transportfocus

**Transport Focus Bus Passenger Survey**

**Methodological overview – Autumn 2016 wave**

**March 2017**

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# 1    Background

Transport Focus first established the Bus Passenger Survey (BPS) in April 2009 to generate a robust and comprehensive measure of bus passengers' journey experience within our remit area (England outside of London). The survey is an objective measure of bus passengers' experience on individual journeys and it covers: the bus stop environment, punctuality, 'on bus' comfort, and the standards of the bus driver, together with overall journey satisfaction and value for money ratings. The Bus Passenger Survey has a well-established methodology, achieved over many waves of this survey.  However, following an independent review in late 2014 and further development work through 2015, the Autumn 2015 survey saw some enhancements; these were carried forward to Autumn 2016 and are detailed in this document.

Transport Focus allows local transport authorities and/or bus service operators (operators) to 'buy into' the survey to achieve boosted response numbers in their territories of interest.

BDRC Continental was appointed by Transport Focus to provide the market research agency services needed to carry out the Autumn 2016 wave of the survey.  BDRC Continental is an independent market research agency and conducts research in accordance with the Market Research Society (MRS) Code of Conduct; it is also accredited with the ISO 20252 Quality Assurance Standard and ISO 27001 IT and Data Security. BDRC Continental is also an MRS Company Partner Scheme member.

This document describes the methodology in general and specifics as they relate to the Autumn 2016 BPS wave.  If there are any further questions about the methodology deployed in the survey, please call Robert Pain on 0300 123 0835.

# 2   Survey Overview

The BPS is designed to provide results that are statistically representative of bus passenger journeys made within a Primary Sampling Unit (PSU); a passenger journey is defined as an individual trip made on a local bus service.  PSUs are typically local transport authority areas or the divisions of a bus operator.  The survey is a measure of individual journey experience.  It is designed to provide results that have utility at the PSU level, and in certain circumstances at remit wide level.

The sampling process generates a list of bus routes representative of journeys made in each PSU selected. Fieldworkers board buses on a representative sample of bus routes; they discuss the survey briefly with individual passengers on these buses and invite them to take part in the survey; those wishing to take part fill in a self-completion questionnaire after their journey (details of the questionnaire and data collection method are given in sections 4 and 5).   The survey is restricted to passengers aged 16 and over.  Weighting is applied to correct for differential response rates by age, gender and the day and time of day when travelling.  Weighting is also applied to proportionate the individual PSU relative to all the others included in the survey.

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## 2.1   The Primary Sampling Units surveyed in Autumn 2016

| PTE authorities | Unitary authorities | Two tier authorities | Operators not aligned to any authority areas | Scottish samples ⫨ | Other special territory areas |
|---|---|---|---|---|---|
| West Midlands | Cheshire East | Essex | Blackpool Transport | SPT | Coventry VMA routes within West Midlands |
| Mersey (+ Halton) | Cornwall | Norfolk | First Potteries | SEStran | QP and Better Bus routes within Mersey (+ Halton) |
| South Yorkshire | Durham | Nottingham-shire | First South Coast | Nestrans | Nottinghamshire: boost on non-major operators |
| Greater Manchester | Herefordshire | Oxford-shire^ | GA - Anglian Bus^^^ | Tactran | |
| Tyne and Wear | Leicester City | | GA – Bluestar | SWestrans | |
| West Yorkshire | Milton Keynes | | GA - Brighton & Hove | HITRANS | |
| | Northumber-land | | GA - Carousel Buses | First Buses Scotland East | |
| | Nottingham City | | GA - Hedingham & Chambers | First Buses Glasgow | |
| | Tees Valley* | | GA - Konectbus | | |
| | West England Partnership** | | GA - Metrobus | | |
| | York | | GA - Oxford P&R | | |
| | | | GA - Plymouth Citybus | | |
| | | | GA - Southern Vectis | | |
| | | | GA - Wilts & Dorset | | |
| | | | Reading Buses | | |
| | | | Rossendale Transport^^ | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | Stagecoach Cumbria & North Lancashire*** | | |
| | | | Stagecoach in Lincolnshire*** | | |
| | | | Stagecoach South East*** | | |
| | | | Stagecoach South West*** | | |
| | | | Stagecoach West*** | | |

*Comprised of Redcar & Cleveland, Middlesbrough, Stockton on Tees, Hartlepool, Darlington local authority areas

**Bath and North East Somerset, Bristol City Council, North Somerset, South Gloucestershire local authority areas

***Stagecoach samples were comprised of the operator's routes running in the following local authority areas

- Stagecoach Cumbria & North Lancashire: Cumbria and North Lancashire

- Stagecoach in Lincolnshire: Lincolnshire, North Lincolnshire and North East Lincolnshire

- Stagecoach South East: East Sussex and Kent

- Stagecoach South West: Devon and Somerset

- Stagecoach West: Bristol, Gloucestershire, Herefordshire, Monmouthshire, Oxfordshire, Swindon and Wiltshire

ⱡ Scottish authority areas have been abbreviated as follows:

- SPT – Strathclyde Partnership for Transport

- SEStran – South East of Scotland Transport Partnership

- Nestrans – North East of Scotland Transport Partnership (for Aberdeen City and Shire)

- Tactran – Tayside and Central Scotland Transport Partnership

- SWestrans – South West of Scotland Transport Partnership

- HITRANS – Highlands and Islands Transport Partnership. NB. HITRANS covers the Highlands and Islands including Shetland; however the BPS in Autumn 2016 did not cover any of the Islands, and was for mainland services only.

^Alongside the Oxfordshire sample was a boost for Oxford Bus to ensure a suitable minimum sample size for analysis of results for this operator individually (this boost excluded Oxford Bus Park and Ride services for which there was also a separate, standalone sample as shown above)

^^Alongside the Rossendale Transport sample was a boost for Rossendale Transport in Lancashire, to ensure a suitable minimum sample size for analysis of results for this operator individually

^^^Go-Ahead abbreviated to "GA"

# 3    Sampling

The sampling process was designed to ensure representative results were achieved for each Primary Sampling Unit surveyed.

Sometimes in some Primary Sampling Units, sample design also accommodated requests to boost specific routes or Operators, so that substantive response numbers could be achieved for these groups; where this occurred, they were suitably weighted back when producing the final Primary Sampling Unit results.

In this wave, the following were sampled as sub-Primary Sampling Units within their respective areas:

- Routes covered by the Voluntary Multilateral Agreement (VMA) within the West Midlands area
- Routes covered by the Quality Partnership (QP) and Better Bus Area within the Mersey (and Halton) area
- Services run by non-major operators within Nottinghamshire
- Services run by Oxford Buses in Oxfordshire
- Services run by Rossendale Transport in Lancashire.

## 3.1    Sample design

A sample was designed for each Primary Sampling Unit.  The sample universe was sourced from ITO World Ltd (which collects and makes available the bus journey data shown by Traveline, for example).  To ensure the research encompassed the totality of routes, the starting point was to use the information from ITO World Ltd to make a list of every bus service and every timetabled occurrence of each service that runs within each Primary Sampling Unit. Bus journeys that started outside 06.00 to 21.59 were excluded, as these were outside the fieldwork hours.

This data source had some additional key fields, including: the local transport authority through which the route runs, whether or not it crossed a local transport authority boundary, the journey length in minutes, the start/finish bus stops.  To date no superior sample source has been identified, and experience has not suggested that this sample source omits any noticeable proportion of journeys.  A small proportion of journeys sampled in advance of the fieldwork were found to have been withdrawn or changed (e.g. timetable changes) by the time of fieldwork itself.  The effect of this was relatively minor and was usually due to local changes made in the short period between sampling and fieldwork, rather than due to inaccuracies in the sample source.  For the Autumn 2016 survey, once the sample had been drawn, local authorities and some operators were asked to review the list of routes that had been selected for inclusion in the survey for their area, and to indicate where any routes were likely to change significantly by the time of or during the fieldwork. This helped with planning in order to minimise the effect of such changes where possible.  However, to

speed up the process, it was subsequently decided that in future waves, local authorities and operators would be asked to provide more general information about which of their routes were likely to change significantly (e.g. be withdrawn or see major timetable changes) between the sampling process and fieldwork, rather than releasing the more detailed lists of selected routes in advance of fieldwork.

The sampling process is described below:

1. The journey duration of every timetabled occurrence of every bus service was calculated using the stated start and end times provided by ITO World Ltd. Journeys reaching beyond the Area boundary used the proportion of the journey within the Area boundary (unless this was less than 30% of its total route time, and the portion of the journey within the area was under 15 minutes; such journeys were removed from this initial list). The PSU list (of every timetabled occurrence of every bus route) was then sorted in descending journey lengths.

2. A "Passenger Value" (PV) was then applied to each individual bus journey (this was based on additional research and modelling work which took place during the preceding Autumn 2015 wave of the survey):

   o The total number of passengers boarding during a single one-way bus journey was counted on a sample of all the bus journeys surveyed during the Autumn 2015 wave

   o This data was used to generate models to predict the number of people travelling on each bus service depending on:

     • area (or type of area[1] if that area was not surveyed in 2015 and did not therefore have its own counts and model)

     • duration

     • time of day and day of week when travelling

     • operator (one of the "big five[2]", or other operators)

   o The passenger values determined in this way correlated extremely strongly with published journey volume statistics when aggregated at total Local Authority level (but were superior to the published figures because they were applicable at the level of individual bus journeys).

   o The models used for sampling in Autumn 2016 are provided in Appendix 2, along with an example of the passenger value (PV2) applied to bus services in one of the areas covered in this survey. These models will be updated in

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[1] Types of areas were: PTEs, Unitary Authorities and Two-tier Authorities
[2] The "big five" were: Arriva, First, Go-Ahead, National Express and Stagecoach

advance of the Autumn 2017 survey, based on new passenger counts undertaken during the Autumn 2016 fieldwork.

- o This passenger value, known as "PV2" thus gave a good estimation of how busy each individual bus service was relative to all others. This was an enhancement compared to previous waves of the BPS, where a PV was assigned to each bus vehicle journey based on some assumptions (e.g. that longer journeys would carry more passengers). The new method based the PV2 on evidence about how passenger volumes vary and accounted for more journey variables, not just the duration of the bus route

- o This knowledge was used in the next stage to enable systematic selection of a representative sample of vehicle journeys on which to recruit respondents.

3. Next, the database was sorted by route, day-part[3], journey start time and day of week. In practice, each row of the database (i.e. each journey) showed a cumulative passenger value (PV2). Probability proportional to size was then used to sample the required number of journeys; i.e. probability proportional to PV2. A sampling interval for the PSU was calculated which was the total Passenger Value divided by the number of fieldwork shifts required. For example, a PSU with a total of 30,000 Passenger Value units and 30 shifts required, would have a sampling interval every 1000th fraction of the total value. In practice, to allow for some journeys being infeasible to cover (e.g. non-returning market day services), or if a need was to arise during fieldwork to add supplementary shifts through low return rates, a sample 'overage' was built into calculating the sampling interval. In Autumn 2016, this overage was 75% of the required number of shifts. So in the example for the PSU requiring 30 shifts, in practice 53 journeys would be sampled, and the sampling interval would be 566.

4. The actual sample was struck by choosing a random start point between 0 and the row with the cumulative Passenger Value of the required sampling interval, and then selecting the service corresponding to every sampling interval gap down the list. So, from the example in the previous paragraph, the random start might have been 326 with 53 shifts required and a sampling interval of 566, the selected services would be taken from the rows which contained cumulative passenger values of 892, 1458, 2024, etc.

5. The result of step 4 was a list of bus vehicle journeys, which would form the basis of fieldwork shifts. In previous waves of the BPS, fieldworkers had boarded the bus selected during this process and made outward and return journeys from that point onwards, within a three hour period. In the independent consultant's review following the Autumn 2014 BPS, 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

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[3] Day-parts are weekday morning peak (06:00 – 08:59), weekday off-peak (before 06:00, 09:00 – 16:29, or after 18:59), weekday evening peak (16:30 – 18:59) and weekends.

starting at 6am, 7am and 8am, and anywhere in between. Therefore from Autumn 2015, a step was added here to correct for this: A programme was written into the sampling database to find the <u>same</u> journey as the one selected, but starting 1.5 hours earlier, for all bus vehicle journeys selected. That is, a journey with the same start and end point, the same operator, the same overall duration, and on the same day of the week. Inevitably, bus timetables do not run with journeys exactly 1.5 hours apart, and so the identical journey which was nearest to 1.5 hours earlier was identified (and in some cases this was actually the same journey, if the original selection was the first of the day or the first for some hours). 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 matched the PV2 profile for each PSU, for different times of the day. As a result this also meant we could expect to see more (and a better representation of) early morning journeys contributing to the survey results, and fewer journeys from the end of the day.

6. Finally, any journey which had a start time at or later than 19.30 was removed and manually replaced by the instance of that journey which started closest to, but before, 19.00. For example if a journey was selected which started at 19.56, and there was another instance of the same journey at 18:56, it was replaced with the 18.56. This was in order to ensure that a three hour shift could be worked, while still finishing at a reasonable time for the fieldworker (no later than 10:30pm). Similarly, any journey which now had a start time before 6am (as a result of the adjustment in step 5) was replaced by the instance of that journey starting at or closest to, but after, 6am.

