

# Tram Passenger Survey (TPS)

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Technical report

transportfocus 

  
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# 1. Background

Transport Focus is the official, independent consumer watchdog that promotes 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 (with a smaller project in the late spring) 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 and 2015. 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 a paper self-completion questionnaire or 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 reduced 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 for the BPS, and is being implemented for 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 2016 TPS in detail, including where this has differed at all from previous waves.

## 2. Summary of approach

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

- It provides a measure of experiences with tram journeys. Each individual response relates to a single passenger journey (rather than to a passenger who may have made multiple individual journeys)
- The sampling unit is 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 (for the 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 is the list of all tram services that run each week (which was downloaded from the published timetables)
- A core standard questionnaire is 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 previous 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 2016 survey is given in Appendix 1.

A similar version of the questionnaire was used for both 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 26 September and 4 December 2016. 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. In most areas this pause was between 24th October and 30th October, although there were some variations if school half term holidays were at a different time (as in Scotland for example).

### 3.1 Data collection method

#### Recruiting respondents

Before working their first shift on the project all fieldworkers received a detailed briefing from BDRC via regional supervisors. 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 invite 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 this has been shown to increase the potential for participation among certain demographic groups (especially younger males) who are otherwise typically somewhat 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 Bus Passenger Survey, and pilots on the National Rail Passenger Survey.

In total, 20,784 paper questionnaires were distributed (an average of 59 per shift), and 3892 email addresses were collected (an average of 11 per shift). In total therefore, 24,676 people were recruited to take part in the survey, an average of 70 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 BDRC.

As questionnaires were returned to BDRC’s head office, their barcodes were scanned to provide immediate extra confirmation that a fieldwork shift had taken 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 from certain fieldworkers, if this was found to be the case.

BDRC 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 BDRC 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 8-page self-completion booklet that was handed out along with a reply-paid envelope. The online questionnaire was exactly the same in terms of question content, with small modifications in order to work appropriately depending on the type of device (desktop, smartphone, etc.) being used by the respondent.

The questionnaire had a core set of questions to provide consistent measurement of the components of the journey experience. Some minor questionnaire variations were 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 it was in 2013, 2014 and 2015), to include a number of additional questions useful for TfGM.

A number of revisions were made to the TPS questionnaire in 2016, aimed at improving the online survey experience, and hence to reduce dropout rates from the online survey. This was especially important for respondents using touch devices (smartphones/tablets) for whom dropout rates in previous waves of the survey were higher than for those using a desktop. The majority of the content remained the same, but improvements included:

- Shortening the introduction to the survey which was displayed on the first screen on entering the survey. This had already been streamlined in previous waves but

- the introduction was revisited to ensure key words and phrases stood out and were emboldened, for example 'independent', 'driving service improvements' etc.
- Clarification around the use of the 24 hour clock when detailing journey time (there were some issues with this in 2015)
  - Shortening the question wording as far as possible throughout, to reduce the amount of text shown on smartphone screens, in particular, and therefore reduce the requirement to scroll
  - The questionnaire asked respondents to confirm the time and date that they were recruited on board the tram. A new automated email invitation process, which recorded a much more accurate time and date (described later in section 5). This more accurate time and date was used in the online questionnaire when respondents were asked to confirm these details
  - And more generally, making the survey 'look and feel' more appropriate on a smartphone screen.

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

### **3.3 Response rates and validation of returns**

#### **3.3.1 Response rates achieved**

The overall measure of fieldwork success was the product of recruitment rates achieved and response rates achieved. The table over the page shows the key fieldwork metrics achieved in this wave.

Table 1: Fieldwork metrics: TPS autumn 2016

Network	No. shifts	Recruits : paper	Responses: paper	Response rate: paper	Recruits: online	Responses: online	Response rate: online	Recruits: total	Responses: total*	Response rate: total	Average responses per shift (total)
Blackpool	31	1762	426	24%	481	151	31%	2243	577	26%	19
Midland Metro	28	1813	600	33%	362	50	14%	2175	650	30%	23
Edinburgh	16	856	529	62%	68	8	12%	924	537	58%	34
Manchester - Total	244	14278	2462	17%	2642	515	19%	16920	2977	18%	12
Manchester - Altrincham	28	1850	386	21%	330	75	23%	2180	461	21%	16
Manchester - Ashton	39	2431	380	16%	424	83	20%	2855	463	16%	12
Manchester - Bury	39	2256	371	16%	402	79	20%	2658	450	17%	12
Manchester - East Didsbury	32	2075	339	16%	328	61	19%	2403	400	17%	13
Manchester - Eccles/MediaCity	31	1654	323	20%	450	79	18%	2104	402	19%	13
Manchester - Rochdale	37	1932	334	17%	421	87	21%	2353	421	18%	11
Manchester - Airport	38	2080	329	16%	287	51	18%	2367	380	16%	10
Nottingham - Total	19	1243	244	20%	223	50	22%	1466	294	20%	15
Nottingham - Clifton	12	778	134	17%	129	29	22%	907	163	18%	14
Nottingham - Toton	7	465	110	24%	94	21	22%	559	131	23%	19
Sheffield - Total	13	832	234	28%	116	49	42%	948	283	30%	22
Sheffield - Blue/Purple	7	432	106	25%	59	25	42%	491	131	27%	19
Sheffield - Yellow	6	400	128	32%	57	24	42%	457	152	33%	25
<b>Autumn 2016 total</b>	<b>351</b>	<b>20784</b>	<b>4495</b>	<b>22%</b>	<b>3892</b>	<b>823</b>	<b>21%</b>	<b>24676</b>	<b>5318</b>	<b>22%</b>	<b>15</b>

\* Total number of responses shown is the total number received, before any further cleaning; a small number of responses were rejected during validation and analysis of the responses (see next section)

### 3.3.2 Validation of completed surveys

Completed questionnaires were subject to two stages of checks and validation; one before they were scanned electronically (for paper questionnaires), or accepted as online responses, and one afterwards.

#### 1a. Checks and validation pre-scanning of paper questionnaires

The first stage of checks took place immediately after completed questionnaires were received. First, 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 questions and so it would be wrong to waste their other answers. Questionnaires were therefore accepted according to the following guidelines:

- Provided that the respondent had at least reached the “overall journey satisfaction” question (including a small number of cases where the respondent had clearly reached the end of the questionnaire but missed the “overall journey 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), the questionnaire was accepted on this basis, since they would have completed the majority of the questions by this point
- 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 was accepted – providing that most of the other questions had been completed. If the respondent had missed four whole pages, the questionnaire was 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 had been completed, this was scanned from a barcode 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), the start and end points of the passenger’s journey (Q1a and b, see questionnaire example in the Appendix) and the time they boarded (Q2). 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 were 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.

### 1c. Checks and validation of time entries

At this stage, for paper questionnaires, the answers to numeric questions were also recorded manually and/or checked. These were all about times (Q15, Q17, and Q25), and were recorded manually because sometimes respondents’ handwriting was difficult to pick up via the electronic scanning data capture system, or passengers incorrectly recorded route numbers or times (which used the 24-hour clock). (Checks were built into the manual data entry system to avoid human error, such as a flag to alert the

person if they had entered an abnormally long time for waiting for the tram, etc. Also note that the answers to these questions were still scanned electronically, and a sample was compared to the manually entered data, as a further check against human error at the data entry stage). Similarly, electronic validation of the equivalent (typed-in) responses in the online questionnaire was built into the data cleaning programme.

