Transport Focus Tram Passenger Survey

Technical Report - Autumn 2018 wave

December 2019

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1. Background

Transport Focus is the official, independent consumer organisation representing the interests of train, bus, coach and tram users across England outside London. A key part of the Transport Focus mandate is to provide evidence-based research to support its stance on the views and priorities of passengers. To this end, Transport Focus (and its predecessors) established:

- The National Rail Passenger Survey (NRPS) in 1999 – this twice-yearly survey (Spring and Autumn) provides data for each Train Operating Company on its passengers' perceptions in regard to key measures of station and train performance
- The Bus Passenger Survey (BPS) in 2009 – this annual Autumn survey provides data for a number of PTE, unitary and county council areas on passengers' perceptions in regard to key bus stop, bus vehicle and bus driver measures
- The Tram Passenger Survey (TPS) in 2013 – a pilot study was undertaken in Spring 2013, followed by full Autumn waves in 2013, 2014, 2015, 2016, 2017 and 2018. The survey provides data for tram networks across Britain on passengers' perceptions in regard to tram journeys, vehicles and stops.

A number of different methodologies were tested in the initial TPS pilot. As well as the traditional paper self-completion approach used historically on the NRPS and BPS, passengers were offered the choice of completing a paper self-completion questionnaire or an online survey, by means of providing an email address. Those providing email addresses were sent an invitation to participate in an online version of the survey one to two days following contact. The pilot demonstrated that the 'choice' option generated a similar final sample size to the traditional paper self-completion approach at similar cost, but in addition did reduce the age bias present in undertaking just a paper self-completion approach and furthermore did not significantly affect the results. As a result, TPS uses this combined approach. (Indeed, this approach is also now used both for the BPS and the NRPS). In 2016 measures were taken to increase the speed of the process of sending email invitations to those providing their email address. An automated system was set up to enhance the online methodology.

This report describes the methodology used for the Autumn 2018 TPS in detail, including where this has differed at all from previous waves.

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2. Summary of approach

Key features of the research methodology used in the TPS were:

- The TPS is a measure of experiences with tram journeys. Each individual response related to a single passenger journey (rather than to a passenger who may have made multiple individual journeys).

- The sampling unit was an individual tram service (e.g. the 06:15 from Birmingham Grand Central on a specific Tuesday), in the same way that BPS sampling is based on bus services. (In NRPS, in contrast, most sampling is based on stations.) This is a more cost effective sampling unit than a tram stop, as passenger numbers are greater for a service over a given time period than for most stops over the same period.

- The sampling frame thus needed was the list of all tram services that ran each week (which was downloaded from the published timetables).

- A core standard questionnaire was used across all networks, with the majority of questions remaining consistent from one annual survey to the next. As Transport for Greater Manchester (TfGM) already had its own passenger satisfaction survey prior to the establishment of the TPS, the questionnaire used for the Metrolink network was slightly longer than for other networks as it included questions specific to the previous TfGM survey. (TfGM funded these additional questions.)

The standard questionnaire used for the Autumn 2018 survey is given in Appendix 1. A similar version of the questionnaire was used both for the paper and online respondents. To ensure online respondents answered specifically about the journey they were taking when recruited by the interviewer, the date and time they were approached was inserted into the wording of the online questionnaire they completed.

As indicated above, all passengers were approached and asked if they would provide feedback about the specific journey they were undertaking. If willing, they were offered the choice between a paper self-completion questionnaire and providing their email address so that they could be sent a link to an online version of the questionnaire.

3. Data Collection

Fieldwork took place between 7th September and 8th December 2018. There was a pause within this to avoid the school half-term holidays and also to allow for a review of the project's progress. There was some variation between areas when this break occurred due to differences in school half term holidays. Half term dates are set out below.

Half term dates

Blackpool: 22nd October to 28th October
Manchester: 22nd October to 28th October
Sheffield: 29th October to 4th November
West Midlands: 29th October to 4th November

3.1 Data collection method

Recruiting respondents

Before each fieldwork period began, all interviewers had a face-to-face group briefing at a central location in each network area. These briefings were also attended by the area Supervisor. During this briefing, all interviewers were given instructions on how to undertake the fieldwork as well as being given and talked through all the materials necessary for each shift. They were shown how to administer the on-line questionnaire and guided through each of the record sheets they were required to administer during fieldwork. The first group briefing was held on 6th September 2018 in Birmingham which Transport Focus also attended.

Fieldworkers boarded the tram services selected from the sampling process (see section 4) on the specified day and start time and at the specified end of the route. They travelled to the final destination of the route and then made the first return trip possible on that route, returning to their start point. They repeated this process to make as many trips as possible within their three-hour shift. During this time fieldworkers approached as many passengers as possible who boarded the tram and gave them the opportunity to participate in the research.

Passengers were offered the choice to take a paper questionnaire, along with a post-paid envelope, or to complete the survey online. If they chose the latter, the fieldworker took their email address and a survey invitation was emailed to them immediately (see section 5 for a full explanation of this process). Both the paper and the online option have been offered in all waves of the TPS (and the original pilot) and have been shown to increase the potential for participation among certain demographic groups (especially younger males) who are otherwise typically under-represented in this type of research. The usefulness of this dual data collection method in the TPS has led to its adoption on the BPS and the NRPS.

In total, 21,559 paper questionnaires were distributed (an average of 63 per shift) and 5,197 email addresses were collected (an average of 15 per shift). In total, 26,756 people were recruited to take part in the survey; an average of 78 per shift.

Further tasks performed during fieldwork

As described further in the later section on weighting, fieldworkers were issued with an "Observation Record Form" on which they recorded the total number of passengers on board at a given point in time, and the observed age and gender profile of those passengers at that time. This observation was conducted twice within a fieldworker shift: 20 minutes after the start of the shift and 20 minutes before the end. These details allowed the creation of a representative passenger demographic profile to be used for weighting purposes.

Fieldworkers were also issued with a "Respondent Record Form" on which they recorded gender and estimated age of all recruits, as well as contact details for a sample of people willing to provide this. This was used to enable standard quality control back-checks, as well as other validation measures on returned questionnaires.

Authorisation to work on board trams

Regarding permission to conduct recruitment on the trams, each of the tram network operators provided a letter which the fieldworker was able to show to any staff (or passengers, if requested) to vouch for the bona fides of the survey.

Monitoring fieldwork

Throughout fieldwork, fieldworkers reported the number of questionnaires they had handed out and how many email addresses they had collected (i.e. how many people they had recruited). This was reported by the next working day after each shift and these

metrics were monitored by the team at AECOM. In addition, the software used to issue emails kept an automatic tally of the number of emails issued. This was used to check interviewer's report metrics.

As questionnaires were returned to AECOM, their serial number was checked to provide additional confirmation that a fieldwork shift took place, and a number of data fields from the questionnaire were recorded manually to enable a first stage of validation checks to take place. The same information from electronic surveys completed online was recorded automatically. The numbers of completed and validated questionnaires were matched with the reported recruitment figures, to allow the project team to monitor the overall productivity of the fieldwork. Several actions could be triggered by this information, including for example:

- If the sample sizes in certain areas appeared likely to fall below the target, additional 'top up' shifts could be scheduled to make up the shortfall
- If it was found that all of the questionnaires were routinely given out in certain areas or on certain routes, this was recorded and more questionnaires may be printed where relevant in future waves
- Steps could be taken to address lower productivity in certain fieldworkers if this was found to be the case.

AECOM carried out all fieldwork in accordance with the MRS Code of Conduct, the IQCS (Interviewer Quality Control Scheme) and ISO 20252. Exceeding normal industry standards, at least 10% of all TPS shifts were subject to unannounced spot-checks by AECOM supervisors and other project team staff. The majority of shifts to be spot-checked were selected at random, but some were chosen specifically, to monitor new or less productive fieldworkers or areas more closely, and indeed to observe more productive fieldworkers in order to study and pass on best practise techniques. Random unannounced spot-checks were also made by Transport Focus staff.

3.2 Questionnaire

For most tram networks, the paper questionnaire was an eight-page self-completion booklet that was handed out along with a reply-paid envelope to all passengers on the trams who were willing to take part. The online questionnaire was exactly the same in terms of question content, with small modifications so that it would display appropriately depending on the type of device (desktop, smartphone, etc.) being used to view it by the respondent.

The questionnaire had a core set of questions to provide consistent measurement of the components of journey experience. Some minor variations were present for the questionnaire used for each tram network, for example to allow for specific ticket types in use on some networks. The questionnaire used for Manchester Metrolink was 12 pages long (as also in 2013, 2014, 2015, 2016 and 2017), to include a number of additional questions useful for TfGM.

Networks had the opportunity to add one or two bespoke questions to their questionnaire, to cover topics of interest.

An example copy of the standard questionnaire is shown in Appendix 1.

3.3 Response rates and validation of returns

3.3.1 Response rates achieved

The metric of fieldwork outcome was the product of recruitment rates achieved and response rate achieved. The table below shows the metrics achieved from fieldwork in this wave.

Table 1: Fieldwork metrics: TPS Autumn 2018

Network	No. shifts	Recruits: paper	Respon-ses: paper	Response rate: paper	Recruits: online	Respon-ses: online	Response rate: online	Recruits: total	Respon-ses: total	Response rate: total	Average responses per shift (total)
Blackpool	30	1836	457	25%	810	57	7%	2646	514	19%	17
West Midlands Metro	50	2950	393	13%	998	161	16%	3948	554	14%	11
Manchester - Total	202	13563	2415	18%	2784	572	21%	16347	2987	18%	15
Manchester - Altrincham	30	1968	434	22%	212	65	31%	2180	499	23%	17
Manchester - Ashton	30	1989	316	16%	420	77	18%	2409	393	16%	13
Manchester - Bury	31	2095	367	18%	483	100	21%	2578	467	18%	15
Manchester - East Didsbury	23	1557	361	23%	328	61	19%	1885	422	22%	18
Manchester - Eccles/MediaCity	29	1964	292	15%	454	94	21%	2418	386	16%	13
Manchester - Rochdale	25	1688	376	22%	389	59	15%	2077	435	21%	17
Manchester - Airport	34	2302	269	12%	498	116	23%	2800	385	14%	11
Sheffield - Total	60	3210	726	23%	605	83	14%	3815	809	21%	13
Sheffield - Blue/Purple	25	1325	293	22%	275	34	12%	1600	327	20%	13
Sheffield - Yellow	24	1258	288	23%	255	42	16%	1513	330	22%	14
Sheffield – Tram train	11	627	145	23%	75	7	9%	702	152	22%	14
Autumn 2018 total	*342*	*21559*	*3991*	*19%*	*5197*	*873*	*17%*	*26756*	*4864*	*18%*	*14*

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3.3.2 Validation of completed surveys

Completed questionnaires were subject to two stages of checks and validation; once before they were data entered to pick up the tick-box responses (for paper questionnaires) and once afterwards:

1a. Pre-data entry checking of question responses (for paper questionnaires)
The first stage took place immediately after completed questionnaires were received. Firstly, each paper questionnaire was opened to check that the respondent had answered the questions and not simply returned a blank or mostly-blank form. Sometimes, with self-completion questionnaires, respondents miss some questions, either accidentally or because they choose not to or cannot answer. They may however have provided sufficient, valid answers to most of the questionnaire and so it would be wrong to waste their other answers. Questionnaires were therefore accepted according to these guidelines:

- Providing the respondent had reached the "overall journey satisfaction" question or beyond (including a small number of cases where the respondent had clearly reached the end of the questionnaire but missed the "overall satisfaction" question itself), the questionnaire was accepted. In other words, if they had left some subsequent questions blank, such as the demographic questions which some people prefer not to answer, they would be accepted on this basis since they would have completed the majority of the questions.

