

Annual Ticketless Travel Survey

ScotRail Franchise Agreement: Schedule 1.6 (22.6)

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Phil Campbell
Head of Revenue Protection
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Introduction:

The Franchisee (Abellio ScotRail) was tasked with conducting an independent review (Committed Obligation 22.6) to ascertain the instances of ticketless travel and fare evasion across the full network.

Steer Davies Gleave was appointed by ScotRail to undertake a second Ticketless Travel Survey following the previous survey and associated analysis that has been undertaken across all eight service groups of the ScotRail franchise in June 2015.

Service Group	Line of Route
Glasgow – Edinburgh Express	Glasgow Queen Street to Edinburgh via Falkirk High.
Other Express Services	Glasgow Queen Street / Edinburgh to Aberdeen / Inverness.
Suburban West - Group 1	North Electrics, South Electrics, Argyle Line, and Motherwell - Cumbernauld.
Suburban West - Group 2	Glasgow Central to Ayr, Gourock / Wemyss Bay, Ardrossan / Largs and Kilmarnock – Girvan
Suburban West - Group 3	Glasgow Queen Street – Cumbernauld, Alloa, Dunblane, Falkirk Grahamston and the Northern Suburban Line.
Suburban West - Group 4	Glasgow Central - Paisley Canal, East Kilbride, Barrhead, Kilmarnock and Edinburgh via Shotts.
Suburban East	Fife Circle. Edinburgh to Alloa, Dunblane, North Berwick and the Borders.
Rural Services	Inverness to Thurso/Wick and Kyle of Lochalsh. Aberdeen to Inverness. Glasgow Central to Ayr, Carlisle and Stranraer. Glasgow Queen Street to Oban, Fort William and Mallaig.

This report presents the results of the Ticketless Travel Survey undertaken on Abellio ScotRail franchise services between Wednesday 11th January and Friday 27th January 2017.

The survey took a stratified sample across eight service groups and five time periods. It comprised 61 shifts (including one contingency shift) over a two week period and collected 22,603 observations.

In this survey the weekdays were split into four time periods – AM peak, inter-peak, PM peak and Evening.

The result reported is the weighted irregularity rate. This is based on a sample for each service group and time period (segment) adjusted to give proportionate weight to each segment reflecting actual passenger volumes, combined with assumptions on:

- The proportion of those who refuse to have their ticket checked (refusals) who fare evade; and
- The proportion of those who alight before their ticket is checked (alighters) who fare evade.

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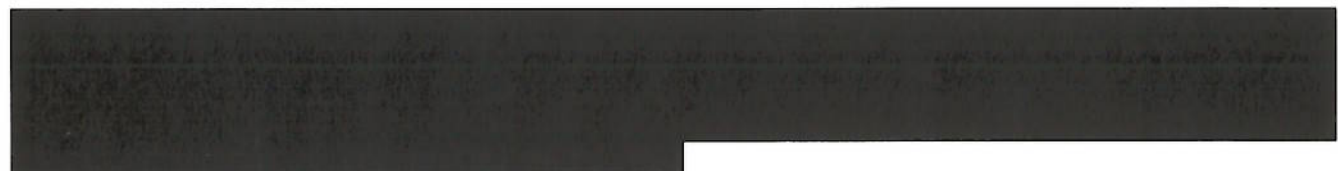
Executive Summary:

The central case result is an irregularity rate of 5.26%, based on franchise revenue data for 2016. We also present Low and High estimates of ticketless travel, each of which has different assumptions for those who refused a ticket check, or alighted prior to the check being made.

- The Suburban West Group 4 has the highest irregularity rate, at 9.03%, followed by Suburban West – Group 1, at 7.74%. The latter service group has seen significant improvements in the irregularity rate by 5.8 percentage points since June 2015.
- Other Express services (between Glasgow/Edinburgh and Aberdeen/Dyce/Inverness) have the lowest irregularity rate, at 1.37%, followed by the Glasgow-Edinburgh Express service at 2.00%.