## 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) 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 series of validation checks once data had been merged to ensure that:

- Paper questionnaires had been scanned correctly. All questionnaires were scanned electronically by feeding them through a scanning machine. Checks were conducted to ensure there were no issues with this process, for example, pages being stuck together during scanning, 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
- There were no residual validation errors. 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 “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:

- All open ended answers written on paper questionnaires were typed up into one document
- Answers given in the online survey were extracted and merged into the same document
- All responses were then 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. “Disabled provision / Wheelchair provision etc.” was added in the 2016 wave of the survey)
- Any profanities, offensive comments or personal identifiers were removed from respondents’ answers
- BDRC and Transport Focus both reviewed the coding and any responses that were flagged for attention (for example, where potentially identifying text should be removed).

Code frame used in 2016:

<b>Q29. If something could have been improved on your journey today, what would it have been?</b>	
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, cleanliness of interior, litter, 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
18	Disabled provision / Wheelchair provision etc.

### 3.3.4 Data preparation and analysis

After the data was 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 classed 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 2016 TPS covered six different tram operators. Three of these had just one route, but the Sheffield network had three, Nottingham had two, and Manchester had seven.

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

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

The Manchester Metrolink Airport line was opened in November 2014, and was included in the survey for the first time in 2015. Nottingham Express Transit was previously surveyed as one single route and was first covered as two separate lines in 2015. All other routes above were surveyed in the same way in 2014, 2015 and 2016. 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. Midland Metro opened a network extension to Grand Central on 30<sup>th</sup> May 2016, which was included, for the first time, in the 2016 survey.

The sampling process described in section 4.3 below was applied in turn to each of these fourteen 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 4.4. The routes were then also weighted according to their relative volume of passenger journeys, so that when looking at aggregated results at the ‘All Network’ level in the overall dataset, the routes with the largest numbers of passengers had the greatest weight and each route contributed appropriately.

## 4.2 Sample sizes

The sample sizes specified for each network are shown in the table below. The sample sizes for Blackpool, Manchester and Midland Metro were determined by boost funding from those authorities; Edinburgh Trams funded the full cost of the research on their network, this being outside the statutory remit of Transport Focus. 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 2016

Network/route	Sample size required	Sample size achieved
Blackpool	500	575
Midland Metro	500	637
Edinburgh	500	533
Manchester – Altrincham	450	485
Manchester – Ashton	380	466
Manchester – Bury	450	493
Manchester – East Didsbury	380	406
Manchester – Eccles/MediaCity	380	415
Manchester – Rochdale	380	428
Manchester – Airport	380	380
Nottingham – Clifton	125	165
Nottingham – Toton	125	131
Sheffield – Blue/Purple routes	125	132
Sheffield – Yellow route	125	151

Within the Manchester sample, a minimum quota was also applied of 100 passenger journeys between tram stops located within the ‘City Zone’. These journeys both started and ended within a group of seven tram stops in the centre of Manchester. In practice, 155 surveys were completed for the ‘City Zone’.

### 4.3 Sampling process

For autumn 2016, the sampling process followed that employed in autumn 2015. 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 2016 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<sup>1</sup>
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<sup>th</sup> 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.
  - 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

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<sup>1</sup> 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

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 was supplied by each of the tram operators, indicating the proportion of all passenger journeys which were made in each of four 'dayparts'<sup>2</sup>. 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, autumn 2015

	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 (which is fairly typical), this would mean that morning and

<sup>2</sup> '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).

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 2016 was identical to that used in 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 provided 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 waves prior to autumn 2015, 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 from 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 addition, five shifts which were conducted at tram stops in central Manchester (rather than on board trams) were six hours long. These were specifically targeted at ensuring a good sample size of passengers boarding trams in TfGM's CityZone, and covered all times of day between them.
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-carriage 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-carriage trams was introduced. The approach in previous waves was as follows:
- a) In 2014:
    - Shifts affected by double-carriage tram services were identified; there were 22 in total

- Two thirds of the double-carriage 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-carriage 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 that 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 2016 identified where doubled-up fieldwork should happen, in a way that treated each line equally, as well as focussing the extra fieldwork coverage at the time of day when it was most relevant. The approach required some input from Metrolink and was as follows:

- a) Established a full list of shifts as described above in sampling process
- b) Metrolink then identified which shifts would be affected by double-carriage trams (i.e. which routes and times of day have double-carriage trams running)
- c) For these potential double-carriage tram shifts Metrolink then estimated the proportion of shift time for which the double-carriage 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, we would need two fieldworkers on board the same tram simultaneously

- e) We then select 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 those 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.

When the double-carriage tram shift selection approach was carried out as above, it resulted in only one shift being appropriate for two interviewers. This is fewer than were selected in 2015 due to a vast reduction in Metrolink's use of double trams across the network compared to 2015.

- 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. Extra shifts were added throughout the fieldwork period based on its productivity up to that point. In total, 58 top up shifts were conducted on top of an original 292. The only routes which did not require any top up fieldwork were Blackpool, Edinburgh, Midland Metro, Sheffield Blue/Purple and Sheffield Yellow.
- 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 was weighted to correct for imbalance in response rate by age and gender, and by day-part. This weighting was applied within each of the fourteen 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 these 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:

- Passenger counts were undertaken twice during the shift to record passenger characteristics (gender and observable age). For Blackpool, Midland Metro, Edinburgh, Nottingham 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'. In 2015 the peak day-part was split in two to provide 'weekday morning peak' and 'weekday evening peak'. The same day-parts were used in 2016

- Profiles by age were recorded in three bands: 16-25, 26-59 and 60+
- The passenger counts were used to compile the weighting matrix (shown in section 4.4.3) used at the data analysis stage.

Of the total 702 planned passenger counts, 518 were completed and used to inform the weighting. There were 120 passenger counts that were not completed or not used to inform the weighting:

- 92 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
- 70 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 and autumn 2015 and was therefore also used in autumn 2016. 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
- A further 22 passenger counts were completed but information was not sent back to the office by fieldworkers in time or was not of sufficient quality for the data to be used to inform the weights
- 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 six tram operators involved in the 2016 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, 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 2015/2016 were used, as published by the DfT<sup>3</sup>, for each of the tram networks. This data was used directly as published for Blackpool, Nottingham and Sheffield. Data was sourced from the networks for Edinburgh, Manchester and Midland Metro, because DfT statistics are England-only and so do not cover Edinburgh Trams, and because network development on Metrolink and Midland Metro (e.g. the opening of the extension to Grand Central in Birmingham) meant that more up-to-date patronage data based on less than a year was deemed more appropriate where the network could provide it.

The data published by the DfT is 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. 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.

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<sup>3</sup><https://www.gov.uk/government/collections/light-rail-and-tram-statistics>

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.

Finally some cells were merged to reduce the amount of weighting required. This occurred when the number of respondents within a cell was far greater or less than the target being weighted to. For example, if the number of 16-25 year olds for Edinburgh AM peak was only 10 and the target being weighted to was 100, this would require a weight factor of 10. In this case the 16-25 cell would be merged with the 26-59 cell to reduce the weight factor. This resulted in the final set of rim weights as shown in the table below.