- If the respondent had missed two whole consecutive pages, where this was clearly the result of the pages having been turned over together and the respondent had not realised they were there, the questionnaire would be accepted – providing most of the other questions were completed. If the respondent had missed four whole pages, the questionnaire would be rejected since in this scenario they would have missed at least half of the questions.

- A small number of questionnaires were rejected where the respondent had written nonsense or expletives (which were unconnected to their feedback on the tram journey) or had defaced part of the questionnaire.

Each questionnaire had a unique ID number; once the above basic checks were completed, for paper questionnaires this was taken from a serial number on the front page.

The answers to certain questions were then manually entered into a database – these were the date (top right on the paper questionnaire and time/date stamped on the electronic questionnaire), the start and end points of the passenger's journey (Q1a and b; see questionnaire example in the Appendix 1). These were checked against the original details of the fieldwork shift, to check that the passenger filled in the questionnaire about a verified journey (this also served as a check that fieldwork had been carried out as intended). Questionnaires which did not tally with the expected journey details were investigated and would be rejected if they could not be verified as corresponding to the correct fieldworker shift.

1b. Validation of online responses
The same basic checks were made at the equivalent stage for online questionnaires:

- Respondents were counted as "complete" providing that they had reached and answered at least the "overall journey satisfaction" question. Of course the questions up to this point would also have all been answered in the online questionnaire since unlike the paper version there was no possibility of a respondent accidentally missing any.

- The online questionnaire reminded respondents of the date and time when they were first approached by the fieldworker. However, they were also asked to confirm these details at the beginning of the survey (just in case there had been any unexpected changes on the day, for example due to fieldworker illness or significant disruption to the tram service). These details in the online questionnaire were equivalent to Q1a/b, Q2 and the date information on the paper questionnaire and were checked electronically against sample information for the same reasons as for the paper questionnaire.

It was useful to carry out this stage of the validation immediately (rather than later on alongside other data processing checks), because it enabled more accurate monitoring of the real number of 'useable' responses which had been collected for each tram network/route.

2. Data merging and final checks
The validation checks described above were carried out during fieldwork, as paper questionnaires were returned and online responses recorded. Once fieldwork ended, paper questionnaires were returned in the post (two weeks was allowed for the return of

paper questionnaires although responses received up to 21st December 2018 were accepted) and online respondents given a chance to complete the survey, the two methods of completion were merged into one final dataset. This involved aligning the paper and online data and checking that all questions had been answered correctly. There was also a final validation check once data were merged to check for issues such as:

- Paper questionnaires having not been data entered correctly. Checks were conducted to ensure there were no issues with this process, for example pages being stuck together during data entry, respondents' ticks on the paper questionnaire not being recognised, any questions with abnormal levels of non-response etc.
- Data from the paper questionnaire had been merged correctly. Each tram network had its own bespoke questionnaire, meaning all versions had to be merged into one data file. Checks were carried out to ensure this merging had been completed correctly
- Merging of the paper and online data had been done correctly
- A final data validation to check for respondents that did not answer large sections of the questionnaire, any journey information that did not fit (e.g. incorrect date ranges, journey times that were abnormal etc.), questions with a large proportion of non-response, any nonsensical answers to open ended questions etc.

3.3.3 Coding of open ended question

The Tram Passenger Survey included an open ended question which asked about improvements to the tram service. The question was coded to understand the main themes that passengers raised. The question was:

- Q29. If something could have been improved on your journey today, what would it have been?

In order to quantify the results from this question, respondents' answers went through the following process:

- For each network, all responses were coded into the main themes arising, using the code frame shown below. Each answer could contain more than one theme; multiple codes were used in these instances
- During the coding process any potential new themes/codes were flagged for review. Where new themes/codes were common they were added to the code frame and answers were recoded using the new code (e.g. "Pushchair provision / Limit

prams/buggies" was added in the 2017 wave of the survey). No new codes were added in the 2018 survey.

- Any profanity was removed from respondents' answers
- AECOM and Transport Focus both checked the coding. AECOM sent through an Excel spreadsheet containing the coding by network that had been conducted by coders at AECOM. Transport Focus reviewed and sent it to AECOM to be added into the data.

Code frame used in 2018:

Q29. If something could have been improved on your journey today, what would it have been?	
1	Tram staff (including tram driver, conductors, customer service staff, ticket inspectors etc.)
2	Tram stop (incl. seats at stop, weather cover, safety, availability at stop of timetable/route info)
3	Fares/tickets (incl. prices, expense, info about fares/tickets/prices, better ticketing facilities/vending machines/smartcards etc.)
4	Frequency/routes (incl. not having to wait too long for the next tram, suggested better routes, etc.)
5	Information about routes (incl. availability of timetables, accurate timetables, next stop info on the tram)
6	Journey times (speed, my journey takes ages, should drive faster etc.)
7	Tram: Design/comfort/condition (incl. seats on board, temperature etc.)
8	Passenger behaviour
9	Punctuality (trams should adhere to timetable, tram was cancelled, unreliable etc.)
10	Other
11	Nothing could be improved/positive statement (incl. no /none/ n/a / dk / No improvements on this journey etc.)
12	Real time information/updates at the tram stop (this relates to the electronic information screens/boards at the tram stop)
13	Tram: On-board amenities like Wi-Fi, tea & coffee facilities, USB charging points, etc.
14	External factors (road works, congestion, bumpy ride, signal failures etc.)
15	Real time information/updates via online sources (incl. websites, phone apps, social media e.g. Twitter, Facebook)
16	Seating and capacity (bigger/longer tram, less crowding)
17	Comment about another journey

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18	Security (incl. on tram, at stops, at car parks)
19	Disabled provision / Wheelchair provision etc.
20	Pushchair provision / Limit prams/buggies
21	Cleanliness of tram (inside or outside)

3.3.4 Data preparation and analysis

After the data were validated, coded and edited, an SPSS data file was provided to Transport Focus. Transport Focus also ran some checks on this file before it was signed off as final.

Summary reports were then produced for each tram network, and an 'All Network' report showing aggregate results for the survey as a whole. Transport Focus invests time to share these reports and any further useful analysis with operators and relevant local and transport authorities.

4. Generating representative samples of passenger journeys

4.1 Route coverage

The Autumn 2018 TPS covered four different tram operators. Two of these operators (Blackpool and West Midlands Metro) had just one route, the Sheffield network had three at the start of fieldwork with an additional line opening during the fieldwork period. Manchester had seven routes.

For cost and logistical reasons, the blue and purple routes in Sheffield were merged and so this wave covered twelve routes in total as follows:

- Blackpool
- Midland Metro (Birmingham/Wolverhampton)
- Manchester – Altrincham
- Manchester – Ashton
- Manchester – Bury
- Manchester – East Didsbury
- Manchester – Eccles/Media City
- Manchester – Rochdale
- Manchester – Airport
- Sheffield – Blue/Purple routes
- Sheffield – Yellow route
- Sheffield – Tram train.

The Manchester Metrolink Airport line was opened in November 2014, during the TPS fieldwork for Autumn 2014, and so was included in the survey for the first time in 2015. West Midlands Metro opened a network extension to Grand Central on 30th May 2016 which was included in the 2016, and subsequent, surveys. The Sheffield Tram-Train line to Rotherham Parkgate was opened in October 2018, during the TPS fieldwork and so was included in the survey for the first time in 2018. All other routes above were surveyed in the same way in 2014, 2015, 2016, 2017 and 2018.

Nottingham Express Transit was not included in 2018 but was previously surveyed as one single route and was first covered as two separate lines in 2015.

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Edinburgh Trams was first launched at the end of May 2014 and so had been included in the survey for the first time in 2014; other networks had also been surveyed in 2013. Edinburgh Trams chose not to take part in the TPS in 2017 or 2018.

Glasgow Subway joined the TPS for the first time in 2017 but did not take part in 2018. See the 2017 Technical Report for the sampling approach used for this network.

The sampling process described in section 4.3 below was applied in turn to each of these twelve routes and a separate sample selected for each. Each route was also weighted according to passenger profile information on demographics and times of travel, in order to provide results which were representative at route level; this is described in section 4.5. The routes were then also weighted according to their relative volume of passenger journeys, so that when looking at aggregated results at 'All Network' level in the overall dataset, the routes with the largest numbers of passengers have the greatest weight and each route contributes appropriately.

4.2 Sample sizes

The sample sizes specified for each network are shown in the table below and were determined by boost funding from the relevant transport authorities or operators. These sample sizes were used to determine the number of fieldwork shifts required for each network and the shift numbers used to determine which tram services should be sampled. The sampling process is discussed in detail in section 4.3.

Table 2: Target and achieved sample size, Autumn 2018

Network/route	Sample size required	Sample size achieved
Blackpool	500	514
West Midlands Metro	500	554
Manchester – Altrincham	450	499
Manchester – Ashton	380	393
Manchester – Bury	450	467
Manchester – East Didsbury	380	422
Manchester – Eccles/MediaCity	380	386
Manchester – Rochdale	380	435
Manchester – Airport	380	385
Sheffield – Blue/Purple routes	300	327
Sheffield – Yellow route	300	330
Sheffield – Tram train	150	152

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Within the Manchester sample a minimum quota was also applied of one hundred passenger journeys between tram stops located within the 'City Zone'. These journeys both started and ended within a group of nine tram stops in the centre of Manchester. In practice, 119 surveys were completed for the 'City Zone'.

4.3 Sampling process

For Autumn 2018, the sampling process followed that employed in Autumn 2017. In Autumn 2015 some enhancements were made to the process (in line with similar enhancements made to the BPS method at the same time).

The sampling process in Autumn 2018 was as follows:

1. The tram timetable for each route was downloaded from the network's website

2. From this, a list was generated of the tram services which ran each day of the week including start point, start time, end point and end time

3. These lists were sorted by direction, the seven days of the week and the start time of the service – this generated a list of the tram services in a week. Because fieldworker shifts only operated between 6am and 10pm, services starting outside of these times were then removed from the lists[1]

4. The next stage was to systematically select services from this list which would form the basis of a fieldworker shift; i.e. the service which fieldworkers would board at the start of their shift. During this selection, steps were taken to minimise the level of weighting needed at the later analysis stage to produce an accurate time of day profile. These steps have been improved upon in past waves of the TPS:

   a) In the first full wave of the TPS in Autumn 2013, a random start point was identified in the list of services, and from there every n[th] journey was selected from the same list based on the total number of records. The selected journeys then formed the start of a fieldworker shift.