Case	Assumptions		Wighted Irregularity Rate
	Refusals	Alighters	
Low	Ave Ticketless Travel Rate	Ave Ticketless Travel Rate	5.07%
Central	50% Ticketless Travel Rate		5.26%
High	25% Ticketless Travel Rate	25% Ticketless Travel Rate	7.57%



As this report will demonstrate, progress has been made in reducing ticketless travel by focussing on a revenue strategy that delivers a well-informed, organised, motivated workforce that has 'customer experience' at its heart.

Abellio ScotRail will continue to deploy innovative schemes and technology to deliver enhanced opportunities for customers to purchase products and for staff to retail more efficiently.

A new marketing campaign will be deployed in April 2017 to encourage passengers to buy tickets before boarding. The campaign will clearly highlight the facilities available at stations (such as ticket offices and the availability of TVMs), as well as informing passengers of any savings that can be made through buying tickets prior to boarding via the ScotRail website or app.

Finally we will also work in partnership with Transport Scotland to explore all ticketing options to encourage the required behavioural change to further reduce ticketless travel.

Methodology:

The main survey was undertaken between Wednesday 11th January and Wednesday 25th January 2017 inclusive, with one contingency shift on Friday 27th January.

To ensure that a representative sample of passengers from across the ScotRail network was collected and that it aligns with how ScotRail manage their business, eight survey service groups were defined across the franchise.

The only significant change compared to the previous survey is that the Borders Railway has now opened and was surveyed as part of the Suburban East route.

Objectives of Survey Scheduling

A schedule was drawn up according to the following objectives:

- Covering as large a geographical area as possible;
- Sampling all service groups from end-to-end; and
- Sampling on different days of the week and throughout the day.

Whilst:

- Ensuring a large sample on service groups with the highest revenue and journeys; and
- Covering passenger flows in the right direction.

Constraints included:

- Sensible wait times between trains;
- Avoiding overcrowded trains where possible;
- Ensuring surveyor value for money (i.e. not surveying too many low usage services); and
- Avoiding any planned engineering works and major events, e.g. football matches that may bias the survey.
- Overall the objective was to capture a representative and significant enough sample for each service group and time period to enable the estimation of an irregularity rate that minimises margins of error subject to the constraints of the survey.

Survey Schedule

The survey schedule was developed in advance and agreed with Abellio ScotRail.

Below is a summary of the survey shift schedule. All shifts involved surveyors working in pairs.

One contingency shift on Friday 27th January (split between the Rural and Other Express services) was added to the regularly scheduled shifts outlined in the table below.

Service Group	Weekday AM 06:00 - 15:00	Weekday PM 15:00 - 24:00	Weekend 11:00 - 20:00	Total Shifts
Glasgow – Edinburgh Express	3	3	2	8
Other Express Services	3	3	2	8
Suburban West - Group 1	3	3	1	7
Suburban West - Group 2	3	3	1	7
Suburban West - Group 3	3	3	1	7
Suburban West - Group 4	3	3	1	7
Suburban East	3	3	2	8
Rural Services	3	3	2	8
Total	24	24	12	60

The schedule needed to provide sufficient observations in each of the forty service group/time period segments to allow robust analysis and estimation of irregularity rates.

The total sample size collected across the two week survey was **22,603** (including 2,253 alighters). This is less than the sample size achieved in the June 2015 survey (27,552, including 3,306 alighters). However, the observation rate has been affected by the following:

- The survey took place in January, whereas the previous survey was undertaken in the summer months. Seasonal variation in the number of journeys means fewer people may be travelling on the network resulting in a lower sample size; and
- During the survey period, weather conditions were poor with weather warnings issued and chances of heavy snow. Although this may have not impacted the surveyors during their shifts, the outcome may still have been a reduction in the number of journeys passengers were making.

The average number of observations for all service group/time period segments was 565. There were at least 200 observations in all but the weekday AM peak and weekday PM inter-peak period on the quieter Rural service group which has an impact on the confidence intervals of the route.

- Fewer trains on this route means that the shift legs are longer and surveyors might finish surveying all passengers before they reach the station where they alight and therefore see less people in total for a whole shift.
- A contingency shift on the Rural and Other Express service group was scheduled to address the lower numbers of observations.

Observations

The following table contains the full distribution of survey observations across the service groups and time periods.

