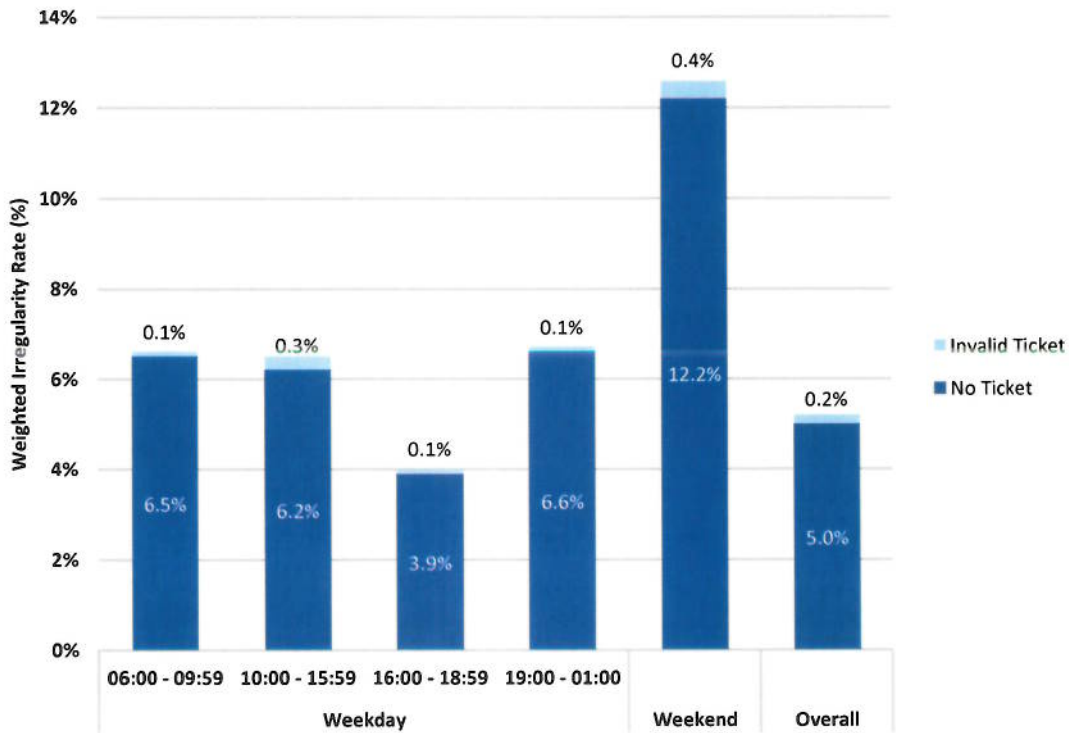


The chart below shows the irregularity rate split by time period for the **central case**.

- As the chart demonstrates, much of the ticketing irregularities consist of passengers travelling with no ticket – approximately 97% of all irregularities fall into this category. This figure was highest on the weekday evening period (close to 100% no ticket), and lower on weekday inter-peak periods (96% no ticket) and weekends (96% no ticket).

