Passenger Focus
Relationship between Customer Satisfaction and Performance
CrossCountry

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Executive Summary

This report provides the results of a study examining the links between train performance and NPS customer satisfaction for a long distance operator, CrossCountry Trains (XC).

- Overall satisfaction with performance on XC is 75% and this has increased by 10% since refranchising in November 2007.
- The lowest levels of satisfaction with punctuality are recorded by commuters with only 61% satisfied, as opposed to 77% of business and leisure travellers.
- The South East route has the greatest dissatisfaction scores, particularly with commuters and noticeably in passenger flows going from Birmingham.
- The percentage of trains arriving within 10 minutes of their scheduled time (and used in the industry PPM measure) is consistently higher than the percentage of NPS respondents who are satisfied with punctuality, suggesting that other measures may be more appropriate.
- Average passenger lateness in the study period was 4.95 mins, and has improved from around 6 mins at the start of the study period to around 4 minutes most recently. By comparison average train lateness is 4.40 minutes. Therefore there is a difference of half a minute between how trains are being reported and what the average passenger is experiencing.
- Over the last four years lateness experienced en route is materially worse than that of terminating trains. When looking at lateness throughout the day the distribution of passenger lateness is later than train lateness distribution.
- Average train lateness increases through the day to peak at around 5 minutes between 7pm and 8pm, whilst average passenger lateness increases though the day, peak at over 6 minutes between 6pm and 7pm
- The 2008 timetable recasting has had a dramatic positive effect on average passenger lateness levels for services from the North East to South East
- Overall the relationship between customer satisfaction and train performance shows that passenger satisfaction decreases by 2% with each additional minute of lateness for commuters this is closer to 3%, reinforcing the view that commuters are more sensitive to lateness.
- There was no determinable impact of crowding on the rating given for punctuality

1 Introduction

1.1 Background

Passenger Focus is the independent national consumer watchdog charged with representing the views of passengers within the UK rail industry and a mission of 'getting the best deal for rail passengers'. Amongst other objectives, Passenger Focus seeks to understand the needs and experiences of rail passengers and to secure tangible and measurable improvements for rail passengers. To support these objectives, Passenger Focus commissions and publishes the twice-yearly National Passenger Survey (NPS), which is the benchmark measure of changes in customer attitude towards all elements of UK train travel, including train services and stations.

Evidence from a wide range of research, including that of Passenger Focus, has highlighted that punctuality and reliability of train services is one of the key determinants of each Train Operating Company's (TOC) NPS customer satisfaction score. However there is frequently a disparity between performance improvements achieved by a TOC (as measured by the Public Performance Measure or PPM) and the corresponding customer NPS satisfaction result. There may be many possible reasons for this, such as: time lags between improved performance and changes in public perception, differences in the distribution of delays that are not reflected in average performance measures, and the impact of cancellations.

This report provides the results of a study examining the links between train performance and NPS customer satisfaction for a long distance operator, CrossCountry Trains.

1.2 Geographical Scope of Analysis

In consultation with Passenger Focus and XC was decided to limit the NPS responses utilised in the study to those passengers travelling to destinations within a defined geographic area. This area represents the core of the XC network and broadly 81% of journeys on XC finish within this area. This area is shown in Figure 1 below.

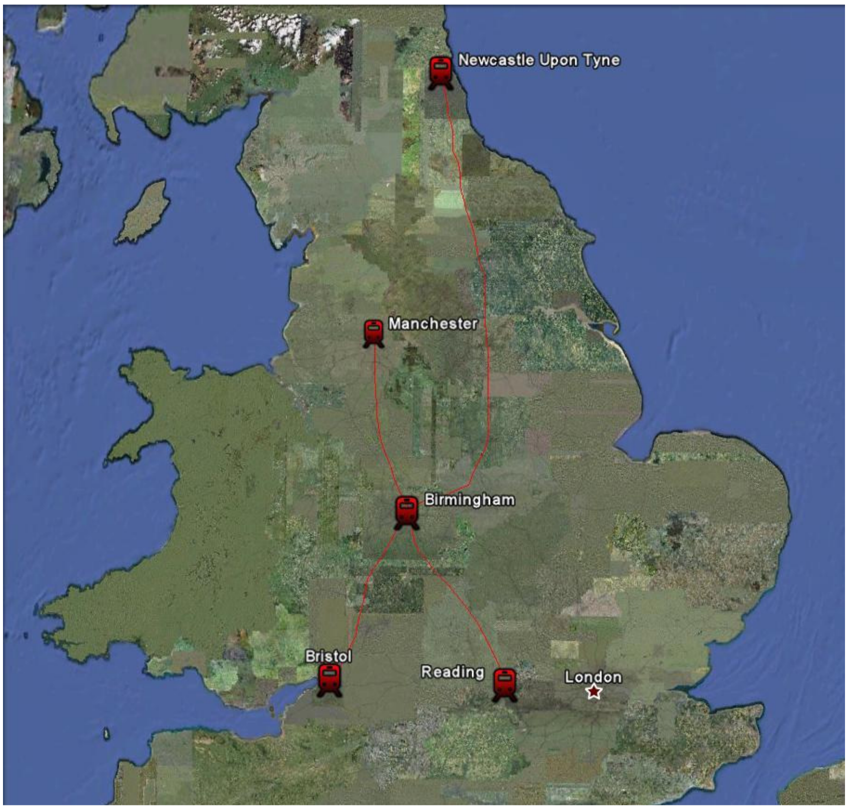


Figure 1

Respondents travelling from extensions to the routes shown above to destinations within the core area are included within the scope of this study. The routes previously operated by Central Trains that were amalgamated into the XC franchise subsequent to the 2007 refranchising have been excluded from the scope of this study in order to maintain a consistent sample.

1.3 Data

1.3.1 NPS Records

Passenger Focus conducts an NPS in the Spring and Autumn each year. Our analysis is based on data from the last eight waves (waves 14 to 21), covering a period of four years from Spring 2006 to Autumn 2009. Furthermore only weekday responses have been used in this study.

1.3.2 Train Performance Records

Data on actual performance of every XC service which calls at a station within the geographical scope of the study over the past four years has been derived from the TOC's Bugle[1] records. This gives details of the punctuality of all scheduled trains arriving at the XC stations. This dataset also includes details of trains which were cancelled (or part cancelled for some of their route).

This analysis comprises weekday only. Weekends, Bank Holidays and the Christmas period days have been excluded.

[1] Bugle is the system which TOCs use to generate details of train performance, in terms of the lateness of every train at each monitoring location on each day

Throughout this analysis, trains arriving early have been treated as arriving on time (i.e. no benefit is assumed for trains arriving before their scheduled time).

1.3.3 Passenger Loads and Capacity for each Train

Passenger loads were derived from the 'MOIRA' software tool. MOIRA is a standard UK rail industry timetable evaluation tool which models how customers choose between train services based on journey time, service frequency and ticket sales. MOIRA includes estimates of passenger loads on each train along its route, and so this information has been used to estimate the number of people alighting each weekday train at each location. This information can then be used to weight performance data to reflect estimated passenger volumes at each location.

MOIRA train load information has been provided for each timetable period, which has enabled us to match this information to each train on each day in the performance data.

1.3.4 Dates

Different sources of data use different terminology in the definition of date.

Each NPS survey is referred to as a "wave", the Spring wave is carried out over a period of ten weeks between January and April, to fit in before Easter, and the Autumn wave over ten weeks from September to November. This may be important in comparing satisfaction to performance, since the Autumn wave includes periods of traditionally low levels of performance due to leaf-fall, and Spring may include periods of affected by severe weather, such as snow, whilst the summer months are not surveyed.

The railway industry divides the year into 13x four-week periods, starting on the 1st of April each year. In terms of labelling, the year is taken as the year ending, thus the period ending in March 2008 is the thirteenth period of the 2007/08 year and referred to as 2008/P13, whilst the following period starting in April 2008 is the first period of the 2008/9 year and is referred to as 2009/P01. In this report, data may be aggregated into calendar quarters, with the first quarter covering periods P11 to P13 (i.e. January to March), and whilst these do not exactly match to NPS waves a reasonable match may be used for comparison and this is shown below.

Wave	Season	Months	Year	RSP Periods	Calendar Quarter
Wave 14	Spring	Jan-April	2006	2006/P11-2007/P1	2005/6 Q1
Wave 15	Autumn	Sept-Nov	2006	2007/P06-2007/P09	2006/7 Q4
Wave 16	Spring	Jan-April	2007	2007/P11-2008/P1	2006/7 Q1
Wave 17	Autumn	Sept-Nov	2007	2008/P06-2008/P09	2007/8 Q4
Wave 18	Spring	Jan-April	2008	2008/P11-2009/P1	2007/8 Q1
Wave 19	Autumn	Sept-Nov	2008	2009/P06-2009/P09	2008/9 Q4
Wave 20	Spring	Jan-April	2009	2009/P11-2010/P1	2008/9 Q1
Wave 21	Autumn	Sept-Nov	2009	2010/P06-2010/P09	2009/10 Q4

2 NPS Data

2.1 Data Used in Analysis

There is a total of 9696 NPS records for CrossCountry services over the eight waves analysed (waves 14 – 21). Of these a total of 4997 (78,171 weighted passengers) relate to weekday flows within the defined scope of this study.

The breakdown of included records per wave shows that the earlier waves are overrepresented in the sample. This is likely to be due to the fact that the routes formerly operated by Central Trains that were amalgamated into the CrossCountry franchise during the refranchising process in 2007 have been excluded from the study. The CrossCountry franchise area was enlarged without a corresponding increase in NPS sample. This overrepresentation is shown in Table 1 below, and shows (for instance) that Wave 14 has almost twice as many records as Wave 21. The sample size for Wave 19 was particularly low.

Table 1

NPS Wave	% of Records in Scope
14	18%
15	12%
16	15%
17	16%
18	14%
19	6%
20	10%
21	10%
Grand Total	**100%**

As punctuality has generally improved over time, this might suppress satisfaction values when considering satisfaction across the time series in aggregate and for most elements of the analysis carried out this is likely to only create a small bias within results.

2.2 Respondents per Route

The breakdown of the sample of valid NPS records by route is shown in Table 2 below.

Table 2

Route	Weighted Passengers in Scope	% of Weighted Passengers in Scope
North East	29,957	38%
North West	14,387	18%
South East	20,025	26%
South West	13,802	18%
Grand Total	**78,171**	**100%**

Passengers travelling from the North East have a higher representation in the sample, with almost 40% of respondents from this area and lower representation from passengers in the North West and South West (after weighting), as can be seen in Figure 2 below. This is in line with estimated passenger loads.

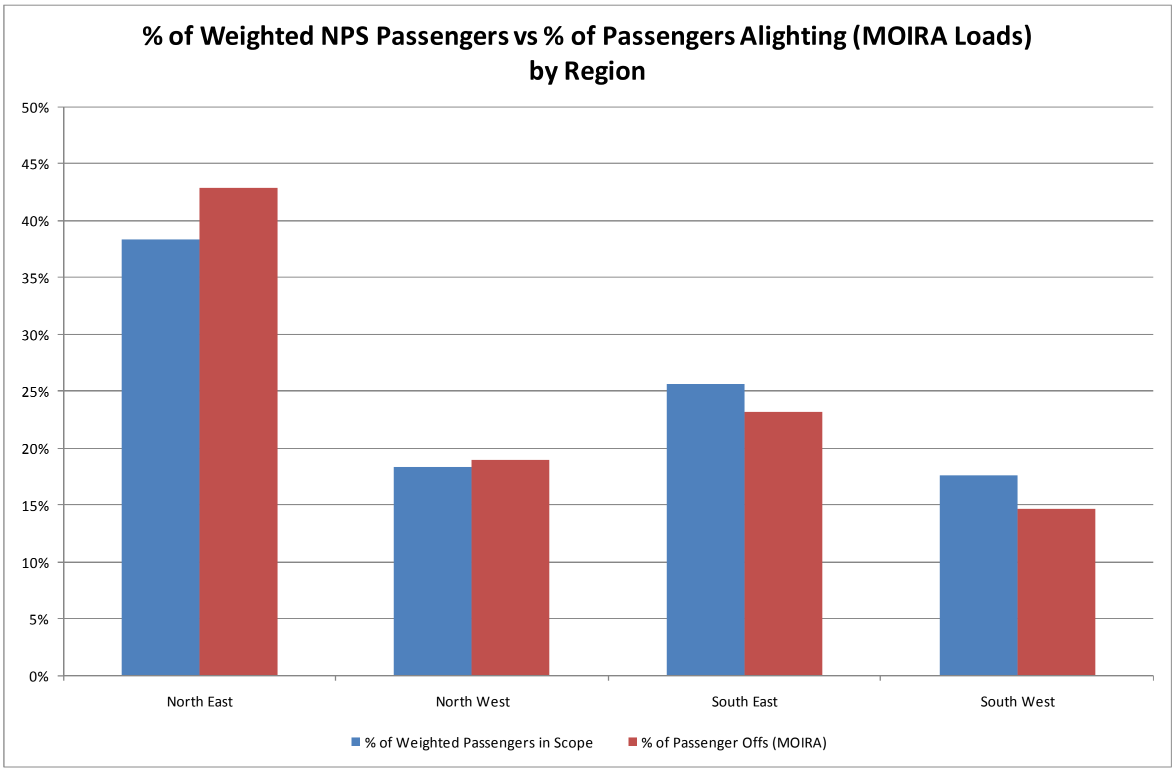


Figure 2

2.3 Overall Satisfaction vs Satisfaction with Punctuality

Passenger Focus has previously undertaken a multivariate analysis to determine which factors (punctuality, crowding, etc) are most important in determining overall customer satisfaction. The results showed that customers are most likely to be satisfied with their journey if they are satisfied with punctuality/reliability. This is the key driver for journey satisfaction. Conversely, customers are most likely to be dissatisfied with their journey if they are dissatisfied with how the train company dealt with any delays.

We therefore expected that a strong relationship between overall satisfaction and satisfaction with punctuality/reliability will be in evidence in the data. Table 2 below shows that overall satisfaction is fairly well aligned to satisfaction scores for punctuality/reliability, although levels of dissatisfaction with punctuality is higher than that for overall dissatisfaction.

Table 3

CrossCountry	Punctuality Satisfaction	Overall Satisfaction
SATISFIED	80%	83%
NEITHER / NOR	6%	8%
DISSATISFIED	14%	9%
Total	**100%**	**100%**

2.4 Satisfaction with Punctuality/Reliability on CrossCountry Services

Satisfaction with the punctuality of XC services has increased over the time period under study, with a 10% increase in satisfaction recorded since the refranchising in November 2007. Since the 2007 refranchising there has been a corresponding 9% fall in dissatisfaction recorded between waves 17 and 21. Levels of satisfaction and dissatisfaction by wave are shown in Figure 3 and Table 4 below with the trends for satisfaction and dissatisfaction shown in Figure 4

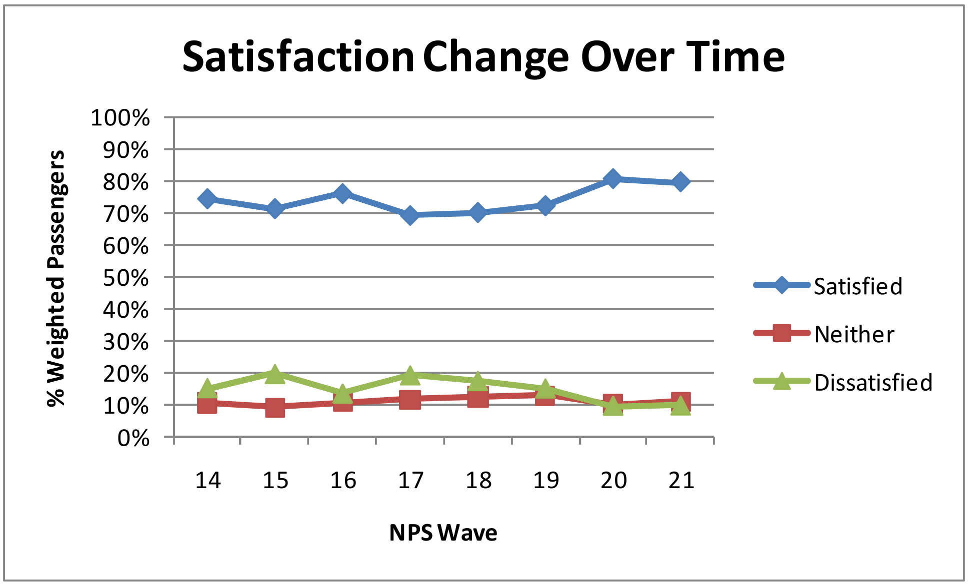


Figure 3

Table 4

NPS Wave	Satisfied	Neither	Dissatisfied	Grand Total
14	74%	11%	15%	100%
15	71%	9%	20%	100%
16	76%	11%	13%	100%
17	69%	12%	19%	100%
18	70%	12%	17%	100%
19	72%	13%	15%	100%
20	80%	10%	10%	100%
21	79%	11%	10%	100%
Grand Total	**75%**	**11%**	**14%**	**100%**

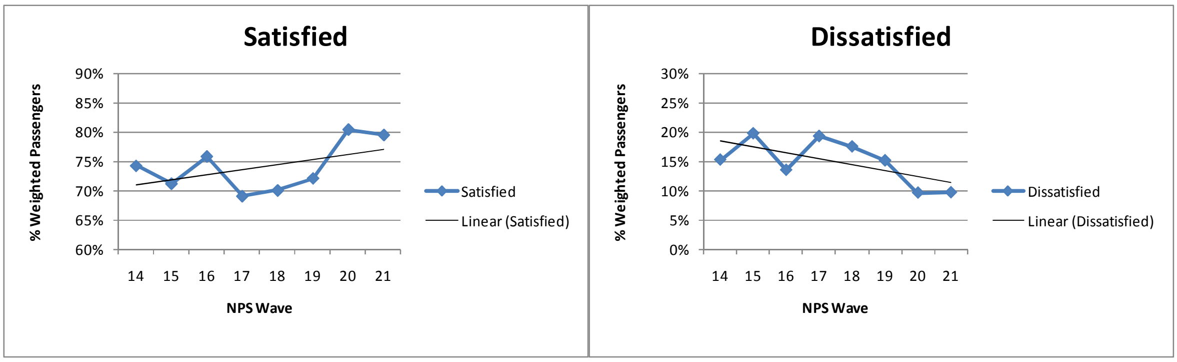


Figure 4

A small difference can also be seen between recorded satisfaction in the Spring and Autumn waves, with the Autumn averaging a 2% lower satisfaction rating than Spring. That said other larger changes have occurred over the period of the study.

2.5 Satisfaction with Punctuality by Journey Type

Table 5 below shows that around half of the passengers carried by XC are categorised as leisure travellers, with business travellers representing the second largest number of passengers and commuters the lowest.

Table 5

Journey Purpose	% Weighted Passengers
Business	36%
Commute	15%
Leisure	49%
Grand Total	**100%**

Analysis of satisfaction results shows that the lowest levels of satisfaction with punctuality are recorded by commuters with only 61% satisfied as opposed to 77% of business and leisure travellers. Table 6 and Figure 5 below illustrate this.