- The number of observations (including alighters and refusals) per service group and time period used in the analysis was as follows:

Service Group	Weekday 06:00 - 09:59	Weekday 10:00 - 15:59	Weekday 16:00 - 18:59	Weekday 19:00 - 01:00	Weekend	Total Observations	% of Total	Total Shifts
Glasgow – Edinburgh Express	762	1,159	455	533	1030	3,939	17%	8
Other Express Services	713	848	379	210	1,402	3,552	16%	8.5
Suburban West - Group 1	614	681	422	325	401	2,443	11%	8
Suburban West - Group 2	406	837	712	302	321	2,578	11%	8
Suburban West - Group 3	367	675	559	301	334	2,236	10%	7
Suburban West - Group 4	481	610	620	348	772	2,831	13%	7
Suburban East	643	853	489	287	779	3,051	13%	7
Rural Services	166	895	432	96	384	1,973	9%	7.5
Total	4,152	6,558	4,068	2,402	5,423	22,603	100%	61
% of Total	18%	29%	18%	11%	24%	100%		

Surveying Methodology

The ticketless travel survey is an electronic survey, which utilises handheld computers and dedicated survey software.

The key elements of the survey methodology were the following:

- Full health and safety risks assessment delivered by Steer Davies Gleave (SDG) in agreement with ScotRail;
- Full surveyor briefing was conducted by SDG and ScotRail, covering survey methodology, and the opportunity to practice the data collection process;
- Detailed shift schedule was provided to all surveyors, indicating the exact trains, route sections to survey, and where to board the train (front, middle or back);

- Prior to surveying, each surveyor made an announcement to all passengers on entering each carriage, stating they were performing a survey looking at ticket usage on behalf of ScotRail;
- On trains with guards the surveyor first met with the guard to check which carriages had already been checked;
- Information was recorded for every passenger in a train carriage, including alighters and those refusing to show their ticket; and
- Surveyors did not have authority to force any passengers to show their tickets and passengers refusing to take part in the survey were recorded as such.

In addition to counting those with valid tickets, the surveyors recorded thirteen different types of ticket irregularity, those who alighted the train before being surveyed and those who refused to participate in the survey (see following slide).



Irregularity Types

The following irregularity types were recorded by surveyors:

Irregularity Type	Description	Irregularity Class
Non-payment	The passenger cannot produce a ticket of any kind	No Ticket Whatsoever
Pay on the train	The passenger does not have a ticket, but has explicitly stated that they intended to buy a ticket on board the train.	
Journey taken after valid date	The ticket or pass has expired	Other No Ticket
Journey taken before valid date	The pass is not yet valid	
Forged / Altered	The ticket/pass/photocard has been tampered with/forged, defaced or altered	
Overriding	The passenger has travelled further than the destination on their ticket	
Missing / Stolen	The ticket or pass is missing or suspected to have been stolen	
Transferred use	The passenger is using someone else's pass (photocard does not match)	
Used at invalid time	The ticket or pass is being used at the wrong time of day	Wrong / Invalid Ticket
Child impersonation	The passenger has a child ticket or pass, but is clearly an adult	
Invalid Class	The passenger is using a Standard ticket on a First class carriage	
Misuse of railcard	The passenger has a ticket or pass that requires a railcard, but does not possess the appropriate card	
No photocard	The passenger has a pass but no valid photocard	Alighter
Alighter	The passenger alights the train before the surveyors can interview them	
Refusal	The passenger refuses to take part in the survey	Refusal

Once the survey has been completed processing the data is divided into two stages:

- Data cleaning; and
- Irregularity weighting calculations.

Data cleaning involves cross-checking the variables in the data to spot incorrectly coded entries, for example:

- Passengers with railcards that lack photocards (misuse of railcard) wrongly coded as no photocard;
- Passengers travelling at weekends on off-peak/super off-peak tickets and wrongly coded as travelling at an invalid time; and

In total 58 observations (c. 0.3%) were recoded for reasons such as these.

Further information on the cleaning and recoding process is shown in the following table.