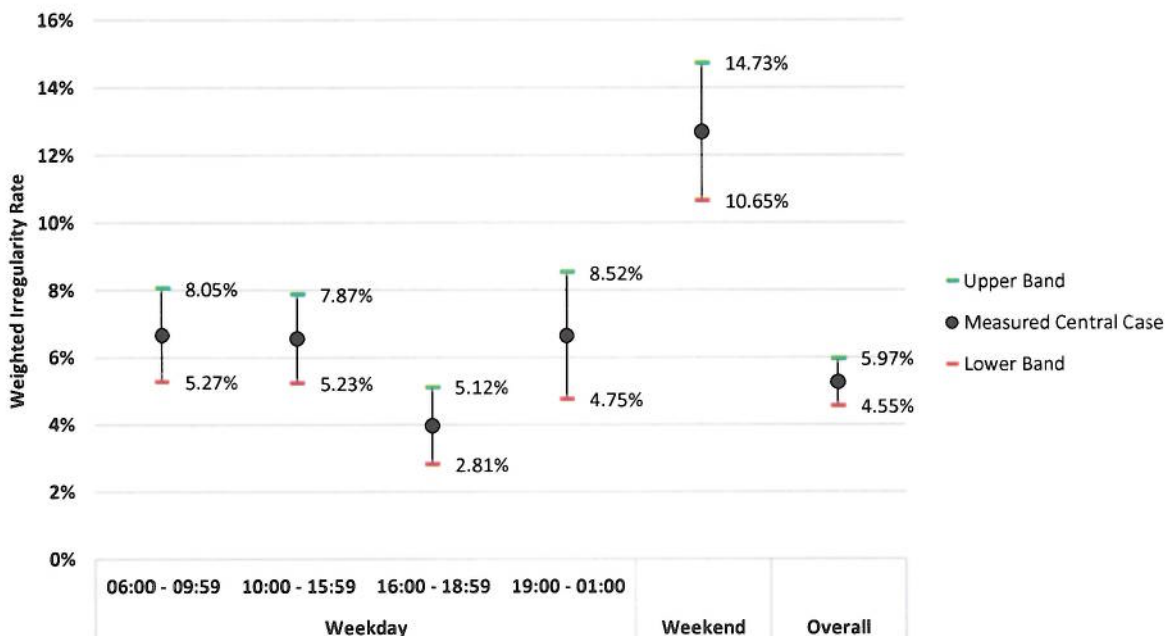


Irregularity Rate Margins of Error by Time Period

The chart below shows the **95% confidence interval** around the weighted central case irregularity rate for each time period, based on the sample sizes in each segment.

- Margins of error are affected by the irregularity rate, sample size and distribution of sample by service group within each time period.
- The maximum margin of error for any time period is $\pm 2.04\%$ which is for the weekend.

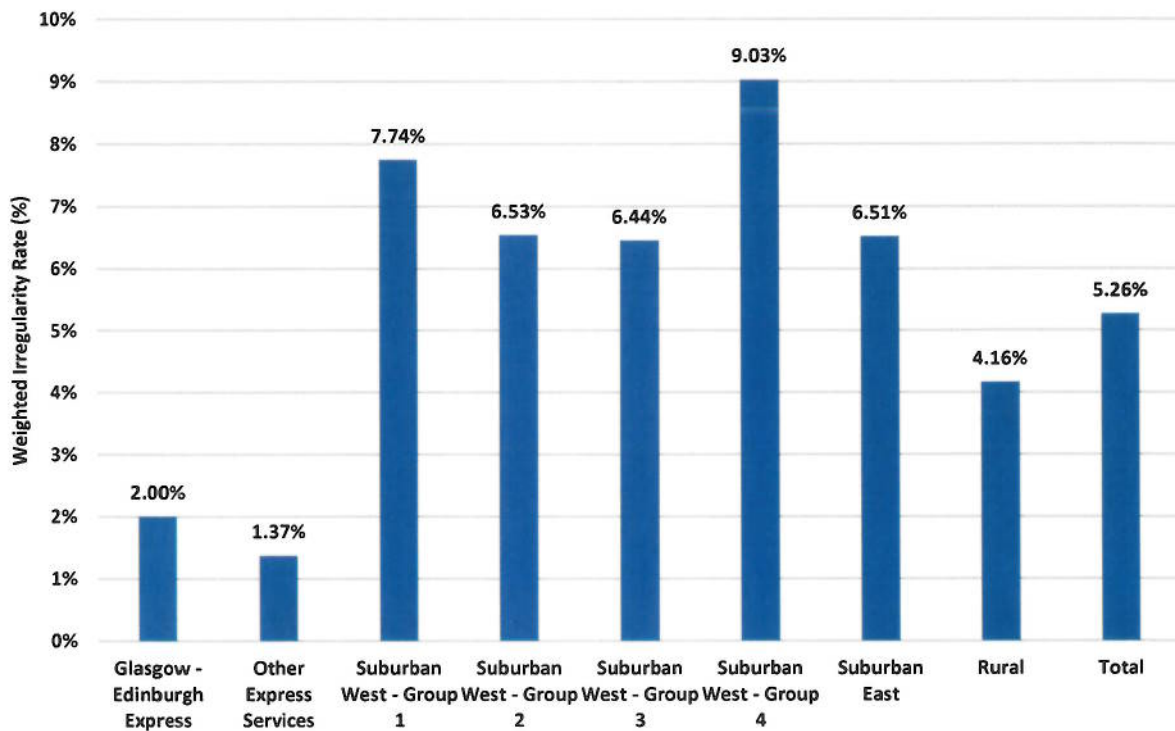
For the overall irregularity rate there is a margin of error of $\pm 0.71\%$. This implies an upper limit to the overall irregularity rate of 5.97% at the 95% level of confidence.