NB. In isolated circumstances, respondents were included in the final survey dataset who travelled after 10.30pm. These were usually when a fieldwork shift had been scheduled for late in the evening and there had also been some kind of delay on the buses covered during that shift meaning the fieldworker finished a little later than normal.

### 3.2   Sample review

Following the systematic selection of the routes, a further process was undertaken which checked the suitability of each route for a three-hour shift. The guideline was that a shift was feasible where two hours or more of a three hour shift could be spent on board a bus (rather than waiting at a stop which is non-productive time). Some Park-and-Ride services and all obvious school-bus routes were excluded during this process and replaced with a randomly selected alternative journey from the sampling 'overage' already provided.

In practice, the timing of bus services meant that some fieldworker shifts were a little shorter or longer than three hours. The general principle used in Autumn 2016 was that a bus journey could be selected and covered by a fieldworker shift if:

a) It would yield a shift of no less than two and a half hours total duration

b) It would yield a shift of no more than four hours total duration (although there were a small number of 4+ hour shifts, where this was necessary to ensure that a reasonable proportion of all routes in a PSU had opportunity to be covered)

c) At least around two hours could be spent on board a bus rather than waiting at a stop

d) At least one full outward and one full return trip could be made on the selected route.

In Autumn 2016, of the 5,186 bus services reviewed for suitability in a fieldworker shift, 3,626 were accepted as possible shifts (including some overage) for the start of fieldwork, and 1,560 were 'rejected'. Bus services were 'rejected' for the following reasons:

a) No return journey available (588)

b) Too small proportion of shift to be spent on board a bus (191)

c) Journey and available returns could not fill a 3-hour (or even a 2.5-hour) shift (14)

d) Shift would finish too late (after 10.30pm), and no suitable alternative journey start time was available, as described in point 6 above (104)

e) Journey would be too long for a 3-hour (or even a 4-hour) shift (586)

f) Other (77).

At this point then, a pool of possible journeys was available, including some overage, as the basis for fieldworker shifts, including some overage, and from this pool the final selection was made. This was done by listing the possible journeys in a randomised order, and selecting the top n, where n was the number of shifts required.

The profile of the selected shifts was then compared to the universe profile of all bus passenger journeys (using the number of journeys previously estimated in the PV2 process). Their profile was observed in terms of operator mix, day-part and day of week. Where the profile of the fieldwork shifts was close to that of the journey universe, the selection of bus journeys was deemed final and fieldwork was subsequently booked to take place on these journeys. Where the profile was not close, different journeys (from the overage) were swapped in to achieve a better profile.

In some cases, if the whole pool of "possible" journeys could not yield a set of journeys and therefore fieldwork shifts with a reasonable profile, slight amendments would need to be made to other, previously not "possible" journeys, in order to make them feasible for fieldworker shifts. For instance, there were some cases where, if a fieldworker stayed on a bus to the end of its journey, there would be no suitable return service to catch; but if they disembarked two or three stops early they would be able to catch a return service. In such cases the journey would be included in the survey and the fieldworker would be instructed to disembark a little before the end of the journey. Another example was where a bus journey could be included in the survey if the shift it yielded was allowed to run a little over four hours.

Before Autumn 2016, the process for "accepting" bus journeys as the basis of fieldwork shifts was a little different to this. Up to and including Autumn 2015, the profile of

"accepted" journeys was not reviewed, but instead there was a target for at least 80% of journeys reviewed for suitability to be accepted as the basis of shifts. Where fewer than 80% of reviewed journeys were accepted, amendments such as those described above were made in order to make a sufficient proportion of journeys feasible as shifts.

(In addition to the shifts scheduled at the outset of the project, a further 406 were scheduled later on, to 'top up' the fieldwork where response was looking lower than needed to generate the required sample sizes. 'Top up' shifts were selected from within the 'overage' provided at initial sample selection stage.)

# 4    Fieldwork

Fieldwork took place between 5 September and 18 December 2016.  The start date was staggered across the country due to later confirmations in some areas.  The latest start dates were in Scotland where fieldwork commenced from 26 September.  Due to the staggered start dates, completion dates also ran into December (where usually fieldwork is completed by the end of November / beginning of December in each Autumn wave).

There was a pause within the fieldwork period to avoid the school half-term holidays and also to allow for a review of progress with the project.  In most areas this was between 17 and 28 October, although there were some variations if school half term holidays were at a different time (as in Scotland for example).

## 4.1    Distribution of questionnaires

**Data collection method**

Before working their first shift on the project all fieldworkers received a detailed briefing from BDRC via regional supervisors. Fieldworkers joined the bus routes selected from the sampling process on the specified day and start time.  They travelled to the final destination of the route and 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 were required to approach all passengers who boarded the bus and give them the opportunity to participate in the research.

In Autumn 2016, passengers were offered the choice to take a paper questionnaire, along with a post-paid envelope, or to complete the survey online.  If they chose the latter, the fieldworker took their email address and a survey invitation was emailed to them as soon after the shift as possible (in most cases this was within two days).  All those recruited were asked to complete their questionnaire after they had finished their journey.  The online option was first offered in Autumn 2015 after previous pilot work showed it had the potential to improve participation from certain demographic groups (especially younger males) who are typically somewhat under-represented in this type of research.  It was then offered again in Autumn 2016 and the intention is to continue with this dual methodology in future waves.

Fieldworkers were issued with between 50 and 80 questionnaires for each shift, driven in part by the estimated number of passengers expected to be encountered during the whole shift (based on the PV2 calculated earlier), but capped with a minimum of 50 and a maximum of 80 (to ensure there would always be enough and to control the sheer weight of questionnaires for fieldworkers to manage).

In total, 143,060 paper questionnaires were distributed (an average of 43 per shift), and 17,768 email addresses were collected (an average of 5 per shift). In total therefore, 160,828 people were recruited to take part in the survey, an average of 48 per shift.

**Travelling on buses in practice**

Fieldworkers were instructed that if they were at their original start-point and the three-hour shift was not complete, but there was insufficient time to make a complete outward and return journey, they should travel outwards for half the remaining time, and then get off the bus and return so that they were back at their start-point at the completion of the three hours.

If the PSU was a Local Transport Authority, where a route crossed the boundary of that Authority area, the fieldworker treated the route as truncated to the portion within the PSU, i.e. only passengers boarding within the PSU would be approached. To achieve this, fieldworkers themselves would only travel within the boundaries of the Authority area, alighting at the border and boarding the next bus back in the opposite direction from that point. The last stop before the Authority border was identified within the bus timetable information supplied by ITO World.

In advance of each shift, fieldworkers were instructed to double check the journey details they had been given (since, as described above, changes could be made to bus services between the sampling and fieldwork stages). This sometimes resulted in changes to a shift; either:

- if the timetable had been altered, the fieldworker may have needed to start the journey at a different point or at a slightly different time, or
- if a service had been withdrawn it would be replaced with another from the 'overage' in the initial sample.

**Further tasks performed during fieldwork**

As described in the later section on weighting, fieldworkers were issued with an "Observation Record Form" on which they recorded the observed age and gender details of all passengers who were on the bus at a given point in time. For Autumn 2016, this observation was conducted twice within a fieldworker shift: at the mid-point of the first outbound journey, and again at the mid-point of the last inbound journey. 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. This was used to enable

standard quality control back-checks, as well as other validation measures on returned questionnaires.

In addition, during the Autumn 2016 fieldwork (and as in previous waves), a second fieldworker accompanied the first on a sample of 10% of all shifts in each PSU, to count the total number of passengers boarding during one whole outbound and one whole inbound journey. This data will be used to update the models used to estimate passenger values for all bus journeys, for use in sampling for the Autumn 2017 survey.

## 4.2   Authorisation to work on buses

Regarding permission to conduct interviewing on the bus, Transport Focus provided a letter which the fieldworker were able to show drivers to vouch for the bona fides of the survey, and Transport Focus communicated to operators that the survey might take place on their services during the intended period. In Autumn 2016 only a relatively small number of shifts were disrupted by bus drivers refusing to allow fieldworkers to work.

## 4.3   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 (see section 6.2). 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 had potential to 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 using the sample overage
- If it was found that all of the available questionnaires were routinely given out in certain areas or on certain routes, this was recorded and more questionnaires may be printed where relevant in future waves
- Steps could be taken to address lower productivity in certain fieldworkers if this was found to be the case.

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 BPS 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.

# 5    Questionnaire

The paper questionnaire was an 8-page self-completion booklet that was handed out along with a reply-paid envelope to all passengers on the bus who were willing to take part.  The online questionnaire was exactly the same in terms of question content and had 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 journey experience. A copy of the standard version of the questionnaire is shown in Appendix 1.  Transport Focus allocated a space on the questionnaire (part 6) where participating local transport authorities or bus operators were able to place a small number of questions of their choosing.

# 6    Response rates, and validation of returns

## 6.1    Response rates achieved

The metric of fieldwork outcome was the product of hand out rates achieved and response rates achieved.  The tables below show the metrics achieved from fieldwork across the Primary Sampling Units in this wave.

**Fieldwork metrics: PTEs**

| PTEs (and boosts) | No. shifts | Recruits: paper | Respon-ses: paper | Response rate: paper | Recruits: online | Respon-ses: online | Response rate: online | Recruits: total | Respon-ses: total* | Response rate: total | Average respon-ses per shift (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *West Midlands* | 197 | 10097 | 2579 | 26% | 1676 | 278 | 17% | 11773 | 2857 | 24% | 14.50 |
| *Coventry VMA routes within West Midlands* | 58 | 2324 | 563 | 24% | 500 | 126 | 25% | 2824 | 689 | 24% | 11.88 |
| *Mersey (+ Halton)* | 109 | 4833 | 1402 | 29% | 382 | 56 | 15% | 5215 | 1458 | 28% | 13.38 |
| *Mersey and Halton – Better Bus* | 89 | 3584 | 716 | 20% | 71 | 10 | 14% | 3655 | 726 | 20% | 8.16 |
| *Mersey and Halton – QP* | 29 | 1336 | 356 | 27% | 152 | 22 | 14% | 1488 | 378 | 25% | 13.03 |
| *South Yorkshire* | 132 | 6106 | 1559 | 26% | 419 | 99 | 24% | 6525 | 1658 | 25% | 12.56 |
| *Greater Manchester* | 192 | 9143 | 1893 | 21% | 1040 | 133 | 13% | 10183 | 2026 | 20% | 10.55 |
| *Tyne and Wear* | 116 | 6429 | 1416 | 22% | 625 | 112 | 18% | 7054 | 1528 | 22% | 13.17 |
| *West Yorkshire* | 136 | 7109 | 1550 | 22% | 606 | 58 | 10% | 7715 | 1608 | 21% | 11.82 |
| **PTEs total** | **1058** | **50961** | **12034** | **24%** | **5471** | **894** | **16%** | **56432** | **12928** | **23%** | **12.22** |

## Fieldwork metrics: Unitary Authorities

| Unitary authorities | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cheshire East* | 36 | 1379 | 453 | 33% | 138 | 39 | 28% | 1517 | 492 | 32% | 13.67 |
| *Cornwall* | 52 | 1530 | 704 | 46% | 537 | 90 | 17% | 2067 | 794 | 38% | 15.27 |
| *Durham* | 52 | 2750 | 735 | 27% | 187 | 20 | 11% | 2937 | 755 | 26% | 14.52 |
| *Herefordshire* | 48 | 1382 | 506 | 37% | 4 | 0 | 0% | 1386 | 506 | 37% | 10.54 |
| *Leicester City* | 83 | 2230 | 525 | 24% | 649 | 104 | 16% | 2879 | 629 | 22% | 7.58 |
| *Milton Keynes* | 36 | 1556 | 457 | 29% | 218 | 43 | 20% | 1774 | 500 | 28% | 13.89 |
| *Northumberland* | 45 | 1918 | 546 | 28% | 105 | 22 | 21% | 2023 | 568 | 28% | 12.62 |
| *Nottingham City* | 82 | 4039 | 807 | 20% | 613 | 83 | 14% | 4652 | 890 | 19% | 10.85 |
| *Tees Valley* | 154 | 7065 | 1894 | 27% | 125 | 14 | 11% | 7190 | 1908 | 27% | 12.39 |
| *West England Partnership* | 98 | 4429 | 1418 | 32% | 1035 | 234 | 23% | 5464 | 1652 | 30% | 16.86 |
| *York* | 36 | 2108 | 707 | 34% | 106 | 19 | 18% | 2214 | 726 | 33% | 20.17 |
| ***Unitaries total*** | **722** | **30386** | **8752** | **29%** | **3717** | **668** | **18%** | **34103** | **9420** | **28%** | **13.05** |