Table 6

Journey Purpose	Satisfied	Neither	Dissatisfied	Grand Total
Business	77%	11%	11%	100%
Commute	61%	11%	28%	100%
Leisure	77%	11%	12%	100%
Grand Total	**75%**	**11%**	**14%**	**100%**

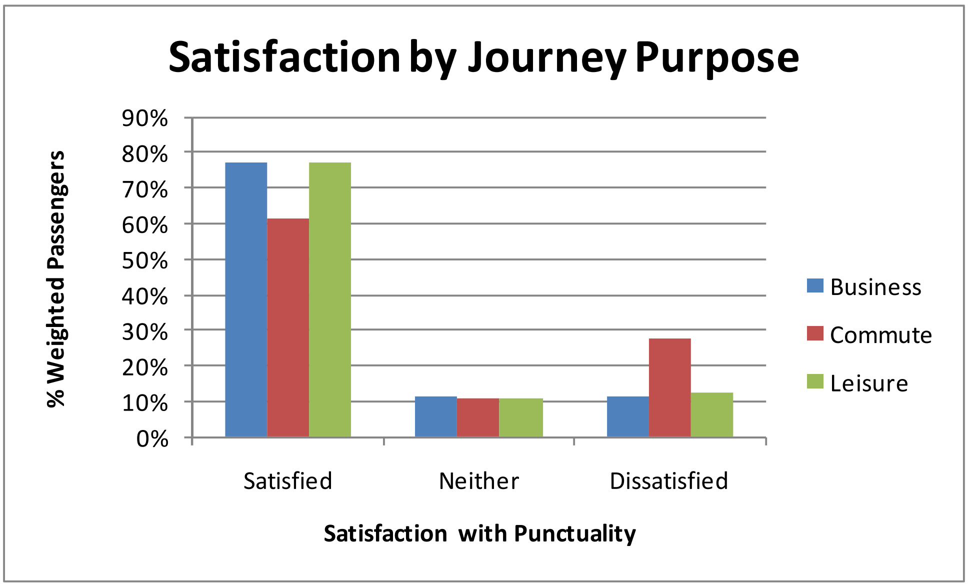


Figure 5

2.6 Punctuality Satisfaction by Route

As described earlier, the geographic scope of this study has been limited to an area bounded by Bristol, Reading, Manchester and Newcastle. For the purpose of this study the XC network has been split into four sections:

- Bristol <> Birmingham (SW);
- Reading <> Birmingham (SE);

- Manchester <> Birmingham (NW;
- Newcastle <> Birmingham (NE).

It is recognised that Bristol, Reading and Newcastle are not the final destination stations of these lines. However this geographic area represents the core of the XC long distance network. Passengers from stations beyond the study boundary whose destination is within this geographic area have been included in the analysis.

Table 7 below shows the composition of passengers by journey type and by route, and which again illustrates the higher sample size of the North East and South East.

Table 7

Route	Business	Commute	Leisure	Grand Total
North East	13%	6%	20%	38%
North West	8%	2%	8%	18%
South East	9%	5%	12%	26%
South West	7%	2%	9%	18%
Grand Total	**36%**	**15%**	**49%**	**100%**

On average 75% of passengers are satisfied with their train's punctuality, with a much lower level of satisfaction recorded for passengers in the South East quadrant (shown in Table 8 and Figure 6 below).

Table 8

Route	Grand Total
North East	77%
North West	77%
South East	68%
South West	78%
Grand Total	**75%**

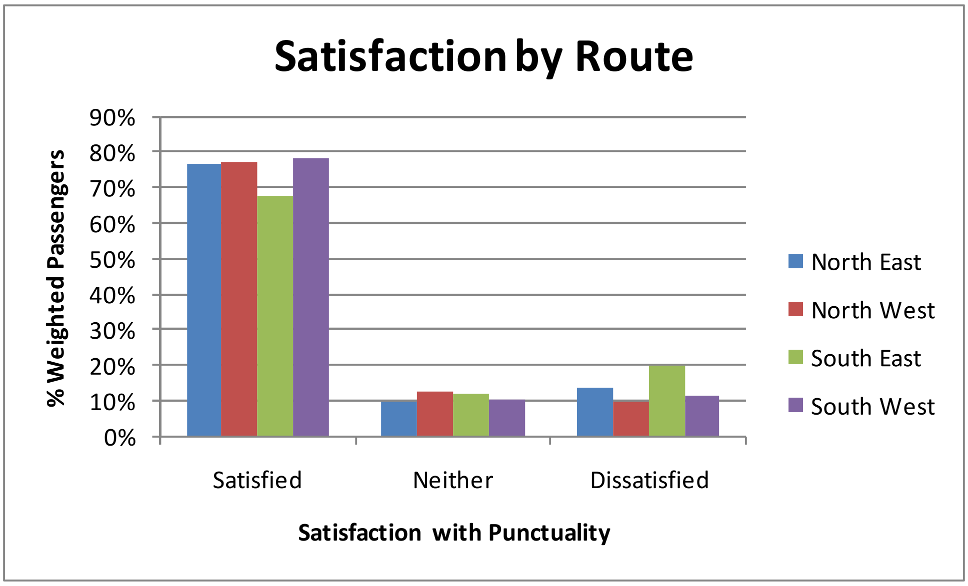


Figure 6

The higher levels of dissatisfaction recorded for South East services might be a reflection of the composition of passenger types, i.e. the breakdown between commuters, business and leisure travellers, as it has already been shown that commuters record higher levels of dissatisfaction than other passenger types, and it can be seen from Table 9 below that there are slightly more commuters than average on the South East Route, but the difference to other routes (3%-6%) is not as great as the difference in satisfaction (9%-11%) and so it is probable that other factors will be affecting the satisfaction scores.

Table 9

Route	Business	Commute	Leisure	Grand Total
North East	33%	15%	52%	100%
North West	43%	12%	45%	100%
South East	35%	18%	48%	100%
South West	38%	12%	50%	100%
Grand Total	**36%**	**15%**	**49%**	**100%**

2.7 Punctuality Satisfaction To / From Birmingham

In addition, satisfaction with punctuality for passengers travelling on services from Birmingham is lower than that for services to Birmingham, with a 7% difference in satisfaction. This is shown in Table 8 below.

Table 10

To / From Birmingham	Satisfied	Neither	Dissatisfied	Grand Total
FROM BIRMINGHAM	72%	11%	17%	100%
TO BIRMINGHAM	79%	10%	11%	100%
Grand Total	77%	10%	13%	100%

When punctuality satisfaction for services to and from Birmingham is analysed by route, it is apparent that the lowest scores for punctuality are recorded on services from Birmingham to destinations south of Birmingham. The highest scores are given for those travelling to Birmingham from the South West (86%) and the North West (80%). This is shown in Table 11 below.

Table 11

Region	Satisfied	Satisfied	Neither	Dissatisfied	Grand Total
NE	FROM BIRMINGHAM	72%	10%	18%	100%
	TO BIRMINGHAM	77%	8%	15%	100%
NE Total		**75%**	**9%**	**16%**	**100%**
NW	FROM BIRMINGHAM	78%	10%	12%	100%
	TO BIRMINGHAM	80%	11%	8%	100%
NW Total		**80%**	**11%**	**10%**	**100%**
SE	FROM BIRMINGHAM	69%	12%	19%	100%
	TO BIRMINGHAM	73%	9%	17%	100%
SE Total		**72%**	**10%**	**18%**	**100%**
SW	FROM BIRMINGHAM	70%	12%	17%	100%
	TO BIRMINGHAM	86%	11%	3%	100%
SW Total		**81%**	**11%**	**8%**	**100%**
Grand Total		**77%**	**10%**	**13%**	**100%**

2.8 Satisfaction with Punctuality - Conclusions

- Around half (49%) of the passengers carried by XC are categorised as leisure travellers, with business travellers at 36% and commuters 15%.
- Overall satisfaction with performance is 75%.
- Satisfaction with punctuality has increased by 10% since refranchising in November 2007.
- The lowest levels of satisfaction with punctuality are recorded by commuters with only 61% satisfied as opposed to 77% of business and leisure travellers
- The South East route has the greatest dissatisfaction scores, particularly with commuters.
- Satisfaction from Birmingham is poor in comparison to other flows, again this is particularly pronounced on the South East route.
- Passengers travelling from the North East have a higher representation in the sample, with almost 40% of respondents from this area and lower representation from passengers in the North West and South West

3 Train Performance

3.1 Historic Performance

Having examined how passenger satisfaction has varied, we now need to examine how XC performance has varied and whether and how this has been reflected in NPS customer satisfaction data (i.e. how directly linked are they?).

This analysis will provide an understanding of how performance has varied by time, by route, by direction and by time of day.

For XC, RT10 (trains run arriving within 10 minutes of advertised time) is a broadly equivalent measure to PPM as XC services' PPM is measured at 10 minutes, in line with other long distance operators (but excludes train cancellations).

Over the four years considered by this study the number of trains arriving within 10 minutes of scheduled time (RT10) has averaged 87%, with a general improvement from around 85% to around 90%. This is shown in Figure 7 below.

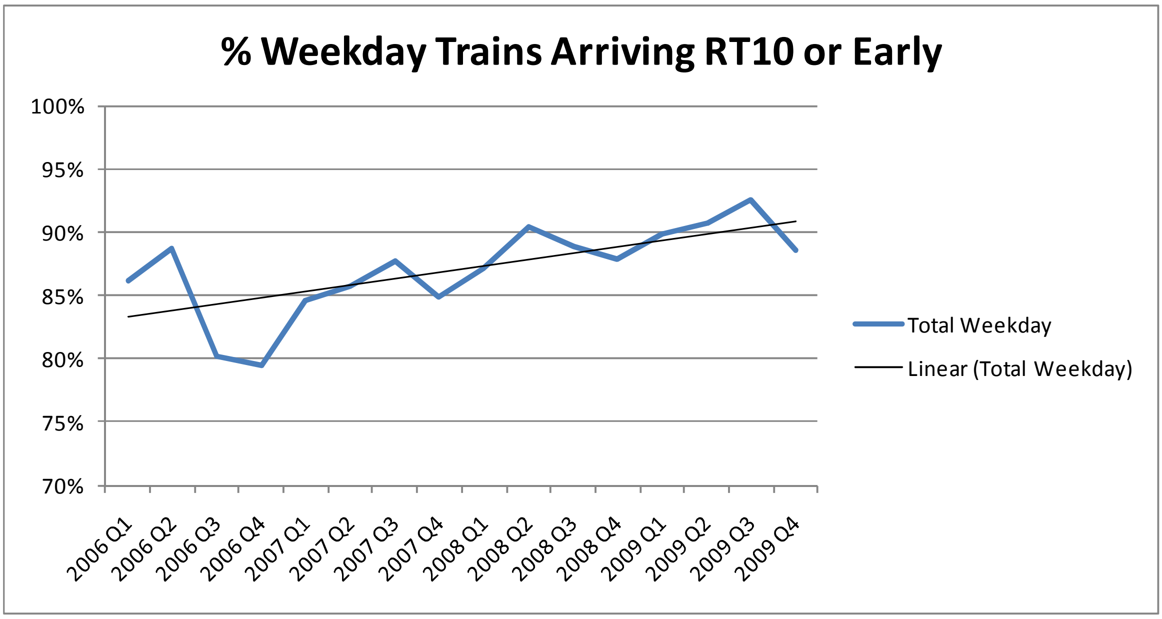


Figure 7

3.2 Average Train Lateness at Destination

Average train lateness refers to the average lateness of all trains at their final (terminating) destination. Considering all trains at their terminating destination over the four years under study the average train lateness has been 3.97 minutes. Figure 8 below shows that average terminating lateness has improved over the four years under study from around 5 minutes to around 3 minutes. It can also be seen that there is a degree of seasonal variation with the greatest degree of lateness generally in evidence in the Autumn (Q4 in calendar years).

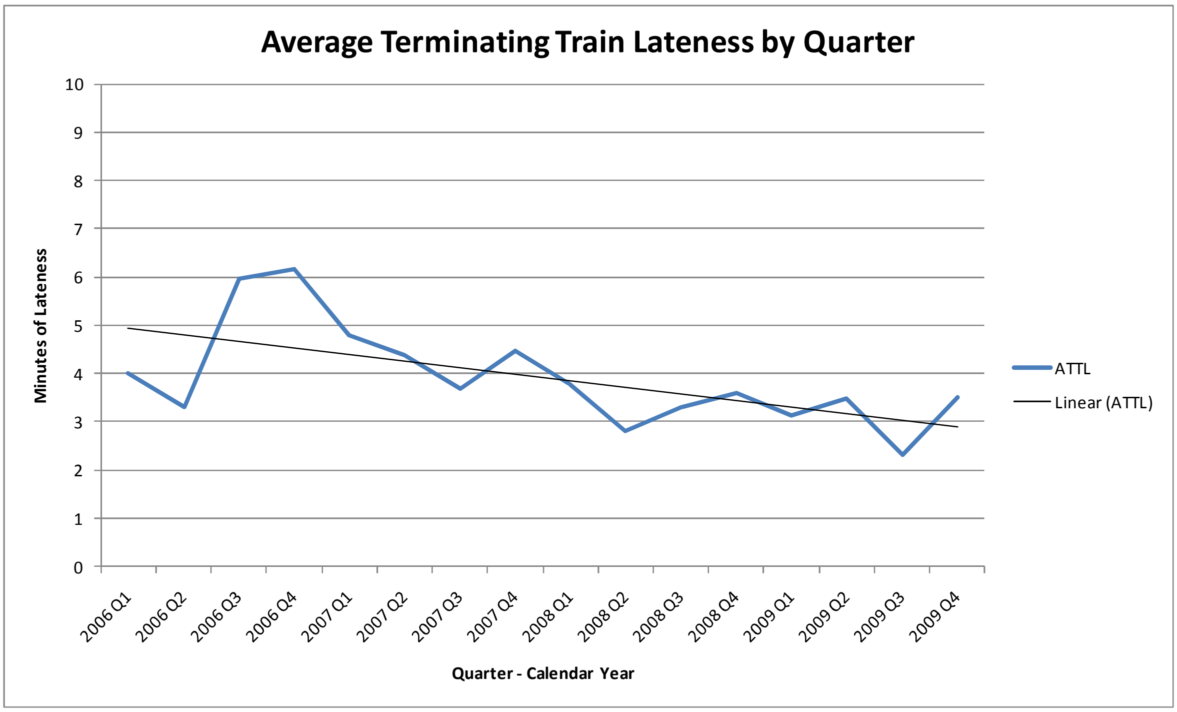


Figure 8

3.3 Average Terminating Train Lateness by Time of Day

When terminating train lateness is examined by time of day it can be seen that lateness accumulates through the day, peaking for arrivals between 19:00 and 20:00 before decreasing.

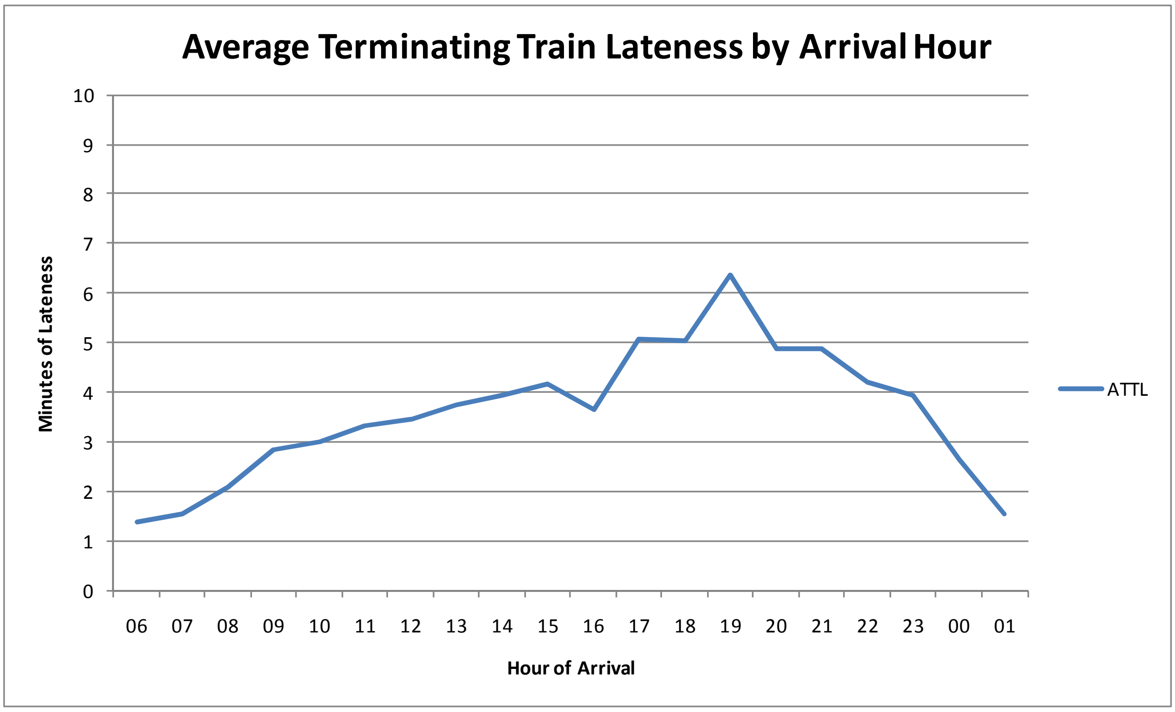


Figure 9

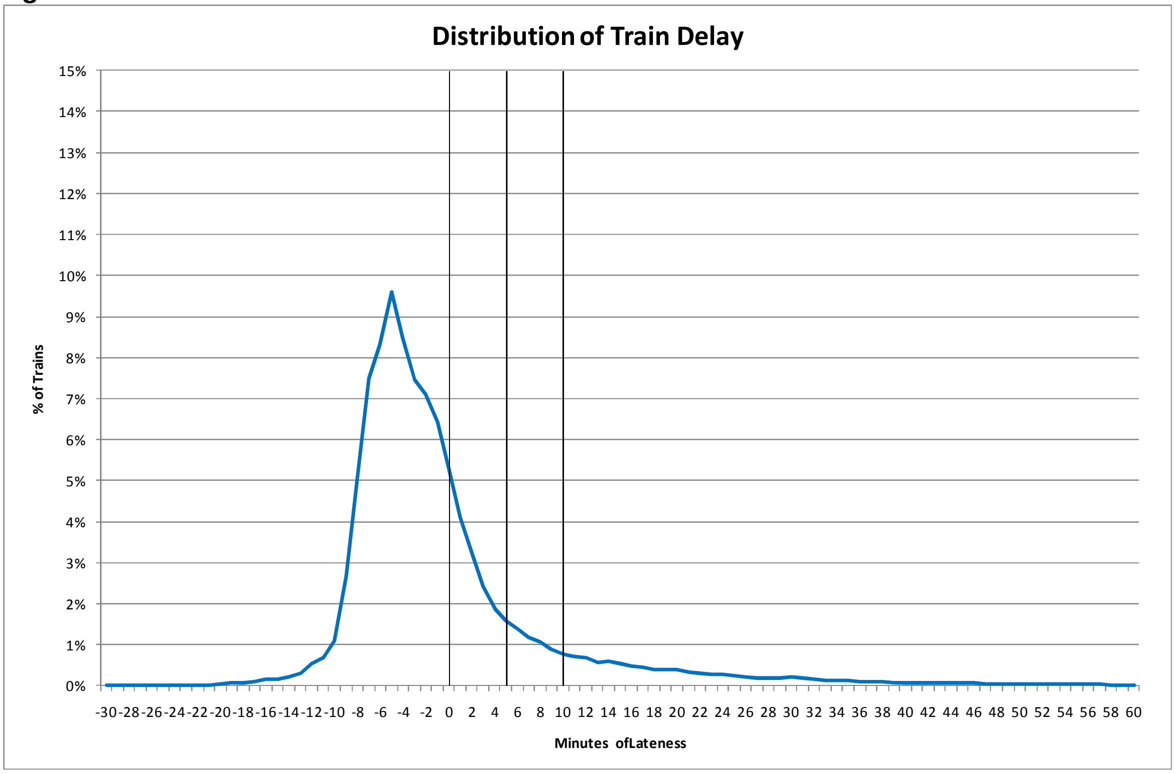
3.4 Lateness Distribution

The level of delay experienced for each train can be divided into time bands, including those trains arriving right time or early (RTE), within five minutes (RT5) or within ten minutes (RT10). This is detailed in Table 12 and further illustrated by Figure 10 below, where we can see that 89% of trains arrived within 10 minutes of their advertised time at their final destination (72% RTE, 83% RT5).