Central Case Irregularity Rate by Service Group

The chart below shows the **central case** irregularity rate by service group.

- In general, it is the Suburban services that have the higher irregularity rates, followed by Rural services. Suburban West Group 4 (Glasgow Central - Paisley Canal, East Kilbride, Barrhead / Kilmarnock and Shotts/ Edinburgh) has the highest irregularity rate, at 9.03%, followed by Suburban West Group 1 (Glasgow North Electrics, Glasgow South Electrics, Argyle Line, and Motherwell – Cumbernauld), at 7.74%.
- The express services have the lowest irregularity rates. The service group with the lowest irregularity rate is Other Express services at 1.51%, followed by Glasgow-Edinburgh Express, at 2.00%.

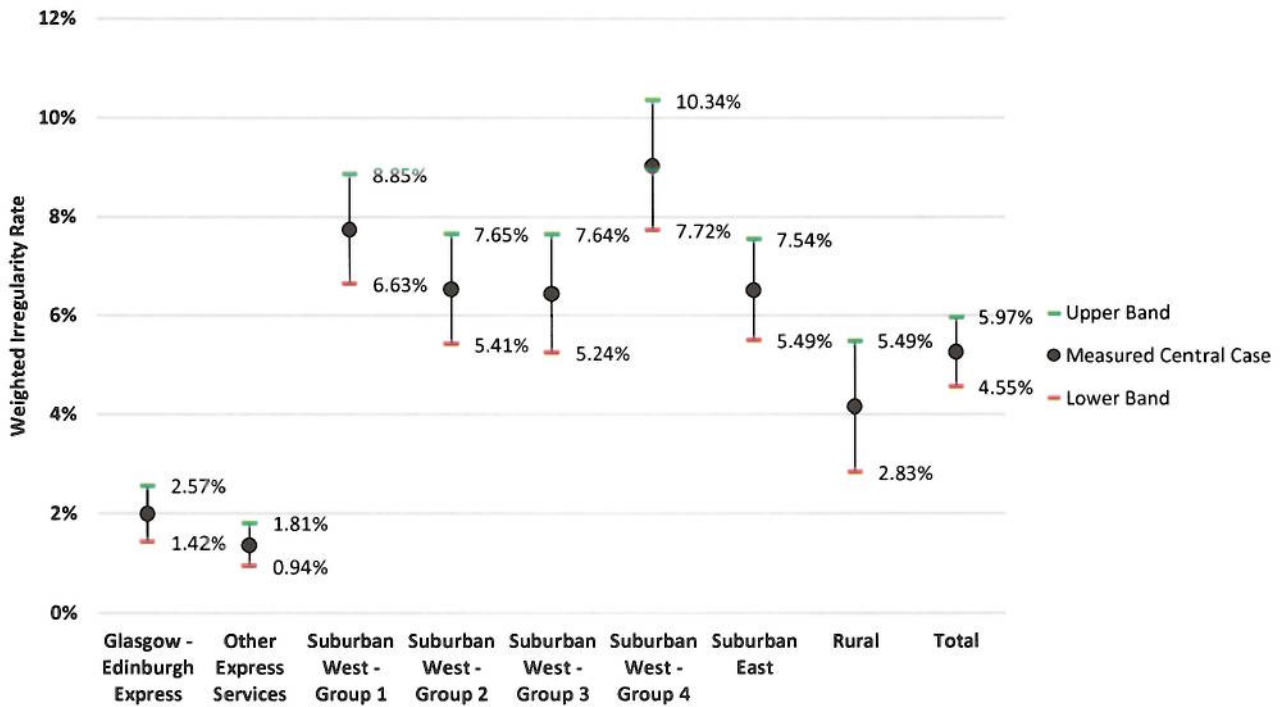


- Notable improvements in irregularity rates since June 2015 include the Suburban West – Group 1 route which has improved by 5.79 percentage points and the Glasgow-Edinburgh Express, which has improved by 2.48 percentage points since June 2015. Both improvements are driven by a decreased proportion of pay-on-train passengers.
- The irregularity rate has increased on Suburban West - Group 2 and 3, Suburban East, and Rural services, with the highest increases on Suburban West – Group 2 (from 4.71% in 2015 to 6.53% in 2017) and rural routes (from 2.90% in 2015 to 4.16% in 2017). The increased rate on this route is driven by an increased proportion of non-payment in all time periods apart from the AM peak, pay-on-train in all periods apart from the PM peak, and overriding observations in the weekend period.

Irregularity Rate Margins of Error by Service Group

The chart below shows the **95% confidence interval** around the weighted central case irregularity rate for each service group, based on the sample sizes in each segment.

Across the service groups the margins of error are slightly lower than by time period, because in most cases the irregularity rates are notably below the average. This is because the overall rate is dominated by Rural and Suburban services. The lower number of observations on the Rural routes that was mentioned on slides 19-20 impacts the higher margins of error on that route which is not considerably larger than the Suburban routes however.



Current Measures:

- Stations with Automatic Ticket Gates: 17 (+ 3 from 2015 position)
- Stations with Manual Ticket Barriers (Peak Times): 11 (+ 4 from 2015 position)
- Stations without Automatic / Manual Ticket Barriers: 331

Of the 331 stations without Automatic / Manual Ticket Barriers;