*Fieldwork metrics: Two tier authorities*

| Two tier authorities *(and boosts)* | No. shifts | Recruits: paper | Respon-ses: paper | Response rate: paper | Recruits: online | Respon-ses: online | Response rate: online | Recruits: total | Respon-ses: total* | Response rate: total | Average responses per shift (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Essex* | 56 | 1952 | 692 | 35% | 394 | 101 | 26% | 2346 | 793 | 34% | 14.16 |
| *Nottinghamshire (major operators)* | 66 | 2412 | 776 | 32% | 383 | 66 | 17% | 2795 | 842 | 30% | 12.76 |
| *Nottinghamshire (non-major operators)* | 24 | 727 | 289 | 40% | 61 | 15 | 25% | 788 | 304 | 39% | 12.67 |
| *Norfolk* | 78 | 2695 | 954 | 35% | 394 | 78 | 20% | 3089 | 1032 | 33% | 13.23 |
| *Oxfordshire* | 75 | 2631 | 800 | 30% | 963 | 152 | 16% | 3594 | 952 | 26% | 12.69 |
| *Oxfordshire: boost on Oxford Bus* | 28 | 976 | 280 | 29% | 353 | 66 | 19% | 1329 | 346 | 26% | 12.36 |
| **Two tier total** | **327** | **11393** | **3791** | **33%** | **2548** | **478** | **19%** | **13941** | **4269** | **31%** | **13.06** |

### Fieldwork metrics: Operators (1)

| Operators | No. shifts | Recruits: paper | Respon-ses: paper | Response rate: paper | Recruits: online | Respon-ses: online | Response rate: online | Recruits: total | Respon-ses: total* | Response rate: total | Average responses per shift (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Blackpool Transport* | 37 | 1574 | 378 | 24% | 368 | 76 | 21% | 1942 | 454 | 23% | 12.27 |
| *First Potteries* | 59 | 2563 | 658 | 26% | 532 | 77 | 14% | 3095 | 735 | 24% | 12.46 |
| *First South Coast* | 55 | 2652 | 721 | 27% | 260 | 52 | 20% | 2912 | 773 | 27% | 14.05 |
| *GA - Anglian Bus* | 35 | 750 | 300 | 40% | 49 | 8 | 16% | 799 | 308 | 39% | 8.80 |
| *GA – Bluestar* | 26 | 1505 | 398 | 26% | 100 | 10 | 10% | 1605 | 408 | 25% | 15.69 |
| *GA - Brighton & Hove* | 52 | 2609 | 746 | 29% | 500 | 87 | 17% | 3109 | 833 | 27% | 16.02 |
| *GA - Carousel Buses* | 23 | 727 | 309 | 43% | 75 | 30 | 40% | 802 | 339 | 42% | 14.74 |
| *GA - Hedingham & Chambers* | 27 | 701 | 269 | 38% | 67 | 25 | 37% | 768 | 294 | 38% | 10.89 |
| *GA – Konectbus* | 19 | 652 | 266 | 41% | 94 | 29 | 31% | 746 | 295 | 40% | 15.53 |
| *GA – Metrobus* | 41 | 1590 | 463 | 29% | 250 | 59 | 24% | 1840 | 522 | 28% | 12.73 |
| *GA - Oxford P&R* | 21 | 827 | 264 | 32% | 162 | 49 | 30% | 989 | 313 | 32% | 14.90 |
| *GA - Plymouth Citybus* | 34 | 1387 | 480 | 35% | 336 | 68 | 20% | 1723 | 548 | 32% | 16.12 |

### Fieldwork metrics: Operators (2)

| Operators | 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GA - Southern Vectis | 19 | 823 | 276 | 34% | 136 | 48 | 35% | 959 | 324 | 34% | 17.05 |
| GA - Wilts & Dorset | 36 | 1637 | 503 | 31% | 122 | 14 | 11% | 1759 | 517 | 29% | 14.36 |
| Reading Buses | 62 | 2845 | 925 | 33% | 751 | 155 | 21% | 3596 | 1080 | 30% | 17.42 |
| Rossendale Transport | 22 | 518 | 168 | 32% | 76 | 16 | 21% | 594 | 184 | 31% | 8.36 |
| Rossendale Transport: boost in Lancashire | 11 | 350 | 93 | 27% | 20 | 7 | 35% | 370 | 100 | 27% | 9.09 |
| Stagecoach Cumbria & North Lancashire | 23 | 992 | 280 | 28% | 113 | 23 | 20% | 1105 | 303 | 27% | 13.17 |
| Stagecoach in Lincolnshire | 28 | 1123 | 365 | 33% | 105 | 20 | 19% | 1228 | 385 | 31% | 13.75 |
| Stagecoach South East | 29 | 1271 | 349 | 27% | 24 | 7 | 29% | 1295 | 356 | 27% | 12.28 |
| Stagecoach South West | 23 | 806 | 407 | 50% | 215 | 54 | 25% | 1021 | 461 | 45% | 20.04 |
| Stagecoach West | 73 | 2568 | 846 | 33% | 604 | 105 | 17% | 3172 | 951 | 30% | 13.03 |
| **Operators total** | **755** | **30470** | **9464** | **31%** | **4959** | **1019** | **21%** | **35429** | **10483** | **30%** | **13.88** |

**_Fieldwork metrics: Scottish samples_**

| Scottish samples | No. shifts | Recruits: paper | Respon-ses: paper | Response rate: paper | Recruits: online | Respon-ses: online | Response rate: online | Recruits: total | Respon-ses: total* | Response rate: total | Average responses per shift (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| _SPT_ | 53 | 2515 | 1189 | 47% | 195 | 29 | 15% | 2710 | 1218 | 45% | 22.98 |
| _SEStran_ | 62 | 2466 | 1347 | 55% | 240 | 56 | 23% | 2706 | 1403 | 52% | 22.63 |
| _Nestrans_ | 83 | 3782 | 1519 | 40% | 41 | 3 | 7% | 3823 | 1522 | 40% | 18.34 |
| _Tactran_ | 74 | 3550 | 1585 | 45% | 175 | 18 | 10% | 3725 | 1603 | 43% | 21.66 |
| _SWestrans_ | 68 | 1884 | 887 | 47% | 4 | 0 | 0% | 1888 | 887 | 47% | 13.04 |
| _HITRANS_ | 44 | 1423 | 590 | 41% | 152 | 32 | 21% | 1575 | 622 | 39% | 14.14 |
| _First Buses Scotland East_ | 30 | 997 | 544 | 55% | 107 | 23 | 21% | 1104 | 567 | 51% | 18.90 |
| _First Buses Glasgow_ | 56 | 3233 | 1591 | 49% | 159 | 17 | 11% | 3392 | 1608 | 47% | 28.71 |
| **_Scotland total_** | **470** | **19850** | **9252** | **47%** | **1073** | **178** | **17%** | **20923** | **9430** | **45%** | **20.06** |

## 6.2   Validation of completed surveys

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

1. Pre-scanning of question responses (for paper questionnaires)

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

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

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

Each questionnaire had a unique ID number; once the above basic checks were completed, for paper questionnaires this was 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 and time/date stamped on the electronic questionnaire), the route number of the bus (Q1, see questionnaire example in the Appendix) and the time the respondent boarded the bus (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 would be rejected if they could not be verified as corresponding to the correct fieldworker shift.

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 approximate time when they were first approached by the fieldworker, and the route number of the bus they were travelling on. 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 bus service). These details in the online questionnaire were equivalent to Q1, 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 DP checks), because it enabled more accurate monitoring of the real number of 'useable' responses which had been collected in each PSU.

At this stage, for paper questionnaires, the answers to numeric questions were also recorded manually and/or checked. These are all about times (Q15, Q17, Q24 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 bus, etc. Also note that the answers to these questions were still scanned electronically, and a sample 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 in to the cleaning programme.

2. Post-scanning of question responses

Validated paper questionnaires were then scanned electronically to record which answer boxes on the form had been ticked by respondents. (At this stage, the data capture itself was 100% validated, meaning that a person checked, for example, that the electronic process had picked up genuine ticks, rather than instances where a respondent may have

ticked one response and then crossed it out in favour of another, or where a mark may have been made accidentally in a box).

Once all of the responses to the questionnaire were recorded in a database, other data cleaning could take place. This included, for example, checks for multi-coded answers where a single-code was required, and responses to questions which the respondent should have routed around.

## 6.3   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 ruled off as final, and then also produced a large number of reports and other outputs.

# 7 Weighting

## 7.1 Weighting by age, gender and day-part

The survey weighting was designed to offset the effects of both non-response bias and non-participation bias based on age, gender and day-part.[4]

Age and gender weights

No known source of information exists to detail the demographic of journeys by age and gender consistently for each PSU; therefore this information was collected through the fieldwork. During the Autumn 2016 survey, fieldworkers broke from distributing questionnaires temporarily at points through their shift, to record the age (within 3 bands: 16-25, 26-59 and 60+) and gender of every passenger of the bus (from observation). As described earlier, this age and gender report was made at the mid-point of the first outbound journey, and again at the mid-point of the last inbound journey. The passenger age and gender profile was aggregated at the PSU level and compared to the profile given by the declared age and gender on the questionnaires returned for that PSU. Rim weights were then applied for each PSU for age and gender (which were not interlocked). In practice, a small proportion of respondents did not declare their age and / or gender in the questionnaire itself. Therefore the observed profiles were adjusted proportionately to allow for this. (The alternative would be to have excluded these respondents on account of the fact that they could not be given a weight, but this would have meant a reduction in the overall sample size and the loss of passenger feedback which was otherwise entirely valid).

(The above age and gender weighting approach was used in Autumn 2015 and again in 2016. In 2014, factor weights were applied for eight interlocking age-gender cells (4 x age and 2 x gender). Following the independent review of the BPS, the day-part weight (below) was added, and the age-gender weights were simplified at the same time.)

Day-part weights

In order to provide data on which to base day-part weights, a count was made of all passengers boarding throughout a whole leg of a bus journey, for a representative sample of all bus journeys covered in that survey. The count was made by a second fieldworker who travelled alongside the person distributing questionnaires, during 10% of all shifts in each PSU. This provided a good estimate of the proportions of journeys being made in each day-part in each PSU. These proportions formed a further set of rim weights applied to each PSU.

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[4] *Day-parts are weekday morning peak (06:00 – 09:00), weekday off-peak (before 06:00, 09:01 – 16:29, or after 19:00), weekday evening peak (16:30 – 19:00) and weekends.*

As described earlier in the section on sampling, these counts will also enable the production of models to predict the number of passengers on board a bus, for use in sampling in the next wave of the BPS. .

Note that for the purpose of weighting, where there were overlaps between a PSU for a local authority, and PSU(s) for operators or other boosts, local authorities were treated as "local authority excluding routes relevant to the operator/boost".  For example for Cornwall, where the Autumn 2016 wave surveyed both Cornwall as a whole and separate samples for Stagecoach South West and Plymouth Citybus, weights were applied to all responses for "Cornwall excluding Stagecoach South West and Plymouth Citybus", and separately for the two operators.  Therefore responses from within the original 'main' Cornwall sample which were for Stagecoach South West and Plymouth Citybus, were weighted in the same way as all other responses for those respective operators.

The following tables show the observed age and gender profile of passengers from the fieldworker observation (adjusted for non-response to age and gender questions in the questionnaire itself), and the estimated day-part profiles generated by the PV2 models. These were therefore the target rim weights applied to each PSU in Autumn 2016.

*Target rim weights*

Target rim weights applied in PTE Areas

| PTE Authorities (and boosts) | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| West Midlands | 46% | 49% | 5% | 33% | 40% | 22% | 4% | 17% | 52% | 13% | 18% |
| Coventry VMA routes within West Midlands | 42% | 53% | 5% | 35% | 37% | 25% | 3% | 15% | 54% | 13% | 19% |
| Mersey (+ Halton) | 42% | 52% | 6% | 26% | 42% | 27% | 5% | 16% | 53% | 13% | 18% |
| Mersey and Halton - Better Bus | 42% | 54% | 4% | 28% | 39% | 30% | 4% | 16% | 53% | 13% | 18% |
| Mersey and Halton - QP | 42% | 53% | 5% | 21% | 47% | 28% | 4% | 15% | 54% | 13% | 19% |
| South Yorkshire | 42% | 54% | 4% | 24% | 46% | 27% | 3% | 16% | 55% | 13% | 17% |
| Greater Manchester | 45% | 51% | 5% | 30% | 45% | 21% | 4% | 15% | 53% | 14% | 18% |
| Tyne and Wear | 42% | 55% | 3% | 22% | 40% | 35% | 2% | 12% | 15% | 55% | 19% |
| West Yorkshire | 43% | 52% | 5% | 29% | 43% | 23% | 5% | 15% | 54% | 13% | 18% |