Table 12

Arrival Band	Number of Trains	% of Trains	Cummulative % of Trains
RT or Early	113,977	71.73%	72%
1-4 mins Late	17,880	11.25%	83%
5-9 mins Late	9,534	6.00%	89%
10-19 mins Late	8,933	5.62%	95%
20-29 mins Late	4,232	2.66%	97%
30-59 mins Late	3,611	2.27%	99.5%
60+ mins Late	735	0.46%	100.0%
Grand Total	**158,902**	**100%**	**100%**

Figure 10

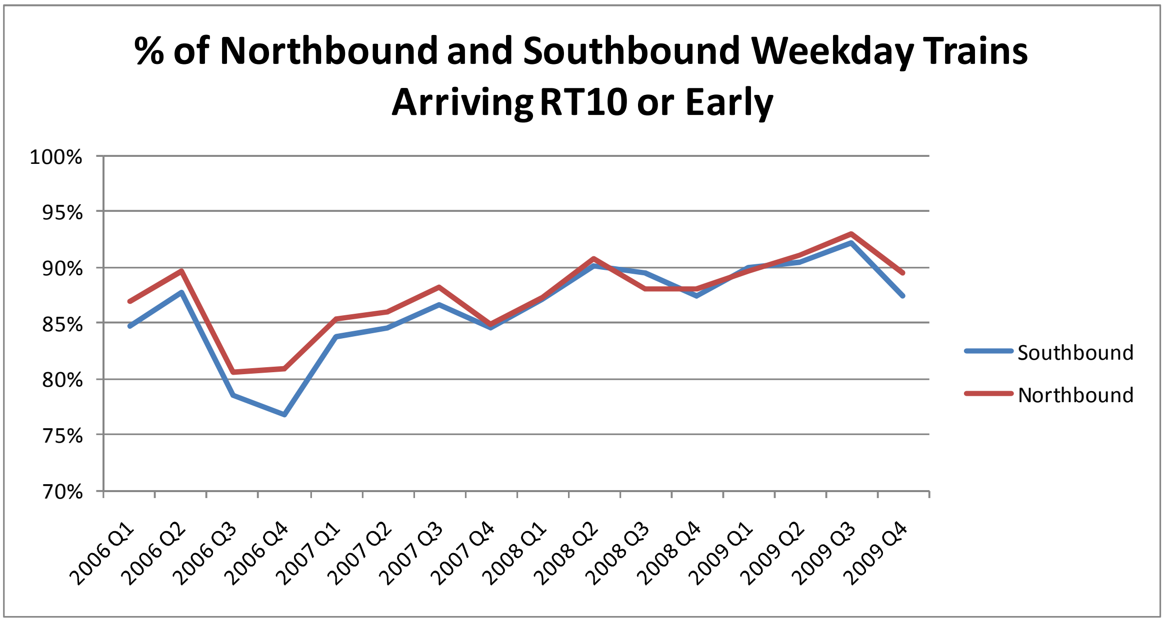


Northbound services performed marginally better than southbound services through 2006 and 2007, but with similar performance levels from 2008 onwards This can be seen in Table 13 and Figure 11 below.

Table 13

% RT10 or Early	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	Grand Total
Total Weekday	86%	89%	80%	79%	85%	86%	88%	85%	87%	90%	89%	88%	90%	91%	93%	89%	**87%**
Southbound	85%	88%	79%	77%	84%	85%	87%	85%	87%	90%	90%	87%	90%	90%	92%	87%	**86%**
Northbound	87%	90%	81%	81%	85%	86%	88%	85%	87%	91%	88%	88%	90%	91%	93%	90%	**87%**

Figure 11



3.5 Performance by Route

The study area for CrossCountry (covering 81% of all passenger journeys) has been split up into four routes for the purposes of this analysis. They are:

- North East ⇔ South East (NE-SE)
- North East ⇔ South West (NE-SW)
- North West ⇔ South East (NW-SE)
- North West ⇔ South West (NW-SW)

For services included in the study area, 71% of all XC trains operated on these four routes. The remaining 29% of trains are those that originate or terminate at Birmingham New Street (24%), and those that originate and terminate at stations within a single geographical area, i.e. a service originating at Aberdeen and terminating at Edinburgh (5%). Table 14 below shows how the volume of trains operated varies by route and how this has varied in each year.

It should be noted that trains formerly operated between the North West, Scotland and South West along the west coast prior to refranchising have not been included within the scope of this study, and hence the low percentage of trains operating this route prior to 2008.

Route	2006	2007	2008	2009	Total
NE-SE/SE-NE	12%	11%	11%	18%	13%
NE-SW/SW-NE	30%	30%	28%	20%	27%
NW-SE/SE-NW	23%	23%	27%	20%	23%
NW-SW/SW-NW	2%	2%	10%	17%	8%
To BHM	15%	15%	11%	10%	13%
From BHM	14%	14%	8%	9%	11%
Intra Route	4%	5%	6%	6%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Table 14

Performance has varied significantly across the different routes, as has the level of improvement. This is illustrated in Figure 12 below which shows the proportion of trains arriving within 10 minutes of advertised time at their termination station by route (RT10) for both northbound (red) and southbound (blue) services. In each case the performance has also been compared with the average for all XC services (green/dotted line) and the December 2008 timetable change date when a number of major service changes took place (vertical black line).

Figure 12

From this we can see that

- Until recently, southbound NE⇔SE services have performed much worse than both northbound NE⇔SE services and XC as a whole, albeit with an improving trend. However, summer 2008 (Q2 2008) saw a more dramatic improvement in performance which has seen southbound services deliver punctuality on a par with XC services as a whole (whilst northbound continues to out-perform the XC average).

- NW⇔SW services have broadly followed the average for all XC services, with southbound services generally performing worse than northbound services. Since 2008, services have generally performed less well than those for XC as a whole.
- Prior to the December 2008 timetable change northbound NW⇔SE services performed below both the average for XC as a whole and for southbound services on the same route. December 2008 has seen a step change in performance with northbound coming up to, and exceeding, those of both southbound services and all XC services.
- NW⇔SW services have historically performed better than the average for all XC services, with northbound being better than southbound. However, since December 2008 performance on northbound services has worsened, dipping below historic levels and both southbound services and all XC services.

3.6 RT10, RT5 & RT or Early

Figure 10 showed that the number of trains arriving within 10 minutes of their scheduled arrival time is improving and that in the last four quarters over 90% of trains have achieved this measure. However, the percentage of trains arriving within 10 minutes of their scheduled time is consistently higher than the percentage of NPS respondents who are satisfied with punctuality, suggesting that other measures may be more appropriate for measuring punctuality to better reflect passenger experience.

Examining different levels of performance we can see that over the study period 70% of trains arrived at their final destination right time or early (RTE) whilst 81% arrived within five minutes (RT5). More recent results show an improvement on this, results for summer 2009 (2009 Q3) showing with 78% RTE, 88% RT5 and 93% RT10.

Table 15 and Figure 13 shows how the percentage of trains arriving within 10 minutes of scheduled time, 5 minutes of scheduled time and right time or early has changed over time.

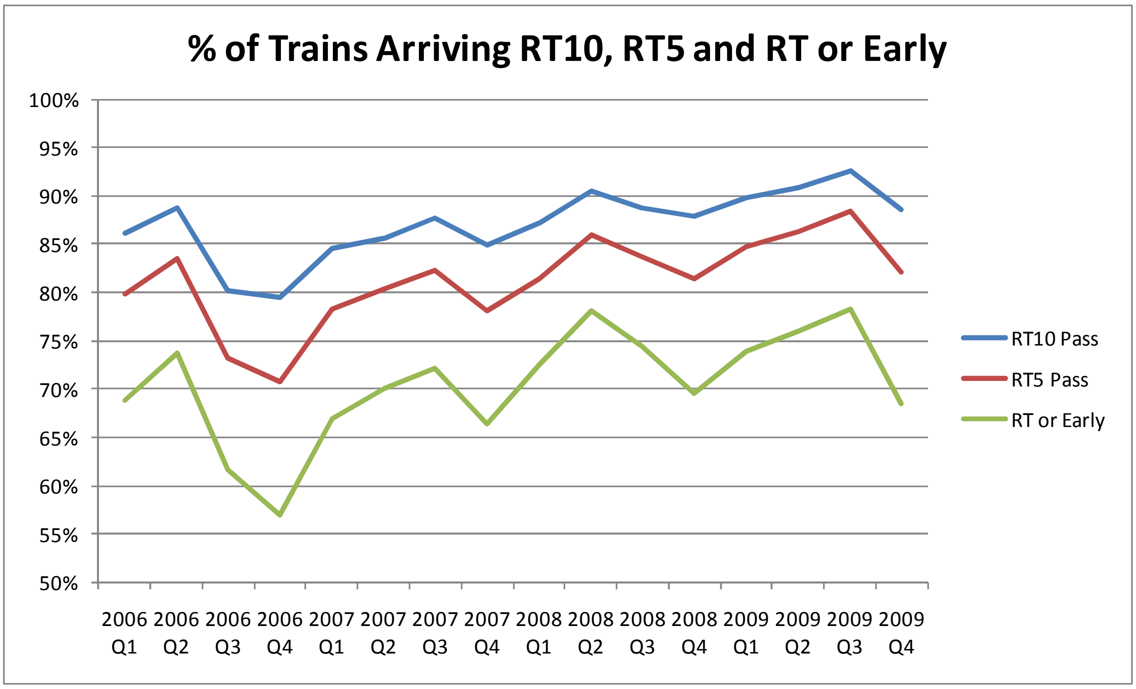


Figure 13

Quarter	RT10 Pass	RT5 Pass	RT or Early
2006 Q1	86%	80%	69%
2006 Q2	89%	84%	74%
2006 Q3	80%	73%	62%
2006 Q4	79%	71%	57%
2007 Q1	85%	78%	67%
2007 Q2	86%	80%	70%
2007 Q3	88%	82%	72%
2007 Q4	85%	78%	66%
2008 Q1	87%	81%	72%
2008 Q2	90%	86%	78%
2008 Q3	89%	84%	75%
2008 Q4	88%	81%	69%
2009 Q1	90%	85%	74%
2009 Q2	91%	86%	76%
2009 Q3	93%	88%	78%
2009 Q4	89%	82%	68%
Total	**87%**	**81%**	**70%**

Table 15

This data also shows the poorer levels of performance experienced each Autumn, with Q4, RTE results averaging 7% below the average of all other quarters (65% against (72%). This fall in punctuality may be particularly important as it coincides with the Autumn Wave of the NPS survey.

3.7 Train Performance by Time of Day

As we saw in Figure 9, average train lateness increases through the day until reaching a high-point during the evening peak. Similarly when train lateness is examined by time of day it can be seen that the percentage of trains arriving within 10 minutes of their scheduled time decreases until the end of the evening peak before recovering.

The difference between RT10, RT5 and RTE is broadly replicated through the day, as shown in Figure 14 below. At its worst point, the proportion of RTE trains falls to around 60% at the end of the evening peak (7pm-8pm)

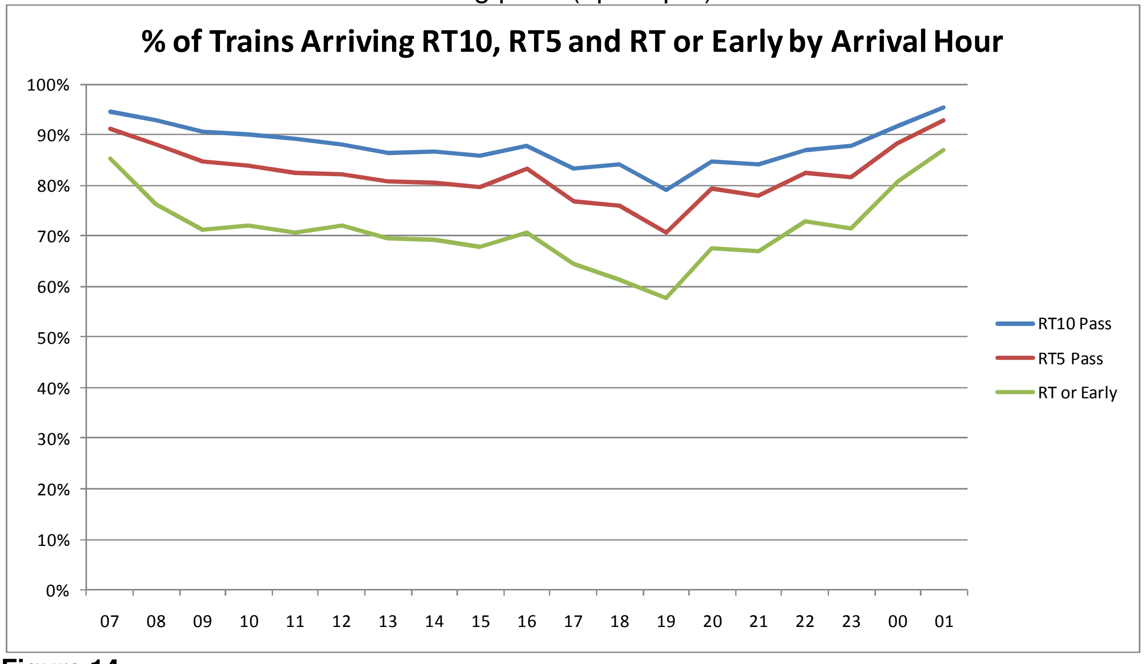


Figure 14

3.8 Average Train Lateness En Route

Average terminating lateness (lateness at final destination) does not directly indicate the level of delay experienced at intermediate points en route. We therefore need to examine how lateness affects trains throughout the journey in order to gain a fuller picture of how lateness affects passengers. Average train lateness measures the lateness of trains at intermediate stations as well as terminating stations. Average train lateness en route may be calculated by taking the sum of train lateness at each stop and dividing this figure by the total number of stops by trains. This may be particularly useful in examining long distance routes such as XC, where the service may be subject to a number of scheduling allowances or lengthy station dwell times.

Over the period of the study train lateness en route has averaged 4.4 minutes. Figure 15 below shows that over the four years under study average train lateness en route has improved. Again distinct seasonality is in evidence with the worst performance year on year seen in Q4 (autumn). It can also be seen that average train lateness is consistently worse than average terminating train lateness (shown by the green dotted line).

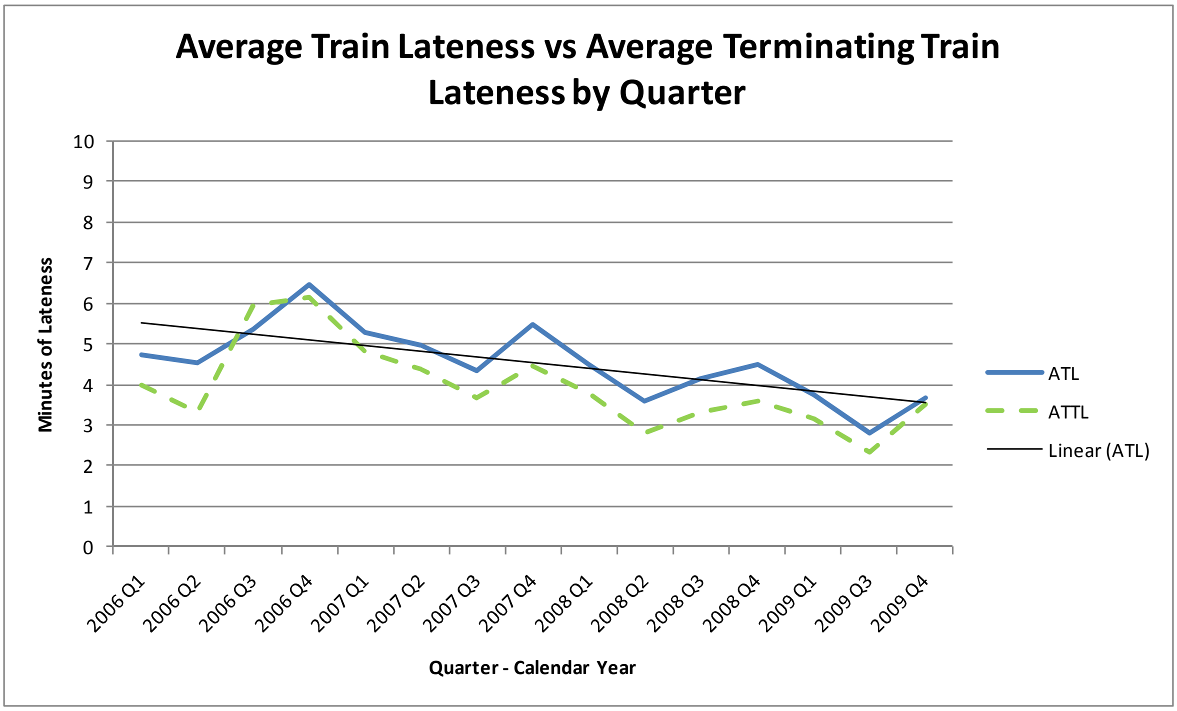


Figure 15

3.8.1 Average Train Lateness En Route by Time of Day

The profile of train lateness en route through the day is similar to that of average train lateness at destination, except that the peak lateness is one hour earlier. Lateness en route throughout the day is materially worse than that of terminating trains.

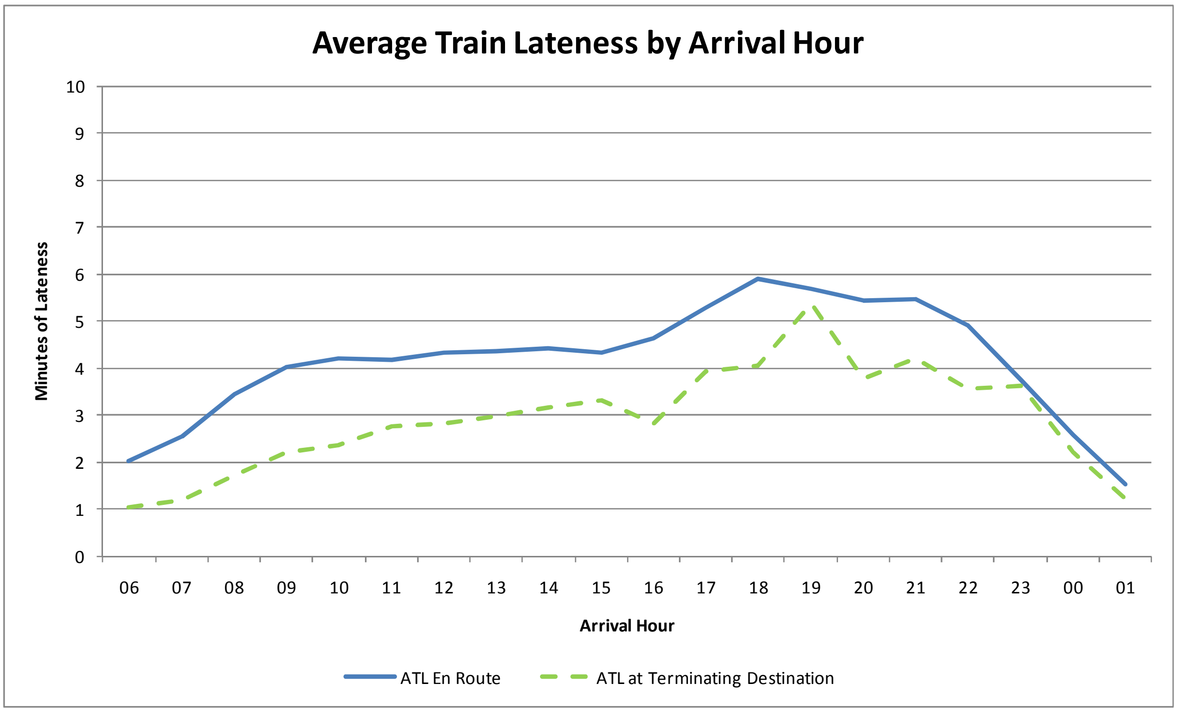


Figure 16

3.8.2 Average Train Lateness En Route by Route

Figure 17 below examines how lateness en route (blue line) builds up, or is recovered and how that value varies from that recorded at the final destination (black horizontal line).

