regions. By putting additional emphasis on economic impacts, it will build on, and go further than, evaluations of previous national funds, such as the Local Sustainable Transport Fund[54].

Data gathered from local areas indicates the Government's investment is expected to deliver a wide range of transport improvements including new rail and metro stations; rail improvements; better, cleaner bus services with improved ticketing and information; more park-and-ride schemes; active travel routes; public bike hire services; more pedestrian-friendly neighbourhood and city centre areas; improved traffic management; more charging points for electric cars; and low carbon ferries.

Focus of the evaluation

Given the significant proportion of total investment that, at the time of baseline data collection, was allocated to rail stations, light rail schemes, bus schemes, cycle routes, city centre improvements and multi-modal corridor upgrades, these elements of the Fund are a particular focus for this evaluation. Dedicated work packages have been designed, aimed at examining the impact of individual interventions in detail.

At the time of collecting baseline data, datasets were established relating to:

- 52 town centres where TCF was expected to affect travel choices.
- 119 residential areas of relative deprivation expected to benefit from TCF schemes.
- 46 residential areas expected to benefit from major public transport TCF schemes.
- 78 rail stations expected to receive upgrades, and 12 new rail stations.
- 16 new light rail stations, and six existing light rail stations expected to receive more parking (and other upgrades).
- 27 'high dose' bus routes, six other major bus schemes and 11 park-and-ride sites (either new or expanded).
- 82 cycle counters on routes expected to benefit from TCF schemes.

For each of these locations, it was also possible to identify similar areas that could be used to provide counterfactual evidence about what might have happened without TCF investment, and whose performance can be compared with the intervention areas in the evaluation's final report. In practice, given that programmes are adapting, the scale of each dataset is likely to change, though there should still be a substantial number of sites where analysis can take place.

To complement the detailed insights from these specific locations, analysis will also be undertaken at TCF area level, including assessment of national secondary data

[54] A summary of the LSTF evaluation is given here, together with links to the main reports.

sources; the collation of detailed programme management information; and an assessment of each local area's own key data series about what is happening.

Baseline trends

As part of this baseline report, the data sources that will be used for final reporting were used to assess trends in travel and related metrics for the baseline period of 2009-11 to 2015-17 (where data were available). General trends are described below, although there was often considerable variation between specific locations.

As a broad overview, over this baseline period, levels of walking and cycling were largely stable or increasing slightly; bus use was mostly declining; rail use was generally increasing; and use of light rail systems was mixed (with two systems showing an increase and two a decline[55]). Traffic levels in the TCF areas were mostly increasing. Travel by both car and non-car modes into town and city centres was, on average, falling. In all cases, changes in population and inward commuter flows may have affected observed trends, as well as changes in choices by existing residents.

Per capita road traffic casualty rates were mostly falling (though were, at best, stable for cyclists). Bus punctuality was often improving, though service provision was often declining. Light rail performance was relatively stable, albeit with some periods of significant disruption, and more variability on some systems than others.

For the TCF areas as a whole, job numbers, the employment rate (measured as jobs per person) and productivity were increasing, whilst unemployment had fallen (specifically between 2013 and 2016).[56] Compared with a set of comparison areas, for the TCF areas as a whole, job numbers and the employment rate were increasing faster but, in absolute terms, unemployment (measured by benefit claims) was higher (though showing a similar trend to the comparison areas), whilst productivity was lower, and had been increasing more slowly.

For the TCF areas as a whole, during the baseline period, vehicle emissions had not reduced in absolute terms, but had reduced on a per capita basis. Population had been increasing.

Local areas were expecting a substantial number of housing growth areas, and air quality management areas, to benefit from TCF schemes. The Fund had also been a source of employment, with estimates from 17 local areas suggesting it had been responsible for over 450 direct FTE jobs in local authorities in the financial year 2020/21, together with many indirect jobs.

The evaluation's final analysis will draw together the results from the different data sources to comment both on general trends and the experiences of particular places. By triangulating both the high-level and fine-grained data analysis, and employing a quasi-experimental evaluation approach, it is expected that robust and informative conclusions can be drawn about the links between investment and observed outcomes and impacts, in order to understand the overall effects of the Fund.

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[55] There was a change of operator in the West Midlands in 2018/19, meaning trend analysis was not possible.

[56] This was also the case for all TCF areas individually, with the exception of one where productivity had not increased.