Target rim weights applied in Unitary Authority Areas

| Unitary authorities | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cheshire East | 40% | 57% | 3% | 19% | 31% | 48% | 2% | 12% | 62% | 15% | 11% |
| Cornwall | 43% | 52% | 5% | 31% | 25% | 40% | 4% | 15% | 57% | 14% | 14% |
| Durham | 46% | 50% | 4% | 26% | 28% | 42% | 4% | 14% | 59% | 14% | 13% |
| Herefordshire | 42% | 56% | 2% | 28% | 23% | 47% | 2% | 15% | 58% | 17% | 10% |
| Leicester City | 40% | 58% | 2% | 22% | 47% | 29% | 2% | 15% | 56% | 14% | 15% |
| Milton Keynes | 40% | 55% | 4% | 31% | 45% | 19% | 4% | 16% | 54% | 14% | 16% |
| Northumberland | 43% | 53% | 3% | 17% | 34% | 46% | 3% | 14% | 56% | 13% | 17% |
| Nottingham City | 44% | 53% | 3% | 33% | 48% | 16% | 3% | 14% | 58% | 14% | 14% |
| Tees Valley | 40% | 57% | 3% | 21% | 35% | 41% | 3% | 13% | 57% | 13% | 17% |
| West England Partnership | 43% | 53% | 4% | 31% | 42% | 24% | 3% | 16% | 53% | 14% | 17% |
| York | 41% | 56% | 4% | 18% | 38% | 39% | 4% | 16% | 52% | 15% | 17% |

Target rim weights applied in Two Tier Authority Areas

| Two tier authorities *(and boosts)* | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Essex | 38% | 59% | 3% | 25% | 29% | 44% | 3% | 17% | 54% | 16% | 14% |
| Nottinghamshire (major operators) | 39% | 57% | 3% | 18% | 39% | 40% | 3% | 15% | 55% | 14% | 15% |
| Nottinghamshire (non-major operators) | 36% | 60% | 4% | 9% | 26% | 61% | 3% | 13% | 63% | 12% | 12% |
| Norfolk | 41% | 56% | 4% | 30% | 30% | 38% | 3% | 15% | 56% | 13% | 17% |
| Oxfordshire | 43% | 53% | 4% | 30% | 44% | 23% | 3% | 16% | 54% | 15% | 15% |
| Oxfordshire: boost on Oxford Bus | 41% | 55% | 4% | 33% | 49% | 14% | 4% | 15% | 52% | 15% | 18% |

Target rim weights applied to Operator PSUs

| Operators | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Blackpool Transport | 43% | 53% | 4% | 27% | 40% | 29% | 3% | 16% | 51% | 13% | 20% |
| First Potteries | 41% | 56% | 3% | 28% | 33% | 36% | 3% | 16% | 53% | 13% | 18% |
| First South Coast | 41% | 55% | 4% | 23% | 45% | 28% | 4% | 15% | 53% | 15% | 17% |
| GA - Anglian Bus | 42% | 54% | 4% | 29% | 22% | 45% | 4% | 17% | 56% | 13% | 15% |
| GA - Bluestar | 42% | 53% | 5% | 49% | 28% | 20% | 4% | 15% | 54% | 13% | 18% |
| GA - Brighton & Hove | 42% | 52% | 6% | 33% | 37% | 24% | 6% | 14% | 52% | 13% | 21% |
| GA - Carousel Buses | 49% | 48% | 3% | 21% | 37% | 40% | 2% | 17% | 56% | 14% | 13% |
| GA - Hedingham & Chambers | 41% | 55% | 5% | 32% | 21% | 43% | 4% | 18% | 59% | 13% | 9% |
| GA - Konectbus | 35% | 64% | 2% | 25% | 33% | 40% | 2% | 17% | 56% | 13% | 14% |
| GA - Metrobus | 44% | 51% | 5% | 24% | 41% | 30% | 5% | 16% | 52% | 13% | 19% |
| GA - Oxford P&R | 41% | 55% | 4% | 17% | 60% | 19% | 4% | 12% | 57% | 17% | 14% |
| GA - Plymouth Citybus | 44% | 54% | 3% | 26% | 37% | 33% | 3% | 17% | 52% | 13% | 17% |
| GA - Southern Vectis | 49% | 50% | 2% | 20% | 31% | 47% | 2% | 13% | 54% | 13% | 21% |
| GA - Wilts & Dorset | 43% | 54% | 3% | 22% | 33% | 42% | 3% | 16% | 55% | 14% | 16% |
| Reading Buses | 39% | 57% | 4% | 28% | 46% | 22% | 3% | 17% | 51% | 15% | 17% |
| Rossendale Transport | 39% | 56% | 5% | 17% | 42% | 38% | 4% | 13% | 60% | 13% | 14% |
| Rossendale Transport: boost in Lancashire | 47% | 49% | 4% | 19% | 42% | 34% | 5% | 17% | 57% | 13% | 13% |

| | Male | Female | No response | 16-25 | 26-59 | 60+ | No response | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stagecoach Cumbria & North Lancashire | 43% | 54% | 3% | 28% | 31% | 39% | 3% | 14% | 56% | 14% | 15% |
| Stagecoach in Lincolnshire | 39% | 58% | 2% | 20% | 40% | 38% | 2% | 15% | 55% | 14% | 15% |
| Stagecoach South East | 37% | 56% | 7% | 20% | 36% | 38% | 6% | 16% | 55% | 14% | 16% |
| Stagecoach South West | 44% | 53% | 2% | 18% | 32% | 48% | 1% | 15% | 53% | 15% | 16% |
| Stagecoach West | 42% | 55% | 4% | 25% | 39% | 33% | 3% | 16% | 54% | 15% | 16% |

Target rim weights applied to Scottish PSUs

| Areas in Scotland | Male | Fe-male | No response | 16-25 | 26-59 | 60+ | No response | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SPT | 39% | 53% | 8% | 26% | 36% | 31% | 7% | 16% | 54% | 14% | 17% |
| SEStran | 42% | 51% | 6% | 24% | 51% | 19% | 6% | 16% | 54% | 14% | 16% |
| Nestrans | 42% | 50% | 8% | 27% | 42% | 23% | 8% | 16% | 54% | 14% | 16% |
| Tactran | 39% | 52% | 9% | 21% | 33% | 38% | 8% | 15% | 55% | 14% | 16% |
| SWestrans | 41% | 55% | 4% | 17% | 27% | 52% | 4% | 14% | 57% | 15% | 14% |
| HITRANS | 40% | 55% | 5% | 19% | 39% | 37% | 5% | 16% | 55% | 14% | 15% |
| First Buses Scotland East | 41% | 51% | 8% | 17% | 43% | 33% | 7% | 15% | 54% | 13% | 17% |
| First Buses Glasgow | 39% | 51% | 10% | 18% | 45% | 28% | 9% | 16% | 52% | 13% | 19% |

The average weights applied to respondents in each PSU, within each of the weight cells, are given in the tables below. Before settling on these final weights as shown (i.e. the degree to which the final weighted profile matched the target profiles in the tables above), average weights for each of these cells were observed. For a small number of day-parts within PSU cells, the average weight for all respondents in that cell was 4 or higher. In these cases, the cell was merged with the most similar other cell (e.g. a weekend cell would be merged with the weekday off-peak cell, a morning peak cell would be merged with an evening peak cell), and the weight for the combined cells applied. The aim was that no individual cell would have respondents with an average weight of above 4, to control the overall level of manipulation on the data. In practice, after merging in this way, the average weight for respondents in one cell (weekend for SPT) was a little higher than 4. Collapsing weekend weights with other weights was deemed inappropriate and was felt to be acceptable rather than to merge further cells and reduce the representativeness of the results.

***Actual weights applied***

Actual weights applied in PTE Areas

| PTEs *(and boosts)* | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| West Midlands | 0.79 | 1.40 | 1.01 | 1.56 | 0.94 | 0.70 | 1.00 | 0.98 | 0.89 | 1.22 | 1.33 |
| Coventry VMA routes within West Midlands | 0.89 | 1.19 | 1.02 | 1.73 | 0.93 | 0.68 | 1.00 | 1.14 | 0.94 | 1.24 | 0.95 |
| Mersey (+ Halton) | 0.85 | 1.28 | 1.01 | 1.83 | 1.22 | 0.59 | 1.00 | 1.32 | 0.87 | 1.11 | 1.20 |
| Mersey and Halton - Better Bus | 0.83 | 1.33 | 1.02 | 2.55 | 1.16 | 0.57 | 1.00 | 1.21 | 0.75 | 1.44 | 2.43 |
| Mersey and Halton - QP | 0.90 | 1.16 | 1.03 | 1.38 | 1.19 | 0.68 | 1.01 | 3.07 | 0.75 | 1.04 | 1.80 |
| South Yorkshire | 0.82 | 1.39 | 1.01 | 2.30 | 1.21 | 0.56 | 1.00 | 1.78 | 0.84 | 1.32 | 1.03 |
| Greater Manchester | 0.85 | 1.25 | 1.01 | 1.82 | 1.23 | 0.48 | 1.00 | 1.80 | 0.79 | 1.38 | 1.24 |
| Tyne and Wear | 0.87 | 1.24 | 1.03 | 2.94 | 1.15 | 0.64 | 1.02 | 1.23 | 0.23 | 5.91 | 1.16 |
| West Yorkshire | 0.83 | 1.33 | 1.01 | 2.43 | 1.15 | 0.51 | 1.00 | 1.23 | 0.86 | 1.08 | 1.37 |

Actual weights applied in Unitary Authorities

| Unitary authorities | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cheshire East | 0.93 | 1.12 | 0.97 | 2.67 | 1.45 | 0.69 | 1.01 | 1.67 | 0.76 | 4.31 | 1.43 |
| Cornwall | 0.82 | 1.36 | 1.02 | 1.56 | 1.23 | 0.72 | 1.00 | 1.21 | 0.82 | 2.50 | 1.13 |
| Durham | 0.80 | 1.36 | 1.01 | 1.58 | 0.97 | 0.83 | 0.98 | 1.74 | 0.86 | 1.00 | 1.40 |
| Herefordshire | 0.83 | 1.36 | 0.98 | 5.05 | 1.22 | 0.64 | 1.00 | 3.18 | 0.74 | 2.77 | 0.97 |
| Leicester City | 0.84 | 1.39 | 1.00 | 1.60 | 1.36 | 0.58 | 1.00 | 1.94 | 0.85 | 1.16 | 1.04 |
| Milton Keynes | 0.85 | 1.33 | 1.03 | 2.05 | 1.27 | 0.43 | 1.00 | 1.96 | 0.78 | 1.16 | 1.47 |
| Northumberland | 0.84 | 1.31 | 1.00 | 1.66 | 1.27 | 0.76 | 1.00 | 1.95 | 0.75 | 1.47 | 1.79 |
| Nottingham City | 0.80 | 1.42 | 1.02 | 1.95 | 1.26 | 0.38 | 1.00 | 2.59 | 0.92 | 1.04 | 0.78 |
| Tees Valley | 0.86 | 1.28 | 0.99 | 1.68 | 1.24 | 0.73 | 1.00 | 1.58 | 0.77 | 1.99 | 1.59 |
| West England Partnership | 0.87 | 1.24 | 1.01 | 1.45 | 1.19 | 0.59 | 1.00 | 1.17 | 0.86 | 1.12 | 1.37 |
| York | 0.83 | 1.39 | 1.00 | 3.00 | 1.37 | 0.64 | 1.00 | 2.15 | 0.85 | 1.51 | 0.80 |

## Actual weights applied in Two Tier Authorities

| Two tier authorities *(and boosts)* | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Essex | 0.88 | 1.26 | 0.99 | 2.55 | 0.96 | 0.76 | 1.00 | 1.87 | 0.79 | 1.41 | 1.20 |
| Nottinghamshire (major operators) | 0.82 | 1.47 | 1.00 | 2.06 | 1.37 | 0.67 | 1.01 | 1.93 | 0.75 | 1.49 | 1.75 |
| Nottinghamshire (non-major operators) | 0.88 | 1.29 | 0.97 | 2.89 | 1.47 | 0.81 | 1.00 | 7.82 | 0.68 | 12.82 | 2.86 |
| Norfolk | 0.88 | 1.24 | 1.02 | 2.10 | 1.19 | 0.65 | 0.98 | 1.45 | 0.82 | 1.39 | 1.35 |
| Oxfordshire | 0.84 | 1.30 | 1.00 | 2.14 | 1.10 | 0.53 | 1.01 | 1.75 | 1.00 | 1.03 | 0.67 |
| Oxfordshire: boost on Oxford Bus | 0.90 | 1.18 | 1.01 | 2.44 | 0.97 | 0.44 | 1.01 | 0.73 | 0.93 | 1.01 | 2.08 |