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[1] *There are very few public transport services prior to 6am and the additional costs for running fieldwork at this time – hourly rates and transport to the start point – are not justified given the very small number of passengers. Although there are more journeys after 10pm, safety concerns rule out fieldworkers operating after this time – the only feasible option would be to ensure fieldworkers operate in pairs and again the cost of this and providing transport at the end of the shift is not justified given the relatively low number of passengers*

b) In Autumn 2014 this approach was adapted by taking into account the weights applied in the previous wave, to achieve a more accurate spread of shifts according to the different passenger volumes in different time segments (weekday peak, weekday off peak and weekend). Each journey in the sample frame was allotted a 'passenger value' weight, based on the weight applied to each time segment within that tram network in Autumn 2013. For Edinburgh, where Autumn 2013 weights were not available, the passenger value was calculated using the average weight applied to each time segment across all networks. Selection of the sample was then made at intervals based on the passenger value rather than the total number of records, meaning that more services would be likely to be selected during busier times, to reflect passenger footfall throughout the day and week.

c) In Autumn 2015, patronage data were supplied by each of the tram operators, indicating the proportion of all passenger journeys which were made in each of four 'dayparts'[2]. This enabled a passenger value weight to be applied to each journey in the same way as previously but this time based on real data. An example of how the passenger value weight was calculated is shown below (this example uses illustrative data only since the data supplied by the operators is confidential to those organisations):

Table 3: Calculating passenger value weights

	Passenger journey profile *(supplied by operator)*	Proportion of all weekly scheduled services *(from lists generated from published timetables)*	Weight applied to each timetabled journey
Morning peak*	15%	12%	1.25
Off-peak	40%	52%	0.77
Evening peak	20%	13%	1.54
Weekend	25%	23%	1.09

See definitions of these dayparts in footnote below

A random start point in the list of timetabled services was identified, and from this point, as in 2014, services were selected at intervals based on the cumulative passenger value, rather than being selected at intervals based on the absolute number of scheduled service departures. In the example above

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[2] *'Dayparts' are: 'Morning peak' (weekdays 07:00-09:30), 'Evening peak' (weekdays 16:00-18:30), 'Off-peak' (weekdays at other times) and 'Weekends' (any time on Saturdays or Sundays).*

(which is fairly typical), this would mean that morning and especially evening peak tram services would have a slightly higher chance of being selected, and weekday off-peak services a slightly lower chance, reflecting the overall profile of when passenger journeys are taking place.

d) The sampling approach used in 2018 was identical to that used in 2017, 2016 and 2015.

5. The result of step 4 was a shortened list of tram journeys, which would form the basis of fieldwork shifts. In waves of the TPS before 2015, fieldworkers boarded the tram selected during this process and made journeys all the way along the route and back from that time onwards, within a three-hour period. However, in an independent consultant's review following the Autumn 2014 Bus Passenger Survey (which followed the same principle), a concern was raised that this approach skewed the overall survey coverage towards later journeys in the day. This is because, for example, passenger journeys happening at 6am could only ever be picked up by fieldwork shifts arranged to start at 6am, whereas journeys starting at 8am could be picked up by shifts starting at 6am, 7am, 8am, and anywhere in between. Therefore, from Autumn 2015 onwards, a step was added here to correct for this: for every service selected at this point, the identical service 1.5 hours earlier was identified. That is, the tram service with the same start and end point and on the same day of the week but 1.5 hours earlier (or as close to this as possible). If the original selection was actually one of the earliest in the day and there was no alternative a whole 1.5 hours earlier (but still starting from 6am or later), then the first service of the day, from the same start point, was selected. This newly 'adjusted' journey then became the start point for the fieldworker's shift, meaning that, in practice, the originally selected start time became the mid point of the shift. This meant that the overall profile of fieldwork shifts (based on their mid point time) matched the passenger journey profiles supplied by operators, which gave a better opportunity than in previous waves, to represent passenger journeys across the day.

6. Fieldworker shifts were then scheduled based on the newly adjusted selected services: the time and day of the week that was selected dictated the beginning of the shift, and return journeys were made thereafter on the same vehicle for the duration of that shift, approximately three hours. The three hour shift length allowed for two return journeys in most shifts, adjusting as necessary to ensure this. A three hour shift length provides time for fieldworkers to encounter plenty of passengers for

distributing questionnaires. A longer period than this can introduce more clustering – e.g. if a particular day is affected by service disruption.

7. A small number of manual amendments were made at this point, in particular:

    a) To address instances where some selected services still fell towards the end of the day, meaning that a full three hour shift would have run beyond 10pm, which is the usual latest reasonable time for fieldworkers to finish. In these cases, all such selected services were replaced by an identical one starting at 7pm (or as close this time as possible), so the fieldwork shift would cover the period 7pm-10pm. (NB. In previous waves, half of such shifts were moved forward to begin at around 7pm, and the other half were moved so that they covered the same or a similar tram journey, starting at 6am. This also addressed the issue of under-sampling earlier times in the day, which was no longer relevant in Autumn 2015 thanks to the 1.5 hour adjustment described above.)

    b) In some cases, if a return journey from one end of a route to the other did not fit well within a standard three-hour shift, that shift would take place over up to four hours instead. In 2017, five six hour shifts were conducted at tram stops in central Manchester (rather than on board trams) targeting trips wholly conducted in the City Zone. Due to the volume of trips generated in the City Zone within the 2018 data set, this approach was not required.

8. A final manual amendment was made, to deal with the presence of double-carriage trams in Manchester, where many services are doubled up with a second carriage during busy times to create extra capacity. While it can be possible for a fieldworker to move between carriages in quieter times of the day, to make sure that passengers in both carriages have the opportunity to take part in the survey, this is difficult in busy periods where both carriages may be full. To address this, some shifts involving double trams were assigned two fieldworkers – one for each carriage. This ensured that the views of passengers on busier services were better represented. In 2016 a more systematic approach to surveying double trams was introduced, and used again in 2017. The approach in previous waves was as follows:

    a) In 2014:

        ▪ Shifts affected by double tram services were identified; there were 22 in total

- Two thirds of the double tram shifts were assigned two fieldworkers. Only two thirds were so treated to avoid over-clustering the sample, while also gaining the benefit of some double tram shifts
- To maintain the total number of interviewer shifts, the same number of shifts was then removed at random from the rest of the sample.

b) In 2015:

- The same process was initially used in 2015; however due to a large increase in the incidence of double-carriage trams this year, including during the off-peak, this resulted in a large number of double-interviewer shifts and therefore significantly fewer shifts overall, presenting a greater risk of sample clustering. It was therefore decided that the same number of fieldworker shifts should be doubled up with two interviewers in 2015 as in 2014, despite the increased number of double-carriage services, and that these would be focussed at peak times only
- In addition, one double-fieldworker shift was assigned to each of the Eccles/Media City and Ashton routes, which had not had any double-carriage trams in 2014 but did by 2015
- The shifts where two interviewers would work simultaneously were selected at random from within the peak-time shifts, and as before the same number of shifts were removed from the schedule, at random from other day-parts

The approach used in 2017 and 2016 to survey double trams identified where doubled-up fieldwork would happen, in a way that treats each line equally, as well as focussing the extra fieldwork attention at the time of day when it is most relevant. The approach required some input from Metrolink and was as follows:

a) Establish full list of shifts as described above in sampling process
b) Metrolink then identified which shifts would be affected by double trams (i.e. which routes and times of day have double trams running)
c) For these potential double-tram shifts Metrolink then estimated the proportion of shift time for which the double-tram capacity would be in full use, i.e. the times at which it would be particularly difficult for one fieldworker to cover both carriages and so having two fieldworkers would be the ideal
d) The average percentage journey time across all shifts for the line would then be calculated. Let's say that, across all shifts for a given line, 30% of all journey time

uses double-carriage trams and full use is made of them. This is similar to saying that, for 30% of total fieldwork time on this line, the research provider would need two fieldworkers on board the same tram simultaneously

e) The research provider then selected 15% of all shifts, on which two fieldworkers would work together simultaneously throughout the shift. At the same time, the same absolute number of shifts would be selected to be removed. The overall effect would be that 30% of fieldwork would be performed with two people working simultaneously. The proportion of all fieldwork being performed in this way could be different for each line, but would be proportionate for that line relative to all the others

f) The process for selecting which shifts on which to double up the fieldwork, and which to remove, would also be systematic: they would be selected with probability proportional to the percentage journey time where doubled-up fieldwork would be desired, in the same way that tram services themselves are selected for inclusion in the sample in the first place

For the 2018 research, Metrolink did not provide data on which shifts double trams would be operating. It was therefore agreed that the double tram information from the 2017 survey would be applied to the 2018 sampling. As such, weekend and off peak shifts did not require two interviewers working at the same time; the same applying to the Oldham-Rochdale route. Double shifts were required for shifts where the start time fell in the AM inbound and the PM outbound time periods. For such shifts, two interviewers were allocated to work simultaneously both arriving at the required stop at the allocated time. If that tram was not a double tram, both interviewers would wait until a double tram arrived and both would board it. To maintain the required shift numbers, the overall number of weekday peak period shifts were then reduced by the corresponding amount of double shifts at random.

When the double-tram shift selection approach was carried out as above, it resulted in eleven shifts being appropriate for two interviewers:

- 3 shifts on the Altrincham route
- 5 shifts on the Bury route
- 3 shifts on the East Didsbury route

9. On almost all routes, additional 'top up' fieldwork was needed to ensure that targets had a good chance of being met, where the strike rate was lower than expected.

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Extra shifts were added throughout the fieldwork period based on its productivity up to that point. In total, 23 top up shifts were conducted on top of an original 357. The only network which did not require any top up fieldwork was Manchester.

10. Once travelling on the selected tram services, fieldworkers approached all passengers (except those apparently under 16 years of age) as soon as possible after they boarded, to offer them a paper questionnaire or the opportunity to provide an email address to which a link to an online version could be sent; thus all passengers over 16 had the opportunity to be included in the sample. (Interviewing those under 16 requires consent from a responsible adult.)

4.4 Weighting

The final survey data were weighted to correct for imbalance in response rate by age and gender, and by day-part. This weighting was applied within each of the twelve sampled tram lines, in order that results were representative at line level (rather than at overall network level, where a network is divided into several lines).

The lines were also weighted appropriately within each network, and each network was weighted appropriately within a total survey dataset so that in any 'All Networks' results, each network contributed to the results in relative proportion to the number of passenger journeys it carries.

The sources for each of the weights, and the process for each, are described below.

4.4.1 Demographic and day-part weights

No known source of information exists to detail the demographic of journeys by age and gender consistently for each network; therefore this information was collected during the fieldwork via 'passenger counts'.

Passenger counts were completed during each interviewer shift to establish a passenger profile with which to weight the data. They were conducted as follows:

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- Passenger counts were undertaken twice during the shift to record passenger characteristics (gender and observable age). For Blackpool, West Midlands Metro, and Sheffield the fieldworker was given times at which to start these counts:
    i.   After 20 minutes
    ii.   After two hours 40 minutes
- In most cases this ensured one count on an outward journey and one count on an inward journey. For Manchester, due to the high number of shifts, interviewers were given times that ensured one outward and one inward count
- If necessary, these times were varied to ensure the time coincided with the fieldworker being on board the tram
- In a few cases, where the tram was too busy to undertake a count at peak times, estimates of passenger numbers were made – see below for more details on this).
- The data produced by the counts was used to weight responses to a more representative gender and age profile for each line. The time at which passenger counts took place was recorded, meaning that an age and gender profile was actually created for each day-part, within each line. In 2013 and 2014 the day-parts were: 'weekday peak', 'weekday off-peak' and 'weekend'. From 2015 onwards the peak day-part was split in two to provide 'weekday morning peak' and 'weekday evening peak'.
- Profiles by age were recorded in three bands: 16-34, 35-59 and 60+.
- The passenger counts were used to compile the weighting matrix (shown in section 4.5.3) used at the data analysis stage.