Significant differences can be seen when analysed at this route level. Average train lateness en route for NE to SE and NW to SE (i.e. southbound) builds up as the trains approach Birmingham, but then continue to run at this level of lateness thereafter. In the northbound direction, delay is more consistent along the line of route.

The horizontal black line represents the level of lateness that would be recorded by the industry and used in measures such as PPM. With the exception of North East to South East services, it can be seen that for many stations en route, trains are later than at final destination i.e. those above the horizontal black line.

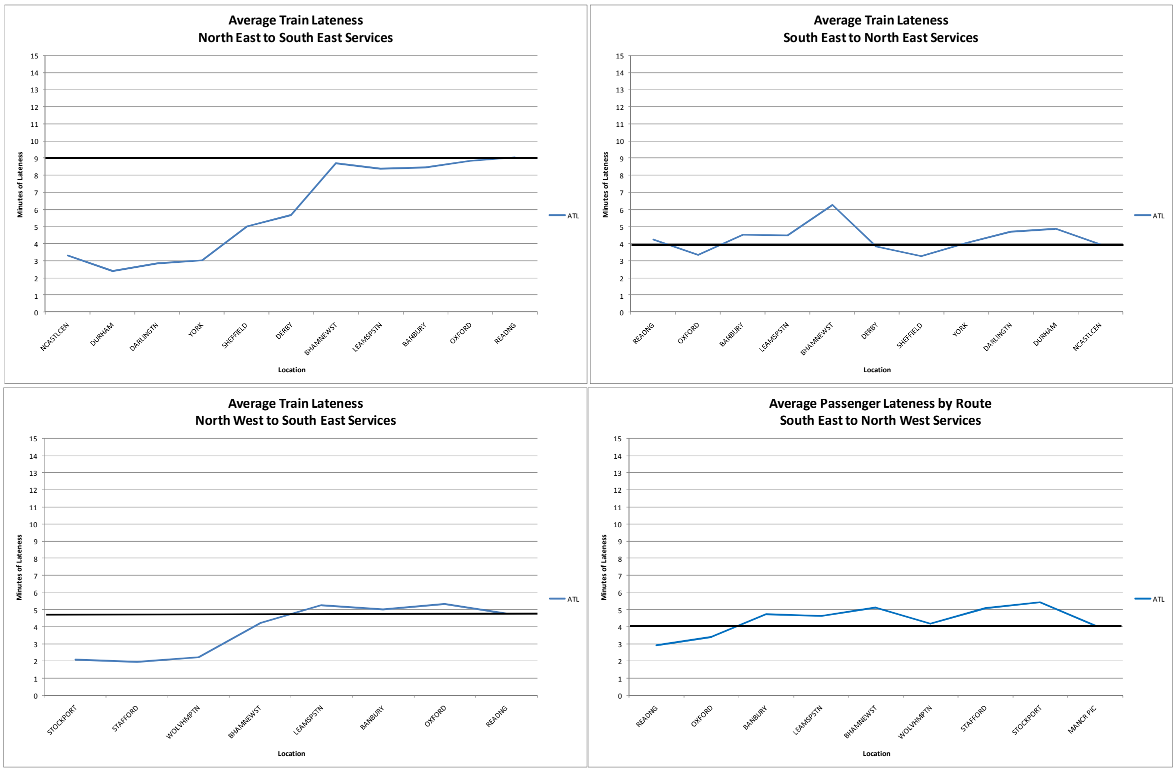


Figure 17

3.9 Average Train Lateness – Terminating vs Through Trains

As has been detailed above, the scope of this study does not extend to the extremities of the XC network. Therefore many of the trains terminate outside the study area. Table 16 below shows the percentage of trains originating in the North East that terminate within the study area as well as the % of through services. This table shows that the majority of trains terminate outside the study area i.e. trains that terminate further south than Reading or Bristol.

Route	% Terminating Services	% Through Services	Total
North East to South East	43%	57%	100%
North East to South West	36%	64%	100%

Table 16

Figure 18 shows the average train lateness along the line of route for services from the NE to SW. Terminating and 'through services' show a similar trend but trains travelling through Bristol are on average over a minute later than trains terminating there. Both terminating and through trains can be seen to recover time between Bristol Parkway and Bristol Temple Meads.

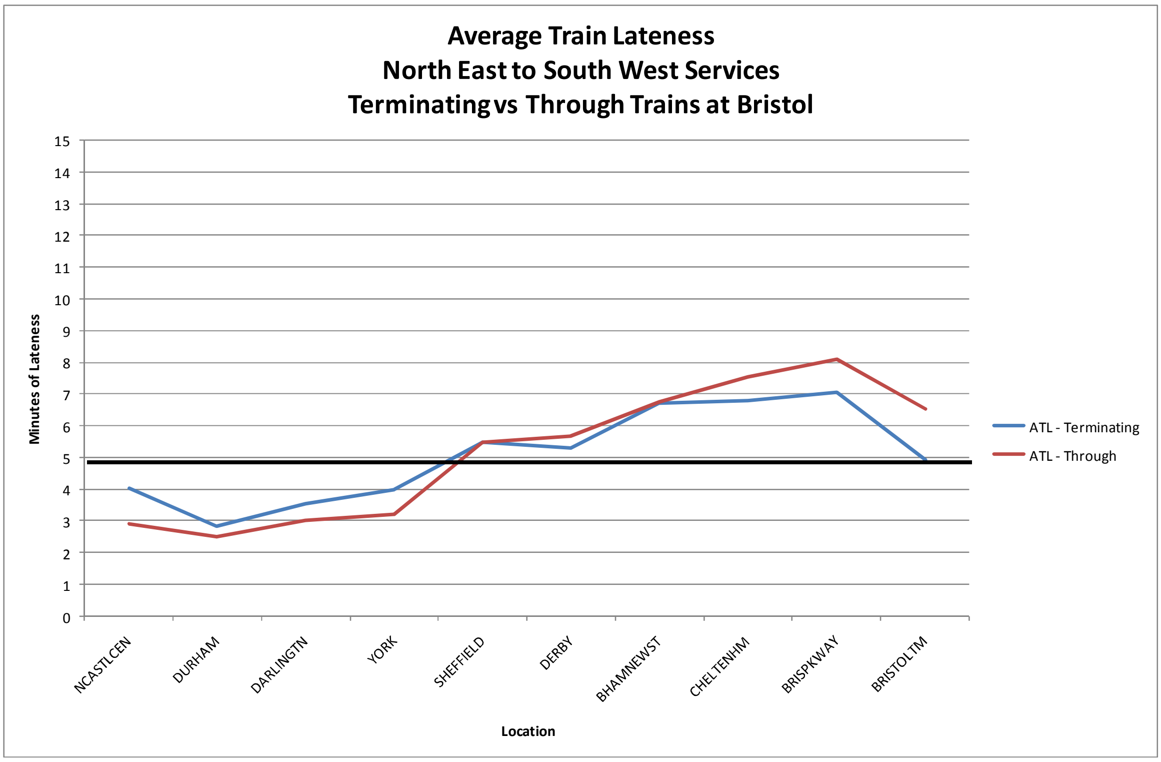


Figure 18

When services from the NE to SE are split between trains terminating and trains through Reading a significantly different trend is seen. This is shown in Figure 19 below and shows that trains travelling through Reading are consistently later than trains terminating there.

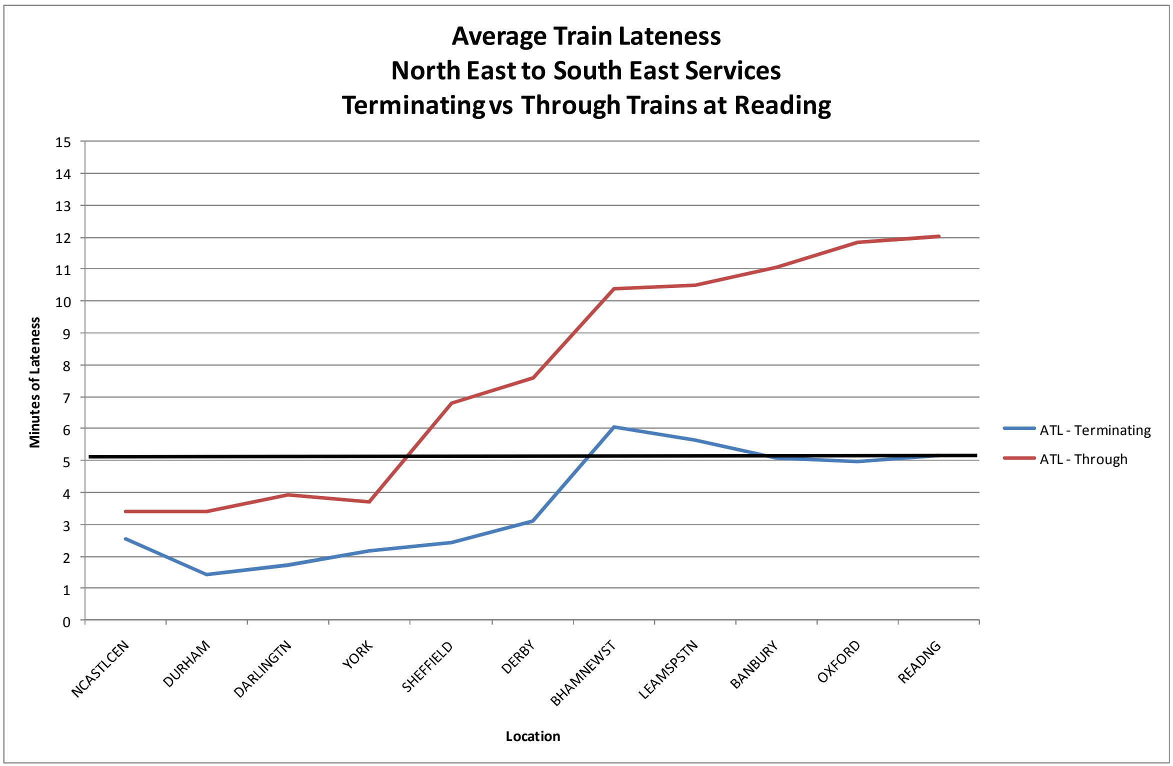


Figure 19

It can also be seen that trains terminating at Reading begin to recover time after they have passed Birmingham New Street. However trains travelling through Reading continue to accrue lateness throughout the journey and are on average 6.9 minutes later at Reading (through trains are 12 minutes late compared to terminating trains which are 5.1 minutes late). In addition, as shown in Table 16 above, a higher percentage of trains travel through rather than terminate at Reading.

3.10 Cancellations

Cancellations can occur in a number of different ways. They are classified as the following:

- Cancelled (CAPE) – Full Cancellation the timetabled train did not run at all
- PINE – Partial cancellation where more than 50% of the journey was completed
- CALVIN – where the train misses the start of its timetabled journey
- CALPIN – where the train misses the start and the end of its timetabled journey

Other ways in which a train is classified as not completing its timetabled journey are fail to stops (FTS), where the train was supposed to stop at a location and for some reason did not. The other reason is if a train is diverted (N/R) for an operational reason and therefore misses its scheduled stop.

Table 17 below shows that 95% of trains ran as advertised in the four years under study. Of the 5% that did not run as advertised

- 0.41% were cancelled,
- 2.1% had over half of the service cancelled (Pine),
- 1.12% did not start at the station advertised (Calvin),
- 0.09% were diverted
- 0.06% missed the start and end of the advertised service (Calpin).

Cancellations	% of Total
Ran as Scheduled	95.27%
Pine	2.10%
Calvin	1.12%
Cancelled	0.41%
N/R (Diverted)	0.09%
Calpin	0.06%
TOTAL	**100%**

Table 17

Relative to the whole of the rail network, that 5% of trains have not run as scheduled is a surprisingly large number. However Figure 20 below shows that over the four years under study the number of trains which are cancelled or which only ran for part of the scheduled journey has declined significantly.

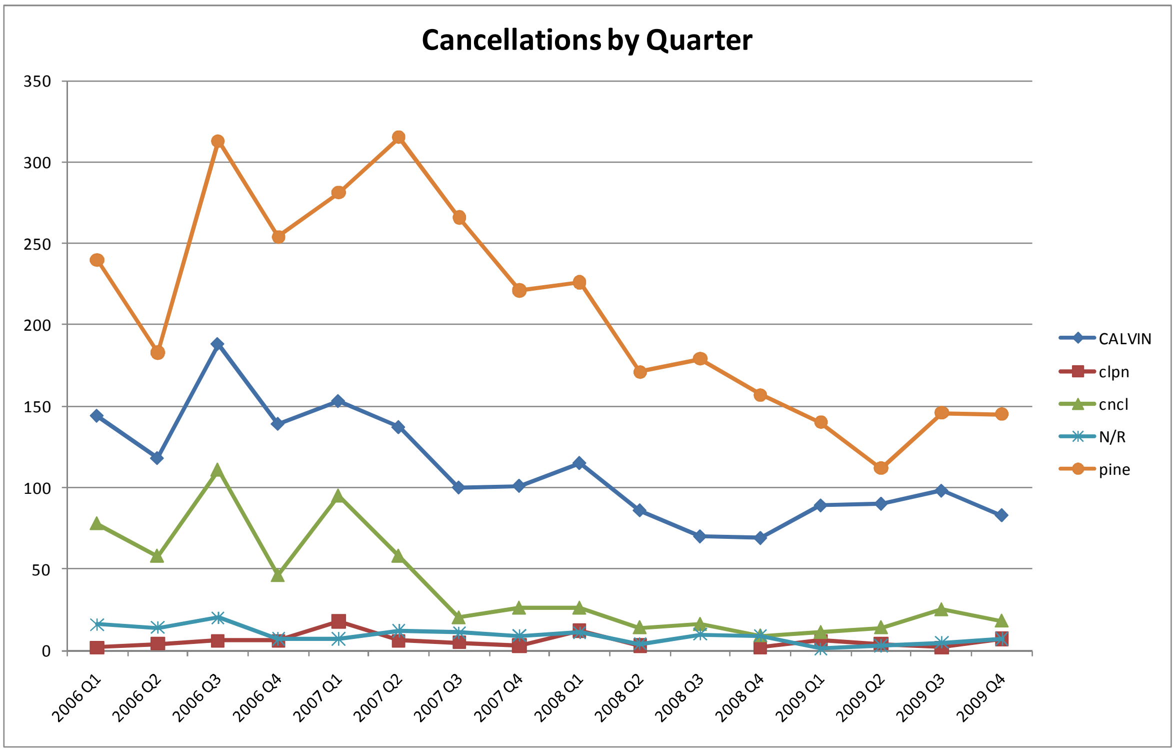


Figure 20

3.11 Train Performance - Conclusions

- Until recently, southbound NE⇔SE services have performed much worse than other XC services
- A step change in performance happened in 2008, most services seeing improvement apart from NW⇔SW northbound services
- Most routes are now performing around the XC average apart from NE⇔SW route which now performs worse
- The percentage of trains arriving within 10 minutes of their scheduled time is consistently higher than the percentage of NPS respondents who are satisfied with punctuality, suggesting that other measures may be more appropriate for measuring punctuality to better reflect passenger experience.

- Seasonality is very apparent with Autumn (Quarter 4) suffering poorer performance
- The profile of train lateness en route through the day is similar to that of average train lateness at destination, except that the peak lateness is one hour earlier
- Lateness en route throughout the day is materially worse than that of terminating trains
- Trains recover time between Bristol Parkway and Bristol Temple Meads
- Trains that terminate at Reading are on average 6.9 minutes earlier than those that pass through
- Cancellations over the study period as a whole have been relatively high although a dramatic improvement has been seen recently

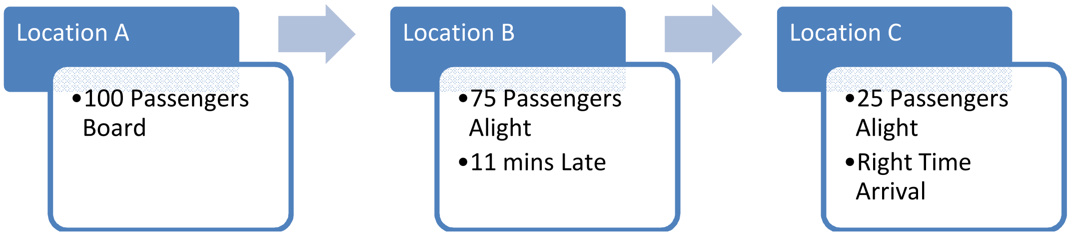
4 Passenger Lateness Analysis

4.1 Measures of Passenger and Train Lateness

Section 3 examined terminating train lateness, the measure used by the rail industry in PPM scores, and train lateness en route. However it may be that measuring the lateness of trains in either of these ways does not fully reflect lateness as experienced by passengers.

Average terminating train lateness details the lateness of a service at its final destination and average train lateness shows the lateness of a train en route, but it could be that neither of these measures fully reflect how passengers are affected by delays as they do not take into account variations in volumes of passengers alighting at different stations.

For example, if for a particular train, 25% of passengers alight at the destination (location C) while 75% of passengers alight at the preceding station (Location B).



In this example lateness values are different at each station, this could be due to ‘performance allowance’ in the timetable for the route section approaching the destination. Measuring lateness at destination only will not give a reflective picture of the lateness experienced by the average passenger. In this example 75% of passengers suffered a 11 minute delay to their journey.

Variability between loads on train services might also be a factor if, say, peak services carrying more passengers per train, have a different lateness profile to off-peak trains.

As part of this study, we have therefore calculated a measure of passenger lateness. This is a measure of the average lateness experienced by each passenger, and is calculated based on comparing the lateness of trains at each station stop with the volume of passengers alighting at each stop.

In the example above this would be ((75 pax*11 mins) +(25 pax*0 mins))/100 pax = 8.25 average minutes lateness for the train.

For trains which are recorded in the performance data as cancelled at the station stop, passengers who would normally alight at this station on this train would be attributed a lateness value of 30 minutes (aimed to reflect the average lateness they would be likely to experience through having to wait for the following train).

4.2 Average Passenger Lateness

Over the four years under study, the average lateness of a passenger alighting within the scope area has been 4.95 minutes. Figure 21 below shows that average passenger lateness has decreased throughout the study period. It can also be seen that there is a distinct seasonal difference in average passenger lateness figures, reflecting worse performance in Q4 (Autumn) year on year.