Actual weights applied for Operators

| Operators | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Blackpool Transport | 0.82 | 1.35 | 0.92 | 2.13 | 1.12 | 0.60 | 0.92 | 1.97 | 0.78 | 1.39 | 1.06 |
| First Potteries | 0.85 | 1.30 | 1.00 | 1.43 | 1.08 | 0.77 | 1.01 | 1.46 | 0.85 | 1.80 | 0.91 |
| First South Coast | 0.81 | 1.44 | 1.03 | 2.25 | 1.39 | 0.53 | 1.00 | 1.75 | 0.84 | 1.33 | 1.00 |
| GA - Anglian Bus | 0.91 | 1.15 | 1.00 | 2.91 | 1.20 | 0.66 | 0.98 | 3.59 | 0.69 | 1.55 | 2.53 |
| GA - Bluestar | 0.87 | 1.24 | 1.03 | 2.48 | 0.85 | 0.45 | 1.00 | 0.90 | 0.95 | 1.06 | 1.28 |
| GA - Brighton & Hove | 0.86 | 1.26 | 0.99 | 1.71 | 0.95 | 0.67 | 1.00 | 2.03 | 0.85 | 0.66 | 1.63 |
| GA - Carousel Buses | 0.79 | 1.36 | 0.99 | 2.13 | 1.28 | 0.67 | 1.00 | 2.18 | 0.93 | 1.66 | 0.55 |
| GA - Hedingham & Chambers | 0.86 | 1.27 | 1.01 | 2.00 | 1.26 | 0.68 | 1.00 | 4.63 | 0.75 | 3.72 | 0.69 |
| GA - Konectbus | 0.90 | 1.27 | 1.00 | 4.75 | 1.17 | 0.62 | 1.00 | 1.71 | 0.81 | 2.29 | 0.96 |
| GA - Metrobus | 0.84 | 1.27 | 0.97 | 3.08 | 1.35 | 0.53 | 1.00 | 3.10 | 0.79 | 1.43 | 0.96 |
| GA - Oxford P&R | 0.86 | 1.28 | 1.04 | 2.53 | 1.10 | 0.55 | 1.08 | 0.63 | 1.15 | 1.01 | 0.99 |
| GA - Plymouth Citybus | 0.78 | 1.52 | 1.02 | 1.75 | 1.16 | 0.67 | 0.99 | 1.88 | 0.85 | 1.43 | 0.85 |
| GA - Southern Vectis | 0.78 | 1.42 | 0.93 | 2.21 | 1.24 | 0.73 | 1.00 | 3.57 | 0.81 | 1.07 | 1.11 |
| GA - Wilts & Dorset | 0.92 | 1.12 | 1.01 | 3.77 | 1.35 | 0.63 | 1.01 | 2.16 | 0.77 | 1.66 | 1.22 |
| Reading Buses | 0.91 | 1.17 | 1.01 | 1.94 | 1.06 | 0.58 | 1.00 | 0.97 | 0.91 | 1.47 | 1.05 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rossendale Transport | 1.01 | 0.99 | 0.93 | 1.15 | 1.59 | 0.68 | 1.00 | 1.50 | 1.10 | 1.15 | 0.54 |
| Rossendale Transport: boost in Lancashire | 0.81 | 1.34 | 1.04 | 1.24 | 1.36 | 0.70 | 1.00 | 1.87 | 0.99 | 1.14 | 0.61 |
| Stagecoach Cumbria & North Lancashire | 0.83 | 1.34 | 1.03 | 1.32 | 1.35 | 0.72 | 1.00 | 1.62 | 0.76 | 3.06 | 1.23 |
| Stagecoach in Lincolnshire | 0.80 | 1.56 | 0.97 | 2.07 | 1.33 | 0.65 | 1.00 | 1.23 | 0.72 | 4.21 | 1.91 |
| Stagecoach South East | 0.85 | 1.36 | 1.00 | 1.59 | 1.11 | 0.78 | 1.00 | 2.96 | 0.81 | 1.63 | 0.86 |
| Stagecoach South West | 0.83 | 1.34 | 1.00 | 1.10 | 0.99 | 0.97 | 1.00 | 1.79 | 0.96 | 0.91 | 0.83 |
| Stagecoach West | 0.84 | 1.33 | 0.99 | 2.05 | 1.30 | 0.61 | 0.98 | 1.92 | 0.76 | 1.15 | 1.99 |

Actual rim weights applied to areas in Scotland

| **Areas in Scotland** | Male | Fe-male | No res-ponse | 16-25 | 26-59 | 60+ | No res-ponse | AM peak | Off-peak | PM peak | Week-end |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SPT | 1.01 | 0.99 | 1.00 | 1.08 | 0.93 | 1.02 | 1.00 | 2.69 | 0.76 | 0.68 | 5.14 |
| SEStran | 0.92 | 1.12 | 0.99 | 1.24 | 1.10 | 0.66 | 1.01 | 1.48 | 0.88 | 0.74 | 1.78 |
| Nestrans | 0.87 | 1.21 | 1.01 | 1.44 | 1.01 | 0.73 | 1.00 | 1.15 | 0.88 | 1.47 | 1.05 |
| Tactran | 0.90 | 1.19 | 0.99 | 1.05 | 0.89 | 1.09 | 0.99 | 1.21 | 0.85 | 1.46 | 1.18 |
| SWestrans | 0.91 | 1.14 | 1.02 | 1.45 | 0.84 | 1.00 | 1.00 | 4.48 | 0.69 | 1.74 | 2.55 |
| HITRANS | 0.92 | 1.14 | 1.02 | 1.17 | 1.20 | 0.80 | 1.00 | 4.31 | 0.72 | 1.13 | 1.92 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| First Buses Scotland East | 0.86 | 1.25 | 0.98 | 0.86 | 1.02 | 1.06 | 1.00 | 2.76 | 0.79 | 0.99 | 1.42 |
| First Buses Glasgow | 0.92 | 1.13 | 1.01 | 0.96 | 0.93 | 1.16 | 1.00 | 2.24 | 0.76 | 1.10 | 1.51 |

The weighting efficiency after rim weights had been applied (and before the second stage of weighting described below) ranged from 31% for Tyne and Wear to 93% for Tactran.

## 7.2 Weighting to proportion Primary Sampling Units within total survey dataset

Weighting was also used to proportion each PSU to the number of passenger journeys it represented within the total set of areas surveyed. Journey numbers for each local authority were sourced from DfT Bus Statistics, and the unweighted sample size for each PSU was 'grossed up' to this number. This meant that, with any analysis where results were aggregated, e.g. for a type of PSU (such as 'all PTEs'), the component PSUs within that aggregate made the appropriate contribution relative to each other.

While journey numbers for local authority areas were available from the DfT, journey numbers for Operator PSUs were derived: from the sample universe supplied by ITO World, it was possible to determine the proportion of all journeys served by an individual operator within the local authorities where it operated, and therefore to estimate the journey volumes for an operator, as a proportion of the journey volumes published at local authority level by the DfT.

For most Operator PSUs in the Autumn 2016 survey, that PSU was the only (or main) coverage of bus services in its area (e.g. the survey of First South Coast was the only coverage in the whole survey of the areas this operator serves). However, some Operator PSUs were effectively sample boosts on local authority PSUs which were also being surveyed already – such as GA Hedingham and Chambers as a boost on the Essex survey. In these cases, the same process was used to estimate the annual journey volume weights for the operator, but the same volume was also *deducted* from the journey volume weights for the respective local authority. This was necessary to ensure that the total journey volume weight for these local authorities was still proportionate to other PSUs, e.g. that the total journey volume weight for Essex (which was actually made up of the Essex survey plus the Hedingham and Chambers boost), matched the published figures for the number of journeys in Essex. The same principles applied to other types of booster samples, i.e. the boost of QP and BBA routes in the Mersey (+ Halton) area and the boost of VMA routes in Coventry as part of the West Midlands area.

The following tables show the journey volume weightings applied to the PSUs selected within this wave's survey. Journey volumes are shown in thousands.

| PTEs (and boosts) | Journeys ('000)* | Sample size (valid responses used in reported results) | Journey volume weight |
|---|---|---|---|
| West Midlands / (ex. Cov VMA routes) | 222,987 | 2,571 | 86.73 |
| Coventry VMA | 44,886 | 975 | 46.04 |
| Mersey and Halton (excl. QP and BBA routes) | 78,928 | 1,345 | 58.68 |
| Mersey and Halton - Better Bus area | 17,536 | 839 | 20.90 |
| Mersey and Halton QP | 31,439 | 378 | 83.17 |
| South Yorkshire | 105,282 | 1,658 | 63.50 |
| Greater Manchester (excl. Rosso Buses) | 200,887 | 2,008 | 100.04 |
| Tyne and Wear | 116,877 | 1,528 | 76.49 |
| West Yorkshire | 153,475 | 1,608 | 95.44 |

| Unitary Authority | Journeys ('000)* | Sample size (valid responses used in reported results) | Journey volume weight |
|---|---|---|---|
| Cheshire East | 5,354 | 492 | 10.88 |
| Cornwall (excl. GA-Plymouth Citybus and Stagecoach South West) | 8,653 | 694 | 12.47 |
| Durham | 22,145 | 755 | 29.33 |
| Herefordshire Council (excl. Stagecoach West/Swindon) | 2,051 | 380 | 5.40 |
| Leicester City | 26,158 | 629 | 41.59 |
| Milton Keynes | 10,030 | 500 | 20.06 |
| Northumberland | 9,309 | 568 | 16.39 |
| Nottingham City | 47,588 | 890 | 53.47 |
| Tees Valley | 31,789 | 1,908 | 16.66 |
| WEP (excl. Stagecoach West) | 63,379 | 1,644 | 38.55 |
| York | 16,890 | 726 | 23.26 |

| Two tier authorities (and boosts) | Journeys ('000)* | Sample size (valid responses used in reported results) | Journey volume weight |
|---|---|---|---|
| Essex CC (excl. GA-H&C) | 41,992 | 754 | 55.69 |
| Nottinghamshire (ex non major groups) Main | 28,367 | 720 | 39.40 |
| Nottinghamshire (non-major operators) Boost | 3,358 | 426 | 7.88 |
| Norfolk (excl. GA-Anglian and GA-Konect) | 22,937 | 830 | 27.63 |
| Oxfordshire (excl. Oxford Bus, Oxford P&R, Carousel, Reading Buses, Stagecoach West Swindon) | 27,548 | 632 | 43.59 |
| Oxfordshire - Oxford Bus (excl. Oxford P&R) | 10,379 | 666 | 15.58 |

| Operators not assigned to any authority areas | Journeys ('000)* | Sample size (valid responses used in reported results) | Journey volume weight |
|---|---|---|---|
| Blackpool Transport | 7,513 | 454 | 16.55 |
| First Potteries | 9,301 | 735 | 12.65 |
| First South Coast | 32,073 | 773 | 41.49 |
| GA - Anglian Bus | 1,457 | 347 | 4.20 |
| GA – Bluestar | 7,431 | 408 | 18.21 |
| GA - Brighton & Hove | 31,032 | 833 | 37.25 |
| GA - Carousel Buses | 396 | 339 | 1.17 |
| GA - Hedingham & Chambers | 1,798 | 333 | 5.40 |
| GA – Konectbus | 3,855 | 458 | 8.42 |
| GA – Metrobus | 14,785 | 522 | 28.32 |
| GA - Oxford P&R | 2,133 | 313 | 6.81 |
| GA - Plymouth Citybus | 7,362 | 636 | 11.58 |
| GA - Southern Vectis | 7,440 | 324 | 22.96 |
| GA - Wilts & Dorset | 19,792 | 517 | 38.28 |
| Reading Buses | 27,881 | 1,080 | 25.82 |
| Rosso Buses (excl. Lancs) | 4,006 | 103 | 38.89 |
| Rosso Buses (Lancs boost) | 2,597 | 199 | 13.05 |
| Stagecoach Cumbria & North Lancashire | 6,668 | 303 | 22.01 |
| Stagecoach in Lincolnshire | 20,059 | 385 | 52.10 |
| Stagecoach South East | 43,834 | 356 | 123.13 |
| Stagecoach South West | 22,793 | 473 | 48.19 |
| Stagecoach West | 20,965 | 1,085 | 19.32 |

*Source: Table BUS0109a - Passenger journeys on local bus services by local authority1, 2: England, from 2015/16*

| Scotland | Journeys ('000)** | Sample size (valid responses used in reported results) | Journey volume weight |
|---|---|---|---|
| SPT (excl. First Glasgow) | 58,935 | 560 | 105.24 |
| SEStran (excl. First Scotland East) | 143,727 | 1,158 | 124.12 |
| Nestrans | 24,010 | 1,522 | 15.78 |
| Tactran | 39,990 | 1,603 | 24.95 |
| SWestrans | 14,185 | 887 | 15.99 |
| HITRANS | 12,000 | 622 | 19.29 |
| First Buses Scotland East | 20,273 | 869 | 23.33 |
| First Buses Glasgow | 100,881 | 2,209 | 45.67 |

*\*\*Source: DfT Bus Statistics data 2014/2015 and operator information*

## 7.3 Weighting total

The final weight was the multiplication of the two component weights as shown below:

**Final weight = demographic x journey millions.**

## 7.4 Survey accuracy

This research was designed to ensure robust sample sizes for analysis, at PSU level and in some cases among specific passenger groups within PSUs (e.g. commuters versus leisure travellers). As the survey was conducted with a sample of bus users in each PSU (as opposed to all of them), there could be some differences in results compared to a census of the whole population.