Of the total 692 planned passenger counts, 611 were completed and used to inform the weighting. There were 81 passenger counts that were not completed or not used to inform the weighting:

- 54 of these were at off-peak times and it was assumed the total counts and demographic profile of passengers on these shifts would have been the same as the average for that route and time of day
- 27 were in peak hours when the tram was full and this prevented the fieldworker moving around the tram to effect the count; in these cases we could not assume that the count was the same as the average for the route. In the first full wave of the TPS, Autumn 2013, we investigated an appropriate assumption to use for these missing counts and found that using the crush capacity of the trams (which can be provided by operators) in place of missing counts was the best approach. This approach was further verified in Autumn 2014, Autumn 2015 and Autumn 2016 and was therefore

also used this wave. Where the crush capacity figure was used to estimate the total number of passengers, the split between the three age groups and between males and females was based on the profile for other peak shifts on that route. For example, if the crush capacity for Manchester Bury morning peak is 200 and the average gender breakdown from all Manchester Bury morning peak observations was 60/40 Male/Female, it was assumed that the full tram had 120 men and 80 women on board

- In the case of a double-carriage tram, where there were two fieldworkers present the count was taken twice. Where the count was taken only once (in most cases), this was doubled; similarly where the count was not undertaken at peak hours for a double tram, the estimated passenger numbers using crush capacity figures provided by the operator were doubled.

Using the sum of all observations (including those estimated using the crush capacity), an overall age and gender profile was then derived for each line for each of the four day-part segments. The four operators involved in the 2018 survey provided information about how their total passenger journeys would break down by day-part in a typical week. This was the same information as used earlier in the sampling.

Therefore at this point we had established target profiles for age, gender and day-part for each line had been established which would be used as the basis for rim weights. The next section describes the way that weights were estimated to ensure that each line contributed proportionately to the overall network, and that each network contributed proportionately to any aggregated 'All Network' results. The subsequent section summarises how all of these weights (demographic, day-part, line and network) were brought together and applied to the final dataset.

4.4.2 Line and network weights

Annual passenger journeys for 2017/2018 were used, as published by the DfT[3], for each of the tram networks. Where networks had more up-to-date annual passenger journey statistics these were used in place of the DfT figures. The DfT data were used directly as published for Blackpool, West Midlands Metro, and Sheffield. Data were sourced from the network for Manchester Metrolink.

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[3]https://www.gov.uk/government/collections/light-rail-and-tram-statistics

The data published by the DfT are at total network level only. Therefore, for networks with more than one line, operators provided information about how the total annual passenger journey data should be split by line.

4.4.3 Creating rim weights

These passenger journey numbers established for each line were now split according to the age, gender and day-part profiles determined earlier. This provided an estimated total number of passenger journeys being made on each line, in each day-part, by each of the three age groups and by males and females.

Weights were applied to the final responses as one overall set of rim weights for the four tram networks: Blackpool, Manchester, West Midlands Metro and Sheffield. In order to determine these rim weights, the absolute passenger journey numbers as established above for each cell were divided by the total number of passenger journeys across all networks in the survey, to create a percentage for each cell.

In practice, some respondents did not answer the questions on the survey about age and / or gender. The percentages for each cell were therefore adjusted slightly to account for this.

This resulted in the final set of rim weights as shown in the table below.

Table 4a: Autumn 2018 target <u>rim weights</u>: Blackpool, Manchester, West Midlands Metro and Sheffield

Line	16-25	26-59	60+	NA	Male	Fe-male	NA
Blackpool AM peak	0.19%	0.29%	0.39%	0.00%	0.40%	0.46%	0.00%
Blackpool offpeak	0.44%	0.49%	0.48%	0.00%	0.64%	0.78%	0.00%
Blackpool PM peak	0.49%	0.91%	1.36%	0.00%	1.32%	1.43%	0.00%
Blackpool Weekend	0.83%	0.94%	1.07%	0.00%	1.28%	1.56%	0.00%
Manchester - Airport AM peak	0.32%	0.30%	0.10%	0.00%	0.40%	0.32%	0.00%
Manchester - Airport offpeak	0.27%	0.30%	0.06%	0.00%	0.34%	0.29%	0.00%
Manchester - Airport PM peak	1.12%	1.01%	0.51%	0.00%	1.40%	1.25%	0.00%
Manchester - Airport Weekend	0.37%	0.30%	0.15%	0.00%	0.44%	0.38%	0.00%
Manchester - Altrincham AM peak	1.33%	1.12%	0.54%	0.00%	1.60%	1.40%	0.00%
Manchester - Altrincham offpeak	0.67%	1.04%	0.24%	0.00%	1.08%	0.87%	0.00%
Manchester - Altrincham PM peak	3.17%	2.74%	1.58%	0.00%	3.47%	4.02%	0.00%
Manchester - Altrincham Weekend	1.03%	1.01%	0.51%	0.00%	1.15%	1.40%	0.00%
Manchester - Ashton AM peak	0.30%	0.21%	0.11%	0.00%	0.34%	0.27%	0.00%
Manchester - Ashton offpeak	0.22%	0.17%	0.08%	0.00%	0.28%	0.19%	0.00%
Manchester - Ashton PM peak	1.14%	0.98%	0.70%	0.00%	1.40%	1.42%	0.00%
Manchester - Ashton Weekend	0.48%	0.23%	0.09%	0.00%	0.43%	0.37%	0.00%
Manchester - Bury AM peak	0.84%	0.61%	0.57%	0.00%	1.01%	1.02%	0.00%
Manchester - Bury offpeak	0.52%	0.44%	0.18%	0.00%	0.58%	0.56%	0.00%
Manchester - Bury PM peak	3.22%	2.31%	1.83%	0.00%	3.68%	3.67%	0.00%
Manchester - Bury Weekend	0.87%	0.83%	0.45%	0.00%	1.09%	1.07%	0.00%
Manchester - East Didsbury AM peak	0.81%	0.93%	0.40%	0.00%	1.09%	1.04%	0.00%
Manchester - East Didsbury offpeak	0.49%	0.37%	0.20%	0.00%	0.50%	0.56%	0.00%
Manchester - East Didsbury PM peak	1.97%	1.46%	0.75%	0.00%	2.21%	1.96%	0.00%
Manchester - East Didsbury Weekend	0.60%	0.58%	0.33%	0.00%	0.68%	0.83%	0.00%
Manchester - Eccles/Media City AM peak	0.48%	0.37%	0.15%	0.00%	0.48%	0.52%	0.00%
Manchester - Eccles/Media City offpeak	0.58%	0.56%	0.09%	0.00%	0.68%	0.54%	0.00%
Manchester - Eccles/Media City PM peak	1.93%	1.42%	0.79%	0.00%	2.02%	2.12%	0.00%
Manchester - Eccles/Media City Weekend	0.57%	0.56%	0.17%	0.00%	0.62%	0.68%	0.00%
Manchester - Rochdale AM peak	0.66%	0.64%	0.18%	0.00%	0.76%	0.72%	0.00%
Manchester - Rochdale offpeak	0.43%	0.40%	0.09%	0.00%	0.49%	0.43%	0.00%
Manchester - Rochdale PM peak	2.39%	2.09%	0.78%	0.00%	2.68%	2.58%	0.00%
Manchester - Rochdale Weekend	0.76%	0.47%	0.34%	0.00%	0.84%	0.73%	0.00%
Manchester - City Zone AM peak	0.08%	0.07%	0.04%	0.00%	0.10%	0.09%	0.00%
Manchester - City Zone offpeak	0.17%	0.16%	0.04%	0.00%	0.20%	0.17%	0.00%
Manchester - City Zone PM peak	0.44%	0.36%	0.20%	0.00%	0.50%	0.49%	0.00%
Manchester - City Zone Weekend	0.14%	0.12%	0.06%	0.00%	0.16%	0.16%	0.00%
West Midlands Metro AM peak	0.74%	0.80%	0.27%	0.00%	0.92%	0.89%	0.00%

West Midlands Metro offpeak	1.34%	1.32%	0.27%	0.00%	1.46%	1.47%	0.00%
West Midlands Metro PM peak	1.03%	0.91%	0.39%	0.00%	1.17%	1.16%	0.00%
West Midlands Metro Weekend	0.56%	0.74%	0.25%	0.00%	0.81%	0.74%	0.00%
Sheffield - Blue AM peak	0.73%	1.24%	0.45%	0.00%	1.02	1.40	0.00%
Sheffield - Blue offpeak	1.15%	1.16%	0.48%	0.00%	1.21	1.59	0.00%
Sheffield - Blue PM peak	3.89%	3.69%	2.11%	0.00%	4.41	5.28	0.00%
Sheffield - Blue Weekend	1.67%	1.57%	0.50%	0.00%	1.93	1.80	0.00%
Sheffield - Yellow AM peak	0.73%	1.24%	0.45%	0.00%	1.02	1.40	0.00%
Sheffield - Yellow offpeak	1.15%	1.16%	0.48%	0.00%	1.21	1.59	0.00%
Sheffield - Yellow PM peak	3.89%	3.69%	2.11%	0.00%	4.41	5.28	0.00%
Sheffield - Yellow Weekend	1.67%	1.57%	0.50%	0.00%	1.93	1.80	0.00%
Sheffield – Tram Train AM peak	0.73%	1.24%	0.45%	0.00%	1.02	1.40	0.00%
Sheffield - Tram Train offpeak	1.15%	1.16%	0.48%	0.00%	1.21	1.59	0.00%
Sheffield - Tram Train w PM peak	3.89%	3.69%	2.11%	0.00%	4.41	5.28	0.00%
Sheffield - Tram Train Weekend	1.67%	1.57%	0.50%	0.00%	1.93	1.80	0.00%

Note that in a small number of cases, there were only a few passenger counts on which to base the age and gender profiles. This was usually due to small target sample sizes in some cells and therefore a small number of fieldwork shifts taking place during which to observe the profile of passengers. In time segments with fewer than 50 observed passengers, the demographic profile for the whole line was used.

Manchester City Zone is not a route in itself in the same way as the main seven Metrolink routes. It therefore does not have passenger observations conducted on board trams. In the absence of observations the Manchester total was used for each of the City Zone dayparts, e.g. City Zone AM peak used the profile from all Manchester AM peak observations.

The actual average weights for respondents in each cell are given below, for information.