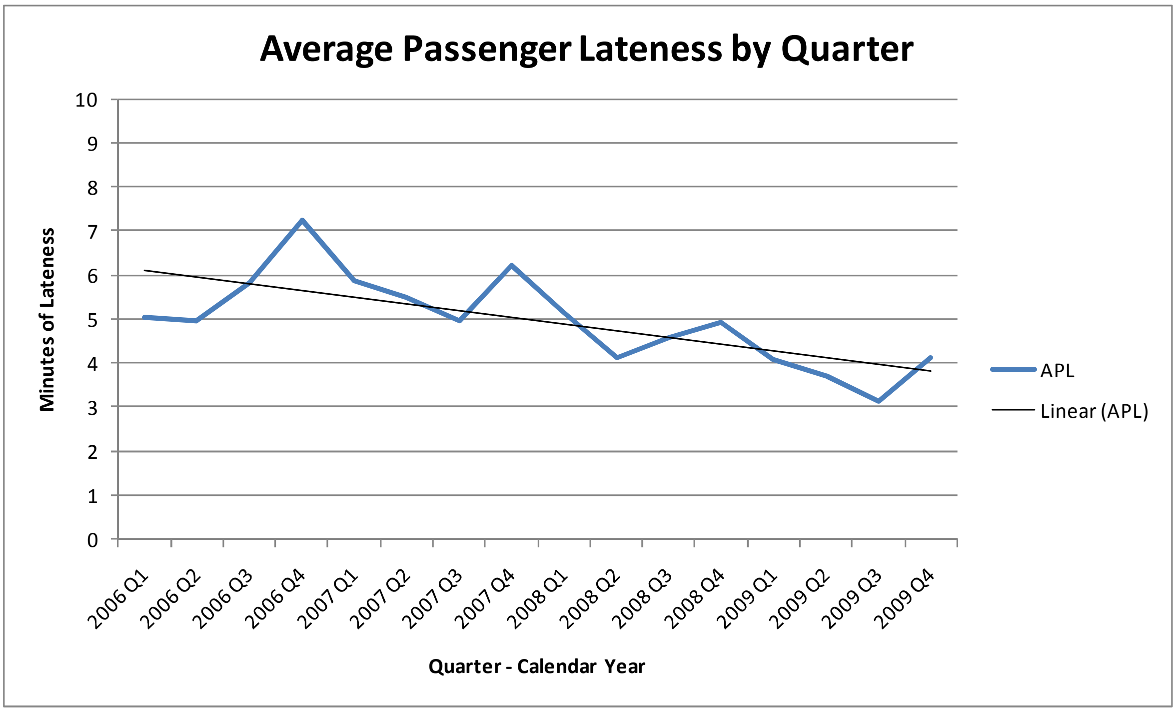


Figure 21

4.3 Passenger Lateness Distribution

Figure 10 in Section 3 showed that 72% of trains arrived right time or early at their final destination. In addition 11% of trains arrived within 5 minutes of their advertised time and an additional 6% of trains arrived within 10 minutes of their advertised time, a total of 89%.

Arrival Band	% of Passenger Arrivals	Cumulative % of Passenger Arrivals	% of Terminating Train Arrivals	Cumulative % of Terminating Trains
RT or Early	45.55%	46%	71.73%	72%
1-4mins Late	29.16%	75%	11.25%	83%
5-9mins Late	11.25%	86%	6.00%	89%
10-19mins late	7.91%	94%	5.62%	95%
20-29mins late	3.28%	97%	2.66%	97%
30-59mins late	2.41%	99.6%	2.27%	99.5%
60mins+ late	0.44%	100%	0.46%	100%
Total	**100%**	**100%**	**100%**	**100%**

Table 18

Taking into account passengers who alight before terminating stations and variable loadings of services, Table 18 above compares train lateness distribution with passenger lateness distribution. It can be seen that 86% of passengers arrive within 10 minutes of advertised time, 3% less than trains at their terminating destination.

However the distribution between arrival bands is considerably different for passengers than trains at their destinations. Of the 86% of passenger arriving within ten minutes of advertised time only 45% arrives right time or early compared with 72% of trains at final destination. A further 29% arrived within 5 minutes of advertised time and a further 11% within 10 minutes of advertised time. This is represented graphically in Figure 22 below.

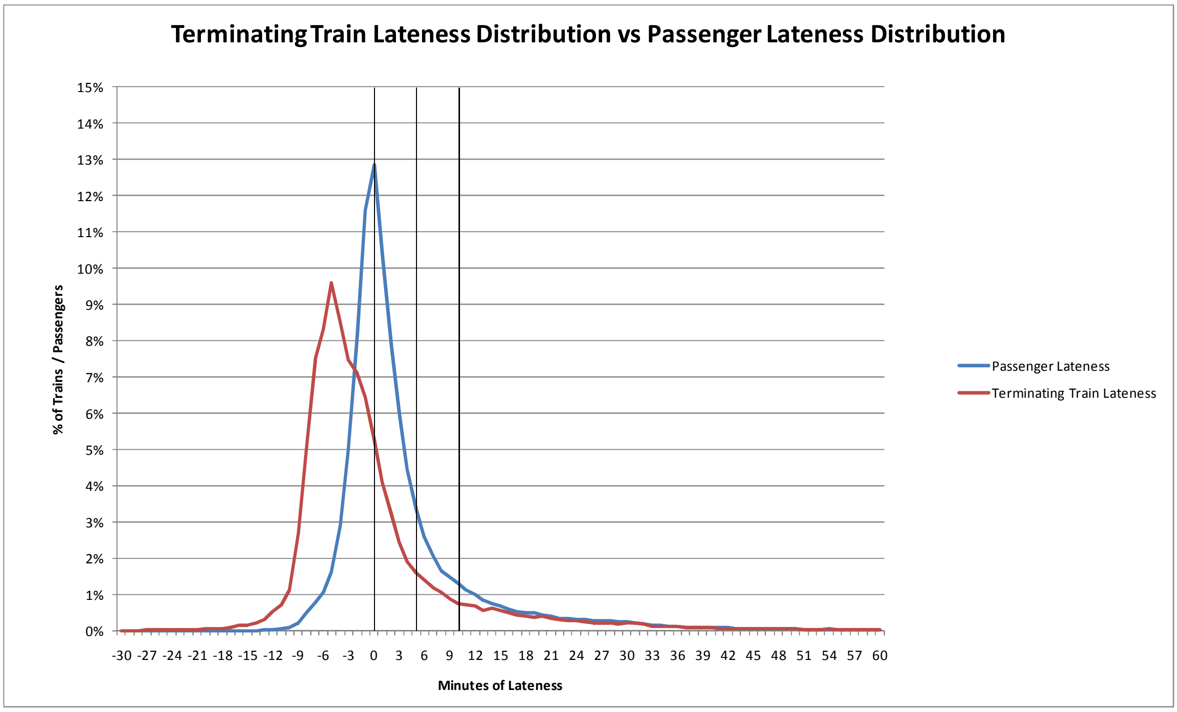


Figure 22

4.4 Average Passenger Lateness by Time of Day

As previously mentioned average passenger lateness for the study period is 4.95 minutes, whereas average train lateness is 4.40 minutes. Therefore there is a difference of half a minute between how trains are being reported and what the average passenger is experiencing.

Figure 23 below shows the average passenger lateness by time of day for the ten largest stations within the scope of this study (largest in terms of the number of passengers alighting) and compares it to average terminating train lateness. We can see that both measures follow a similar trend of increasing lateness through the day, peaking between 19:00 and 20:00. It can also be seen that average passenger lateness is consistently 1 to 2 minutes worse than average terminating train lateness throughout the day until the late evening. There are a number of possible reasons for this which will be explored in more depth

It can also be seen that the greatest disparities between the two measures are during the morning and evening peaks. While these times show the greatest disparities, they are still relatively marginal. This reflects the fact that loadings on XC services are relatively stable throughout the day with only a slight uplift during peak hours.

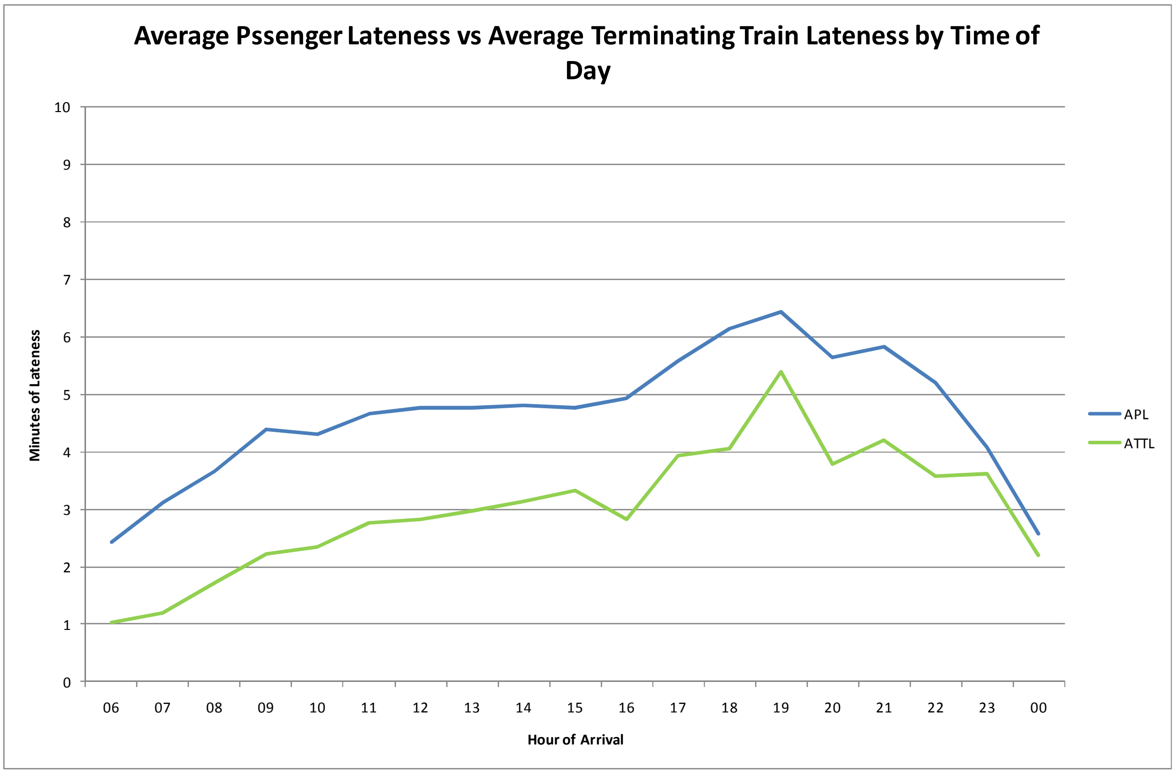


Figure 23

4.5 Average Passenger Lateness by Location

In the section above we have examined average passenger lateness by time of day across the XC network within the scope of this study. When average passenger lateness is examined by location it can be seen that passengers at different locations experience lateness of significantly varying degrees. Figure 24 below shows average passenger lateness at Bristol Temple Meads and Cheltenham Spa and compares them to average terminating train lateness. Despite the fact that these two stations are served by the same trains it can be seen that passengers alighting at Cheltenham Spa experience a greater degree of lateness on average than passengers alighting at Bristol Temple Meads. It can also be seen that passengers alighting at both of these stations experience a greater degree of lateness than that that measured at the terminating station. It should also be noted however that far fewer passengers alight at Cheltenham Spa than Bristol Temple Meads, and therefore the higher degree of average lateness affects fewer passengers. This is shown in Table 19 below. Further examples of differential average passenger lateness by location can be seen in APPENDIX B to this report.

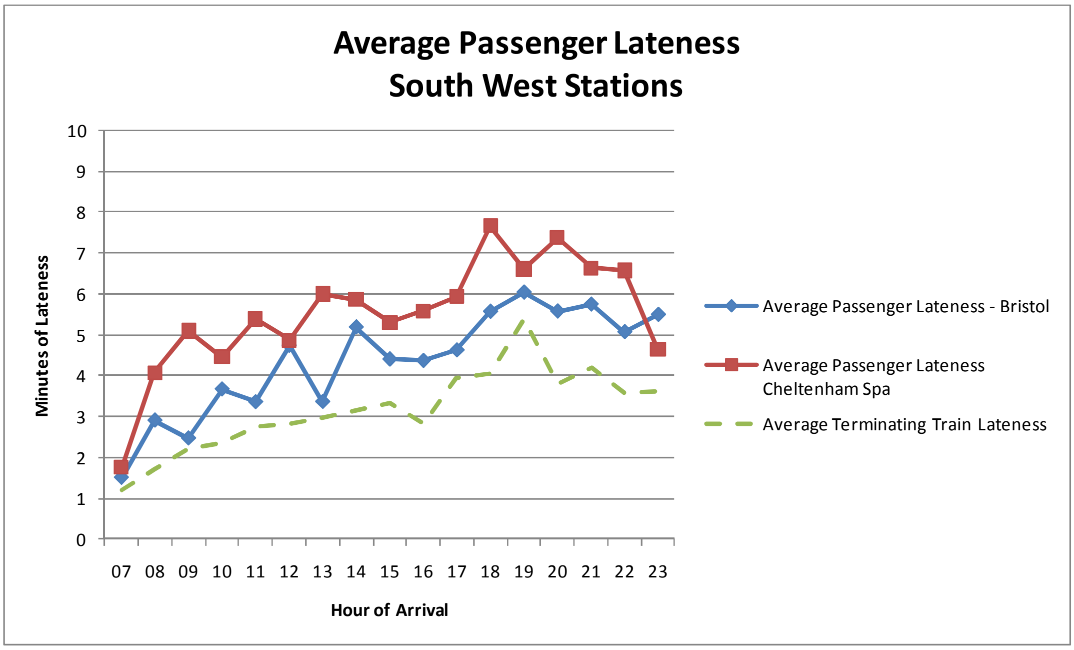


Figure 24

	Bristol Temple Meads	Cheltenham Spa
Number of Passengers Alighting	2,820,600	1,304,984

Table 19

4.6 Average Passenger Lateness by Location – Terminating vs Through Trains

In the section above we have seen that average passenger lateness differs by location. Figure 25 below compares average passenger lateness with average train lateness at Manchester Piccadilly. All scheduled XC services to the North West terminate at Manchester and Manchester is a major destination with a high proportion of passengers alighting here. This explains the extremely close match between average passenger lateness and average train lateness.

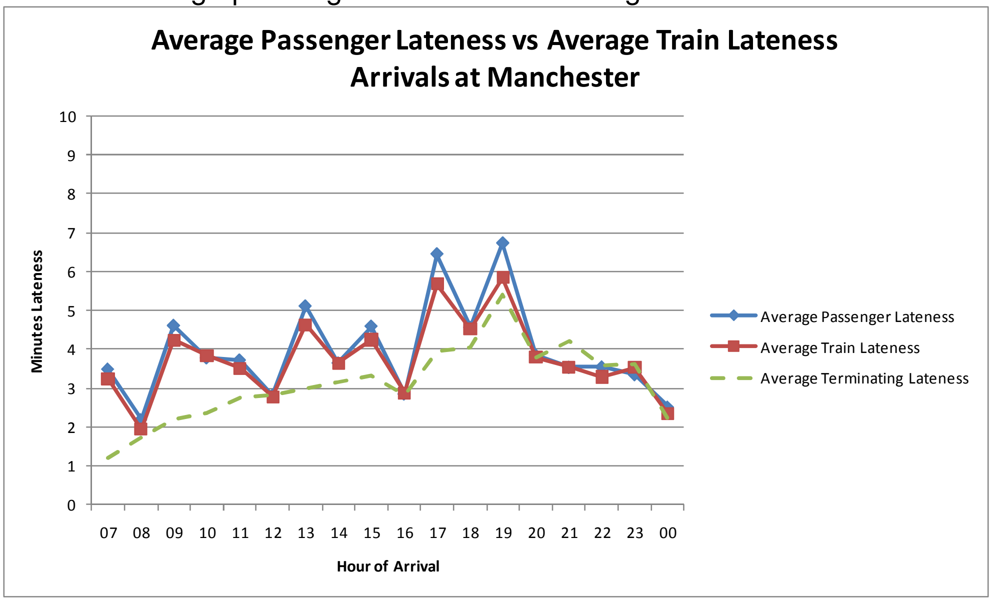


Figure 25

Figure 26 below compares the average passenger lateness for passengers travelling on terminating trains with that for those travelling on through trains for the three stations at the extremities of the study area.

In the case of trains serving Newcastle and Reading, it can be seen that the degree of lateness by passengers alighting from through services is generally higher than the degree of lateness experienced by passengers alighting from terminating services. This reflects the industry practice of including 'recovery time' at the end of a service as part of its schedule.

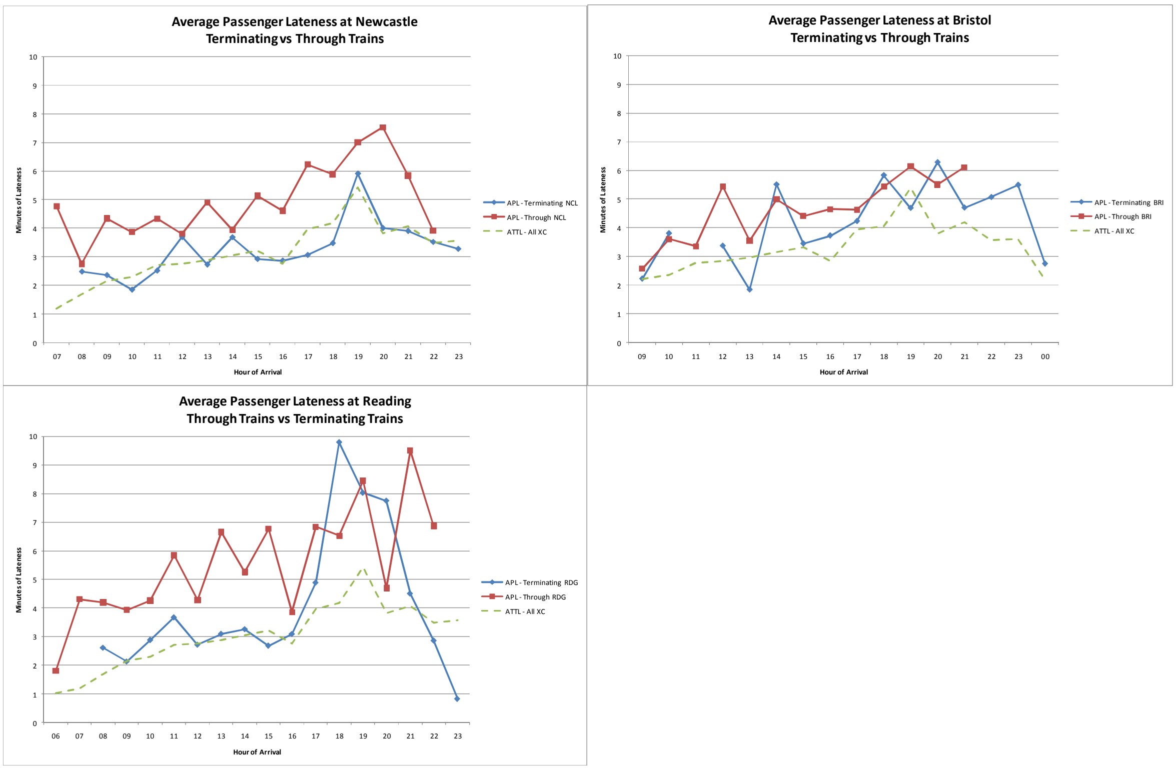


Figure 26

Table 20 below shows the percentage of passengers alighting at the stations detailed in Figure 26 and the type of service (terminating or through) that they alighted from. It can clearly be seen that the majority of passengers alighting at these stations are from through trains, 69% at Newcastle, 84% at Bristol and 85% at Reading. Again this suggests that lateness experienced by passengers differs considerably from the industry PPM measure as a significant majority are travelling on services that do not terminate at the station at which they alight and they therefore do not benefit from the recovery time built into the timetable.