- Stations with Booking Offices / TVM's: 121
- Stations with TVM's only: 86
- Stations with no revenue facilities: 124

The customers claimed to have opted to buy on board for 3 main reasons;

- Lack of understanding of the National Conditions of Carriage and the need to buy before travelling.
- Habitual reasons e.g. why not board the train and then get served at seat - no perceived financial incentive to purchase prior to travelling / boarding.

In addition to the existing Station & On-Train revenue protection measures, the following enhancements were achieved during 2016;

- BBYB 'Rules of Travel' created and shared across the network, with buy-in from key stakeholders (BTP, PF & TS).
- New manual protection at key hot spot stations e.g. Edinburgh Waverley, Glasgow High Street and E&G Corridor.
- New ATG's at Bathgate and Exhibition Centre with renewed focus on all gated locations via efficient diagramming and utilization of all staff.
- Refreshed Fraud and Security team - 35% more productivity
- New suite of performance enhancing tools enabling a rounded understanding of staff and fixed assets, earnings, productivity and reliability in relation to revenue protection
- New Switch Teams created and active across the network promoting the use of TVM's, Booking Offices and the ScotRail App while promoting the migration to Smart
- New approach to recovering debt via the Ticket Irregularity & Unpaid Fares Strategy – Conversion rate increased from 5% to 85%. With a £30 admin fee for pre meditated acts of fraud.
- Dedicated intelligence based exercises across the network focussing on fraud, the customer environment (Quality of Life) and feedback from staff on perceived hot spots via dedicated staff surgeries
- 26 New TVM's located at key pinch point locations ensuring capacity better meets demand
- New staff app to report revenue related issues direct to BTP and Revenue Protection team.

Correlation to Crime:

Analysis has been carried out to review if levels of ticketless travel and fare evasion influence crime across the ScotRail network. Data was extracted from internal and external sources to ensure a full and comprehensive review took place.

The data sources indicate that there have been 50 incidents of crime impacting upon staff carrying out revenue protection duties during 2016.

The top 3 grades affected are:

- Ticket Examiner (19)
- Conductor (17)
- Gateline (9)

Community Intelligence Reports

Since BTP and ScotRail re-launched CIR in digital format, the number of reports we've received has soared.