Table 4b: Autumn 2018 average weights: Blackpool, Manchester, West Midlands Metro and Sheffield

Line	16-25	26-59	60+	NA	Male	Fe-male	NA
Blackpool AM peak	0.27	0.43	0.68	1.00	0.53	0.86	1.00
Blackpool offpeak	0.31	1.25	2.14	1.00	1.48	2.20	1.00
Blackpool PM peak	0.37	0.74	0.66	1.00	0.84	0.90	1.00
Blackpool Weekend	0.33	1.40	1.32	1.00	0.95	2.10	1.00
Manchester - Airport AM peak	0.37	0.49	0.16	1.00	0.47	0.62	1.00
Manchester - Airport offpeak	0.08	0.08	0.14	1.00	0.23	0.08	1.00
Manchester - Airport PM peak	0.95	1.46	1.46	1.00	1.85	2.06	1.00
Manchester - Airport Weekend	0.33	0.43	0.41	1.00	0.47	0.76	1.00
Manchester - Altrincham AM peak	0.51	0.97	1.09	1.00	1.21	1.38	1.00
Manchester - Altrincham offpeak	0.37	0.43	0.23	1.00	0.39	0.64	1.00
Manchester - Altrincham PM peak	0.86	1.79	2.16	1.00	2.24	2.63	1.00
Manchester - Altrincham Weekend	0.19	0.43	0.90	1.00	0.53	0.93	1.00
Manchester - Ashton AM peak	0.19	0.33	0.25	1.00	0.31	0.47	1.00
Manchester - Ashton offpeak	0.23	0.29	0.19	1.00	0.39	0.29	1.00
Manchester - Ashton PM peak	0.82	1.21	2.28	1.00	2.24	2.14	1.00
Manchester - Ashton Weekend	0.43	0.47	0.68	1.00	0.56	1.05	1.00
Manchester - Bury AM peak	0.39	0.78	0.93	1.00	1.15	1.01	1.00
Manchester - Bury offpeak	0.12	0.37	0.31	1.00	0.27	0.53	1.00
Manchester - Bury PM peak	0.78	1.38	2.34	1.00	1.73	2.86	1.00
Manchester - Bury Weekend	0.27	0.41	0.82	1.00	0.70	0.86	1.00
Manchester - East Didsbury AM peak	0.19	0.70	1.01	1.00	0.88	1.01	1.00
Manchester - East Didsbury offpeak	0.29	0.51	0.60	1.00	0.51	0.90	1.00
Manchester - East Didsbury PM peak	0.66	1.44	1.77	1.00	1.36	2.57	1.00
Manchester - East Didsbury Weekend	0.25	0.31	0.37	1.00	0.47	0.51	1.00
Manchester - Eccles/Media City AM peak	0.35	0.47	0.10	1.00	0.27	0.68	1.00
Manchester - Eccles/Media City offpeak	0.35	0.21	0.16	1.00	0.23	0.47	1.00
Manchester - Eccles/Media City PM peak	1.11	1.34	1.27	1.00	1.56	2.10	1.00
Manchester - Eccles/Media City Weekend	0.29	0.58	0.58	1.00	0.64	0.82	1.00
Manchester - Rochdale AM peak	0.37	0.66	1.17	1.00	1.01	1.17	1.00
Manchester - Rochdale offpeak	0.21	0.41	0.37	1.00	0.45	0.58	1.00
Manchester - Rochdale PM peak	0.76	1.42	2.22	1.00	1.91	2.59	1.00
Manchester - Rochdale Weekend	0.14	0.29	0.43	1.00	0.35	0.51	1.00
Manchester - City Zone AM peak	0.06	0.14	0.12	1.00	0.19	0.14	1.00
Manchester - City Zone offpeak	0.10	0.10	0.12	1.00	0.14	0.21	1.00
Manchester - City Zone PM peak	0.19	0.51	0.68	1.00	0.66	0.74	1.00
Manchester - City Zone Weekend	0.02	0.08	0.16	1.00	0.14	0.10	1.00
West Midlands Metro AM peak	1.17	0.93	0.76	1.00	1.19	1.73	1.00

West Midlands Metro offpeak	0.82	1.19	0.29	1.00	0.84	1.48	1.00
West Midlands Metro PM peak	0.76	1.07	1.58	1.00	1.36	2.01	1.00
West Midlands Metro Weekend	0.51	0.76	0.88	1.00	1.19	0.76	1.00
Sheffield - Blue AM peak	0.66	1.09	0.64	1.00	0.66	1.71	1.00
Sheffield - Blue offpeak	0.53	0.99	0.56	0.68	1.38	0.82	1.00
Sheffield - Blue PM peak	1.75	2.78	5.39	3.80	6.19	0.82	1.00
Sheffield - Blue Weekend	0.39	0.60	0.72	0.82	0.90	0.92	1.00
Sheffield - Yellow AM peak	0.66	1.09	0.64	1.00	0.66	1.71	1.00
Sheffield - Yellow offpeak	0.53	0.99	0.56	1.00	0.68	1.38	1.00
Sheffield - Yellow PM peak	1.75	2.78	5.39	1.00	3.80	6.19	1.00
Sheffield - Yellow Weekend	0.39	0.60	0.72	1.00	0.82	0.90	1.00
Sheffield – Tram Train AM peak	0.66	1.09	0.64	0.66	0.66	1.71	1.00
Sheffield - Tram Train offpeak	0.53	0.99	0.56	0.53	0.68	1.38	1.00
Sheffield - Tram Train PM peak	1.75	2.78	5.39	1.75	3.80	6.19	1.00
Sheffield - Tram Train Weekend	0.39	0.60	0.72	0.39	0.82	0.90	1.00

The main reason for variation in the weights applied to different cells is that, in addition to controls for age, gender and day-part, each network will have been either over or under-sampled relative to the others depending on the need for robust sample sizes on different routes and whether or not local authorities or operators wished to boost the survey on their own routes.

It is important to test for statistical confidence when reading results, and for this reason statistical significance notation has been included in all standard report outputs which have been produced for the TPS. Understanding statistical robustness involves determining the margin for error around any result. The table below shows some typical margins for error, when analysing results at route level. Note that margins for error are higher for scores closer to 50% and lower for scores closer to 0% and 100%. The example margins for error given here are for a typical overall journey satisfaction score of around 90%.

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Network/route	Margin for error (+/-)
Blackpool	2.59%
Midland Metro	2.5%
Manchester (total)	1.08%
Manchester – Airport	3.0%
Manchester – Altrincham	2.63%
Manchester – Ashton-under-Lyne	2.96%
Manchester – Bury	2.71%
Manchester – East Didsbury	2.86%
Manchester – Eccles/MediaCityUK	2.99%
Manchester – Rochdale	2.83%
Sheffield (total)	2.07%
Sheffield - Blue Line	3.25%
Sheffield - Yellow Line	3.24%
Sheffield - Tram Train	4.77%
Overall 'All Networks' results	**0.84%**

5. Implications of using dual modes of completion

In the TPS it has been shown that the method of completion (online or paper) may have a very small influence on the way people respond to the questions, and therefore on the satisfaction results – but that this was extremely minor in comparison with other factors, particularly age, which the use of an online method in addition to paper is designed to help control.

The 2018 survey showed an improvement in the proportion of on-line responses from the previous two years and achieved the highest proportion to date for touch screen completion. (see table 5 below). Analysis from previous waves shows that online respondents are usually more negative in their responses (which is almost entirely linked to the fact that online respondents are typically younger).

Table 5: proportion of (un-weighted) response from online vs. paper

Mode	Autumn 2013	Autumn 2014	Autumn 2015	Autumn 2016	Autumn 2017	Autumn 2018
Online – total	27.0%	33.6%	22.5%	15.6%	14.7%	17.8%
Online – desktop	*19.9%*	*21.9%*	*12.8%*	*7.8%*	*5.1%*	*6.3%*
Online – touch (smartphone / tablet)	*6.2%*	*10.5%*	*9.6%*	*7.8%*	*9.7%*	*11.5%*
Online – other	*0.9%*	*0.2%*	*0.1%*	*0.0%*	*0.0%*	*0.0%*
Paper	73.0%	67.4%	77.5%	84.4%	85.3%	82.2%

This section briefly revisits the degree to which mode of interviewing impacted on survey results (which was explored in greater detail in 2015), as well as recapping the impact of automated email invitations to the online survey (introduced in 2016).

Impact of mode of interview completion
From analysing un-weighted data, comparing online responses with those from the paper self-completion questionnaire, there are some differences which are significant. For

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example, the table below shows the Autumn 2018 results for overall journey satisfaction for each mode of completion. Paper respondents are a little more likely to be 'satisfied' (either fairly or very), and even more likely to be 'very satisfied' compared with online respondents.

Table 6: Overall journey satisfaction by mode of interviewing (un-weighted)

Mode	% satisfied	% very satisfied
Online	88%	48%
Paper	93%	65%
Total	92%	62%

However, those responding online tend to have a younger profile than those responding on paper (see table 7 below), and younger people tend to be less satisfied with their overall journey experience, as shown in table 8:

Table 7: Profile of respondents, online vs. paper (un-weighted)

	Online	Paper	Total
16-34	37%	16%	20%
35-59	38%	33%	34%
60+	15%	47%	41%
Not stated/prefer not to say	10%	4%	5%

Table 8: Overall journey satisfaction by age (un-weighted)

Age group	% satisfied	% very satisfied
16-34	88%	43%
35-59	90%	57%
60+	97%	77%
Total	92%	62%

Given that satisfaction varies by age, and that the online sample has a different age profile from the paper sample, the question arises as to whether there is a real mode effect, or whether the apparently lower satisfaction seen in the online sample comes entirely from the younger age profile.

To test this we have looked at the overall satisfaction levels by age for each mode of data collection, as shown in the table below:

Table 9: overall journey satisfaction by age and interviewing mode (un-weighted)

Age group	Mode	% satisfied	% very satisfied
16-25	Online	86%	37%
	Paper	88%	46%
	Total	88%	43%
26-59	Online	89%	53%
	Paper	91%	58%
	Total	90%	57%
60+	Online	93%	72%
	Paper	97%	78%
	Total	97%	77%
Total	Online	88%	48%
	Paper	93%	65%
	Total	92%	62%

As can be seen in Table 9, within most age groups there is a little variation in satisfaction, when combining both 'very' and 'fairly satisfied' responses as in the majority of reporting on TPS, by mode of interviewing. Notable differences tend to occur for the younger age group where satisfaction is lower in general.

There is greater variance in the positivity of online and paper respondents for those who are 'very satisfied'. There are lower ratings amongst online respondents in general, and more so in the younger age groups.

Whilst there is a pattern that online respondents tend to be more negative than paper respondents, this is also a function of their age with the online option tending to attract a higher proportion of younger people. The mode of completion can have a small impact on satisfaction, but so does age, and the advantage of greater representativeness through offering an online option outweighs this potential impact on results.

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Automated invitations to the online survey

A new automated email invitation was introduced to the TPS in 2016. Analysis from previous waves demonstrated that recruited passengers are more likely to actually go on to complete the survey if they receive the emailed invitation (with the link to the survey URL) quickly. Response rates are highest where recruits received their survey invitation within one day of first being approached by the fieldworker when they made their tram journey. The same pattern has been seen in the other *Passenger Surveys*.

The mechanism introduced in 2016 sped up invitations to the online survey. The methodology was therefore repeated in 2017. It involved:

- All interviewers used a tablet to record email addresses of passengers who preferred the online method

- All tablets had a 'mini-survey' with which interviewers recorded email addresses

- All tablets had wi-fi or 3G/4G connectivity ('mi-fi' devices were fitted to all tablets, which act as a mobile wi-fi hotspot and enabled internet access on board trams)

- When an email address was collected it was time and date stamped for a more precise record of recruitment (this was used in the online questionnaire to prompt respondents about when they were on board)

- Once email addresses were collected the data was transferred and an automated email to the online survey was triggered (delivered to the passenger within 10 minutes of them providing their email address).