	Newcastle		Bristol		Reading	
Service Type	No. Of Passengers Alighting	% of Passengers Alighting	No. Of Passengers Alighting	% of Passengers Alighting	No. Of Passengers Alighting	% of Passengers Alighting
Terminating Trains	783,543	31%	456,439	16%	427,316	15%
Through Trains	1,712,011	69%	2,364,161	84%	2,396,215	85%
Total	2,495,554	100%	2,820,600	100%	2,823,531	100%

Table 20

4.7 Average Passenger Lateness by Route

Sections 4.5 and 4.6 above showed how passenger lateness differs by location, time of day and whether a passenger is travelling on a terminating or through train. This section will examine how passenger lateness differs along line of route. Figure 27 below compares average passenger lateness for trains terminating and travelling through the stations at the furthest geographical extent of the study area. In the case of SE to NW services all trains terminate at Manchester. The horizontal black line represents the lateness experienced by passengers on terminating services at the destination at the furthest extent of the study area and is analogous to what is conventionally captured by measurements such as PPM for trains. Passengers alighting at stations where lateness is greater than this line can be seen to have experienced lateness in excess of that captured by standard industry measurements.

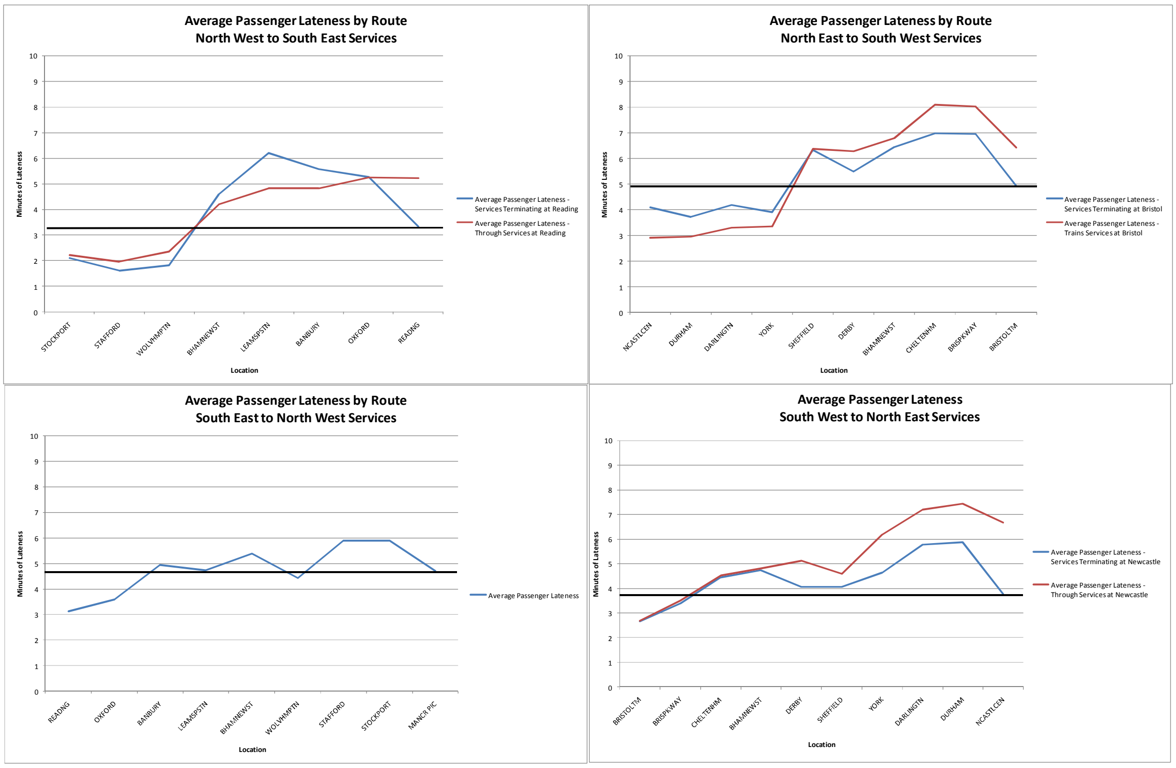


Figure 27

It can be seen for NW to SE services, passengers travelling on trains that travel through Reading experience less lateness if alighting at stations en route. However if a passenger alights at Reading, on average, they experience almost two minutes less delay if travelling on a terminating service than on a service operating to a destination beyond Reading. As can be seen in Table 20 above, a smaller proportion of passengers alighting at Reading travel on these services. Therefore the degree of lateness experienced for through services affects far more passengers.

Passengers travelling on services that terminate outside the study area, as opposed to the boundary stations, also experience a greater degree of delay on services between the NE and SW for both northbound and southbound services. For southbound services, passengers alighting at intermediate stations early on the route experience a lesser degree of lateness than those travelling to or beyond Bristol. Passengers travelling northbound on this route however experience a greater degree of lateness than passengers alighting at Newcastle from Cheltenham onwards.

Figure 28 below compares average passenger lateness for NE to SE services.

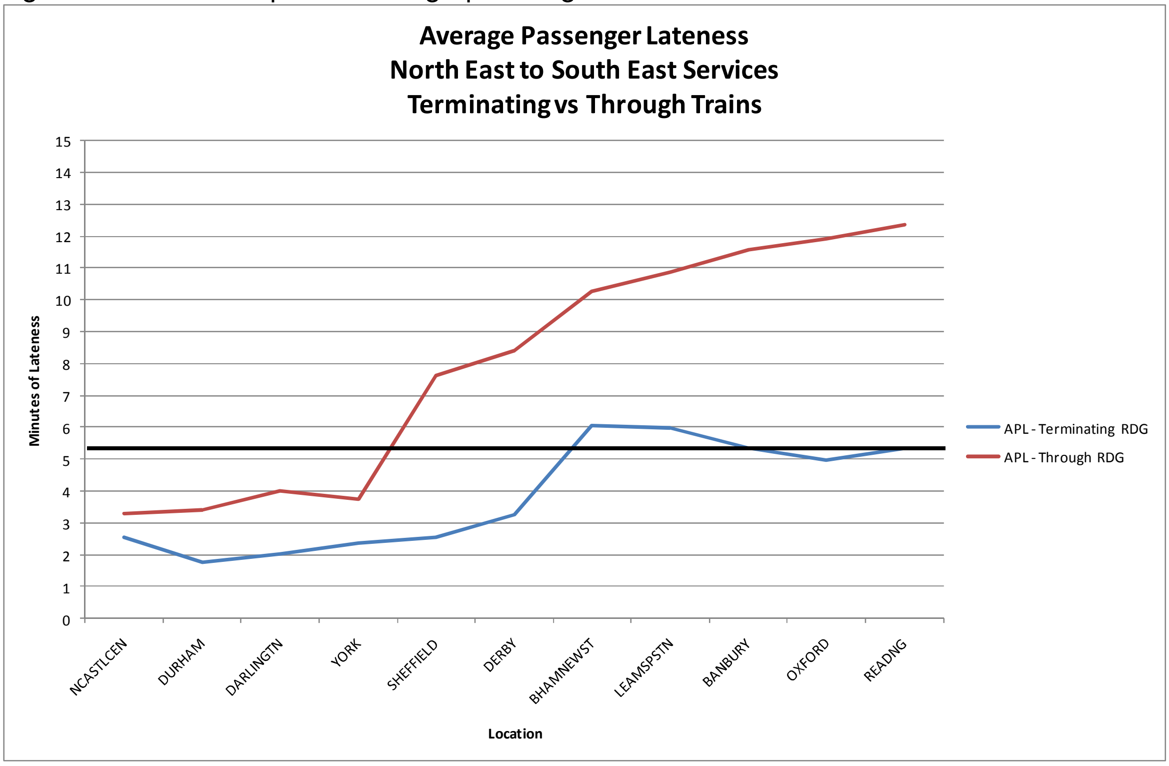


Figure 28

It can clearly be seen that passengers travelling on services terminating at Reading consistently experience a lesser degree of lateness than passengers travelling on services operating to destinations after Reading. This is particularly pronounced for passengers alighting at stations from Sheffield onwards. Passengers alighting at Reading from services terminating at that station on average experience 7 minutes less lateness than passengers on through stations alighting there. Again, as has been seen above, a considerably higher proportion of passengers alighting at Reading travel on through services than terminating services.

4.8 Average Passenger Lateness 2008 Timetable Recasting

In December 2008 the XC timetable was significantly recast. This section will examine what effect this change has had on average passenger lateness. Figure 29 below compares average passenger lateness pre and post timetable recasting for NE to SW services.

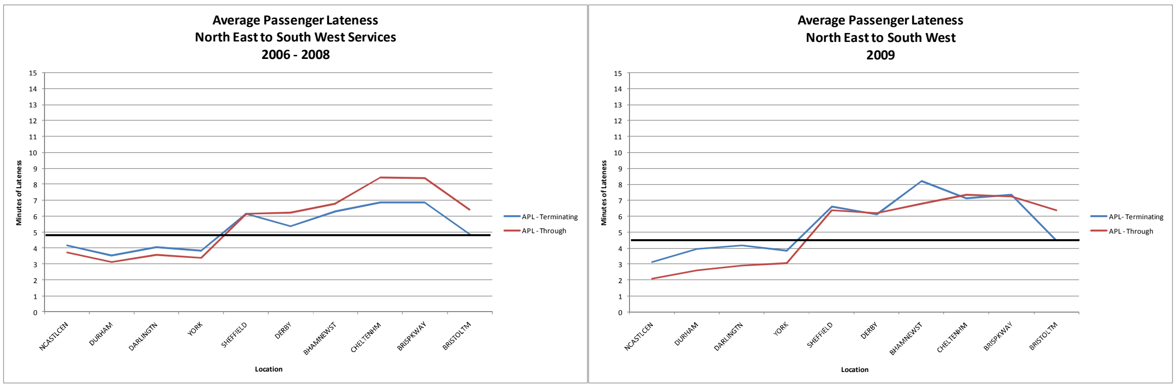


Figure 29

It can be seen that average passenger lateness for services operating to destinations beyond Bristol (through trains) has improved for intermediate stations after Birmingham New Street. For passengers alighting from services that terminate at Bristol, the affect of the recasting has been marginal with the exception being average passenger lateness at Birmingham New Street. On the whole the timetable recasting has not had a dramatic affect on NE SW.

In contrast to the pattern seen above the 2008 timetable recasting has had a dramatic affect on average passenger lateness levels for services from NE to SE. Figure 30 below shows that average passenger lateness for both services terminating and through Reading has decreased at all stations en route. Average passenger lateness for all stops for services terminating at Reading fell from 5.9 minutes pre-recasting to 4.1 minutes, an improvement of 1.8 minutes. For services operating to stations beyond Reading average passenger lateness has improved from 9.3 minutes to 1.8 minutes, an improvement of 7.5 minutes.

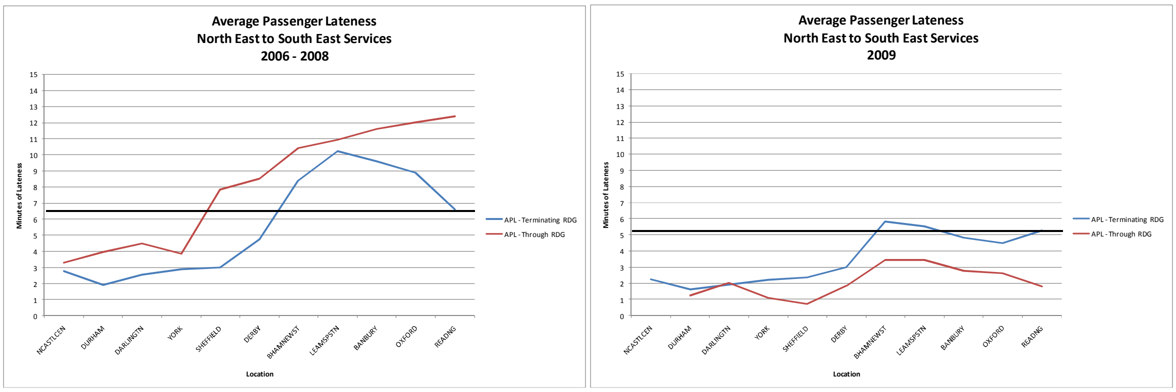


Figure 30

When this improvement is examined by location and time of day it can be seen that the timetable recasting has had a dramatic affect on average passenger lateness at Reading at most times of day (see Figure 31 below) and passengers alighting at Reading from terminating services have seen an improvement in punctuality until arrivals after 17:00, however, after 17:00 average passenger lateness dramatically increases. A closer examination of this reveals that the high degree of average passenger lateness after 17:00 is overwhelmingly caused by a relatively small number of services. These services are shown in Table 21 below.

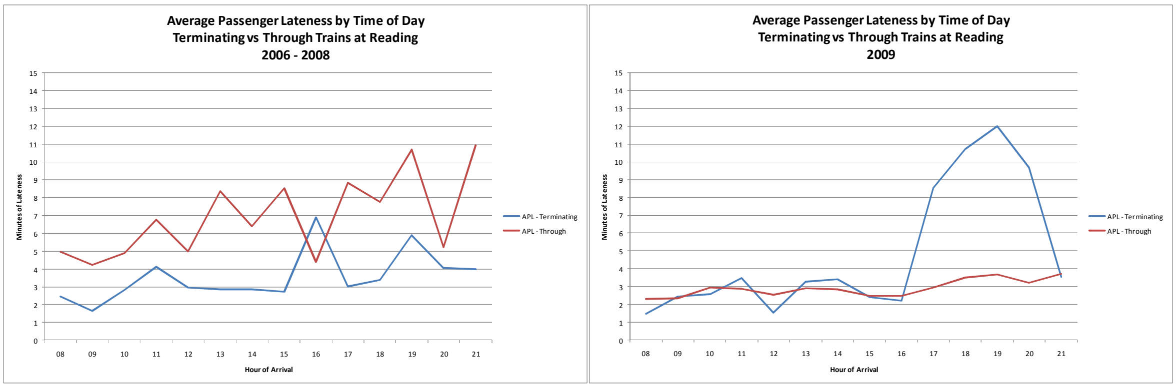


Figure 31

Timetable	Service (Bugle)	Average Train Lateness
May 2009	1219 NCL-RDG 1713	13.31
	1334 NCL-RDG 1813	15.07
	1427 NCL-RDG 1913	17.57
	1522 NCL-RDG 2013	15.20
December 2009	1334 NCL-RDG 1808	7.09
	1426 NCL-RDG 1908	9.40
Average Passenger Lateness		13.75

Table 21

4.9 Passenger Lateness Analysis – Conclusions

- Average passenger lateness in the study period was 4.95 mins, it has improved from around 6 mins at the start of the study period to around 4 minutes most recently
- The distribution of passenger lateness is later than train lateness distribution
- Average passenger lateness for the study period is 4.95 minutes, whereas average train lateness is 4.40 minutes. Therefore there is a difference of half a minute between how trains are being reported and what the average passenger is experiencing
- Average passenger lateness increases through the day to peak at around 5 minutes between 7pm and 8pm, whilst average passenger lateness increases though the day, peak at over 6 minutes between 6pm and 7pm
- Passengers alighting at Cheltenham Spa experience a greater degree of lateness on average than passengers alighting at Bristol Temple Meads
- The degree of lateness suffered by passengers alighting from through services is generally higher than the degree of lateness experienced by passengers alighting from terminating services
- As previously demonstrated with train lateness, there is a significant difference in average passenger lateness between terminating and through trains at Reading. Passengers alighting at Reading from services terminating at that station on average experience 7 minutes less lateness than passengers on through trains
- The 2008 timetable recasting has had a dramatic positive effect on average passenger lateness levels for services from the North East to South East

- For services operating to stations beyond Reading average passenger lateness has improved from 9.3 minutes to 1.8 minutes, an improvement of 7.5 minutes as a result of the timetable recast
- Further examination at Reading of the recasting reveals that the high degree of average passenger lateness after 17:00 is overwhelmingly caused by a relatively small number of services that terminate there. In the latest timetable examined, December 2008, the trains causing the greatest degree of average passenger lateness were the 13:34 Newcastle – Reading 18:08 and the 14:26 Newcastle – Reading 19:08

5 Relationship between Customer Satisfaction and Train Performance

Having examined both customer satisfaction and train performance the next step is to look at the relationship between the two.

The spread of satisfaction with punctuality by minutes lateness in the NPS data suggests that 97% of those passengers interviewed arrived within 30 minutes of advertised time. The other 3% have been excluded from the following analysis because the sample sizes were too small to use.

Table 22

Route	Satisfied
Business	76%
Commuter	62%
Leisure	77%
All Passengers	**72%**

In the sample used 72% of all passengers were satisfied with punctuality.

The graph below in Figure 32 shows that there is a strong linear relationship between customer satisfaction and the amount of delay they have experienced.

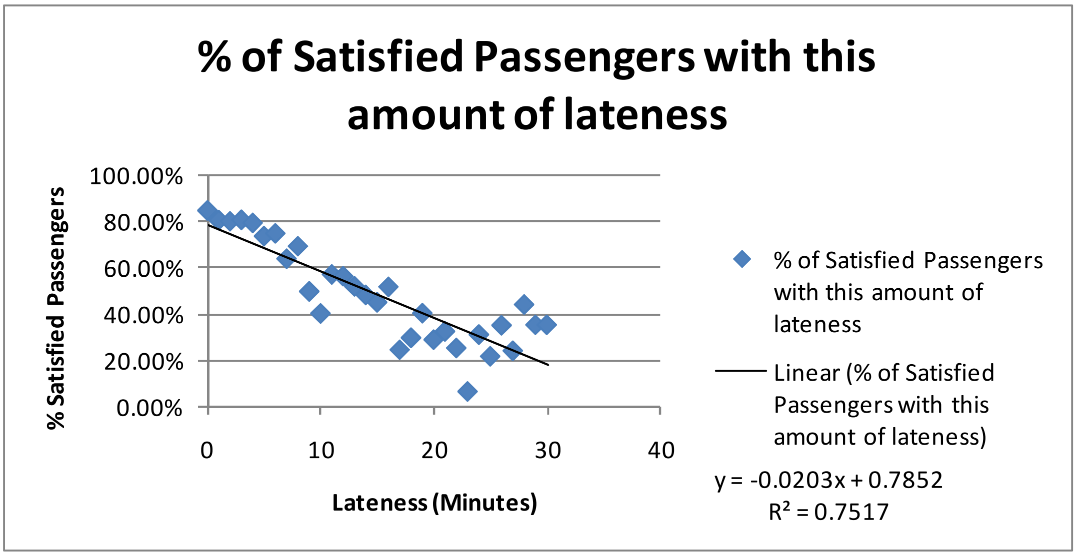


Figure 32

Overall the equation of the graph shows that passenger satisfaction decreases by 2% with each additional minute of lateness. This is consistent with the conclusions of the previous report for NXEA.

5.1 Relationship Variation by Journey Purpose

Strong correlations were found when looking at the change in satisfaction based on lateness observed for both business and leisure journeys as shown below in Figure 33.