Table 4: Autumn 2016 target *rim weights*

Line	16-25	26-59	60+	NA	Male	Fe- male	NA
Blackpool AM peak	0.26%	0.39%	0.07%	0.00%	0.32%	0.38%	0.01%
Blackpool offpeak	0.34%	0.79%	1.09%	0.03%	1.02%	1.19%	0.05%
Blackpool PM peak	0.24%	0.52%	0.39%	0.02%	0.56%	0.58%	0.02%
Blackpool Weekend	0.49%	0.89%	0.79%	0.11%	1.00%	1.17%	0.11%
Midland Metro AM peak	0.45%	0.63%	0.18%	0.08%	0.62%	0.61%	0.12%
Midland Metro offpeak	1.00%	1.35%	0.49%	0.21%	1.62%	1.20%	0.23%
Midland Metro PM peak	1.03%	0.99%	0.18%	0.14%	1.26%	0.90%	0.17%
Midland Metro Weekend	0.27%	0.65%	0.27%	0.05%	0.66%	0.53%	0.05%
Edinburgh AM peak	0.87%		0.16%	0.09%	0.54%	0.49%	0.09%
Edinburgh offpeak	0.46%	1.67%	0.62%	0.21%	1.41%	1.34%	0.21%
Edinburgh PM peak	0.34%	0.48%	0.15%	0.04%	0.50%	0.46%	0.05%
Edinburgh Weekend	0.41%	0.95%	0.56%	0.19%	0.93%	1.01%	0.17%
Manchester - Airport AM peak	0.18%	0.27%	0.05%	0.01%	0.27%	0.23%	0.01%
Manchester - Airport offpeak	0.49%	0.80%	0.48%	0.04%	0.88%	0.87%	0.06%
Manchester - Airport PM peak	0.09%	0.26%	0.06%	0.01%	0.23%	0.19%	0.01%
Manchester - Airport Weekend	0.19%	0.26%	0.11%	0.02%	0.30%	0.25%	0.03%
Manchester - Altrincham AM peak	1.01%	0.98%	0.41%	0.02%	1.35%	1.03%	0.05%
Manchester - Altrincham offpeak	1.35%	3.15%	1.22%	0.23%	3.30%	2.49%	0.15%
Manchester - Altrincham PM peak	0.22%	1.28%		0.02%	0.75%	0.75%	0.02%
Manchester - Altrincham Weekend	0.48%	0.85%	0.72%	0.04%	0.89%	1.16%	0.04%
Manchester - Ashton AM peak	0.20%	0.25%	0.05%	0.02%	0.24%	0.25%	0.02%
Manchester - Ashton offpeak	0.72%	0.96%	0.52%	0.11%	1.06%	1.13%	0.12%
Manchester - Ashton PM peak	0.10%	0.16%	0.10%	0.01%	0.16%	0.20%	0.01%
Manchester - Ashton Weekend	0.48%		0.17%	0.03%	0.28%	0.37%	0.03%
Manchester - Bury AM peak	0.41%	1.18%	0.08%	0.06%	1.00%	0.66%	0.06%
Manchester - Bury offpeak	1.64%	2.77%	1.80%	0.24%	2.91%	3.19%	0.35%
Manchester - Bury PM peak	0.24%	0.59%	0.10%	0.07%	0.49%	0.44%	0.07%
Manchester - Bury Weekend	0.62%	0.83%	0.30%	0.19%	1.00%	0.72%	0.23%
Manchester - East Didsbury AM peak	0.48%	0.71%	0.10%	0.09%	0.75%	0.53%	0.09%
Manchester - East Didsbury offpeak	2.07%		0.54%	0.15%	1.48%	1.15%	0.13%
Manchester - East Didsbury PM peak	0.55%		0.09%	0.03%	0.37%	0.27%	0.03%

Manchester - East Didsbury Weekend	0.80%		0.19%	0.03%	0.53%	0.44%	0.05%
Manchester - Eccles/Media City AM peak	0.13%	0.32%	0.03%	0.03%	0.33%	0.17%	0.01%
Manchester - Eccles/Media City offpeak	0.58%	1.04%	0.44%	0.12%	1.18%	0.85%	0.16%
Manchester - Eccles/Media City PM peak	0.12%	0.43%	0.07%	0.01%	0.35%	0.26%	0.01%
Manchester - Eccles/Media City Weekend	0.17%	0.43%	0.11%	0.00%	0.36%	0.32%	0.02%
Manchester - Rochdale AM peak	0.47%	0.52%	0.07%	0.03%	0.57%	0.47%	0.05%
Manchester - Rochdale offpeak	1.26%	1.53%	1.01%	0.22%	2.05%	1.69%	0.27%
Manchester - Rochdale PM peak	0.65%		0.07%	0.02%	0.37%	0.35%	0.02%
Manchester - Rochdale Weekend	0.92%		0.26%	0.06%	0.66%	0.52%	0.06%
Nottingham - Clifton AM peak	0.30%	0.64%	0.27%	0.00%	0.56%	0.65%	0.00%
Nottingham - Clifton offpeak	2.00%		0.41%	0.07%	1.09%	1.29%	0.10%
Nottingham - Clifton PM peak	0.23%	0.50%	0.21%	0.03%	0.44%	0.51%	0.03%
Nottingham - Clifton Weekend	0.20%	0.91%	0.57%	0.06%	0.76%	0.86%	0.11%
Nottingham - Toton AM peak	0.46%	1.10%	0.21%	0.06%	0.83%	0.94%	0.06%
Nottingham - Toton offpeak	0.94%	1.97%	0.63%	0.18%	1.40%	2.04%	0.27%
Nottingham - Toton PM peak	1.32%		0.15%	0.00%	0.71%	0.76%	0.00%
Nottingham - Toton Weekend	0.64%	1.46%	0.39%	0.10%	1.03%	1.46%	0.10%
Sheffield - Blue AM peak	0.41%	0.46%	0.03%	0.00%	0.49%	0.41%	0.00%
Sheffield - Blue offpeak	0.58%	1.47%	1.43%	0.32%	1.55%	1.99%	0.27%
Sheffield - Blue PM peak	0.36%	0.93%		0.06%	0.61%	0.67%	0.06%
Sheffield - Blue Weekend	0.85%		0.57%	0.00%	1.28%		0.00%
Sheffield - Yellow AM peak	0.35%	0.47%	0.08%	0.03%	0.40%	0.53%	0.00%
Sheffield - Yellow offpeak	0.51%	2.24%	1.04%	0.16%	1.63%	2.06%	0.26%
Sheffield - Yellow PM peak	0.51%	0.69%	0.12%	0.08%	0.57%	0.75%	0.08%
Sheffield - Yellow Weekend	0.34%	0.77%	0.36%	0.00%	1.47%		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 cases where three or fewer passenger counts were made, the cells were collapsed for the purpose of defining the above weights, and replaced with the next closest profile available,

- e.g. if AM peak was unavailable, AM peak and PM peak were combined into 'total peak'

- If 'total peak' was still not robust, the profile from the line as a whole was used

The cells that were collapsed were:

- Edinburgh AM peak (used total Edinburgh peak)
- Manchester Rochdale PM peak (used total Rochdale peak)
- Nottingham Clifton AM peak (used total Clifton)
- Nottingham Clifton PM peak (used total Clifton)
- Nottingham Toton AM peak (used total Toton peak)
- Nottingham Toton weekend (used total Toton)
- Sheffield Blue AM peak (used total Blue peak)
- Sheffield Yellow AM peak (used total Yellow peak)
- Sheffield Yellow PM peak (used total Yellow peak)