The specification for the 2018 survey required emails containing links to the on-line version of the questionnaire to be sent to respondents immediately. Interviewers therefore used the method stated above to capture email addresses from respondents. However, due to changes in data collection and storage legislation in May 2018, the cost of creating an encrypted email storage facility was deemed too great. Therefore, following collection of the email address, the software immediately issued a link to the appropriate network's questionnaire. As soon as the link was sent, the email address was deleted. This approach meant that follow-up emails reminding respondents to complete the questionnaire could not be sent as the email address had not been stored. Also, as no data were stored, the shift the emails were collected in was not captured and the email was not pre-populated with the respondent's journey information. A few weeks into fieldwork, the requirement to send reminder emails and the ability to link the collected email address to the shift on which it was captured were deemed more important than the 'instant' survey link facility and so the software used to collect emails was changed. Following this change, the mini-survey interface used by interviewers remained the same but the information collected was securely stored. The resulting encrypted data files were downloaded three times a day, every day during the fieldwork period and automated emails sent to respondents. Reminders were automatically generated and sent 24 hours

later and then seven days later. The change in approach enhanced the on-line response rate and brought the approach closer to that used in recent waves of the survey, albeit without the same speed of issuing the survey invitation emails.

Table 10 shows that the proportion of drop outs has changed little over the life of the TPS survey. Previous surveys collected the volume of click-throughs (percentage of people that clicked on the link they received via email). This metric was not collected in 2018.

Table 10: Proportion of recruits that click the survey, drop out and complete

	2013	2014	2015	2016	2017	2018
Online recruits	100%	100%	100%	100%	100%	100%
Click-through (all clicking the survey link)	36%	37%	33%	41%	27%	n/a
Drop outs	9%	10%	11%	20%	9%	11%
Completes (online response rate)	28%	27%	23%	21%	18%	17%

The contribution of online versus paper responses

At the beginning of this section, it was reported that online responses had contributed a little more to the overall (un-weighted) dataset than in previous waves with touchscreen completion improving more than desktop.

Table 11 below shows the proportion of all online starters and all survey responders using a touch device versus a desktop (and others, which are primarily non-touchscreen mobile devices which are connected to the internet, such as older models of Blackberrys). The 2018 survey starters figure comprises those who completed the survey having received an email via the initial email method and those who clicked on the survey via the second email method.

As in 2017, for 2018 there is a larger proportion using a touch device. And the trend towards more people <u>completing</u> via touch devices continues in the 2018 wave of the survey.

Table 11: survey completers by online device

	Autumn 2013	Autumn 2014	Autumn 2015	Autumn 2016	Autumn 2017	Autumn 2018
Device used by online survey starters						
Desktop	65%	57%	47%	62%	31%	30%
Touch	31%	41%	53%	38%	69%	70%
Other*	4%	1%	0.8%	0%	0%	0%
Device used by online survey completers						
Desktop	74%	67%	57%	50%	34%	36%
Touch	23%	32%	43%	50%	66%	65%
Other	3%	0.7%	0.2%	0%	0%	0%

*data from Autumn 2016 are recorded in a slightly different way from previous years due to a change in data collection online software. iPads are recorded as desktops in 2015 and previous, in 2016 they are recorded as touch devices.

One new feature for the 2018 survey was the inclusion of the online survey address on paper copies of the questionnaire, allowing passengers who took a paper questionnaire to subsequently complete the survey online should they so choose. Each network had its own online survey address (for example "www.tramsurvey.co.uk/Blackpool") and respondents were required to enter the serial number shown on the paper questionnaire at the start of the online survey before they could complete it. The number of completed online responses received per network via this approach can be seen in Table 12 below.

Table 12: Number of responses completed online following being handed a paper questionnaire

	2018
Blackpool	2
West Midlands Metro	11
Manchester	124
Sheffield	17

Online drop out

The graph below shows those who completed key questions throughout the questionnaire, as a proportion of all people who started the survey. In effect it shows the points at which survey drop out was most prevalent, showing waves for 2018, 2017 and 2016. The start of the online survey remains the place at which most drop out occurred, with drop out reducing as the questionnaire progresses. Other than network specific information such

as ticket type, only minor changes were made to the questionnaire between 2017 and 2018.

% of online starters who are still in the survey at key points in the questionnaire:
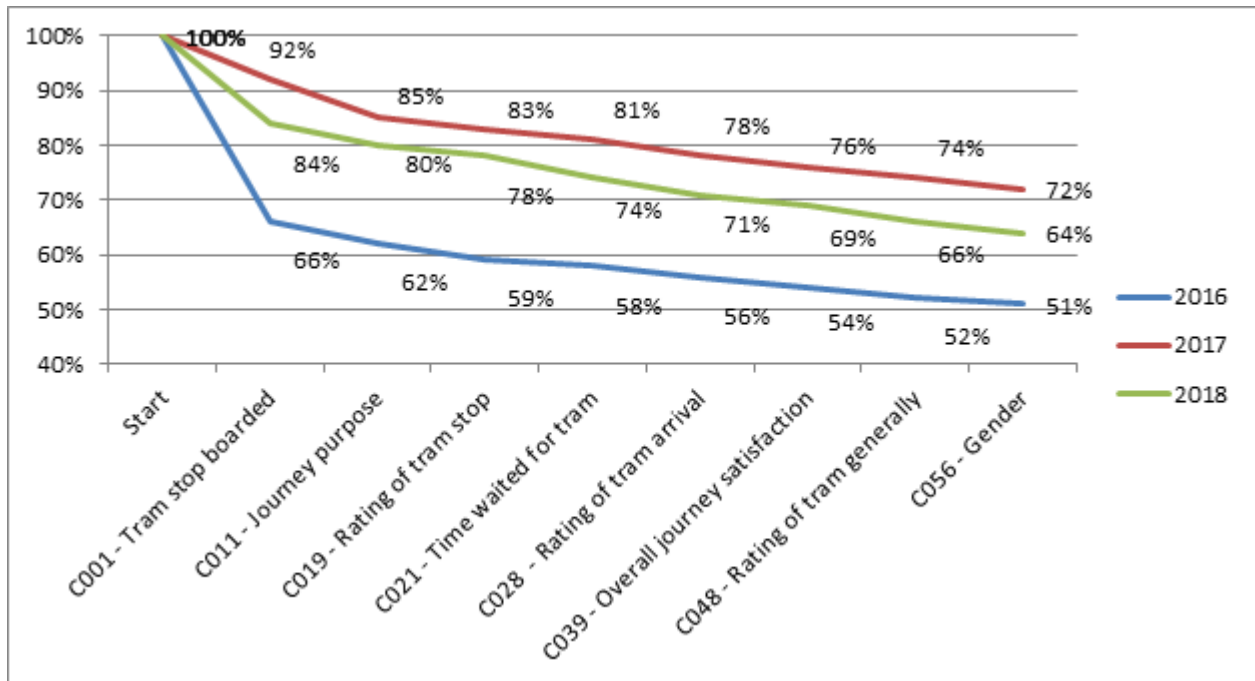
The pattern of drop outs throughout the survey have remained fairly consistent over the past three years, the main difference being the drop out at the start of the survey, which suggests this is where future improvement efforts should be focussed.

6. Key driver analysis

Why do we conduct the Key Driver Analysis?
The headline measure on the Tram Passenger Survey (TPS) is the level of passenger satisfaction with the overall journey, which provides a simple summary for the journey as a whole. The question we are therefore often asked by local authorities, transport bodies and tram operators is 'how do we improve overall passenger satisfaction?' and this is often accompanied by 'where should we focus our attention or resources?'. We conduct the Key Driver Analysis in order to identify those elements of the journey experience that are having the greatest impact upon the overall journey satisfaction rating that passengers give, using the other question ratings from the survey. This then enables us to provide guidance on how to go about improving (or maintaining) overall passenger satisfaction with tram journeys.

Which questions are included in the Key Driver Analysis?
As mentioned above, the headline measure on the TPS is the level of passenger satisfaction with the overall journey, taken from the core survey question:
Q28. Overall, taking everything into account from the start to the end of the tram journey, how satisfied were you with your tram journey?

The questions that we then test to see what impact they have on this overall satisfaction are taken from the core survey questions; Q13 (tram stop ratings), Q19 (waiting time and punctuality), Q20 (boarding the tram), Q21 (on the tram) and Q30 (value for money). (Question numbers differ in the Manchester questionnaire: Q17 (tram stop ratings), Q23 (waiting time and punctuality), Q24 (boarding the tram), Q25 (on the tram) and Q32 (value for money)).

How do we conduct the Key Driver Analysis?
We use a series of statistical techniques to conduct the Key Driver Analysis. There are three stages to this.

Stage 1: Selecting fare paying passengers (filtering the data)
We feel that it is important to include value for money as one of the potential influencers of overall journey satisfaction, and this means that the analysis can only be conducted using the survey responses from fare-paying passengers. We therefore remove the responses for non-fare paying passengers from the data before carrying out the Key Driver Analysis.

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Stage 2: Categorising the main survey questions into themes (factor analysis);
This stage was first introduced for the autumn 2016 survey and has been repeated in 2017 and 2018. The aim of this stage is to use a statistical technique (factor analysis) to group together individual questions from the survey into themes, based upon the way in which passengers respond to the questions. We usually find that there is some degree of overlap between the responses that passengers give to the different satisfaction questions we ask them in the survey. For example, we ask about waiting time and punctuality in two separate questions. While these questions have a slightly different meaning, there are often similarities between the responses that passengers give to these two questions. In such an example, we might regard this as being responded to by passengers as one theme, even though we have asked them two questions.

This is a common phenomenon when it comes to market research data, partly because of genuine overlap in topics covered and partly due to questionnaire effects, where responders to a survey might respond in a similar way across multiple questions or topics.

We have taken all the responses from fare payers to the autumn 2017 and autumn 2018 TPS and used them to identify the different themes, using the factor analysis technique. We combine two waves of the survey to increase the robustness of the analysis.

We have identified 10 themes, which are summarised in the table below:

Theme (factor)	Questions
1 On tram environment and comfort	• Sufficient room for all the passengers to sit/stand
	• The comfort of the seats
	• The amount of personal space you had around you
	• Provision of grab rails to hold on to when standing/moving about the tram
	• The temperature inside the tram
	• The ease of getting off the tram
2 Tram stop condition	• Its general condition/standard of maintenance
	• Its freedom from graffiti/vandalism
	• Its freedom from litter
3 Boarding the tram	• The ease of getting on the tram
	• The length of time it took to board the tram
4 Timeliness	• The length of time you had to wait for the tram
	• The punctuality of the tram
5 Access to the tram stop	• Its distance from your journey start e.g. home, shops
	• The convenience/accessibility of its location
6 Personal safety throughout journey	• Behaviour of fellow passengers waiting at the stop
	• Your personal safety whilst at the tram stop
	• Your personal security whilst on the tram
7 Cleanliness and condition of the tram	• The cleanliness and condition of the outside of the tram
	• The cleanliness and condition of the inside of the tram
8 Smoothness/speed of tram	• The amount of time the journey took
	• Smoothness/freedom from jolting during the journey
9 Information throughout journey	• The information provided at the tram stop
	• Route/destination information on the outside of the tram
	• The information provided inside the tram
10 Value for money	• How satisfied were you with the value for money of your tram journey?

We have then used these *themes*, rather than the individual questions, in the next stage of the analysis.