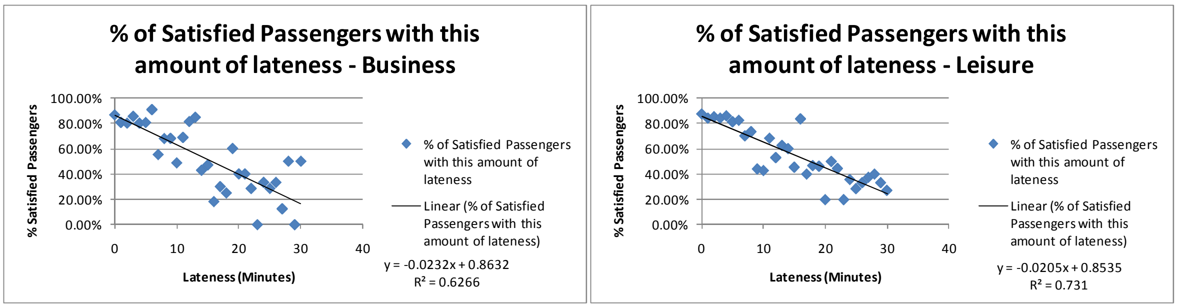


Figure 33

Examining the same relationship for commuters shows that the relationship wasn't as strong. This was considered to be due to the sample size of commuters who suffered more than 15 minutes of delay being too small and may be because commuters are likely to be travelling over shorter distances to urban centres. Generally, more frequent services operate (including trains run by other operators), therefore commuters are more likely to be able to get on another service in less than half an hour. We therefore examined only those commuters who suffered up to 15 minutes of lateness (over 90% of commuters), as this was considered more appropriate. The relationship for commuters for up to a 15 minute lateness range gives an R-squared value of nearly 0.7 between lateness and satisfaction for commuters. This correlation is much stronger and is more consistent with the overall view. This is shown in Figure 34 below:

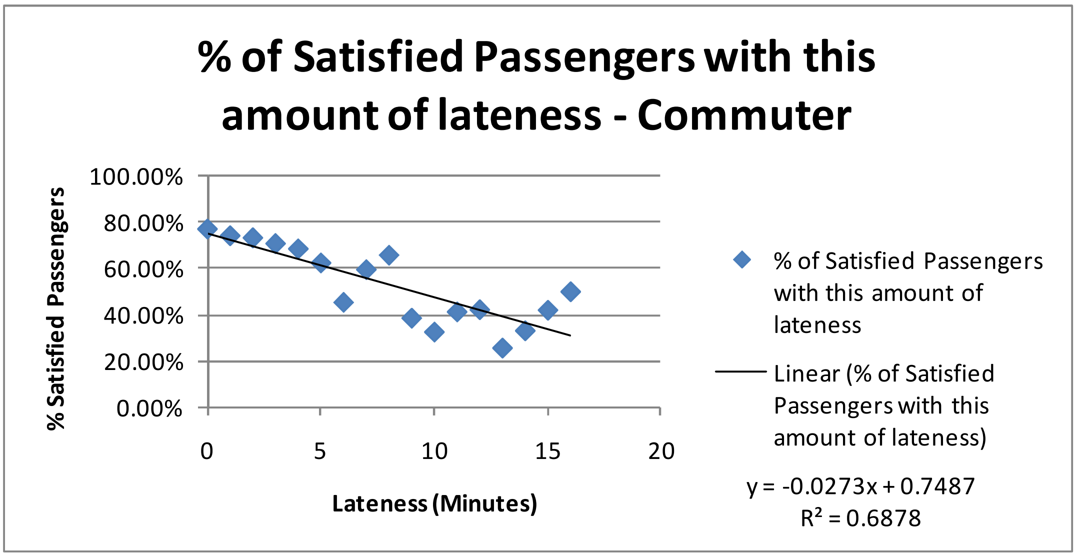


Figure 34

In all other examples the relationship suggests that there is around a 2% change in satisfaction for every minute of lateness, but for commuters this is closer to 3%, reinforcing the view that commuters are more sensitive to lateness.

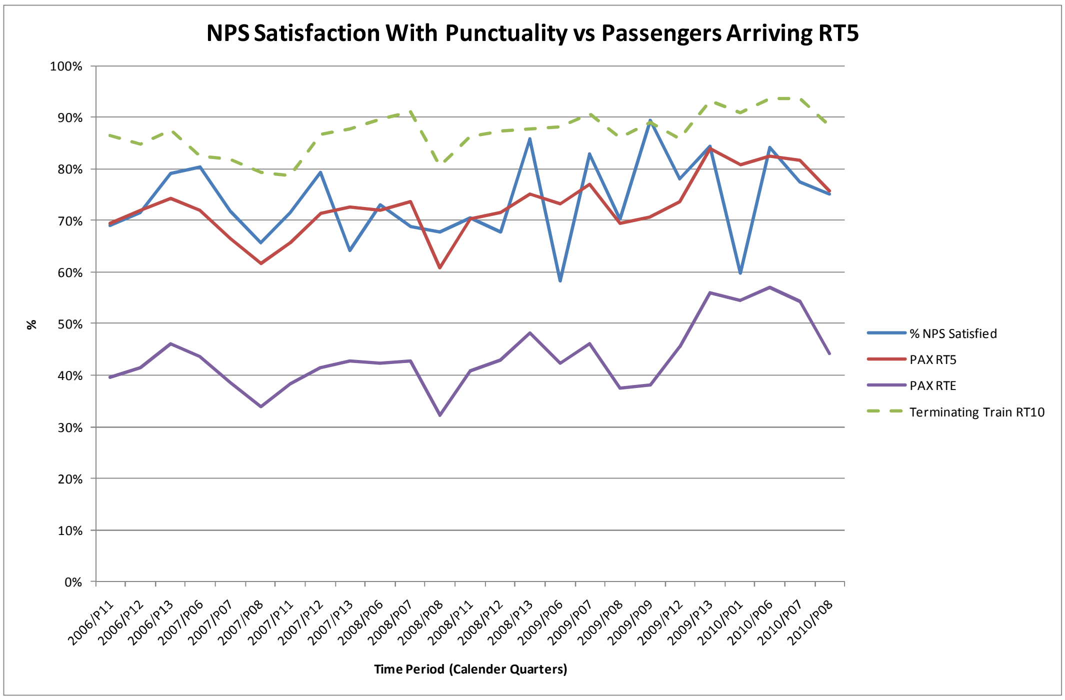
5.2 Correlation between customer satisfaction with Performance and Lateness

Table 23 below shows the NPS sample available to investigate the relationship between customer satisfaction with punctuality.

Table 23

RSP Period	% Passengers Arriving RTE	% of Weighted Respondents Satisfied	Weighted Respondents Satisfied	Count of Respondents Satisfied
2006/P11	40%	69%	425	49
2006/P12	42%	72%	3,305	350
2006/P13	46%	79%	2,477	240
2007/P06	44%	80%	613	55
2007/P07	38%	72%	3,114	269
2007/P08	34%	66%	1,078	101
2007/P11	38%	72%	1,129	100
2007/P12	41%	79%	4,524	363
2007/P13	43%	64%	731	69
2008/P06	42%	73%	1,062	92
2008/P07	43%	69%	3,058	278
2008/P08	32%	68%	2,280	181
2008/P11	41%	70%	2,674	175
2008/P12	43%	68%	4,204	265
2008/P13	48%	86%	701	49
2009/P06	42%	58%	1,382	58
2009/P07	46%	83%	2,149	85
2009/P08	37%	70%	1,200	45
2009/P09	38%	89%	372	16
2009/P12	45%	78%	5,293	186
2009/P13	56%	84%	4,584	194
2010/P01	54%	60%	184	8
2010/P06	57%	84%	4,956	145
2010/P07	54%	77%	3,825	147
2010/P08	44%	75%	3,087	86
Grand Total	**44%**	**75%**	**58,405**	**3,606**

In order for an equation to be determined which could be used to forecast this relationship a series of stepwise regressions must be carried out.



Unfortunately due to the variation between time periods and sample sizes being too low in too many instances, a normal curve is not an accurate enough fit to perform the regressions.

A number of alternative methods were attempted. However the results of these were unsuitable to be used in any kind of forecast when checked using backcasting.

5.3 Relationship between Customer Satisfaction and Performance - Conclusions

- Overall the relationship between customer satisfaction and train performance shows that passenger satisfaction decreases by 2% with each additional minute of lateness
- In all other examples the relationship suggests that there is around a 2% change in satisfaction for every minute of lateness, but for commuters this is closer to 3%, reinforcing the view that commuters are more sensitive to lateness
- Sample sizes were too low and erratic to determine a forecast for passenger satisfaction with performance and lateness

6 Impact of Crowding

An overview of satisfaction with crowding shows that 62% of XC passengers[2] in the NPS sample felt that they had sufficient room to sit as shown below in Table 24.

Table 24

	Very Satisfied - Punctuality	Fairly Satisfied - Punctuality	Neither - Punctuality	Fairly Dissatisfied - Punctuality	Dissatisfied - Punctuality	Grand Total
Very Good - Room to Sit	15%	4%	1%	1%	1%	**22%**
Fairly Good - Room to Sit	18%	14%	2%	4%	2%	**40%**
Neither - Room to Sit	5%	5%	2%	1%	1%	**14%**
Fairly Poor - Room to Sit	4%	4%	1%	2%	1%	**12%**
Very Poor - Room to Sit	2%	4%	1%	2%	2%	**12%**
Grand Total	**43%**	**32%**	**7%**	**10%**	**7%**	**100%**

Considering the results from the NPS survey, we can see that where the rating for "sufficient room to sit/stand" is rated very poor, the respondent is more likely to be very dissatisfied with punctuality. As demonstrated by the fact that the average dissatisfaction with punctuality was only 17%, whereas by comparison, 30% of those who felt there was insufficient room to sit were also dissatisfied with punctuality.

Table 25

	Satisfied with Punctuality	Neither with Punctuality	Dissatisfied with Punctuality	Grand Total
Sufficient Room to Sit	82%	5%	13%	**100%**
Neither/Nor Room to Sit	70%	13%	16%	**100%**
Insufficient Room to Sit	60%	10%	30%	**100%**
Grand Total	**75%**	**7%**	**17%**	**100%**

By considering both the lateness of each respondents train and the level of crowding, we can see whether for the same level of delay, there is a lower level of satisfaction for punctuality if the train is more crowded.

Table 26

	No Standing	Some Standing	Crowded	Grand Total
RT	46%	31%	38%	**44%**
1-9 Late	38%	42%	39%	**39%**
10-29 late	11%	19%	18%	**13%**
30+ Late	3%	6%	3%	**4%**
Cancelled	1%	2%	2%	**1%**
Grand Total	**100%**	**100%**	**100%**	**100%**

Figure 35 below shows the trend in satisfaction with punctuality, this suggests that overall there is no apparent impact of crowding on the rating given for punctuality.

[2] Please note that NPS responses that were either Don't Know or of No Opinion were not used in the analysis.

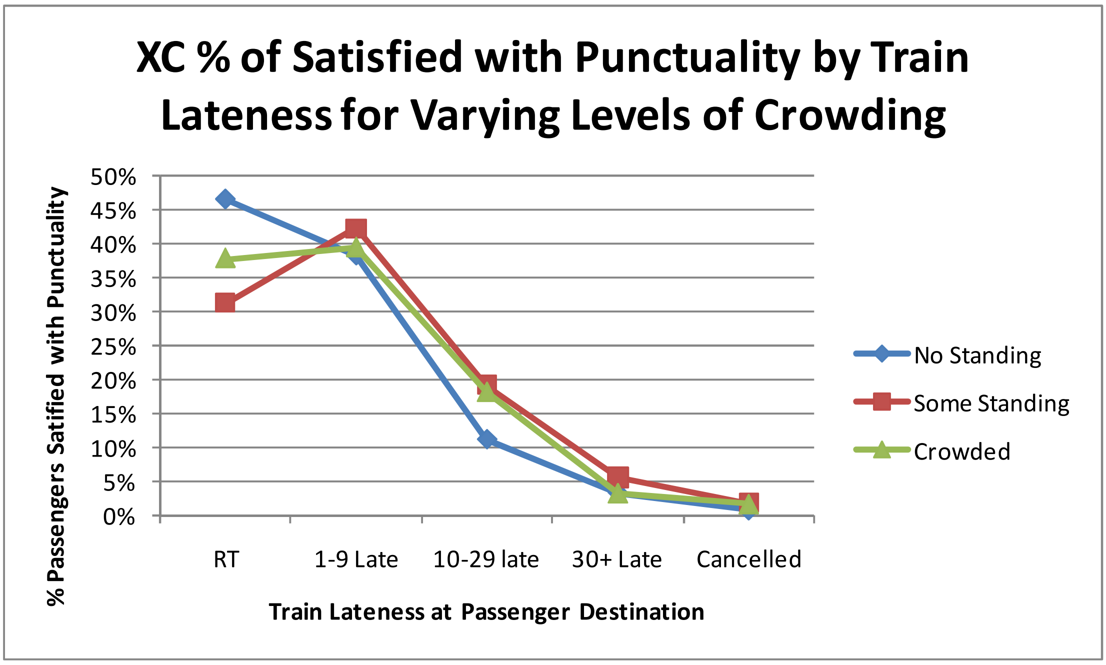


Figure 35

Please note that examining the impact of crowding on Overall Satisfaction was outside the scope of this work, although Table 27 below gives an overview of the NPS responses.

Table 27

	Very Satisfied - Overall	Fairly Satisfied - Overall	Neither - Overall	Fairly Dissatisfied - Overall	Dissatisfied - Overall	Grand Total
Very Good - Room to Sit	15%	7%	1%	0%	0%	**22%**
Fairly Good - Room to Sit	13%	22%	2%	2%	1%	**40%**
Neither - Room to Sit	2%	8%	2%	1%	0%	**14%**
Fairly Poor - Room to Sit	2%	7%	2%	1%	0%	**13%**
Very Poor - Room to Sit	1%	5%	2%	3%	1%	**12%**
Grand Total	**33%**	**48%**	**9%**	**7%**	**3%**	**100%**

6.1 Impact of Crowding - Conclusions

- There was no determinable impact of crowding on the rating given for punctuality

7 Conclusions

7.1 Overall Conclusions

Overall satisfaction with performance on XC is 75% and it has increased by 10% since refranchising in November 2007.

Passengers travelling from the North East have a higher representation in the sample, with almost 40% of respondents from this area and lower representation from passengers in the North West and South West

Around half (49%) of the passengers carried by XC are categorised as leisure travellers, with business travellers at 36% and commuters 15%. The lowest levels of satisfaction with punctuality are recorded by commuters with only 61% satisfied as opposed to 77% of business and leisure travellers. The South East route has the greatest dissatisfaction scores, particularly with commuters and noticeably in passenger flows going from Birmingham.

Average passenger lateness in the study period was 4.95 mins. It has improved from around 6 mins at the start of the study period to around 4 minutes most recently. By comparison average train lateness is 4.40 minutes. Therefore there is a difference of half a minute between how trains are being reported and what the average passenger is experiencing.

The percentage of trains arriving within 10 minutes of their scheduled time is consistently higher than the percentage of NPS respondents who are satisfied with punctuality, suggesting that other measures may be more appropriate for measuring punctuality.

Seasonality is very apparent with Autumn (Quarter 4) suffering poorer performance.

The profile of train lateness en route through the day is similar to that of average train lateness at destination, except that the peak lateness is one hour earlier. Lateness en route throughout the day is materially worse than that of terminating trains. When looking at lateness throughout the day the distribution of passenger lateness is later than train lateness distribution.

Average passenger lateness increases through the day to peak at around 5 minutes between 7pm and 8pm, whilst average passenger lateness increases though the day, peak at over 6 minutes between 6pm and 7pm

Cancellations over the study period as a whole have been relatively high although a dramatic improvement has been seen recently

The 2008 timetable recasting has had a dramatic positive effect on average passenger lateness levels for services from the North East to South East

Overall the relationship between customer satisfaction and train performance shows that passenger satisfaction decreases by 2% with each additional minute of lateness. For commuters this is closer to 3%, reinforcing the view that commuters are more sensitive to lateness.

There was no determinable impact of crowding on the rating given for punctuality

7.2 Conclusion en Route

When train performance is analysed at a route level then until recently, southbound NE⇔SE services have performed much worse than other XC services. A step change in performance happened in 2008, most services seeing improvement apart from NW⇔SW northbound services. Most routes are now performing around the XC average apart from NE⇔SW route which now performs worse.

The degree of lateness suffered by passengers alighting from through services is generally higher than the degree of lateness experienced by passengers alighting from terminating services.

The 2008 timetable recasting has had a dramatic positive effect on average passenger lateness levels for services from the North East to South East.

For services operating to stations beyond Reading average passenger lateness has improved from 9.3 minutes to 1.8 minutes, an improvement of 7.5 minutes as a result of the timetable recast.

7.3 Conclusions by Location

Looking at particular locations indicated that trains recover time between Bristol Parkway and Bristol Temple Meads. Trains that terminate at Reading are on average 6.9 minutes earlier than those that pass through.

Passengers alighting at Cheltenham Spa experience a greater degree of lateness on average than passengers alighting at Bristol Temple Meads.

As with train lateness, there is a significant difference in average passenger lateness between terminating and through trains at Reading. Passengers alighting at Reading from services terminating at that station on average experience 7 minutes less lateness than passengers on through trains

Further examination at Reading of the recasting reveals that the high degree of average passenger lateness after 17:00 is overwhelmingly caused by a relatively small number of services that terminate there. In the latest timetable examined, December 2008, the trains causing the greatest degree of average passenger lateness were the 13:34 Newcastle – Reading 18:08 and the 14:26 Newcastle – Reading 19:08

APPENDIX A Additional Base Data

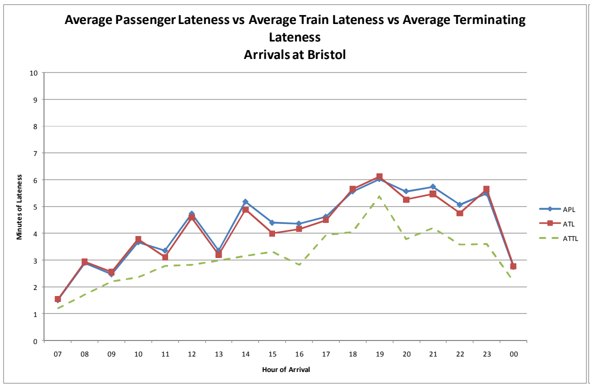
In Scope Services by Route

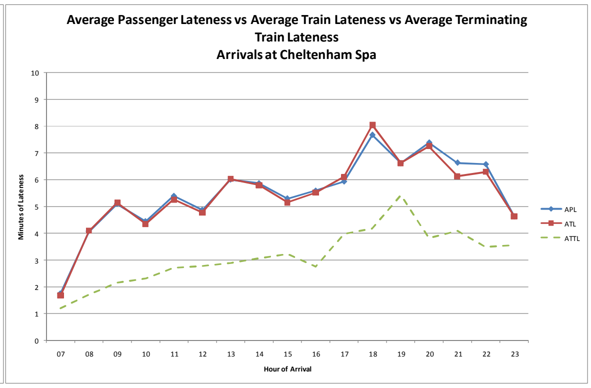
Route	2006	2007	2008	2009	Total
NE-SE/SE-NE	4,748	4,554	3,856	6,733	19,891
NE-SW/SW-NE	12,279	11,765	10,192	7,496	41,732
NW-SE/SE-NW	9,186	9,159	9,695	7,245	35,285
NW-SW/SW-NW	644	870	3,530	6,237	11,281
To BHM	6,161	5,784	4,072	3,506	19,523
From BHM	5,855	5,567	2,779	3,258	17,459
Intra Route	1,809	1,996	2,249	2,295	8,349
Total	**40,682**	**39,695**	**36,373**	**36,770**	**153,520**
NE-SE/SE-NE	12%	11%	11%	18%	13%
NE-SW/SW-NE	30%	30%	28%	20%	27%
NW-SE/SE-NW	23%	23%	27%	20%	23%
NW-SW/SW-NW	2%	2%	10%	17%	8%
To BHM	15%	15%	11%	10%	13%
From BHM	14%	14%	8%	9%	11%
Intra Route	4%	5%	6%	6%	5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

APPENDIX B Average Passenger vs Average Train Lateness & Average Terminating Train Lateness by Location

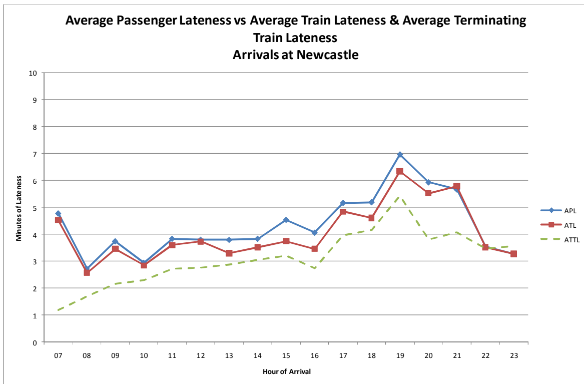
Average Terminating Train Lateness represents figure for all XC services (excluding services formerly operated by Central Trains).