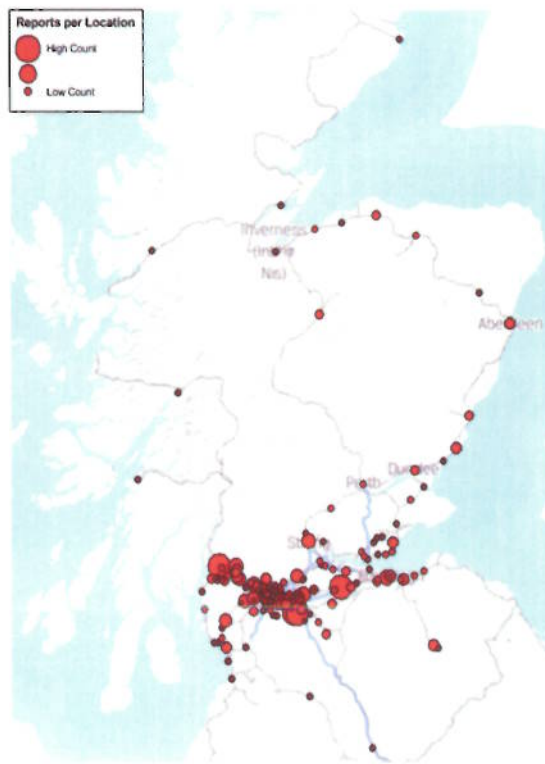
The re-vamped reporting mechanism for staff passing on information to BTP has been on-line since July 2016. Since its launch we have received almost 300 reports from staff across the country on subjects such as revenue protection and anti-social behaviour.

To put this in perspective, in the 12 months prior to the launch, we only received 72 paper-based CIR forms.

All CIR go directly to BTP Intelligence Bureau in Glasgow, who will firstly acknowledge receipt of the report by emailing the sender. The CIR are then assessed and sent to the officer in charge of the respective BTP Police post for their attention.

Any CIR marked as ticket irregularity or revenue related are forwarded direct to ScotRail's Revenue Protection team for further action.

This map highlights the locations where a CIR has been received.



Conclusions:

Irregularity Rate and Revenue-at-Risk

The overall irregularity rate under the central case in this survey is **5.26%**.

By service group:

- The Suburban West – Group 4 service group has the highest irregularity rate across all service groups, at 9.03%. Non-payment and pay-on-train observations are the drivers of the high irregularity rate on the Suburban West – Group 4 service group. Even though the irregularity rate is the highest on this route, however, [REDACTED]
- [REDACTED] observed on the Suburban West – Group 1 service group. Even though the irregularity rate on this route has decreased significantly since June 2015 (5.8 percentage points), [REDACTED], driven by the high number of journeys and yield.
- Rural and long distance services (Glasgow-Edinburgh, and express services to Aberdeen and Inverness) have much lower irregularity rates, which mitigates the impact of the higher irregularity rates on more suburban services.

By time period:

- The weekend time period has the highest irregularity rate, at 12.69%. This has less of an impact on the overall irregularity due to lower passenger volumes. Weekday irregularity rates are generally consistent at around 6.5%, with the weekday PM peak rate slightly lower at 4.0%.
- Weekday AM and PM peaks, at 6.7% and 4.0% respectively, have a large influence on the overall rate due to the passenger volumes in these time periods. Similarly, these two time periods account for more than half [REDACTED]

The impact of pay-on-train passengers is quite significant, and is likely to overstate the level of ticketing irregularities.

Ticket Irregularities and “Pay-on-train”

The vast majority (3.58% out of 5.26%) of ticketing irregularities recorded during the survey fall under the category of “pay-on-train” passengers, which were either passengers that had bought tickets on the train, or did not have a ticket but explicitly stated that they intended to buy a ticket on-board.

A number of passengers were travelling from stations with no ticketing facilities available at the time of travel, and thus were legitimately travelling without a ticket. We have accounted for this category of passengers and have assessed the change to the irregularity rate and revenue-at-risk if pay-on-train passengers travelling from a station with no ticketing facilities at the time of travel were treated as valid passengers, with results below.