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Stage 3: Identifying how much of an impact each of these themes has on the overall journey satisfaction question (regression analysis)

We use a second statistical technique (Multiple Linear Regression) to identify how much of an impact each of the themes has on the overall journey satisfaction question. While the generation of the themes is based upon all the responses from fare payers to the autumn 2017 and autumn 2018 TPS, the impact scores for each of the themes is calculated from the responses of passengers for each individual network.

The analysis is performed in two stages:

- First, the drivers of satisfaction were identified. 'Satisfied' passengers were defined as those who were either very or fairly satisfied with their journey. Dissatisfied customers were classified as those saying either very/fairly dissatisfied or those saying neither/nor (thus this latter group are perhaps more accurately described as 'not satisfied'). The regression took into account all five points of the satisfaction scale, and was run using scalar driver variables (sometimes called independent variables) – this means that moving any one point up the five point scale is assumed to have the same impact.

- Once the drivers of satisfaction had been determined, the 'non-satisfied' (very dissatisfied, fairly dissatisfied and neither/nor respondents) were removed, and a new regression analysis was run to determine which factors drive people to be very satisfied (rather than either fairly or very satisfied), again using scalar driver variables.

The two parts of the analysis therefore indicate, firstly, which service aspects should be improved in order to provide an adequate overall journey experience (i.e. one which is at least satisfactory) and secondly, which service aspects should be improved in order to provide a genuinely good experience.

Appendix 1: Typical Questionnaire

(West Midlands Metro version shown as example from following page)

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Tram Passenger Survey

Thank you for agreeing to take part in our survey about the tram journey you made when given this questionnaire.

There are also questions about your general experiences at the end.

All the information you give will be treated in the strictest confidence.

Your views as a passenger are important.

Transport Focus is the official, independent consumer watchdog that promotes the interests of transport users.

Tram companies, local authorities and governments act on the survey results. They are the evidence we use to seek improvements on behalf of passengers.

Completing the questionnaire

Please fill in the questionnaire after completing your journey on the West Midlands Metro.
Please tick only one box per question, unless directed otherwise.
After completing the questionnaire, please return it to us in the reply paid envelope provided.
If you prefer to fill the questionnaire in online, then please go to www.tramsurvey.co.uk/Birmingham
WHEN ANSWERING:
CONSIDER ONLY THE JOURNEY YOU MADE WHEN GIVEN THIS QUESTIONNAIRE

1 About your journey on the West Midlands Metro

Q1a At which stop did you board this tram?

Q1b At which stop did you leave this tram?

Q2 Please fill in the time that you boarded the tram today:
Use the 24 hr. clock e.g. 5:25pm is 17:25

Q3a What type of ticket or pass did you use for this journey on West Midlands Metro?

Season Tickets		Single/ Return ticket	
1 day	☐	Single ticket - £1 short hop	☐
3 day/ weekend	☐	Single peak	☐
5 days/ 1 week	☐	Single off peak	☐
10 days/ 2 weeks	☐	Return peak	☐
4 weeks/ 1 month	☐	Return off peak	☐
Quarterly/ 3 months	☐		
Student term	☐	A free bus pass or free journey	
1 year	☐	Elderly person's pass	☐
Other ticket		Disabled person's pass	☐
Group ticket	☐	Complimentary/ free ticket	☐
Other	☐		

Q3b What modes of transport does your ticket allow you to travel on?

Metro only	☐	Bus and Metro	☐
Train and Metro	☐	Train, Bus and Metro	☐

Q4 In what format was your ticket?

A standard paper ticket/ pass	☐	A plastic card you touched on to the fare machine	☐
A photo card ticket/ pass	☐	Other format	☐
An m-ticket (sent to your mobile phone)	☐		

Q5a How did you buy that ticket or pass?

From Conductor	☐	Direct from West Midlands Metro	☐
Ticket machine	☐	Rail/ Bus Company	☐
Direct from Network West Midlands (website/ phone)	☐	From a local shop or post office	☐
Direct from National Express (website/ phone)	☐	You had a free pass	☐
Travel shop	☐	Direct debit though work/ college	☐
Direct from myswift.com	☐	Other	☐

Q5b How did you pay for your ticket?

Cash	☐	Contactless payment (Applepay/ google pay)	☐
Debit or credit card	☐	Don't know/ not applicable	☐

Q6 What is the main purpose of your journey on the West Midlands Metro today?

Travelling to/ from work	☐	Shopping trip	☐
Travelling to/ from education (e.g. college, school)	☐	Visiting friends or relatives	☐
On company business (or own if self-employed)	☐	Leisure trip (e.g. day out)	☐
On personal business (job interview, bank, post office)	☐	Other	☐
Travelling to/ from medical/ other appointment	☐		

Q7 Were you on your outward or return journey when you were given a questionnaire?

Outward	☐	One way trip only	☐
Return	☐		

Q8 Were you travelling with....? (Please tick all that apply)

Heavy/ bulky luggage	☐	A non-folding bicycle	☐
Shopping bags	☐	A dog	☐
A shopping trolley	☐	A helper	☐
A pushchair, buggy or pram	☐	A mobility scooter	☐
Children (under 12)	☐	A wheelchair	☐
A folding bicycle	☐	None of the above	☐

Q9 How did you get to the Midland Metro stop where you boarded this tram today?

On foot/ walked	☐	Taxi	☐
Cycled	☐	Bus	☐
Car - dropped off	☐	Train	☐
Car - and used Park and Ride	☐	Tram	☐
Car - parked elsewhere	☐	Other	☐

Q10 Which means of transport did you use when you got off this tram today?

On foot/ walked	☐	Taxi	☐
Cycled	☐	Bus	☐
Car - dropped off	☐	Train	☐
Car - and used Park and Ride	☐	Tram	☐
Car - parked elsewhere	☐	Other	☐

Q11 What was the main reason you chose to take the West Midlands Metro for this journey?
(Please tick all that apply)

Cheaper than the car	☐	Best way to get where I am going	☐
Cheaper than other transport	☐	Tram more comfortable than other transport	☐
More convenient than the car (e.g. parking)	☐	For the experience of riding the tram	☐
Didn't have the option of travelling by another means	☐	Other (please write in)	☐
Quicker than other transport	☐		

Q12   What was the weather like when you made your journey, was it?

Dry.. ☐	Foggy... ☐
Light rain.................................. ☐	Snow.. ☐
Heavy rain................................ ☐	Icy... ☐

2   About the tram stop where you boarded this West Midlands Metro tram

Q13   Thinking about the tram stop itself, how satisfied were you with the following?

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
Its distance from your journey start e.g. home/ shops	☐	☐	☐	☐	☐	☐
The convenience/ accessibility of its location	☐	☐	☐	☐	☐	☐
Its general condition/ standard of maintenance	☐	☐	☐	☐	☐	☐
Its freedom from graffiti/ vandalism	☐	☐	☐	☐	☐	☐
Its freedom from litter	☐	☐	☐	☐	☐	☐
Behaviour of fellow passengers waiting at the stop	☐	☐	☐	☐	☐	☐
The information provided at the tram stop	☐	☐	☐	☐	☐	☐
Your personal safety whilst at the tram stop	☐	☐	☐	☐	☐	☐

Q14   Overall how satisfied were you with the tram stop?

Very satisfied............................. ☐	Fairly dissatisfied................................. ☐
Fairly satisfied........................... ☐	Very dissatisfied.................................. ☐
Neither satisfied nor dissatisfied........... ☐	Don't know/ No opinion............................ ☐

3   Waiting for the tram

Q16   Approximately, how long did you wait for your tram?
(Please write the time in minutes)   ☐

Q18   Did you check any of the following to find out when the tram was meant to arrive?
(Please tick all that apply)

Before leaving for the tram stop		At the tram stop	
Leaflet/ paper timetable...................... ☐	Electronic display at the stop.................... ☐
Online tram times........................... ☐	Information posters at the stop................... ☐
Live tram locator/ timings (e.g. via mobile app/ web)........................ ☐	Online tram times................................ ☐
		Live tram locator/ timings (e.g. via mobile app/ web) ☐
Disruption updates (e.g. on Twitter/facebook)............................ ☐	Disruption updates (e.g. Twitter/ Facebook)............ ☐
Telephoned for information................. ☐	Telephoned for information...................... ☐
Other.. ☐	Other... ☐

If you did not check to find out when the tram was meant to arrive, why was this?
(Please tick all that apply)

Knew the trams ran frequently on this route... ☐	Didn't have the time............................ ☐
Already knew arrival times................. ☐	Did not matter to me when the tram was meant to arrive. ☐
Could not find the information............. ☐	Other... ☐

Q17   Approximately, how long did you expect to wait for the tram?
(Please write the time in minutes)   ☐

Q18a   Thinking about the time you waited for the tram today, was it...

Much longer than expected................ ☐	A little less time than you expected............. ☐
A little longer than expected.............. ☐	Much less time than you expected.............. ☐
About the length of time you expected.. ☐	

Q18b   Were you able to board the first tram you wanted to travel on?

Yes............................. ☐	No............................... ☐

Q19   How satisfied were you with each of the following at the tram stop?

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
The length of time you had to wait for the tram	☐	☐	☐	☐	☐	☐
The punctuality of the tram (arriving on time)	☐	☐	☐	☐	☐	☐

4   On the tram

Q20   Thinking about when the tram arrived, please indicate how satisfied you were with the following:

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
Route/destination information on the outside of the tram	☐	☐	☐	☐	☐	☐
The cleanliness & condition of the outside of the tram	☐	☐	☐	☐	☐	☐
The ease of getting onto the tram	☐	☐	☐	☐	☐	☐
The length of time it took to board the tram	☐	☐	☐	☐	☐	☐

Q21   Thinking about whilst you were on the tram, please indicate how satisfied you were with the following:

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/no opinion
The cleanliness & condition of the inside of the tram	☐	☐	☐	☐	☐	☐
The information provided inside the tram	☐	☐	☐	☐	☐	☐
Sufficient room for all the passengers to sit/stand	☐	☐	☐	☐	☐	☐
The comfort of the seats	☐	☐	☐	☐	☐	☐
The amount of personal space you had around you	☐	☐	☐	☐	☐	☐
Provision of grab rails to hold on to when standing/moving about the tram	☐	☐	☐	☐	☐	☐
The temperature inside the tram	☐	☐	☐	☐	☐	☐
Your personal security whilst on the tram	☐	☐	☐	☐	☐	☐
The amount of time the journey took	☐	☐	☐	☐	☐	☐
Smoothness/freedom from jolting during the journey	☐	☐	☐	☐	☐	☐
The ease of getting off the tram	☐	☐	☐	☐	☐	☐

Q22   Did you get a seat on the tram?

Yes – for all of the journey................... ☐	No – but you were happy to stand............... ☐
Yes – for part of the journey................ ☐	No – but you would have liked a seat............. ☐

Q23a   Did other passengers' behaviour give you cause to worry or make you feel uncomfortable during your journey?

Yes.................................. ☐	No..................................... ☐

Q23b   If yes: Which of the following were the reason(s) for this? (Please tick all that apply)

Passengers drinking/under the influence of alcohol................................. ☐	Feet on seats................................... ☐
Passengers taking/under the influence of drugs... ☐	Music being played loudly........................ ☐
Abusive or threatening behaviour.......... ☐	Smoking.. ☐
Rowdy behaviour........................... ☐	Graffiti or vandalism............................ ☐
Passengers not moving out of priority seats.......... ☐	Loud use of mobile phones...................... ☐
Passengers not paying their fares........... ☐	Other (write in)................................. ☐

Q23c   If yes: What local area was the tram travelling through or at which stop was it when you were worried or concerned? (please write in)

Q24a   Was your journey on the West Midlands Metro today delayed at all?