We can be 95% certain that the actual figure (in the universe of all bus journeys) falls within a certain range of the survey figure. The percentages within the tables below represent the typical error variance, for a result of around 80% (results nearer to 0% or 100% are statistically more accurate than results nearer to 50%). This level of accuracy is for analysis run on the Autumn 2016 wave only; where possible, combining waves together for analysis will increase robustness and therefore accuracy.

| PTEs (and boosts) | Typical error variance on a result of around 80% |
|---|---|
| West Midlands (ex. Cov VMA routes) | 1.5 |
| Coventry VMA | 2.5 |
| Mersey and Halton (excl. QP and BBA routes) | 2.1 |
| Mersey and Halton - Better Bus area | 2.7 |
| Mersey and Halton QP | 4.0 |
| South Yorkshire | 1.9 |
| Greater Manchester (excl. Rosso Buses) | 1.7 |
| Tyne and Wear | 2.0 |
| West Yorkshire | 2.0 |

| Unitary Authorities | Typical error variance on a result of around 80% |
|---|---|
| Cheshire East | 3.5 |
| Cornwall (excl. GA-Plymouth Citybus and Stagecoach South West) | 3.0 |
| Durham CC | 2.9 |
| Herefordshire Council (excl Stagecoach West/Swindon) | 4.0 |
| Leicester City | 3.1 |
| Milton Keynes | 3.5 |
| Northumberland | 3.3 |
| Nottingham City | 2.6 |
| Tees Valley | 1.8 |
| WEP (excl Stagecoach West) | 1.9 |
| York | 2.9 |

| Two tier authorities (and boosts) | Typical error variance on a result of around 80% |
|---|---|
| Essex CC (excl. GA-H&C) | 2.9 |
| Nottinghamshire (ex non major groups) Main | 2.9 |
| Nottinghamshire (non-major operators) Boost | 3.8 |
| Norfolk (excl. GA-Anglian and GA-Konect) | 2.7 |
| Oxfordshire (excl Oxford Bus, Oxford P&R, Carousel, Reading Buses, Stagecoach West  Swindon | 3.1 |
| Oxfordshire - Oxford Bus (excl. Oxford P&R) | 3.0 |

| Operators | Typical error variance on a result of around 80% |
|---|---|
| Blackpool Transport | 3.7 |
| First Potteries | 2.9 |
| First South Coast | 2.8 |
| GA - Anglian Bus | 4.2 |
| GA – Bluestar | 3.9 |
| GA - Brighton & Hove | 2.7 |
| GA - Carousel Buses | 4.3 |
| GA - Hedingham & Chambers | 4.3 |
| GA – Konectbus | 3.7 |
| GA – Metrobus | 3.4 |
| GA - Oxford P&R | 4.4 |
| GA - Plymouth Citybus | 3.1 |
| GA - Southern Vectis | 4.4 |
| GA - Wilts & Dorset | 3.4 |
| Reading Buses | 2.4 |
| Rosso Buses (excl. Lancs) | 7.7 |
| Rosso Buses (Lancs boost) | 5.6 |
| Stagecoach Cumbria & N Lancashire | 4.5 |
| Stagecoach East Midlands | 4.0 |

| | |
|---|---|
| Stagecoach South East | 4.2 |
| Stagecoach South West | 3.6 |
| Stagecoach West | 2.4 |

| Scotland | Typical error variance on a result of around 80% |
|---|---|
| SPT booster (excluding First Glasgow) | 3.3 |
| SEStran booster (excluding First Scotland East) | 2.3 |
| Nestrans booster | 2.0 |
| Tactran booster | 2.0 |
| SWestrans booster | 2.6 |
| HITRANS booster | 3.1 |
| First Buses Scotland East | 2.7 |
| First Buses Glasgow | 1.7 |

# 8 Online methodology: Impact of changes to the survey method

## 8.1 Impact of changes to survey method on respondent profile

Prior to the Autumn 2015 wave of the BPS, only paper questionnaires were offered to passengers. It was known that younger people (especially males) were under-represented in this method. Linked to this imbalance in respondent profile, commuters and fare-paying passengers were also typically under-represented in favour of more leisure, off-peak travellers. Pilot and other work had indicated that moving to the dual paper / online method could improve the response from these under-represented groups, thus improving the overall quality of the survey sample. From Autumn 2015 a dual online and paper method was used.

The tables below show the proportions of respondents in the final Autumn 2015 and Autumn 2016 dataset who were recruited to the survey and who completed the survey on paper and online. In summary, one in ten received a questionnaire using an online method and there was a slight increase to this in 2016 compared to 2015. However, this is also accompanied by a slightly lower online response overall in 2016 compared to 2015.

| *Method of questionnaire distribution* | *2015* | *2016* |
|---|---|---|
| Paper questionnaires handed out | 89.50% | 88.95% |
| Email addresses collected | 10.50% | 11.05% |

| *Method of survey completion* | *2015* | *2016* |
|---|---|---|
| Respondents completing survey on paper | 92% | 93% |
| Respondents completing survey online | 8% | 7% |

The tables below demonstrate the profile of respondents completing a questionnaire using each method. In summary this shows a slightly greater proportion of younger people (16-25 year olds), males, fare-payers and peak passengers completing online. That is, the online option appears to be encouraging response from under-represented and harder to reach groups.

| Profile of respondents by method | 2015 | | 2016 | |
|---|---|---|---|---|
| | Paper | Online | Paper | Online |
| 16-25 | 14% | 34% | 13% | 36% |
| 26-59 | 34% | 49% | 34% | 46% |
| 60+ | 48% | 16% | 48% | 16% |
| Not stated | 5% | 2% | 5% | 1% |
| Male | 32% | 37% | 32% | 38% |
| Female | 62% | 61% | 63% | 60% |
| Not stated | 6% | 2% | 5% | 1% |
| Free pass holder | 51% | 17% | 50% | 19% |
| Fare payer | 47% | 83% | 47% | 81% |
| Not stated | 2% | 0% | 3% | 0% |
| Peak time journeys | 21% | 32% | 20% | 26% |
| Off-peak time journeys | 79% | 68% | 80% | 74% |
| Commuter | 33% | 57% | 32% | 57% |
| Non-commuter | 62% | 43% | 63% | 43% |

Following the introduction of online completion as an option in the 2015 study, additional steps were taken to encourage response via the online questionnaire, in 2016. These are detailed in the next section.

## 8.2 Increasing the contribution of online surveys

Following the introduction of the online questionnaire distribution method in Autumn 2015, a number of steps were taken aimed at improving online take up and response rate:

- Small changes to the questionnaire to reduce 'drop-out' once respondents began the survey
- Efforts made to reduce the time between recruitment (when a passenger was approached on board a bus and provided their email address) and survey access (when that passenger actually received an email invitation with a link to the survey), to increase likelihood of response.

### *Reducing drop out*

The following graph shows those who completed key questions as a proportion of those who began the online survey, effectively showing where drop-out was most prevalent. This compares 2015 and 2016 data. This shows that efforts to improve drop outs at key drop out questions in 2015 had been successful to some extent, with the drop-out rate more gradual over the whole survey[5]. See the questionnaire in Appendix 1 to view full question wording.

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



---
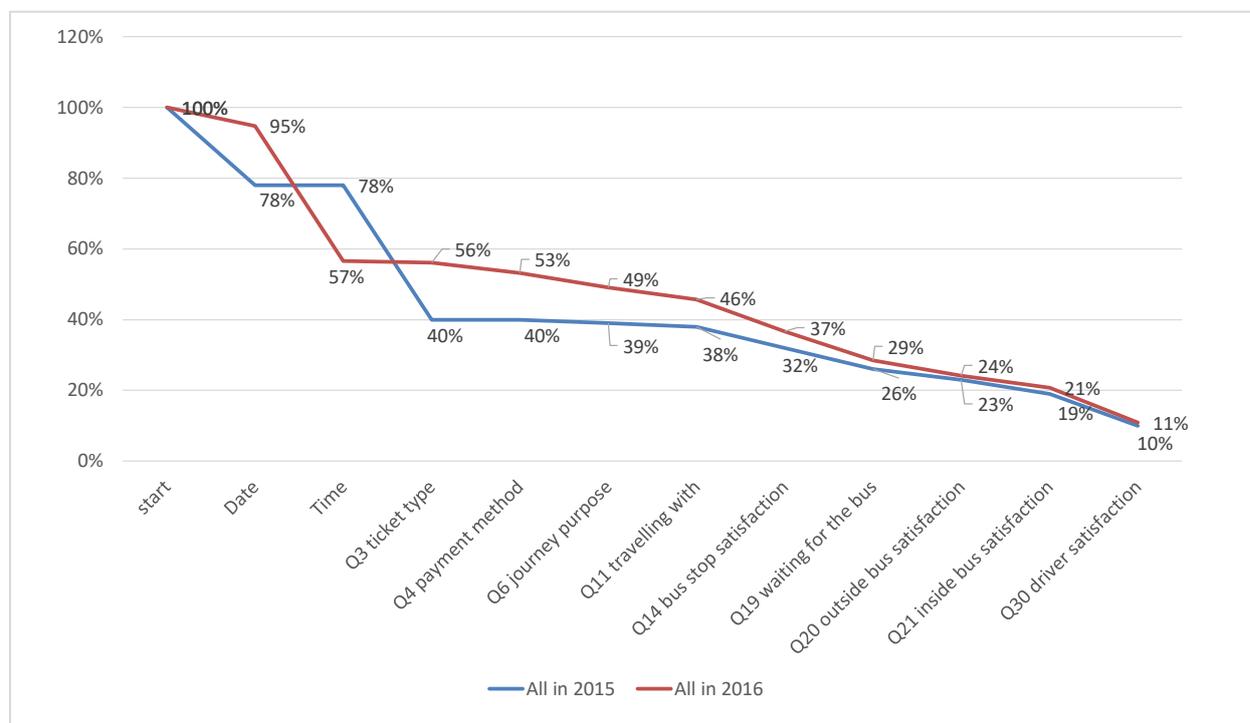
[5] *The questionnaire shown in the Appendix is an example of the paper version. This does not include a question on the date of the passenger's journey, because this information can be confirmed by the fieldworker at the point of recruitment (they write the date in the top right hand corner of the questionnaire). The question about the date of the journey is included on the online questionnaire only. The survey programme gives the date the respondent is expected to have been recruited (from sample information), but the respondent is asked to verify and amend this, in case of last-minute changes to fieldwork which, in isolated cases, may not have been accounted for in the survey programme by the time of completion.*

The main changes made to the questionnaire to reduce drop out in 2016 (where largest drop out was around entering the time and the ticket type) 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 avoids 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 drop-out.

The latter improvement appears to have worked well. Improvements to the time question may still need to be made for future waves, although as an earlier question, it is likely that drop-off was not because of the question format but because it was an early question (where we typically see drop out in online surveys more generally). However, one consideration might be to move the time question to later in the survey and provide an easier to answer question as a first question.

### Increasing response rate

Survey invitations were sent to respondents as soon as possible after recruitment. This varied depending on the method in which email addresses were recorded: email addresses recorded on a tablet were inevitably sent back to head office more quickly than those recorded on paper. The aim was for invitations to be sent on the same day or the next day following recruitment (if recruitment fell late on a Friday or on a weekend, the survey invitations would follow on Monday). If a respondent had not completed the survey two days after the invitations, a reminder email was sent.

The following graph shows the proportion of all recruits who went on to fully complete the survey, by the length of time between recruitment and receiving the email invitation. It shows that, of respondents who received the actual survey invitation on the same day as they were first approached by the fieldworker, 27% went on to complete the survey. Of respondents who received their survey invite the day after they were first approached, 22% completed it, and so on. Clearly, the sooner a respondent receives the survey invitation, the more likely they are to complete it (although this does appear to flatten after some time).

**Response rate time between email invite and recruitment (days):**
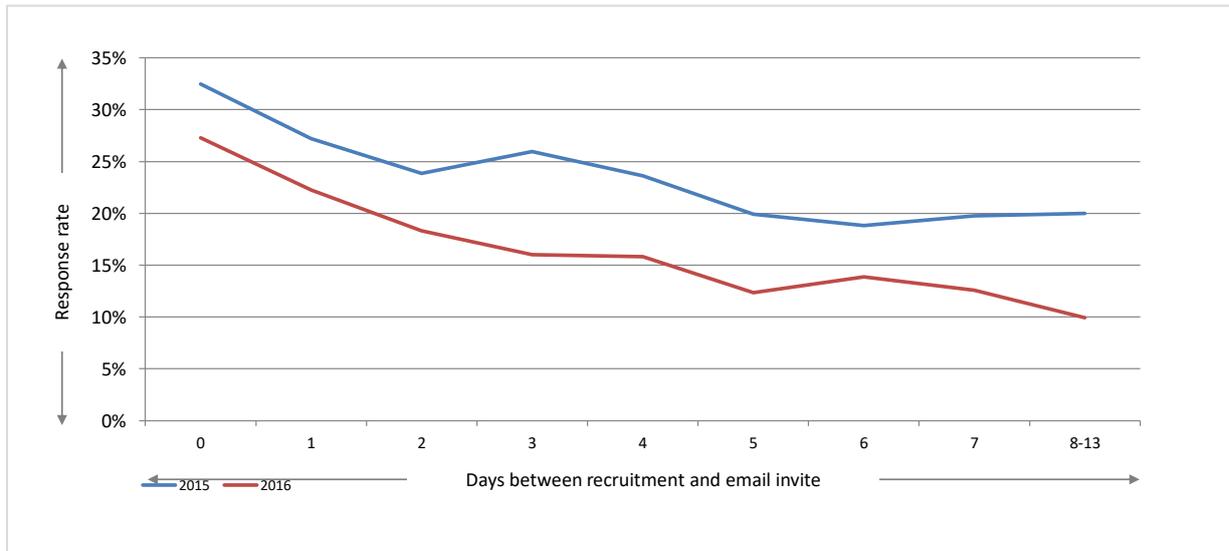


Because receiving the survey invitation promptly is so important, efforts were made in the Autumn 2016 survey to reduce the time taken for this, compared to the Autumn 2015 wave. In all, the average gap between recruitment and receiving the survey invitation was 4.9 days in 2015 (with 60% of recruits being contacted within three days). In 2016 the gap was 4.1 days on average (with 67% being contacted within three days).