This table shows the number of observations recoded by irregularity type (unweighted):

Passenger Class	Cleaned Observations	Recoded	% of Obs. Recoded	% of Total
Valid	19,146	56	0.30%	84.90%
Non-payment	237	-	0.00%	1.10%
Used at invalid time	8	-	0.00%	0.00%
Child impersonation	21	-	0.00%	0.10%
Journey taken after valid date	10	-	0.00%	0.00%
Journey taken before valid date	3	-	0.00%	0.00%
Invalid class	7	-	0.00%	0.00%
Overriding	22	-	0.00%	0.10%
Forged/altered	1	-	0.00%	0.00%
Misuse of railcard	10	2	20.00%	0.00%
No photocard	2	-	0.00%	0.00%
Missing/stolen	9	-	0.00%	0.00%
Pay on train	738	-	0.00%	3.30%
Transferred use	0	-	0.00%	0.00%
Refusal	78	-	0.00%	0.30%
Alighter	2,253	-	0.00%	10.00%
Total	22,545	58	0.30%	100%

Results:

The irregularity rate for each of the three cases is as follows:

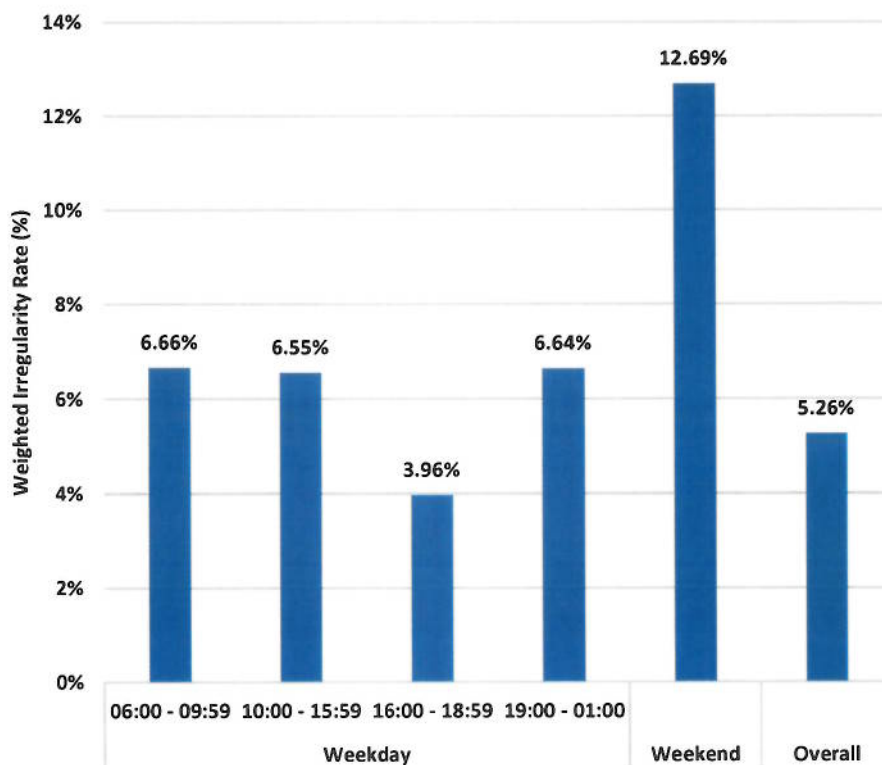
- The Low Case irregularity rate is 5.07%.
- **The Central Case irregularity rate is 5.26%.**
- The High Case irregularity rate is 7.57%.

Central Case Irregularity Rate by Time Period

Compared to the previous June 2015 survey, the central case irregularity rate has decreased by 3.23 percentage points.

The chart below shows the irregularity rate split by time period for the **central case**.

- The weekend period still has the highest weighted irregularity rate (12.69%), although it has decreased slightly since June 2015 (12.82%).
- On weekdays, the irregularity rate is very similar across the whole day, with the PM peak period having the lowest irregularity rate at 3.96%. On all four weekday time periods the irregularity rate has decreased since June 2015 with the biggest improvements happening in the PM peak period, from 8.15% in June 2015 to 3.96% in January 2017.



- The weekend irregularity rate is driven predominantly by an increased proportion of non-payment observations on the suburban routes, specifically Suburban West – Group 1, Suburban West – Group 4 and pay-on-train observations on Suburban West – Group 2 and Suburban East.
- By contrast, the proportion of pay-on train observations on the Glasgow-Edinburgh Express, Suburban West – Group 1, and Suburban West Group 4 has significantly decreased in the weekend period compared to 2015.