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

Table 5: Autumn 2016 average weights

Line	16-25	26-59	60+	NA	Male	Female	NA
Blackpool AM peak	1.23	0.97	0.29	1.00	1.00	0.78	0.56
Blackpool offpeak	1.06	0.44	0.61	0.31	1.32	0.92	1.75
Blackpool PM peak	0.82	0.63	0.61	0.53	1.08	0.81	1.02
Blackpool Weekend	1.10	0.48	0.49	0.50	1.19	0.91	1.08
Midland Metro AM peak	0.27	0.23	0.91	0.25	1.30	0.97	1.17
Midland Metro offpeak	1.17	0.44	0.76	1.44	0.73	0.65	1.00
Midland Metro PM peak	4.72	1.54	0.57	1.77	1.42	0.66	1.07
Midland Metro Weekend	1.45	0.91	0.62	0.95	1.13	0.92	0.96
Edinburgh AM peak	2.19		4.23	2.38	1.03	1.01	1.02
Edinburgh offpeak	0.46	0.53	0.85	0.54	1.07	0.98	1.06
Edinburgh PM peak	0.70	0.45	0.80	0.46	1.07	0.96	1.18
Edinburgh Weekend	0.93	0.67	1.31	0.73	1.56	0.76	1.14
Manchester - Airport AM peak	2.51	0.20	0.53	0.53	3.57	0.39	1.02
Manchester - Airport offpeak	1.53	0.56	0.42	1.38	1.02	1.08	0.52
Manchester - Airport PM peak	0.98	0.25	0.13	0.30	2.32	0.85	0.98
Manchester - Airport Weekend	0.81	0.26	0.17	0.09	0.99	0.94	3.11
Manchester - Altrincham AM peak	3.76	0.60	1.93	0.40	1.60	0.73	2.70
Manchester - Altrincham offpeak	3.21	1.77	0.58	1.80	1.27	0.79	0.75
Manchester - Altrincham PM peak	0.99	0.93		1.06	1.16	0.91	1.02
Manchester - Altrincham Weekend	4.27	1.92	1.48	2.11	1.11	0.97	1.02
Manchester - Ashton AM peak	1.11	0.29	0.24	0.42	1.14	0.63	0.96
Manchester - Ashton offpeak	1.75	0.85	0.22	0.77	1.17	0.95	0.73
Manchester - Ashton PM peak	0.48	0.34	0.28	0.26	1.00	1.04	1.02
Manchester - Ashton Weekend	0.48		0.16	0.30	1.39	0.85	1.05
Manchester - Bury AM peak	6.91	1.32	0.76	1.27	2.14	0.46	0.40
Manchester - Bury offpeak	3.54	1.53	0.57	1.14	0.90	1.16	1.02
Manchester - Bury PM peak	1.05	0.54	0.23	0.65	1.23	0.90	0.76
Manchester - Bury Weekend	8.32	1.56	0.92	9.21	1.84	0.97	0.28
Manchester - East Didsbury AM peak	3.59	0.64	1.63	0.95	1.55	0.58	1.02
Manchester - East Didsbury offpeak	1.76		0.46	0.83	1.44	0.72	1.52
Manchester - East Didsbury PM peak	0.47		0.32	0.40	1.66	0.67	1.02

Manchester - East Didsbury Weekend	0.60		0.24	0.31	1.44	0.75	1.29
Manchester - Eccles/Media City AM peak	0.53	0.25	0.59	0.53	1.40	0.68	0.51
Manchester - Eccles/Media City offpeak	1.56	0.64	0.28	0.34	1.24	0.85	1.75
Manchester - Eccles/Media City PM peak	0.70	0.59	0.34	0.53	0.87	0.81	1.02
Manchester - Eccles/Media City Weekend	1.06	0.80	0.33	1.00	0.84	0.92	0.58
Manchester - Rochdale AM peak	1.24	0.42	0.29	1.54	0.65	0.76	0.83
Manchester - Rochdale offpeak	3.61	0.83	0.49	1.99	1.63	0.73	0.45
Manchester - Rochdale PM peak	1.16		0.33	1.06	1.36	0.81	1.02
Manchester - Rochdale Weekend	1.48		0.42	1.06	1.58	0.70	1.02
Nottingham - Clifton AM peak	2.66	1.76	3.61	1.00	1.00	1.04	1.00
Nottingham - Clifton offpeak	2.66		0.64	3.08	1.27	0.91	0.61
Nottingham - Clifton PM peak	2.44	1.55	1.09	1.58	1.66	0.92	1.02
Nottingham - Clifton Weekend	7.71	3.08	2.56	3.65	1.60	0.70	0.88
Nottingham - Toton AM peak	3.94	3.05	1.64	3.17	1.42	0.81	1.02
Nottingham - Toton offpeak	8.71	8.66	1.51	8.55	1.37	0.89	0.57
Nottingham - Toton PM peak	2.78		1.16	1.00	1.56	0.77	1.00
Nottingham - Toton Weekend	16.12	5.16	3.15	5.28	1.23	0.91	1.02
Sheffield - Blue AM peak	7.57	1.95	0.76	1.00	1.32	0.80	1.00
Sheffield - Blue offpeak	4.82	3.45	2.02	2.39	0.91	1.17	1.22
Sheffield - Blue PM peak	5.34	3.11		3.17	1.58	0.68	1.02
Sheffield - Blue Weekend	17.58		6.74	1.00	0.29		1.00
Sheffield - Yellow AM peak	2.85	1.06	1.68	1.89	1.36	0.86	1.00
Sheffield - Yellow offpeak	3.08	5.63	1.29	3.69	1.31	0.89	0.78
Sheffield - Yellow PM peak	6.57	4.06	1.76	4.23	0.80	1.30	1.02
Sheffield - Yellow Weekend	5.99	4.07	1.90	1.00	1.02		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 acknowledge that, where there are very high weights in some cells, this means that a small number of individuals will be contributing strongly to the overall

results within that cell, and if those individuals had a particularly good or poor experience this will be reflected in satisfaction levels. The main example of this is for 16-59 year olds travelling at the weekend on the Sheffield Blue route: as shown above, the average weight applied to these specific respondents is 17.58 (meaning each individual respondent in this cell accounts for 17.58 people in the results). At an overall level this will have little material consequence since this is a very small part of the overall results for Sheffield, and indeed for the Blue route specifically. However when very detailed subgroup analysis is performed, for example to look at results among off-peak travellers on the Blue route, the results would be less stable and in this case would be inadvisable.

To help deal with this, 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. This does show that results for the Nottingham Clifton route have a high margin for error; this is partly due to the relatively small sample size for this route in the first place, and (related to this) the relatively high weights applied to some individuals. 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%.