# 9 Other analysis: key drivers of satisfaction

<u>The purpose of Key Driver Analysis</u>

The headline measure on the Bus Passenger Survey is the level of passenger satisfaction with the overall journey, which provides a simple summary for the journey as a whole. Transport authorities and operators are, of course, also interested to understand how they might improve overall satisfaction, and where they should focus attention and resources to achieve this. Key Driver Analysis assists with this, by identifying elements of the journey experience which have the greatest impact upon the overall journey satisfaction rating that passengers give, using the other question ratings from the survey.

**Questions included in the Key Driver Analysis**

The headline measure is 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 bus journey, how satisfied were you with your bus journey?*

The questions that were then tested for the impact they have on this overall satisfaction were taken from the core survey questions (see more detail in the questionnaire provided in Appendix 1):

- Q13 and Q14 (bus stop ratings)

- Q19 (waiting time and punctuality)

- Q20 (boarding the bus)

- Q21 and Q26 (on the bus)

- Q30 (the driver and quality of driving)

- Q33 (value for money).

**How the Key Driver Analysis was conducted**

A series of statistical techniques were used, with three stages:

*Stage 1: Selecting fare paying passengers (filtering the data)*

Transport Focus believes that value for money is important to passengers and so it was important to test it as one of the potential influencers of overall journey satisfaction. This meant that the analysis could only be conducted using the survey responses from fare-

paying passengers. Responses for non-fare paying passengers were therefore removed from the data before carrying out the Key Driver Analysis.

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

This was a new stage, introduced for the Autumn 2016 survey. The aim of this stage was 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. In previous waves (and in Transport Focus' other Passenger Surveys) there had usually been some degree of overlap between the responses that passengers give to the different satisfaction questions in the survey. For example, the survey asked about waiting time and punctuality in two separate questions, and while these questions have a slightly different meaning, there have often been similarities between the responses that passengers give to each. 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.

All the responses from fare payers in the Autumn 2016 Bus Passenger Survey were taken together, and used to identify the different themes, using the factor analysis technique. From this analysis we identified ten themes, which are shown in the table below; we then used these themes, rather than the individual questions, in the next stage of the analysis.

| Theme (factor) | Questions |
| --- | --- |
| Bus driver | Nearness to kerb |
| | Appearance |
| | Greeting/welcome |
| | Helpfulness/attitude |
| | Time given to get to seat |
| | Smoothness/freedom from jolting |
| | Safety of driving |
| On bus environment and comfort | Availability of seating or space to stand |
| | Comfort of the seats |
| | Amount of personal space |
| | Provision of grab rails to stand/move within the bus |
| | Temperature inside the bus |

| | Personal security |
|---|---|
| Bus stop condition | General condition/standard of maintenance |
| | Freedom from graffiti/vandalism |
| | Freedom from litter |
| Boarding the bus | Route/destination information on outside of bus |
| | Ease of getting onto/off bus |
| | Time taken to board |
| Timeliness | Waiting time |
| | Punctuality |
| Bus cleanliness and information on-board | Exterior cleanliness/condition |
| | Interior cleanliness/condition |
| | Information provided inside bus |
| Access to the bus stop | Distance from journey start |
| | Convenience/accessibility |
| Bus stop safety and information | Information provided at stop |
| | Personal safety at stop |
| Journey time | On-bus journey time |
| Value for money | Value for money (asked of fare payers only) |

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

We used a second statistical technique (Multiple Linear Regression) to identify how much of an impact each of the themes had on the overall journey satisfaction question. While the generation of the themes was based upon all the responses from fare payers in the Autumn 2016 surveys, the impact scores for each of the themes was calculated from the responses of passengers in each PSU only.

The analysis was 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 or 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 meant that moving any one point up the five point scale was 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 drove people to be very satisfied (rather than either fairly or very satisfied), again using scalar driver variables.

The two parts of the analysis therefore indicated, 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 around two fifths of the variance in overall journey satisfaction, with a small amount of variation for individual PSUs. (The $R^2$ value was, on average, 0.36 for both the drivers of satisfaction the drivers of very satisfied).

**Why did we change the way we conduct the Key Driver Analysis for Autumn 2016?**

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) removed the degree of overlap that could exist between individual questions, as each theme was independent of the others, i.e. they were responded to in different ways. The outputs from this new approach to the Key Driver Analysis were 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 bus stops could cover a range of the individual aspects related to the 'bus stop condition' theme.

| 270089 | 041 |
|---|---|

**transportfocus**

# Bus Passenger Survey

Thank you for agreeing to take part in our survey. Your views as a bus 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 bus journey you made when given this questionnaire.** Towards the end, there are also questions to record your general experiences too.

Bus 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.

Please tick only one box per question, unless directed otherwise.

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 |
|---|---|

**Q1** **Please enter the route number or letter of the bus you boarded**

□□□□

**Q2** **Please fill in the time that you boarded the bus:**
*Please use the 24 hour clock e.g. 5.25pm is 17:25.*
*Enter your time of boarding into the boxes as shown*

□□ : □□
*1 7   2 5*

**Q3** **What type of ticket did you use for that journey?**

**A free pass or free journey**
Elderly person's pass.............................□
Disabled person's pass..........................□
Complimentary/free ticket.......................□

**Single/return/multi tickets**
Standard single ticket............................□
Standard return ticket............................□
A deduction from a multi-ticket/carnet.......□
Reduced single/return ticket....................□

**A day pass - valid for**
That bus company only...........................□
Across bus companies............................□
Buses and other modes of transport.........□

**A pass/season ticket for a longer period (e.g. weekly, monthly) - valid for**
That bus company only...........................□
Across bus companies............................□
Buses and other modes of transport.........□

Other..................................................................................□

§270089041V¬

**Your opinion counts!** ☑

**transportfocus**

**Q4 On boarding the bus, did you?**

Use cash to buy a ticket or pass......................................................☐
Use a contactless credit or debit card to buy a ticket or pass...............☐
Show the driver a paper ticket or pass...........................................☐
Place your smartcard onto the fare machine....................................☐
Show the driver a ticket displayed on your smart phone......................☐

**Q5 If you bought your ticket or pass <u>before</u> getting on the bus, how did you do this?**

From the driver before that day......................................................☐
Direct from the bus company (including web, mobile app, phone)..........☐
From a travel centre/bus station/booking office...............................☐
From a local shop or post office.....................................................☐
Arrangement through work/college.................................................☐
Other.......................................................................................☐

Did not buy your ticket before boarding the bus................................☐

**Q6 What was the main purpose of your bus journey?**

Travelling to/from work...............................................................☐
Travelling to/from education (e.g. college, school)............................☐
Shopping trip............................................................................☐
Visiting friends or relatives..........................................................☐
Leisure trip (e.g. day out)............................................................☐
Other.......................................................................................☐

**Q7 What was the main reason you chose to take the bus for that journey?**

Cheaper than the car.............................☐      More convenient than other transport........☐
More convenient than car (e.g. parking).....☐      Preferred bus to walking/cycling...............☐
Cheaper than other transport..................☐      Other reason.......................................☐

Didn't have the option of travelling by another means...........................................☐

**Q8 Did you use any other form of transport as part of your journey?**
*(Please do not count walking as a form of transport)*

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

**Q9 What was the weather like when you made your journey, was it?**

Dry.....................................................☐      Heavy rain........................................☐
Light rain..............................................☐      Snow...............................................☐

**Q10 Please tell us whether your bus journey was …**

On a single-decker bus..........................☐
Downstairs on a double-decker bus..........☐
Upstairs on a double-decker bus..............☐

**Q11 Were you travelling with …**
*(Please tick all that apply)*

Heavy/bulky luggage/other large items......☐      A helper............................................☐
A pushchair...........................................☐      A mobility scooter...............................☐
A folding bicycle....................................☐      A wheelchair......................................☐
A dog...................................................☐

None of the above.....................................................................☐

2

## 2    About the bus stop where you boarded the bus

**Q12 Which of the following were provided at the stop where you caught the bus?**
*(Please tick all that apply)*

A shelter.............................................☐    Information on types of tickets available.....☐
Seating..............................................☐    A route map.............................................☐
Electronic display showing bus arrival times..☐    Lighting...................................................☐
A timetable.........................................☐    A mobile text code for bus arrival times......☐
Information on fares.............................☐

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

| | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Don't know/no opinion |
|---|---|---|---|---|---|---|
| Its distance from your journey start e.g. home/shops. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The convenience/accessibility of its location within that road/street | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Its general condition/standard of maintenance | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Its freedom from graffiti/vandalism | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Its freedom from litter | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The information provided at the bus stop | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Your personal safety whilst at the bus stop | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

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

| Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Don't know/no opinion |
|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

## 3    Waiting for the bus

**Q15 How long did you wait for your bus?**
*(Please write the time in minutes)*

☐☐

**Q16 Did you check any of the following to find out when the bus was meant to arrive?**
*(Please tick all that apply)*

| | Before you left for the bus stop | At the bus stop |
|---|---|---|
| Paper timetable | ☐ | ☐ |
| Online timetable | ☐ | ☐ |
| Live bus locator/timings (e.g. via mobile app/web) | ☐ | ☐ |
| Disruption updates (e.g. on Twitter/Facebook) | ☐ | ☐ |
| Electronic display at the bus stop | | ☐ |
| Other | ☐ | ☐ |

*If you did not check before leaving, or at the bus stop, why was this?*

Knew service was frequent.......................☐    Didn't have time.....................................☐
Already knew arrival times.......................☐    Other....................................................☐
Could not find the information...................☐

3

**Q17 How long did you expect to wait for your bus?**
*(Please write the time in minutes)*

| | |
|---|---|

**Q18 Thinking about the time you waited for the bus, was it …?**

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

**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 bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The punctuality of the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

## 4 On the bus

**Q20 Thinking about when the bus 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 bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The cleanliness & condition of the outside of the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The ease of getting onto and off of the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The length of time it took to board the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Q21 Thinking about whilst you were on the bus, 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 bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The information provided inside the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The availability of seating or space to stand | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The comfort of the seats | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The amount of personal space you had around you | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Provision of grab rails to stand/move within the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The temperature inside the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Your personal security whilst on the bus | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

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

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

**Q23 Did other passengers' behaviour give you cause to worry or make you feel uncomfortable during your journey?**

Yes ☐          No ☐

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

Passengers drinking/under influence of alcohol ☐          Music being played loudly ☐
Passengers taking/under influence of drugs ☐          Smoking ☐
Abusive or threatening behaviour ☐          Graffiti or vandalism ☐
Rowdy behaviour ☐          Other ☐
Feet on seats ☐

4

**Q24 How long was your journey on the bus?**
*(Please write the time in minutes)*

☐☐☐

**Q25 How long did you expect your journey on the bus to take?**
*(Please write the time in minutes)*

☐☐☐

**Q26 How satisfied were you with the length of time your journey on the bus took?**

| Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Don't know/no opinion |
|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Q27 Thinking about your time you spent on the bus, which one of the following statements do you most agree with?**

I made very worthwhile use of my time.....................☐
I made some use of my time..................................☐
My time spent on the bus was wasted time..............☐

**Q28 Was the length of time your journey took affected by any of the following?**
*(Please tick all that apply)*

Congestion/traffic jams....................☐        Poor weather conditions.......................................☐
Road works.....................................☐        The bus waiting too long at stops.........................☐
Bus driver driving too slowly..............☐        Time it took passengers to board/pay for tickets.....☐

**Q29 Were any of these items of information present on the bus?**

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

**Q30 Thinking about the driver, 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 |
|---|---|---|---|---|---|---|
| How near to the kerb/stop the bus stopped | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The driver's appearance | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The greeting/welcome you got from the driver | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The helpfulness and attitude of the driver | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The time the driver gave you to get to your seat | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Smoothness/freedom from jolting during the journey | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The safety of the driving (i.e. appropriateness of speed, driver concentrating) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

5

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

**Q31 Overall, taking everything into account from start to end of the bus journey, how satisfied were you with your bus journey?**

| Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Don't know/no opinion |
|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Q32 If something could have been improved on your journey, what would it have been?**

[ ]

**Q33 How satisfied were you with the value for money of your journey?**

| Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Don't know/no opinion |
|---|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Q34 What had the biggest influence on the 'value for money' rating you gave in the previous question?**