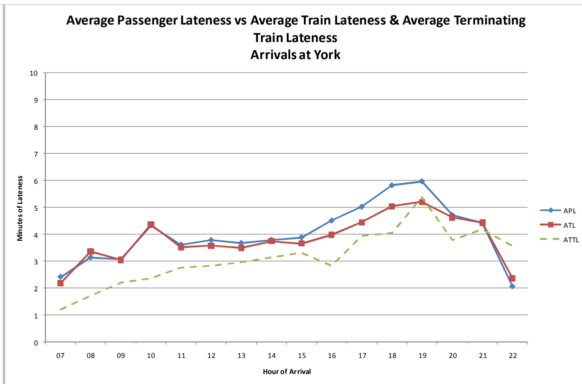
South West Stations

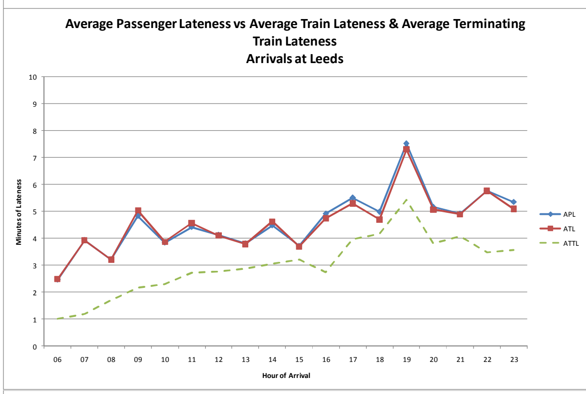


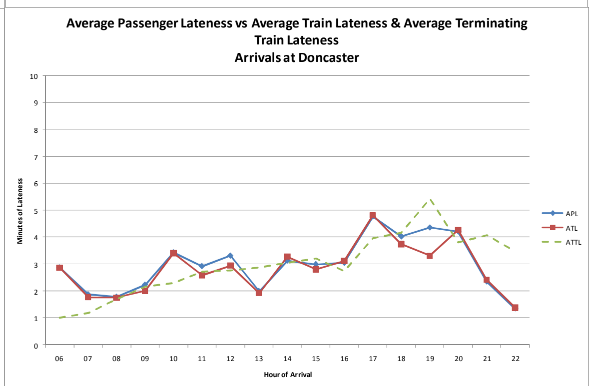


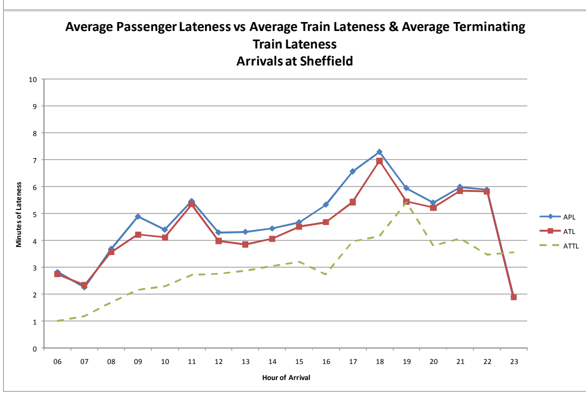
North East Stations

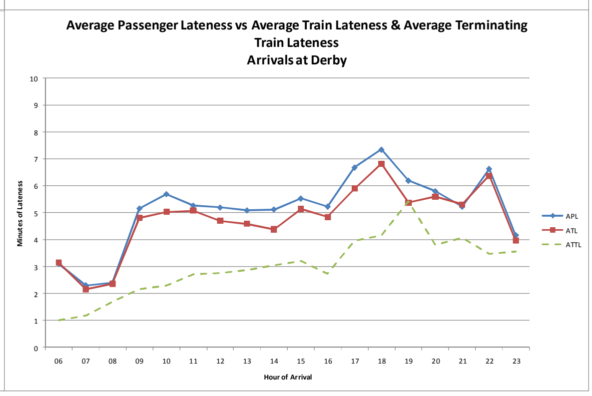




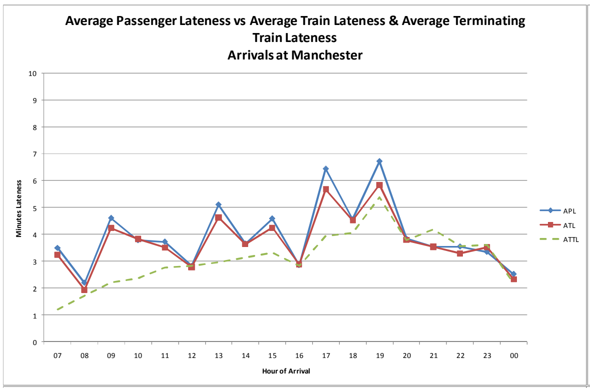


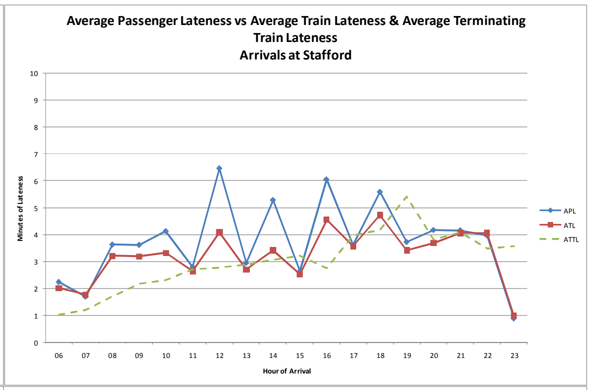


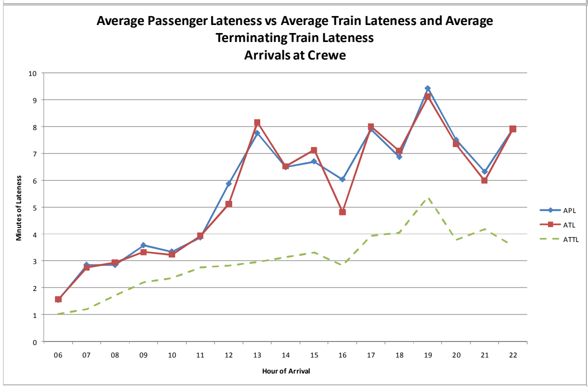


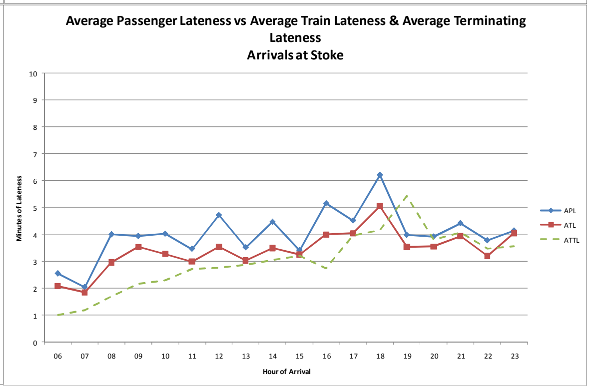


North West Stations

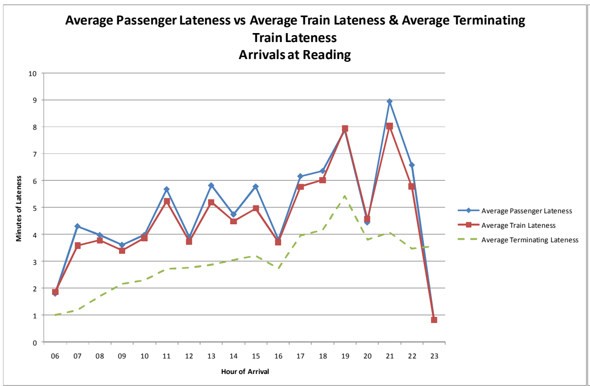


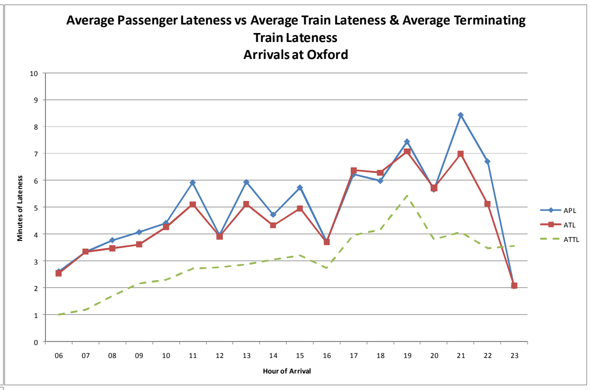


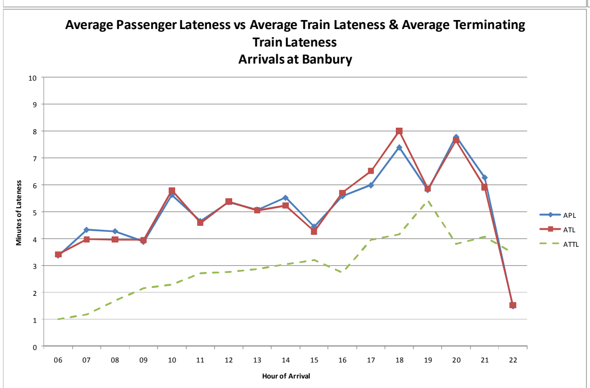




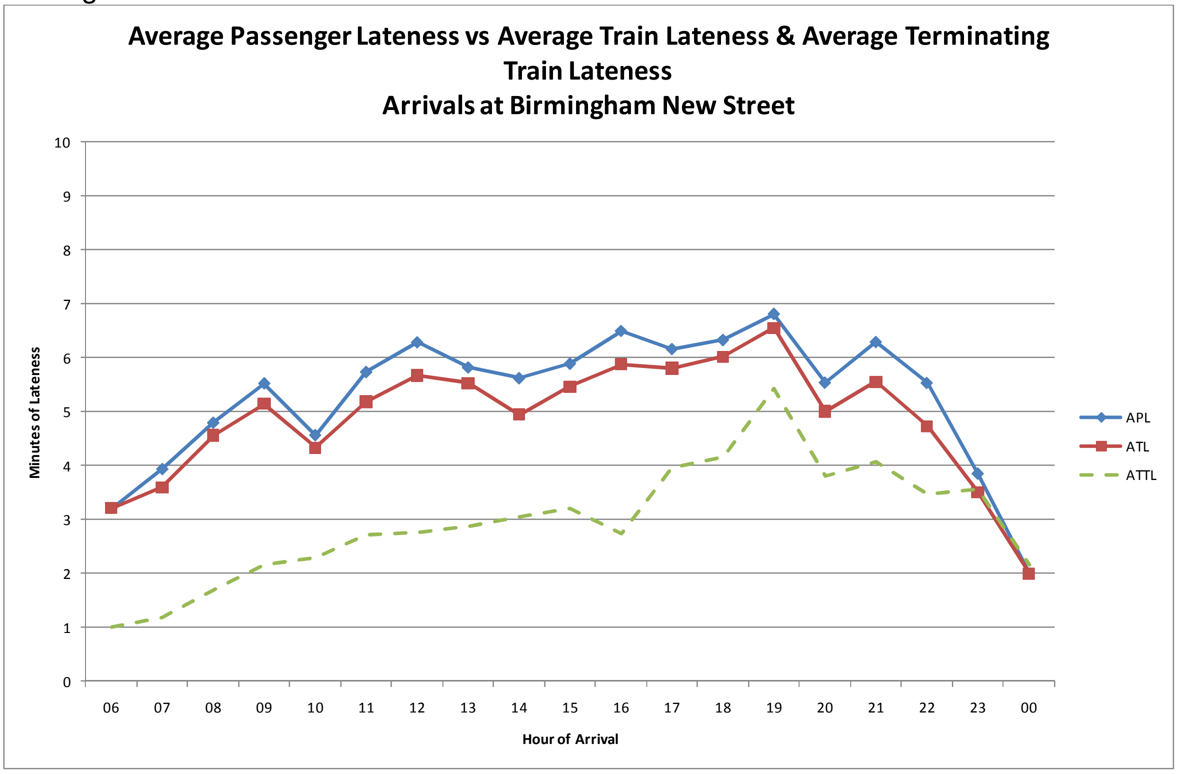
South East Stations





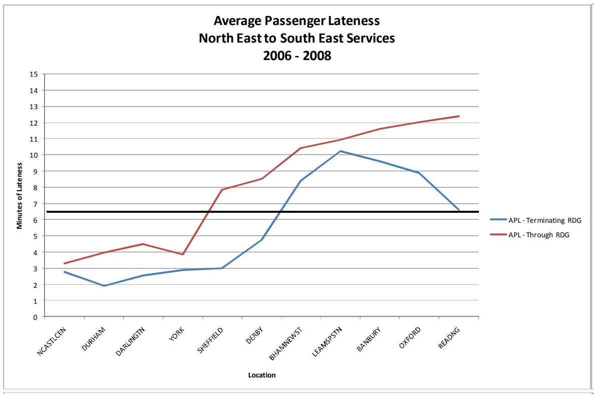


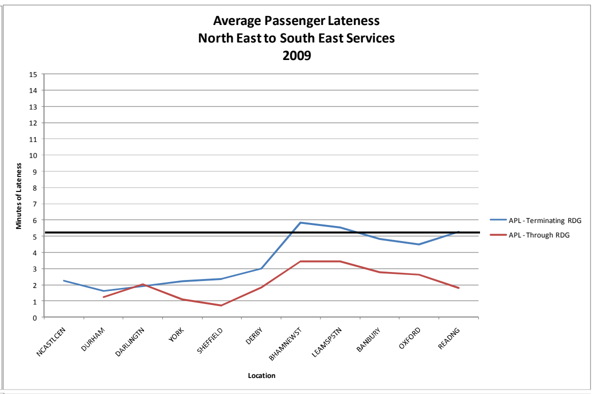
Birmingham New Street

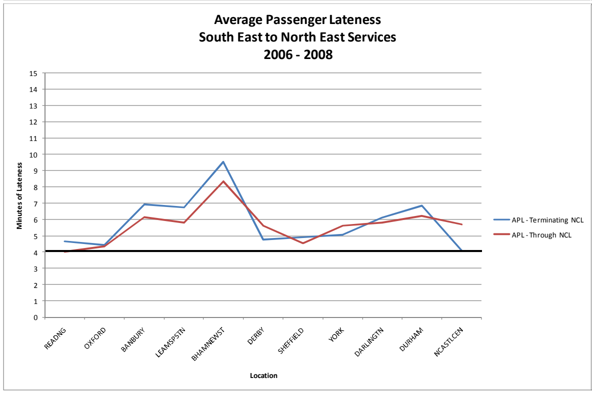


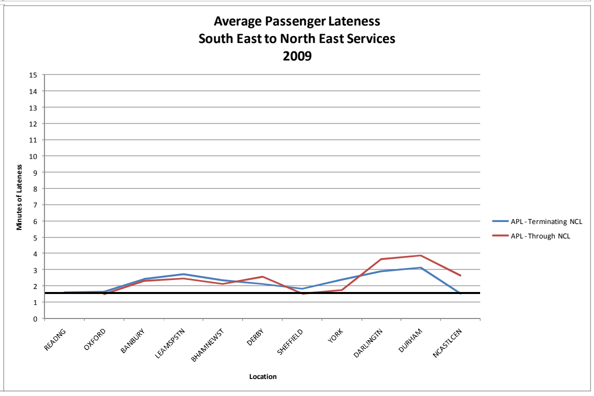
APPENDIX C Average Passenger by Route – Pre and Post 2008 Timetable Recasting

North East – South East Services

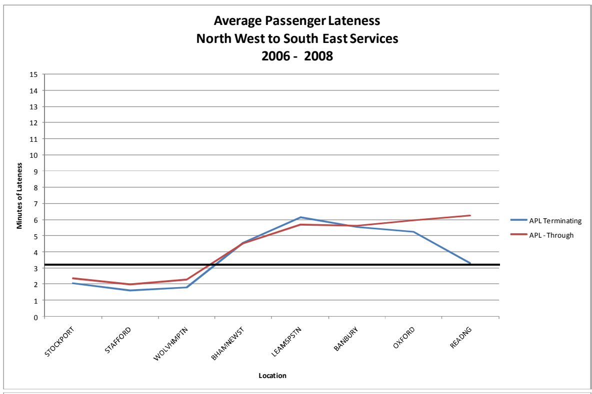


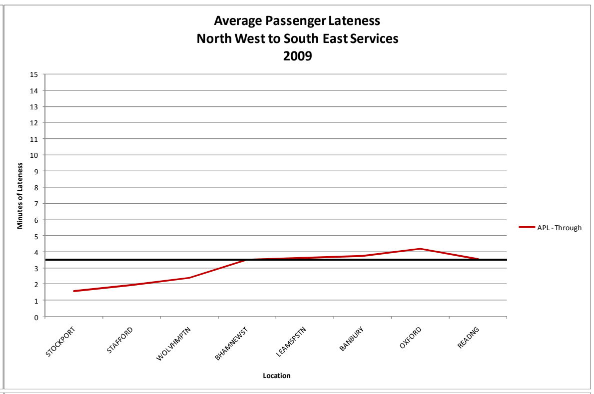


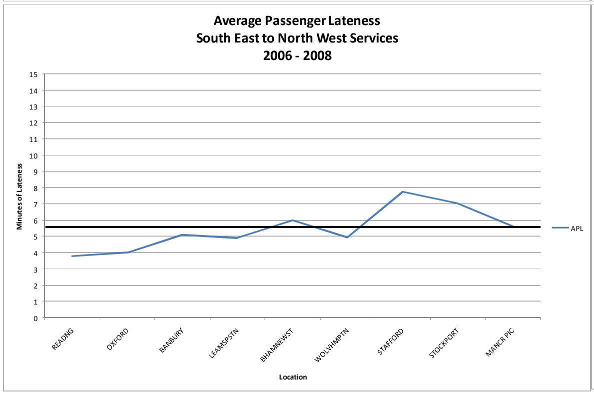


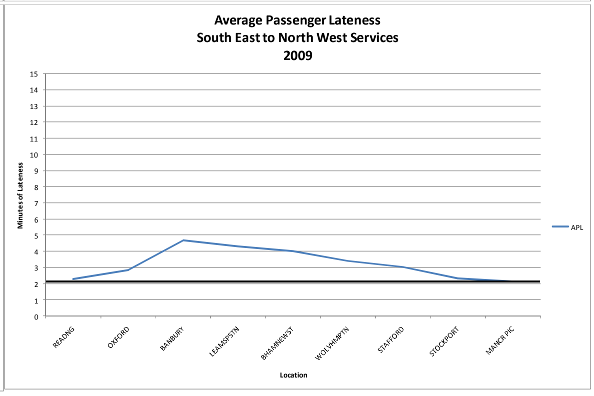


North West – South East Services









North East – South West Services