Network/route	Margin for error (+/-)
Blackpool	2.45%
Midland Metro	2.33%
Edinburgh	2.55%
Manchester (total)	1.06%
Manchester – Airport	2.67%
Manchester – Altrincham	2.72%
Manchester – Ashton-under-Lyne	2.65%
Manchester – Bury	2.92%
Manchester – East Didsbury	2.89%
Manchester – Eccles/MediaCityUK	2.84%
Manchester – Rochdale	3.02%
Nottingham (total)	3.42%
Nottingham - Clifton	4.58%

Nottingham - Toton	5.14%
Sheffield (total)	3.50%
Sheffield - Blue Line	5.12%
Sheffield - Yellow Line	4.78%
<b>Overall 'All Networks' results</b>	<b>0.80%</b>

## 5. Implications of using dual modes of completion

In the original pilot for the TPS, and in the 2013, 2014 and 2015 waves of the survey, it was 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 to other factors, particularly age, which the use of an online method in addition to paper is designed to help control.

Although the influence of interviewing mode is extremely small, the 2016 survey saw a smaller contribution from online respondents compared to paper respondents, than in previous waves (see table 6 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 6: proportion of (un-weighted) response from online vs. paper

Mode	Autumn 2013	Autumn 2014	Autumn 2015	Autumn 2016
Online – total	27.0%	33.6%	22.5%	15.6%
Online – desktop	19.9%	21.9%	12.8%	7.8%
Online – touch (smartphone / tablet)	6.2%	10.5%	9.6%	7.8%
Online – other	0.9%	0.2%	0.1%	0.0%
Paper	73.0%	67.4%	77.5%	84.4%

This section briefly revisits the degree to which mode of interviewing impacted on survey results (which was explored in greater detail in 2015). It then discusses a new development in 2016, which involved automated email invitations to the online survey, aimed at speeding up the process of respondents taking part after they have been recruited.

### 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 example, the table below shows the autumn 2016 results for overall journey satisfaction for each mode of completion. There are no differences between paper and online for those who are ‘satisfied’ (either very satisfied or fairly satisfied) but paper respondents are more likely to be ‘very satisfied’:

Table 7: Overall journey satisfaction by mode of interviewing

Mode	% satisfied	% very satisfied
Online	91%	53%
Paper	91%	63%
Total	91%	61%

However, those responding online tend to have a younger profile than those responding on paper (see table 8 below), and younger people tend to be less satisfied with their overall journey experience, as shown in table 9:

Table 8: Profile of respondents, online vs. paper (un-weighted)

	Online	Paper	Total
16-25	22%	13%	14%
26-59	61%	52%	53%
60+	17%	35%	33%
Not stated	1%	0%	0%

Table 9: Overall journey satisfaction by age (un-weighted)

Age group	% satisfied	% very satisfied
16-25	89%	48%
26-59	91%	57%
60+	95%	77%
Total	92%	62%

Given that satisfaction varies by age, and that the online sample has a different age profile from the paper self-completion 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 10: overall journey satisfaction by age and interviewing mode (un-weighted)

Age group	Mode	% satisfied	% very satisfied
16-25	Online	91%	43%
	Paper	88%	50%
	Total	89%	48%
26-59	Online	90%	52%
	Paper	91%	57%
	Total	91%	57%
60+	Online	95%	72%
	Paper	95%	78%
	Total	95%	77%
Total	Online	91%	53%
	Paper	91%	63%
	Total	91%	61%

As can be seen in Table 10, within most age groups there is very 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 only 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 slightly lower ratings amongst online respondents in general, however because this is not the case for ‘very/fairly satisfied’ (where the opposite is true in some cases – paper respondents giving lower ratings) we cannot say that there is a pattern emerging here.

This therefore supports the previous findings: that online respondents are typically more negative than paper respondents, but this is mainly a function of their age, and while the mode of completion itself can have a small impact on satisfaction this is relatively insignificant compared to the impact of age.

### Automated invitations to the online survey

A new process that was introduced to the TPS in 2016 was an automated invitation to the online survey. Analysis from previous waves demonstrated that recruited passengers are more likely to actually go on to complete the survey if they receive the emailed invite (with the link to the survey URL) quickly. In 2015, response rate was

highest where recruits received their survey invite 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 Transport Focus *Passenger Surveys*.

In order to speed up the email invitations, the TPS in 2016 involved a mechanism by which:

- 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 in 2016, 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 result of this process can be seen in the table below. It shows the average number of days elapsed between the moment the respondent provided their email address and the moment when they first clicked on the online survey link.

*Table 11: Average days elapsed between recruitment and respondent clicking survey link*

	Average days
2013	5.2
2014	4.2
2015	3.0
2016	2.2

Since the automated process was new in 2016 a review was conducted around a third of the way through fieldwork to identify whether any improvements could be made. This review showed that a high proportion of respondents were clicking on the survey link quite quickly (on the same day, or the following day). Table 12 below shows that 43 per cent of online recruits first clicked the survey on the same day that they were recruited

on board a tram. Table 13 breaks this down further, showing that 24 per cent of all online recruits entered the survey within five minutes of the email invite being sent.

Table 12: When online recruits (survey completers and drop outs) clicked on the survey link

	Percentage of online recruits
Same day as recruitment	43%
1 day after recruitment	17%
2 days after recruitment	9%
3 days after recruitment	8%
4 days after recruitment	4%
5 or more days after recruitment	19%

Table 13: How quickly did on-the-day clickers enter the survey?

	Percentage of on-the-day clickers	Cumulative per cent
Within 1 minute	12%	12%
2 minutes	3%	15%
3 minutes	5%	20%
4 minutes	3%	23%
5 minutes	1%	24%
6-10 minutes	1%	25%
11-15 minutes	0%	26%
16-20 minutes	1%	26%
21-30 minutes	1%	27%
31-40 minutes	1%	28%
41-50 minutes	1%	29%
51-60 minutes	2%	31%
1-2 hours	2%	32%
2-3 hours	2%	34%
3-4 hours	1%	35%
4-5 hours	1%	36%
5 hours+	7%	43%

However during the same review of the online survey it was also observed that a lot of online respondents were clicking on the link relatively quickly but not going on to complete the survey. It is possible that a greater proportion of people were accessing

the survey on their smartphone due to the increased speed of the survey invite, but then deciding not to complete the survey at that point, and forgetting to revisit it. The standard process in TPS for these 'incomplete' respondents is to send them an email reminder two days after the initial invite to the online survey, so as to not annoy respondents with too many emails. Due to the increased speed of invitations it was decided to change the email reminders to be sent one day after the initial invite. This was implemented approximately half was through fieldwork, from the 27<sup>th</sup> October 2016 onwards.

The result of the faster email reminder can be seen in the table below: on average respondents clicked on the TPS survey link almost 24 hours more quickly than previously.

*Table 14: Average days elapsed between recruitment and respondent clicking survey link*

	Average days
2 day reminder	2.7
1 day reminder	1.8

Even with the change to the timing of email reminders the automated process seems to have contributed to a higher proportion of drop outs from the online survey, likely because more people click on the survey link in the first place, but the inclination to actually complete the survey has not increased. The table below shows that the proportion of people clicking the survey link increased to 41 per cent in 2016, however the proportion of drop outs also increased to 20 per cent.

*Table 15: Proportion of recruits that click the survey drop out and complete*

	2013	2014	2015	2016
Online recruits	100%	100%	100%	100%
Click-throughs (all clicking the survey link)	36%	37%	33%	41%
Drop outs	9%	10%	11%	20%
Completes (online response rate)	28%	27%	23%	21%

### **The contribution of online versus paper responses**

At the beginning of this section (5), it was reported that online responses had contributed a little less to the overall (un-weighted) dataset than in previous waves.