Service Group	Irregularity Rate	
	Before	After
Glasgow – Edinburgh Express	2.00%	2.00%
Other Express Services	1.37%	1.31%
Suburban West - 1	7.74%	6.56%
Suburban West - 2	6.53%	5.23%
Suburban West - 3	6.44%	5.92%
Suburban West - 4	9.03%	7.42%
Suburban East	6.51%	6.51%
Rural services	4.16%	3.47%
Overall	5.26%	4.37%

It was also observed that the majority of pay-on-train passengers were boarding at stations with either a ticket office or TVM’s, or both available. This would also have had a notable impact on the irregularity rates.

On this issue, it is likely that better education of passengers, through marketing and poster campaigns, will ensure more passengers at stations with TVM’s and specifically part-time ticket offices are aware that they should use the TVM’s when the ticket office are closed, and reduce the level of ticketless travel.

It is also worth noting that the vast majority of pay-on-train passengers will encounter (or will have already encountered) a Ticket Examiner during their journey, or will be required to buy a ticket at their destination station due to the presence of ticket gates. This means that revenue from that passenger will still be collected, even though they fall under the ticketless travel category. However, this affords people the opportunity to either alight from the service before paying or buy tickets for a shorter journey than the one they have made (e.g. a passenger alighting an Express service at Queen Street may claim to have boarded at Croy when in fact they boarded at Polmont). This is more of an issue on suburban trains where there is less time between stops for TE’s to pass through the train.

The analysis of pay-on-train passengers demonstrates that the key areas to target are the Suburban West Group 2 routes (Glasgow Central – Ayr, Glasgow Central – Gourock/Weymss Bay, Glasgow Central – Ardrossan/Largs, and Kilmarnock - Girvan) at ungated stations where the irregularity rate is high. Other routes to focus on include the Suburban West Group 1 (Glasgow North Electrics, Glasgow South Electrics, Argyle Line, and Motherwell – Cumbernauld) which accounts for a high number of journeys. Key to note is that every percentage point reduction in the irregularity rate of these groups improves the overall irregularity rate by 0.14 and 0.43 percentage points respectively.

Similarly, targeting these service groups will have a beneficial effect on revenue-at-risk. Stations on the Other Express services route without ticket gates should also be a key target, given the amount of revenue on this particular service group.

Action Plan:

Initiative	Action
On-Train Revenue Performance Plan 	<p>Introduction of improved data sources for ticket examiners and conductors to enable real time access to infrastructure performance (ticket vending machines, booking offices, automatic gates, platform validators and mobile ticket issuing kit). This will enable the right ticket to be issued consistently across the network and the correct commission to be applied.</p> <p>Support On-Train staff with robust process detailing how to handle Ticket Irregularities with SMART products. New on-train announcements highlighting 'rule of travel' underpinned by new bespoke posters that highlight fraud checks and outcomes.</p> <p>New management information reports (exec to team manager level) highlight good revenue performance and areas for improvement e.g. right ticket retailing, turn and train averages, start and finish times, ticket and smart card checking and validation - all underpinned by clear goals and targets for all sectors of the business.</p> <p>New cross functional rostering to create economy of scale / increase peak time resources.</p>
Full Fare Enforcement 	<p>Phase 3 of 'Right Ticket Retailing' launched – discounted ticketing for on-train, automatic ticket gates and all manual barriers will be [redacted] 2017.</p> <p>Minimum ticket pricing for on-train and barriers staff introduced to counter pay on train customers [redacted]</p> <p>High profile [redacted] exercises supporting all On-Train staff with the continued roll out of BBYB and Right Ticket Retailing.</p> <p>Phase 2 of the Criminal Intelligence Report app rolled out across the network to enable rich information to be received in real time and acted upon by RPO / BTP</p>
Station Revenue Performance Plan (Incl Excess Booth) 	<p>Introduction of new robust KPI's for passenger queuing and gate plunging at all Automatic Ticket Gates.</p> <p>Introduction of improved data sources for booking office, travel centre and barrier staff to enable real time access to infrastructure performance (ticket vending machines, booking offices, automatic gates, platform validators and mobile ticket issuing kit). This will enable the right ticket to be issued consistently across the network and the correct commission to be applied. In addition it will enable staff to act quickly with footfall surges and manage gate plunging more robustly.</p> <p>New staff rosters that better support customer flow rolled out at key city centre gatelines to increase staff numbers in a cost neutral manner - new work pattern will be based on footfall, customer flows and most effective retailing.</p> <p>New retailing facilities created at Tweedbank and improved protection at Glasgow Queen Street [redacted]</p>
TVM Revenue Performance Plan 	<p>Ticket Vending Machines trialled at ATG locations on the unpaid side of gates to influence staff deployment and focus.</p> <p>Installation of x10 additional Ticket Vending Machines located at key pinch point stations to remove barriers to compliance - reduce on-train and barrier retailing and in turn focus attention on ticket inspection.</p> <p>Dedicated switch team activity to promote the increased functionality on new GUI (advance ticket purchasing, increased ticket options and support available).</p> <p>New signage to promote location and to encourage use rollout across the network</p>
Buy Before You Board 	<p>New 'StaffBank' scheme introduced to utilise current staff to support revenue initiatives and deliver new revenue barriers at key pinch point locations.</p> <p>Phase 2 of the BBYB communication campaign launched to target, inform and educate customers (remove barriers).</p> <p>Performance and Resource Committee and Revenue Delivery Managers to attend all staff briefing sessions and create Ticket Examiner and Gateline instructors to support staff.</p> <p>New 'advance purchase' teams deployed at Edinburgh Waverley, Haymarket, Glasgow Central and Queen Street to improve day before retailing.</p>
Ticket Irregularity Process & Unpaid Fares Strategy 	<p>Continued roll out of the Unpaid Fare Strategy (UFS), with results widely shared via media to reduce appetite for risk</p> <p>[redacted] initiatives aimed at capturing payment of outstanding TI's from repeat offenders.</p> <p>Significantly increase Revenue Protection activity / exercises across the network via the UFS (£30 admin fee, debt recovery & final warning scheme). Activity will be shared widely via press office with new information campaign for stations, on-train and poster sites.</p> <p>Refreshed back-office tools rolled out to monitor known hot spot ticket types, stations and usage.</p>
ATG Performance Plan 	<p>Introduction of improved data sources for Customer Experience & Revenue Protection staff to influence ATG operation and flow versus footfall.</p> <p>New queuing, [redacted] and passenger flow system rolled out at Glasgow and Edinburgh stations to enable quicker egress for customers holding a valid ticket. Additional resources created to focus on customers who arrive without a valid ticket to ensure the correct balance between challenge and migration advice is achieved.</p> <p>New Automatic Ticket Gates at Edinburgh Gateway and potential new ATG's [redacted] at Edinburgh Waverley, Paisley Gilmour Street, Partick and Dyce</p> <p>New mobile 'HIT Squads' deployed to know hot spots to ensure the correct ticket types are being used - gate operation will also be improved via new staff training and ownership.</p>
Additional Manual Barriers & Spot Barriers 	<p>Seasonal Revenue Protection spot barriers at Aldrie, Helensburgh, Neilston, Gourrock and Largs.</p> <p>Spot checks carried out via OTR / LTS and out of grade resources.</p>
Revenue Protection Officers / Switch Team Initiatives 	<p>Deliver x16 new Manual Barrier locations – [redacted] at key feeder stations to reduce city centre and on-train retailing.</p> <p>Dedicated intelligence based exercises across the network focussing on fraud, the customer environment (Quality of Life) and feedback from staff on perceived hot spots via dedicated staff surgeries.</p> <p>Pop-Up Booking Offices launched and rolled out to key pinch point locations to ensure customers access the best value tickets at source.</p> <p>Switch Teams continue to promote the use of TVM's, Booking Offices and the ScotRail App while encouraging the migration to SMART.</p>