Yes.................................. ☐	No..................................... ☐

Q24b If yes: Why was this? (Please tick all that apply)

Due to a signal/points failure............ ☐		Time it took passengers to board/pay for tickets.. ☐	
Road congestion/traffic jam............... ☐		Other (please write in) ☐	
Due to a tram failure...................... ☐			
Planned engineering works................ ☐			
Poor weather conditions................... ☐			
The tram waiting too long at stops....... ☐		No reason given...................................... ☐	
The tram waiting too long at signals... ☐		Don't know... ☐	

Q26 If yes: By approximately how long was your journey today delayed?
(Please write the time in minutes)

Q26 Were any of these items of information present on the tram?

	Yes	No	Don't know
A map of the tram route/journey times......................	☐	☐	☐
Audio announcements e.g. saying the next tram stop......	☐	☐	☐
An electronic display e.g. showing the next tram stop	☐	☐	☐
Information about tickets/fares................................	☐	☐	☐
A timetable..	☐	☐	☐
Details of how to contact the tram company, for example, to make a complaint or find out information...........................	☐	☐	☐
Free Wi-Fi..	☐	☐	☐

Q27 Thinking about any West Midlands Metro staff you encountered on your journey, please indicate how satisfied you were with each of the following:

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/ no opinion
The appearance of any staff	☐	☐	☐	☐	☐	☐
Any greeting/welcome you got from the staff	☐	☐	☐	☐	☐	☐
The helpfulness and attitude of the staff	☐	☐	☐	☐	☐	☐
The safety of the driving (i.e. appropriateness of speed, driver concentrating)	☐	☐	☐	☐	☐	☐
The knowledge of the staff	☐	☐	☐	☐	☐	☐

5 Your overall opinion of the journey you made when given this questionnaire

Q28 Overall, taking everything into account from start to end of this journey, how satisfied were you with your journey on the West Midlands Metro today?

Very satisfied................................ ☐	Fairly dissatisfied.................................. ☐
Fairly satisfied.............................. ☐	Very dissatisfied.................................... ☐
Neither satisfied nor dissatisfied.......... ☐	Don't know/ No opinion............................ ☐

Q29 If something could have been improved on your journey on the West Midlands Metro today what would it have been?

Q30 How satisfied were you with the value for money of your journey on the West Midlands Metro?

Very satisfied................................ ☐	Fairly dissatisfied.................................. ☐
Fairly satisfied.............................. ☐	Very dissatisfied.................................... ☐
Neither satisfied nor dissatisfied.......... ☐	Don't know/ No opinion............................ ☐

Q31 What had the biggest influence on the 'value for money' rating you gave in the previous question?

The cost for the distance travelled.............................. ☐	Comfort/journey quality for the fare paid ☐
The cost of the tram versus other modes of transport... ☐	
The fare in comparison to the cost of everyday items... ☐	A reason not mentioned above .... ☐ (please write in the box)

Q32 All things considered, how much do you trust the tram company that operated the tram that you used for this journey (Please tick one box only)

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

Do NOT trust them at all ⟷ TRUST them a GREAT deal

6 Your opinion of West Midlands Metro generally

WHEN ANSWERING THIS SECTION PLEASE CONSIDER WEST MIDLANDS METRO SERVICES GENERALLY (NOT JUST THE JOURNEY YOU MADE WHEN GIVEN THIS QUESTIONNAIRE)

Q33a How would you rate West Midlands Metro services for the following:

	Very good	Fairly good	Neither good nor poor	Fairly poor	Very poor
Ease of getting to local amenities (e.g. shops, hospitals, leisure facilities)	☐	☐	☐	☐	☐
Connection with other forms of public transport (e.g. trains/buses)	☐	☐	☐	☐	☐

Q33b And how satisfied are you overall with West Midlands Metro services for the following:

	Very satisfied	Fairly Satisfied	Neither satisfied nor dissatisfied	Fairly dissatisfied	Very dissatisfied	Don't know/ no opinion
Ease of buying your ticket	☐	☐	☐	☐	☐	☐
Reliability (running on time)	☐	☐	☐	☐	☐	☐
Frequency (how often the trams run)	☐	☐	☐	☐	☐	☐
Range of tickets available	☐	☐	☐	☐	☐	☐
Range of payment options available	☐	☐	☐	☐	☐	☐
Customer Service	☐	☐	☐	☐	☐	☐

Q34 If you needed information about your local tram services, e.g. times, fares, where would you obtain that information (Please tick all that apply)

Phone: Traveline.............................. ☐		Travel shop... ☐	
Internet: West Midlands Metro website............ ☐		Ask friend/relative............................... ☐	
Internet: Network West Midlands website......... ☐		Ask tram staff..................................... ☐	
Internet: Other travel website................. ☐		From a Park and Ride information board..... ☐	
Smartphone app .... ☐		Other... ☐	
Twitter/ Social media/ Facebook.............. ☐		Not sure.. ☐	

Q35 How often do you typically travel on the West Midlands Metro?

5 or more days a week..................... ☐		Once a month........................... ☐	
3 or 4 days a week....................... ☐		Less frequently......................... ☐	
Once or twice a week..................... ☐		This is the first time I have used West Midlands	
Once a fortnight........................ ☐		Metro.................................. ☐	

Q36 If you have used West Midlands Metro before, how typical would you say today's experience was?

Much better than usual................... ☐		A little worse than usual .... ☐	
A little better than usual............... ☐		Much worse than usual............... ☐	
About the same as usual.................. ☐			

Q37 Have any of the following frequently stopped you making journeys by tram? (Please tick all that apply)

The places you can reach by tram......... ☐		How long the journeys take when going by tram.... ☐	
The frequency of trams in the area........ ☐		The comfort of the trams............. ☐	
The reliability of the trams............... ☐		The level of crowding on the trams................. ☐	
The cost of using the tram................ ☐		A concern for your personal safety on tram........... ☐	
Understanding the fares.................... ☐		Tram network improvement work........................ ☐	
Understanding the ticket machines........ ☐			

Q38 Are you aware of any proposed extensions to the tram line?

Yes.. ☐　　No.. ☐

Q39 Are you aware of any of the following?

Change of operator........................ ☐　　Changes to fares/ tickets................ ☐
Change of name............................ ☐

Q40 Are you aware of the following tickets?

Metro only Day Ticket..................... ☐　　Group Ticket (5 for £5)................... ☐
Student Term ticket....................... ☐

7　About you

In this final section we ask for some information about you, some of which, like your health and ethnicity, is considered to be sensitive information. Any information you give us here is used for research purposes only and not to identify any particular individual. You are also free to decide whether you want to give us this information or not.

We ask these questions so that we can understand how different passengers' experiences vary, so, for example, what do younger passengers think compared to those who are middle aged or of retirement age.

QA Are you?

Male ☐　　　Female ☐　　　Prefer another term ☐

QB Are you...?

16 to 18................ ☐　　35 to 44................ ☐　　65 to 69................ ☐
19 to 21................ ☐　　45 to 54................ ☐　　70 to 79................ ☐
22 to 25................ ☐　　55 to 59................ ☐　　80+.................... ☐
26 to 34................ ☐　　60 to 64................ ☐　　Prefer not to say..... ☐

QC Which of the following best describes your ethnic background?

White.................................... ☐　　Black, African/Caribbean or Black British....... ☐
Mixed/multiple ethnic groups............. ☐　　Chinese................................ ☐
Asian or Asian British................... ☐　　Arab................................... ☐
Other ethnic group....................... ☐

QD In terms of having a car to drive, which of the following applies?

You have a car available and don't mind driving ☐　　You have a car available but prefer not to drive ☐
You don't have a car available........... ☐

QE How often are you able to ask someone else to drive you for local journeys?

All or most of the time.................. ☐　　You don't have anybody you can ask.............. ☐
Some of the time......................... ☐　　Not applicable......................... ☐

QF Are you affected by any physical or mental health conditions or illnesses lasting or expected to last 12 months or more? *(Please tick all that apply)*

No – None................................ ☐
Yes – Vision (e.g. blindness or partial sight).. ☐
Yes – Hearing (e.g. deafness or partial hearing)... ☐
Yes – Mobility (e.g only able to walk short distances or difficulty climbing stairs)........ ☐
Yes – Dexterity (e.g. difficulty lifting and carrying objects or using a keyboard).......... ☐
Yes – Learning or understanding or concentrating.. ☐
Yes – Memory... ☐
Yes – Mental health.. ☐
Yes – Stamina or breathing fatigue... ☐
Yes – Socially or behaviourally (for example associated with autism attention deficit disorder or Asperger's syndrome).. ☐
Yes – A condition not mentioned above.. ☐

Does your condition or illness have an adverse effect on your ability to make journeys by tram?

Yes, a lot ☐　　Yes, a little ☐　　Not at all ☐

QG And finally, to help us get a better picture of tram services at a local level, it would be helpful if you could provide us with our home postcode.

If you provide it, this will be used to help understand metro usage and make improvements locally. Your postcode will not be used to identify you personally and will only be used for research purposes.

Please write in your home postcode here 　　Live outside the UK.............................. ☐

☐☐☐☐ ☐☐☐

How the information you have provided will be used (General Data Protection Regulations)

Your name, address, email address or phone number – your personal information
Your personal information will always be handled confidentially. We will not make your personal information avilable to anyone without your knowledge and consent. It will be used solely for the purposes of this research and quality control, and no sales or marketing contact will result from this survey. You have the right to access, withdraw your consent to use and object to processing of your personal information.

Your responses to the questions in this survey, including the 'about you' section

Your responses to the questions in this survey will always be handled confidentially. They will be used solely for the purposes of the research and will not be used to identify you personally. We may share the responses to the questions in this survey, including postcode (if you have provided this) with other organisations that have a legitimate interest in the survey data, such as, but not limited to, local transport authorities, government departments, but operating companies and academic institutions. Any organisations receiving the data will also be subject to the same restrictions and obligations under GDPR.

As some of the information we ask for in the 'about you' section is considered to be sensitive information we require your consent for this sensitive information to be stored and processed as described above.

Please confirm whether or not you consent to this
Yes I consent ☐　　No, I do not consent ☐

You, also have the right to access, withdraw your consent to use, and object to processing of your sensitive information. For further information about your legal rights and how to exercise these please contact AECOM's Data Protection Officer at privacyquestions@aecom.com.

If you have any queries about this survey or how your data will be used please contact Jodie Knight at AECOM on 0161 927 8328. If you would like to check that this survey is genuine, you can contact the Market Research Society on 0800 9759596 or www.mrs.org.uk who will verify AECOM's status as a legitimate market research organisation.

To find out more about the Tram Passenger Survey or Transport Focus' work visit our website (www.transportfocus.org.uk) or follow us on Twitter (@transport focus).

If you would be happy to participate in future research projects about the transport industry for Transport Focus please complete the contact details below.

Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Email address: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Thank you for completing this questionnaire.

Please return it in the envelope provided or use the following Freepost address:

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