One reason for this could be the increasing preference that respondents have to enter the survey via a touch device (mainly smartphones but also includes tablets), rather than on a desktop computer or laptop, and the higher likelihood that touch device respondents have to drop out.

Table 16 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).

In 2016 there was a larger proportion starting the survey using desktop, which goes against the trend seen before 2016. However, the trend towards more people completing via touch devices continued in the 2016 wave of the survey.

Table 16: survey completers by online device

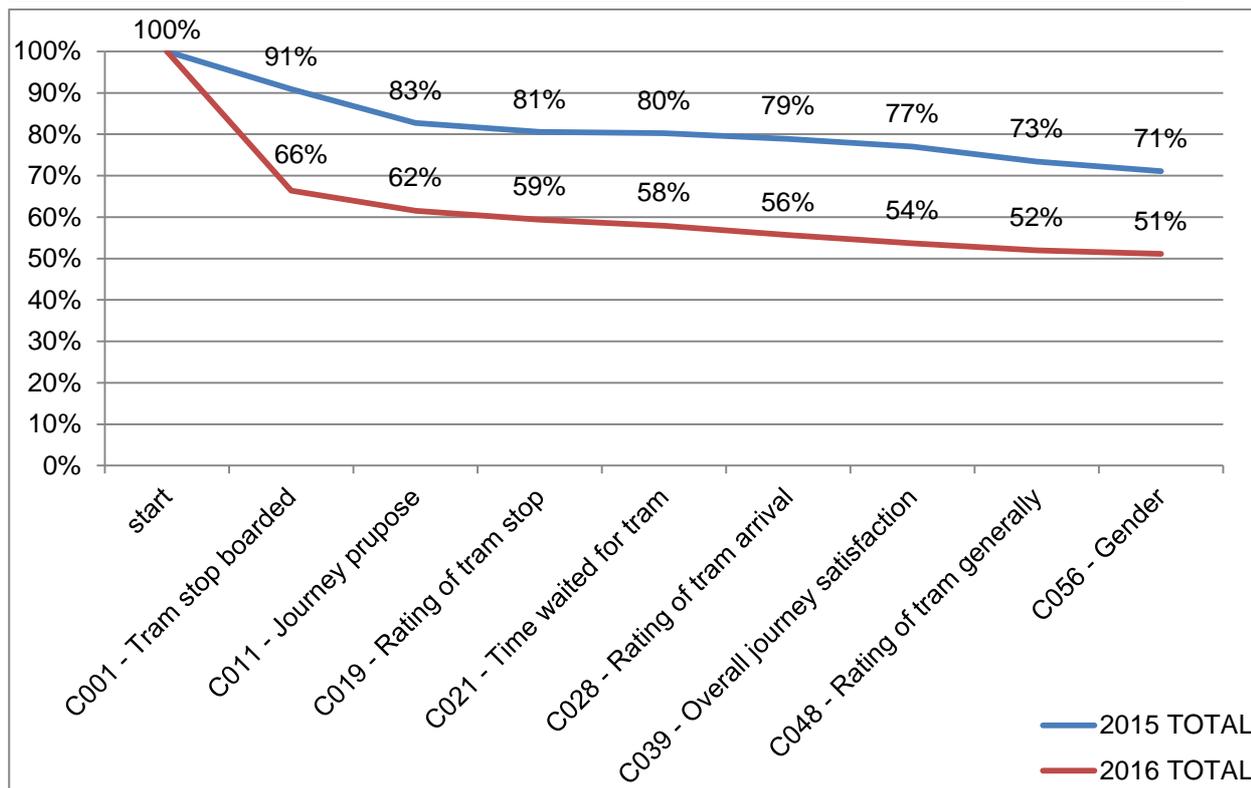
	Autumn 2013	Autumn 2014	Autumn 2015	Autumn 2016*
<b>Device used by online survey starters</b>				
Desktop	65%	57%	47%	62%
Touch	31%	41%	53%	38%
Other	4%	1%	0.8%	0%
<b>Device used by online survey completers</b>				
Desktop	74%	67%	57%	50%
Touch	23%	32%	43%	50%
Other	3%	0.7%	0.2%	0%

\*data in autumn 2016 is recorded in a slightly different way to 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.

### 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, comparing the 2016 wave with 2015. It shows that despite work to improve the experience of the online survey, the overall dropout rate was higher in 2016.

**% of online starters who are still in the survey at key points in the questionnaire:**



The main changes made to the online questionnaire in 2016 were:

- An overall upgrade of the look and feel of the questionnaire (different software was used in 2016 which allowed some further enhancements to be made)
- Shortening of introductory text, specifically with smart phone completion in mind, which avoided an overly busy screen or extensive scrolling
- Provision of further explanation on how to complete the questionnaire using a 24 hour clock system and providing an example
- The ticket type question had four 'over codes' and detailed ticket types within each. By splitting the online version of this question into two parts (overcodes first, then relevant detailed codes) this was hoped to provide an easier to understand question and reduce dropout.

The greatest sticking point of the online survey was the first screen, where respondents saw an introduction to the survey and Transport Focus. Whilst this was shortened in 2016, it remained a barrier to respondents. Dropout rates throughout the rest of the online questionnaire were relatively consistent with 2015, after the survey introduction.

The increase in dropout at the beginning of the survey could be linked to the introduction of the automated survey invites in 2016. There was an uptake in the proportion of recruits clicking on the survey in 2016, but also a corresponding increase in the proportion of recruits that dropped out. It is possible that faster delivery of the invitation caused more recruits to click on the survey in the first place, and that these people were slightly less inclined to complete the survey and more likely to drop out. The introduction to the online survey (both the email invitation and the intro screen on the first page of the survey) and the overall online experience should be reviewed in the next wave of the survey.

## 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:

*Q31. 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.

*Stage 2: Categorising the main survey questions into themes (factor analysis);*

This is a new stage that we have introduced for the autumn 2016 survey. 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 2015 and autumn 2016 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
<b>1 On tram environment and comfort</b>	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
<b>2 Tram stop condition</b>	Its general condition/standard of maintenance Its freedom from graffiti/vandalism Its freedom from litter
<b>3 Boarding the tram</b>	The ease of getting on to and off of the tram The length of time it took to board the tram
<b>4 Timeliness</b>	The length of time you had to wait for the tram The punctuality of the tram
<b>5 Access to the tram stop</b>	Its distance from your journey start e.g. home, shops The convenience/accessibility of its location
<b>6 Personal safety throughout journey</b>	Behaviour of fellow passengers waiting at the stop Your personal safety whilst at the tram stop Your personal security whilst on the tram
<b>7 Cleanliness and condition of the tram</b>	The cleanliness and condition of the outside of the tram The cleanliness and condition of the inside of the tram
<b>8 Smoothness/speed of tram</b>	The amount of time the journey took Smoothness/freedom from jolting during the journey
<b>9 Information throughout journey</b>	The information provided at the tram stop Route/destination information on the outside of the tram The information provided inside the tram
<b>10 Value for money</b>	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.

*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 2015 and autumn 2016 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.

For autumn 2016, the key driver analysis typically explained just over a third of the variance in overall journey satisfaction, with some variation for individual networks. (The R<sup>2</sup> value was, on average, 0.30 for the drivers of satisfaction and 0.35 on average for the drivers of very satisfied).