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

**Q35 All things considered, how much do you trust the bus company that operated the bus 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
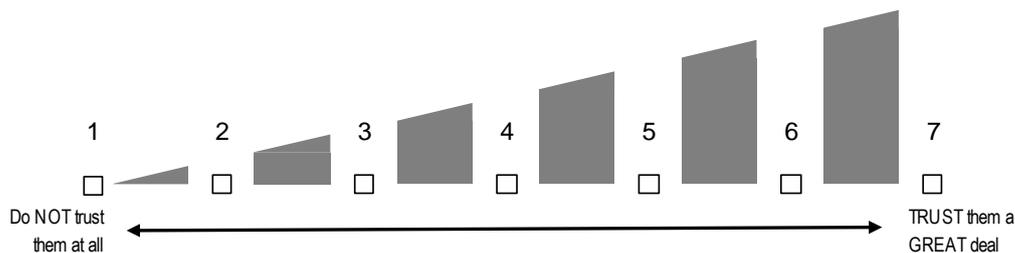
## 6 Your opinion of bus travel in your local area

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

**Q36 How would you rate your local bus 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) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Connections with other forms of public transport (e.g. trains) | ☐ | ☐ | ☐ | ☐ | ☐ |
| The frequency of services in your area | ☐ | ☐ | ☐ | ☐ | ☐ |
| The reliability of services in your area | ☐ | ☐ | ☐ | ☐ | ☐ |

**Q37 How often do you typically travel by bus?**
*(Please tick the closest to your frequency of bus use)*

5 or more days a week............................ ☐
3 or 4 days a week................................. ☐
Once or twice a week............................. ☐

Once a fortnight..................................... ☐
Once a month........................................ ☐
Less frequently...................................... ☐

6

## 7    About you

**QA   Are you?**

Male.......................................................................☐
Female...................................................................☐
Prefer another term...............................................☐

**QB   In which age group are you?**

| | | |
|---|---|---|
| 16 to 18........................☐ | 35 to 44...................☐ | 65 to 69............................☐ |
| 19 to 21........................☐ | 45 to 54...................☐ | 70 to 79............................☐ |
| 22 to 25........................☐ | 55 to 59...................☐ | 80+...................................☐ |
| 26 to 34........................☐ | 60 to 64...................☐ | |

**QC   Which of the following best describes your ethnic background?**

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

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

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

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

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

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

No: None.............................................................................................................☐

Yes: Vision (e.g. blindness or partial sight)........................................................☐
Yes: Hearing (e.g. deafness or partial hearing)..................................................☐
Yes: Mobility (e.g. only able to walk short distances or difficulty climbing stairs)..................☐
Yes: Dexterity (e.g. difficulty lifting and carrying objects or using a keyboard).....................☐
Yes: Learning or understanding or concentrating................................................☐
Yes: Memory......................................................................................................☐
Yes: Mental health.............................................................................................☐
Yes: Stamina or breathing or fatigue..................................................................☐
Yes: Socially or behaviourally (for example associated with autism, attention deficit
   disorder or Asperger's syndrome)................................................................☐
A reason not mentioned above...........................................................................☐

**Does your condition/illness have an adverse affect
on your ability to make journeys by bus?**

| | | |
|---|---|---|
| Yes, a lot.....................☐ | Yes, a little................☐ | Not at all......................☐ |

This survey is being undertaken for Transport Focus by BDRC Continental, an independent market research agency which adheres to the Market Research Society's code of conduct. You were handed this questionnaire by an interviewer working for Perspective Research Services, a part of BDRC Continental.

The information that you have provided on this questionnaire is subject to the Data Protection Act 1998 and will not be used to identify you personally. The data will only be used for research purposes. Any organisations receiving the data will also be subject to the same restrictions and obligations under the Data Protection Act 1998.

If you have any queries about this survey or how your data will be used please contact Ellen Tvedt at BDRC Continental on 020 7490 9160.

If you would like to check that this survey is genuine, you can contact the Market Research Society on 0500 396999 or www.mrs.org.uk who will verify BDRC Continental's status as a legitimate market research organisation.

To find out more about the Bus Passenger Survey or Transport Focus' work visit our website or follow us on Twitter.
Web: www.transportfocus.org.uk
Twitter: @transportfocus

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

Name:

Email address:

# Thank you for completing this questionnaire.
# You have made your opinion count

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

Bus Passenger Survey
Perspective Research Services Ltd
FREEPOST (RTLU-YLTS-TGYY)
12-20 Baron Street
Angel, London  N1 9LL

bdrc continental

transportfocus

**Appendix 2: PV2 models**

The following models were used to estimate the number of unique passengers on board each bus service, from one end of its route to another. Models were found to provide a better fit if the specific local authority area (or operator area) was used, than if the area type (PTE, Unitary, Two Tier) was used. Therefore where the specific local authority (or operator) area was surveyed in the previous year and thus had its own data, the specific area model was used. Where the local authority area was not surveyed previously and there was no specific model available, the relevant area type model was used. Similarly, if one of the 'big five' operators was present in the area, a better model fit was found when the operator was factored into the model; therefore models were generated with and without this factor in order to provide the best estimates possible. As such there were four possible models.

The model for an area that had been surveyed before included a constant specific to that area, and then coefficients covering the time of day, duration of journey and operator. For an area that had not been surveyed before, the model was of the same structure but with coefficients depending upon the type of area (PTE, unitary, Two Tier).

| | model number | 1 | 2 | 3 | 4 |
| | | | Area | | Area |
| | Basis | Area | Type | Area | Type |
| | big 5 operator | Yes | Yes | No | No |
| | | | | | |
| | Constant | 29.16 | 29.16 | 29.16 | 29.16 |
| Duration | 30 minutes or less | -9.38 | -10.74 | -11.43 | -11.78 |
| | 30 and up to 45 mins | -2.31 | -1.48 | -1.92 | -1.40 |
| | 45 mins and up to one hour | 2.77 | 4.08 | 3.60 | 4.52 |
| | over 1 hour | 9.65 | 8.55 | 10.29 | 9.03 |
| Day-part | Evening peak | 2.26 | 2.66 | 2.14 | 1.99 |
| | Morning peak | -0.99 | -1.89 | -0.66 | -1.54 |
| | Off-peak | 0.87 | 1.32 | 0.75 | 1.32 |
| | Weekend | -3.57 | -4.96 | -3.22 | -4.80 |
| Operator | Arriva | -3.17 | -0.26 | 0.00 | 0.00 |
| | First | 5.54 | 2.76 | 0.00 | 0.00 |
| | Go Ahead | -3.15 | -0.17 | 0.00 | 0.00 |
| | National Express | 16.78 | 12.12 | 0.00 | 0.00 |
| | Other | -7.76 | -6.87 | 0.00 | 0.00 |
| | Stagecoach | 2.27 | 1.27 | 0.00 | 0.00 |
| Area type | PTE | 0.00 | 2.70 | 0.00 | 3.85 |
| | Rural | 0.00 | -4.98 | 0.00 | -5.27 |
| | Unitary | 0.00 | 2.01 | 0.00 | 0.42 |
| Actual PSU | Abellio Surrey | -1.98 | 0.00 | -10.13 | 0.00 |
| | Blackpool | 2.84 | 0.00 | -3.50 | 0.00 |
| | Centro | -2.73 | 0.00 | 6.43 | 0.00 |
| | Cov VMA | 15.95 | 0.00 | 28.87 | 0.00 |
| | Devon | -18.17 | 0.00 | -16.51 | 0.00 |
| | East Sussex - Main | 15.96 | 0.00 | 16.97 | 0.00 |
| | Essex | -6.47 | 0.00 | -1.83 | 0.00 |

| | | | | |
|---|---|---|---|---|
| First Buses Aberdeen | -4.63 | 0.00 | 0.20 | 0.00 |
| First in Glasgow | -7.90 | 0.00 | -2.66 | 0.00 |
| First Buses Scotland East | -21.64 | 0.00 | -16.87 | 0.00 |
| First Potteries | -3.21 | 0.00 | 3.15 | 0.00 |
| First South Coast | -7.71 | 0.00 | -1.91 | 0.00 |
| GA Anglian Buses | -8.29 | 0.00 | -10.67 | 0.00 |
| GA Bluestar | -1.61 | 0.00 | -5.38 | 0.00 |
| GA Brighton & Hove | 23.78 | 0.00 | 20.25 | 0.00 |
| GA - Hedingham & Chambers | -13.42 | 0.00 | -17.10 | 0.00 |
| GA Konectbus | -0.49 | 0.00 | -5.74 | 0.00 |
| GA Metrobus | 14.93 | 0.00 | 12.61 | 0.00 |
| GA Oxford P&R | -10.23 | 0.00 | -13.73 | 0.00 |
| GA Plymouth Citybus | -7.16 | 0.00 | -10.23 | 0.00 |
| GA Southern Vectis | -0.10 | 0.00 | -3.77 | 0.00 |
| GA Thames Travel | 2.56 | 0.00 | -1.13 | 0.00 |
| GA Wilts & Dorset | 1.20 | 0.00 | -1.62 | 0.00 |
| GA Go North East | -3.90 | 0.00 | -6.99 | 0.00 |
| Gloucestershire | -4.94 | 0.00 | -4.66 | 0.00 |
| Kent | -2.09 | 0.00 | -4.18 | 0.00 |
| Lancashire | -3.80 | 0.00 | -4.57 | 0.00 |
| Lothian Buses | -6.17 | 0.00 | -9.96 | 0.00 |
| Luton | -4.50 | 0.00 | -11.76 | 0.00 |
| Medway | 1.60 | 0.00 | -0.05 | 0.00 |
| Mersey main | 10.34 | 0.00 | 7.09 | 0.00 |
| Mersey QP | 18.65 | 0.00 | 15.55 | 0.00 |
| Milton Keynes | 0.27 | 0.00 | -2.97 | 0.00 |
| Norfolk | -1.34 | 0.00 | 2.00 | 0.00 |
| North East Lincolnshire | 13.99 | 0.00 | 15.64 | 0.00 |
| North Yorkshire | 0.05 | 0.00 | -8.13 | 0.00 |
| Northumberland | 2.27 | 0.00 | -4.38 | 0.00 |
| Nottinghamshire | -1.54 | 0.00 | -5.80 | 0.00 |
| Oxfordshire | -2.77 | 0.00 | -3.42 | 0.00 |
| Reading Buses | 9.71 | 0.00 | 2.71 | 0.00 |
| Scotland SEStran | -13.83 | 0.00 | -18.72 | 0.00 |
| Scotland SPT | -9.19 | 0.00 | -12.73 | 0.00 |
| Scotland Tactran | -15.87 | 0.00 | -11.50 | 0.00 |
| South Yorkshire | -0.89 | 0.00 | 2.46 | 0.00 |
| Staffordshire | -10.39 | 0.00 | -11.50 | 0.00 |
| Suffolk | 6.57 | 0.00 | 3.29 | 0.00 |
| Tees Valley | 2.27 | 0.00 | -4.13 | 0.00 |
| TfGM | 1.52 | 0.00 | 3.14 | 0.00 |
| Thurrock | 10.25 | 0.00 | 5.38 | 0.00 |
| Tyne & Wear | 3.84 | 0.00 | 1.50 | 0.00 |
| WEP | -3.83 | 0.00 | -0.50 | 0.00 |
| West Yorks | 11.48 | 0.00 | 11.74 | 0.00 |
| York | 3.53 | 0.00 | 4.55 | 0.00 |

The PV model was first implemented for BPS sampling for the Autumn 2014 survey, and has been updated each year based upon data collected on board buses in the previous year. Interestingly, over the years when it has been used, we have seen a change in the level of weighting given to bus services running in the morning peak, compared to the evening peak. There appears to be a trend since 2014, in which the morning peak has been slightly more up-weighted each year, with the evening peak being slightly more down-weighted each year. Since the PVs are based on actual counts being made on the buses in each daypart, this indicates that morning peak services are becoming relatively a little busier compared to evening peak services, over time.

### Example, based on local authority area Milton Keynes:

- This specific area was covered in 2015 and therefore the specific area was able to be modelled. Some services in this area were run by 'big five' operators (Arriva). Therefore Milton Keynes used model number 1
- In this case we started with the base assumption that all buses had 29.16 people on board (this was the constant)
- Then this figure was increased by 0.27 for all individual bus services for the fact that they were all in the Milton Keynes local authority area
- It was then increased or decreased depending on the other attributes of each bus; for instance:

  - If one whole journey for that bus service was less than 30 minutes in duration, it would be decreased by 9.38
  - If the bus service was also travelling in the evening peak it would be increased by 2.26
  - If it was run by Arriva it would be decreased by 3.17

- In this case then, the 'passenger value' (PV2) for this bus service (i.e. the estimated total number of unique passengers on board throughout its journey) would be 19.14. That is [constant 29.16] + [Milton Keynes 0.27] – [<30mins 9.38] + [evening peak 2.26] - [Stagecoach 3.17].

A similar journey (less than 30 minutes long, in the evening peak, run by Arriva) but in a Unitary Authority area not surveyed in Autumn 2015 would have had a PV2 of 22.83. This is because it would have used model 2 (where the local authority area does not have its own specific data but the area type is known), and the values would be: [constant 29.16] + [Unitary 2.01] – [<30mins 10.74] + [evening peak 2.66] + [Arriva -0.26].