### **Why have we changed the way we conduct the Key Driver Analysis this year?**

Each year we review all elements of the survey and see what lessons we can learn from the previous year. Our latest review identified this opportunity to improve the way in which we conduct the Key Driver Analysis; partly, as being a better approach in its own right (with such a large number of questions being included in the analysis, reducing this into a smaller number of themes is more robust), and partly to respond to queries from stakeholders as to why a question could be identified as having a large impact upon overall journey satisfaction in one year, but not in the next (and the effect of this upon investment decisions).

The theming process (using factor analysis) removes the degree of overlap that can exist between individual questions, as each theme is independent of the others, i.e. they are responded to in different ways. The outputs from the Key Driver Analysis are therefore likely to be more stable year on year, making it easier to identify where to focus attention or the resources required to improve, or maintain, overall journey satisfaction. Furthermore, in reality, it may well be simpler to address a theme rather than an individual measure, for example, fixing/cleaning tram stops could cover a range of the individual aspects related to the 'tram stop condition' theme.

## Appendix 1: Typical Questionnaire

(Midland Metro version shown as example from following page)

5105

001

transportfocus



DATE (DD/MM/YY)  
Sep-Nov 2016

# Tram Passenger Survey

Thank you for agreeing to take part in our survey. Your views as a tram passenger are important. Transport Focus is the official, independent consumer watchdog that represents rail, bus, and tram passengers.

To help us represent the views of passengers in your area we would appreciate a little of your time to complete this survey.

It asks about the tram journey you made when given this questionnaire.

Towards the end, there are also questions to record your general experiences too.

Tram companies, local authorities and governments pay close attention to the survey's results. These results provide Transport Focus with the evidence to seek improvements on behalf of passengers.

## Completing the questionnaire

Please fill in the questionnaire after completing your journey with Midland 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.

## WHEN ANSWERING:

### CONSIDER ONLY THE JOURNEY YOU MADE WHEN GIVEN THIS QUESTIONNAIRE

#### 1 About your journey on Midland 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

Enter your time of boarding into the boxes as shown

1	7	:	2	5
---	---	---	---	---

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

<b>Season Ticket/Midland Metro Card/Student</b>	<b>Single/return ticket</b>
1 day..... <input type="checkbox"/>	Single ticket - £1 short hop..... <input type="checkbox"/>
3 day/weekend..... <input type="checkbox"/>	Single ticket - other..... <input type="checkbox"/>
5 days/1 week..... <input type="checkbox"/>	Return ticket..... <input type="checkbox"/>
10 days/2 weeks..... <input type="checkbox"/>	<b>A free pass or free journey</b>
4 weeks/1 month..... <input type="checkbox"/>	Elderly person's pass..... <input type="checkbox"/>
Quarterly/3 months..... <input type="checkbox"/>	Disabled person's pass..... <input type="checkbox"/>
1 year..... <input type="checkbox"/>	Complimentary/free ticket..... <input type="checkbox"/>
Other time period (please write in)	Other ticket
	Park and Ride..... <input type="checkbox"/>
	Family/Group ticket..... <input type="checkbox"/>
	Other..... <input type="checkbox"/>

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

Metro only..... <input type="checkbox"/>	Bus and Metro..... <input type="checkbox"/>
Train and Metro..... <input type="checkbox"/>	Train, Bus and Metro..... <input type="checkbox"/>

For office use only:  
MA

# §5105001C

Your opinion counts!  
transportfocus

Q4 In what format was your ticket?

A standard paper ticket/pass..... <input type="checkbox"/>	A plastic card you touched on to the fare machine..... <input type="checkbox"/>
A photo card ticket/pass..... <input type="checkbox"/>	Other format..... <input type="checkbox"/>
An m-ticket (sent to your mobile phone)..... <input type="checkbox"/>	

Q5a How did you buy that ticket or pass?

From Conductor..... <input type="checkbox"/>	Travel shop..... <input type="checkbox"/>
Ticket machine..... <input type="checkbox"/>	Rail/bus company..... <input type="checkbox"/>
Direct from Network West Midlands (website/phone)..... <input type="checkbox"/>	From a local shop or post office..... <input type="checkbox"/>
Direct from National Express (website/phone)..... <input type="checkbox"/>	You had a free pass..... <input type="checkbox"/>
	Direct debit through work/college..... <input type="checkbox"/>
	Other..... <input type="checkbox"/>

Q5b How did you pay for your ticket?

Cash..... <input type="checkbox"/>	Contactless payment..... <input type="checkbox"/>
Debit or credit card..... <input type="checkbox"/>	Don't know/not applicable..... <input type="checkbox"/>

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

Travelling to/from work..... <input type="checkbox"/>	Health visit (Doctor/hospital/dentist)..... <input type="checkbox"/>
Travelling to/from education (e.g. college, school)..... <input type="checkbox"/>	Shopping trip..... <input type="checkbox"/>
On company business (or own if self-employed)..... <input type="checkbox"/>	Visiting friends or relatives..... <input type="checkbox"/>
On personal business (job interview, bank, post office)..... <input type="checkbox"/>	Leisure trip (e.g. day out)..... <input type="checkbox"/>
	Other..... <input type="checkbox"/>

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

Outward..... <input type="checkbox"/>	One way trip only..... <input type="checkbox"/>
Return..... <input type="checkbox"/>	

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

Heavy/bulky luggage/other large items..... <input type="checkbox"/>	A dog..... <input type="checkbox"/>
A pushchair..... <input type="checkbox"/>	A helper..... <input type="checkbox"/>
Children (under 12)..... <input type="checkbox"/>	A mobility scooter..... <input type="checkbox"/>
A folding bicycle..... <input type="checkbox"/>	A wheelchair..... <input type="checkbox"/>
A non-folding bicycle..... <input type="checkbox"/>	None of the above..... <input type="checkbox"/>

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

On foot/walked..... <input type="checkbox"/>	Bus..... <input type="checkbox"/>
Cycled..... <input type="checkbox"/>	Train..... <input type="checkbox"/>
Car - dropped off..... <input type="checkbox"/>	Tram..... <input type="checkbox"/>
Car - and used Park and Ride..... <input type="checkbox"/>	Other..... <input type="checkbox"/>
Car - parked elsewhere..... <input type="checkbox"/>	

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

On foot/walked..... <input type="checkbox"/>	Bus..... <input type="checkbox"/>
Cycled..... <input type="checkbox"/>	Train..... <input type="checkbox"/>
Car - dropped off..... <input type="checkbox"/>	Tram..... <input type="checkbox"/>
Car - and used Park and Ride..... <input type="checkbox"/>	Other..... <input type="checkbox"/>
Car - parked elsewhere..... <input type="checkbox"/>	

Q11 What was the main reason you chose to take Midland Metro for this journey?

(Please tick all that apply)

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

2

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

Dry.....	<input type="checkbox"/>	Foggy.....	<input type="checkbox"/>
Light rain.....	<input type="checkbox"/>	Snow.....	<input type="checkbox"/>
Heavy rain.....	<input type="checkbox"/>	Icy.....	<input type="checkbox"/>

**2 About the tram stop where you boarded this Midland 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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The convenience/accessibility of its location.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Its general condition/standard of maintenance.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Its freedom from graffiti/vandalism.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Its freedom from litter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Behaviour of fellow passengers waiting at the stop.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The information provided at the tram stop.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your personal safety whilst at the tram stop.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q14 Overall, how satisfied were you with the tram stop?**

Very satisfied.....	<input type="checkbox"/>	Fairly dissatisfied.....	<input type="checkbox"/>
Fairly satisfied.....	<input type="checkbox"/>	Very dissatisfied.....	<input type="checkbox"/>
Neither satisfied nor dissatisfied.....	<input type="checkbox"/>	Don't know/No opinion.....	<input type="checkbox"/>

**3 Waiting for the tram**

**Q15 Approximately, how long did you wait for your tram?**  
(Please write the time in minutes)

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**Q16 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..... <input type="checkbox"/>	Electronic display at the stop..... <input type="checkbox"/>
Online tram times..... <input type="checkbox"/>	Information posters at the stop..... <input type="checkbox"/>
Live tram locator/timings (e.g. via mobile app/web)..... <input type="checkbox"/>	Online tram times..... <input type="checkbox"/>
Disruption updates (e.g. on Twitter/Facebook)..... <input type="checkbox"/>	Live tram locator/timings (e.g. via mobile app/web)..... <input type="checkbox"/>
Telephoned for information..... <input type="checkbox"/>	Disruption updates (e.g. on Twitter/Facebook)..... <input type="checkbox"/>
Other..... <input type="checkbox"/>	Telephoned for information..... <input type="checkbox"/>
	Other..... <input type="checkbox"/>

**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..... <input type="checkbox"/>	Didn't have time..... <input type="checkbox"/>
Already knew arrival times..... <input type="checkbox"/>	Did not matter to me when the tram was meant to arrive..... <input type="checkbox"/>
Could not find the information..... <input type="checkbox"/>	Other..... <input type="checkbox"/>

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

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

Much longer than expected..... <input type="checkbox"/>	A little less time than you expected..... <input type="checkbox"/>
A little longer than you expected..... <input type="checkbox"/>	Much less time than you expected..... <input type="checkbox"/>
About the length of time you expected..... <input type="checkbox"/>	

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

Yes..... <input type="checkbox"/>	No..... <input type="checkbox"/>
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**Q19 How satisfied were you with each of the following?**

	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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The punctuality of the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The cleanliness & condition of the outside of the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ease of getting onto and off of the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The length of time it took to board the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**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 and condition of the inside of the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The information provided inside the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sufficient room for all the passengers to sit/stand.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The comfort of the seats.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of personal space you had around you.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provision of grab rails to hold on to when standing/moving about the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The temperature inside the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your personal security whilst on the tram.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of time the journey took.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoothness/freedom from jolting during the journey.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q22 Did you get a seat on the tram?**

Yes – for all of the journey..... <input type="checkbox"/>	No – but you were happy to stand..... <input type="checkbox"/>
Yes – for part of the journey..... <input type="checkbox"/>	No – but you would have liked a seat..... <input type="checkbox"/>

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

Yes..... <input type="checkbox"/>	No..... <input type="checkbox"/>
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**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..... <input type="checkbox"/>	Passengers not paying their fares..... <input type="checkbox"/>
Passengers taking/under the influence of drugs..... <input type="checkbox"/>	Feet on seats..... <input type="checkbox"/>
Abusive or threatening behaviour..... <input type="checkbox"/>	Music being played loudly..... <input type="checkbox"/>
Rowdy behaviour..... <input type="checkbox"/>	Smoking..... <input type="checkbox"/>
Passengers not moving out of priority seats..... <input type="checkbox"/>	Graffiti or vandalism..... <input type="checkbox"/>
	Loud use of mobile phones..... <input type="checkbox"/>
	Other (please write in) <input style="width: 150px; height: 20px;" type="text"/>

**Q23c If yes: What local area was the tram travelling through or at which stop was it when you were worried or concerned?**

**Q24a** Was your journey on Midland Metro today delayed at all?  
 Yes.....  No.....

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

Due to a signal/points failure..... <input type="checkbox"/>	Time it took passengers to board/ pay for tickets..... <input type="checkbox"/>
Road congestion/traffic jam..... <input type="checkbox"/>	Had to use bus replacement service..... <input type="checkbox"/>
Due to a tram failure..... <input type="checkbox"/>	Other (please write in) <input type="text"/>
Planned engineering works..... <input type="checkbox"/>	No reason given..... <input type="checkbox"/>
Poor weather conditions..... <input type="checkbox"/>	Don't know..... <input type="checkbox"/>
The tram waiting too long at stops..... <input type="checkbox"/>	
The tram waiting too long at signals..... <input type="checkbox"/>	

**Q25** 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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio announcements e.g. saying the next tram stop.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
An electronic display e.g. showing the next tram stop.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information about tickets/fares.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A timetable.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Details of how to contact the tram company, for example, to make a complaint or find out information.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q27** Thinking about any Midland 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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any greeting/welcome you got from the staff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The helpfulness and attitude of the staff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The safety of the driving (i.e. appropriateness of speed, driver concentrating).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**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 Midland Metro today?

Very satisfied..... <input type="checkbox"/>	Fairly dissatisfied..... <input type="checkbox"/>
Fairly satisfied..... <input type="checkbox"/>	Very dissatisfied..... <input type="checkbox"/>
Neither satisfied nor dissatisfied..... <input type="checkbox"/>	Don't know/No opinion..... <input type="checkbox"/>

**Q29** If something could have been improved on your journey on Midland Metro today, what would it have been?

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

Very satisfied..... <input type="checkbox"/>	Fairly dissatisfied..... <input type="checkbox"/>
Fairly satisfied..... <input type="checkbox"/>	Very dissatisfied..... <input type="checkbox"/>
Neither satisfied nor dissatisfied..... <input type="checkbox"/>	Don't know/No opinion..... <input type="checkbox"/>

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

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

**Q32** All things considered, how much do you trust the tram company that operated the tram 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 Midland Metro generally**

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

**Q33a** How would you rate Midland 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).....	<input type="checkbox"/>				
Connection with other forms of public transport (e.g. trains/buses).....	<input type="checkbox"/>				

**Q33b** And how satisfied are you overall with Midland 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.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Punctuality (running on time).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency (how often the trams run).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Range of tickets available.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Range of payment options available.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**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..... <input type="checkbox"/>	Smartphone app..... <input type="checkbox"/>
Internet: Transport for West Midlands (formerly Centro) website..... <input type="checkbox"/>	Travel shop..... <input type="checkbox"/>
Internet: Midland Metro website..... <input type="checkbox"/>	Ask friend/relative..... <input type="checkbox"/>
Internet: Network West Midlands website..... <input type="checkbox"/>	Ask tram staff..... <input type="checkbox"/>
Internet: Other travel website..... <input type="checkbox"/>	From a Park and Ride kiosk..... <input type="checkbox"/>
	Other..... <input type="checkbox"/>
	Not sure..... <input type="checkbox"/>

**Q35** How often do you typically travel on Midland Metro? (Please tick the closest to your frequency of tram use)

5 or more days a week..... <input type="checkbox"/>	Once a month..... <input type="checkbox"/>
3 or 4 days a week..... <input type="checkbox"/>	Less frequently..... <input type="checkbox"/>
Once or twice a week..... <input type="checkbox"/>	This is the first time I have used Midland Metro..... <input type="checkbox"/>
Once a fortnight..... <input type="checkbox"/>	



