



OFFICE OF RAIL REGULATION

# Costs and Revenues of Franchised Passenger Train Operators in the UK

November 2012

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# Executive Summary

## Purpose

1. This report is being published to improve the understanding of costs and cost drivers in the rail industry. The Rail Value for Money study<sup>1</sup> commissioned by the DfT and the ORR identified that UK rail industry costs could be reduced by between £2.7bn and £3.8bn per annum by 2018-19, with around 70 per cent of this reduction coming from Network Rail, and 30 per cent from the rest of the industry. The study recommended that the ORR should benchmark TOC costs nationally and internationally to better understand their drivers. This report is a response to that recommendation and the first in what we expect to be an annual series of reports aimed at understanding and comparing the costs of passenger train operations in the UK.

2. The main objectives of this work are to:

(a) help inform public debate on the efficiency of the rail industry by providing greater transparency to taxpayers and customers on what they are paying in relation to what they receive;

(b) help DfT and TS better understand cost drivers in order to promote value for money in franchise specifications; and

(c) inform train operators on their costs relative to others, to place them in a better position to investigate the underlying causes of these differences.

3. The long term aim for this work is to contribute to an improvement in efficiency through reductions in the overall cost of operating the railways.

## Context

4. Over the period covered in this report<sup>2</sup> there has been strong growth in usage of the railways in Great Britain, alongside improvements in safety, satisfaction, and operational performance. There have also been increases in revenues to train operators (53 per cent in real terms, or 4 per cent when taking passenger growth into account) and costs (35 per cent in real terms, or 13 per cent when taking service level

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<sup>1</sup> <http://www.rail-reg.gov.uk/upload/pdf/rail-vm-detailed-report-may11.pdf>

<sup>2</sup> 2000-01 to 2011-12 – the period over which DfT has suitable data available.

increases into account). Operator costs accounted for 48 per cent of total industry costs in 2010-11<sup>3</sup>, and so are an important element in improving the overall efficiency of the industry.

5. This report presents detailed analysis of these costs and revenues for the 19 franchised Train Operating Companies (TOCs) in Great Britain for the first time. It demonstrates a real and very welcome commitment to transparency and accountability from the rail industry.

6. The work has involved collaboration across a number of organisations, notably ORR, the Department for Transport (DfT), Transport Scotland (TS), the Welsh Government, the Association of Train Operating Companies and its members, Transport for London, and Mersey Travel. ORR is grateful to these organisations for their willingness to engage and provide support in producing this report.

7. The report provides analysis of how costs and revenues have changed over time, and how they vary across franchises. The analysis cannot yet fully identify the underlying drivers of train operator costs and costs between train operators, but given that TOCs operate through franchise competitions and face on-going investor pressures, the focus is more on factors outside of their direct control.

8. This report takes an important first step by comparing unit costs against some aspects of market characteristics (overall demand) and franchise requirements (such as train and vehicle kilometres operated). Given their potential importance, subsequent reports will focus further on understanding the impact of franchise requirements and market conditions on efficiency.

### **Key Results – Comparisons over time**

9. Figure 13 on page 29 of the report shows RPI-adjusted total operator costs, excluding access charges, increased by 35 per cent between 2000-01 and 2011-12. This should be considered in conjunction with a 20 per cent increase in service levels (timetabled train kilometres) over the period. Overall real operating costs per train kilometre increased by 13 per cent, significantly less than the 35 per cent increase in total costs.

10. In terms of revenues, the analysis shows real revenue growth of 52 per cent between 2000-01 and 2011-12, with similar growth in passenger numbers. The rise in real income per passenger kilometre (so taking account of growth in service use) was 4 per cent over the period.

11. The impact of these changes is that the net subsidy being paid to TOCs by the DfT and TS is now relatively close to zero. This reflects payments made directly to TOCs but importantly does not include the impacts of subsidies to Network Rail, such as the network grant. The network grant is paid directly by government to Network Rail in lieu of fixed access charges that would otherwise have to be recouped from

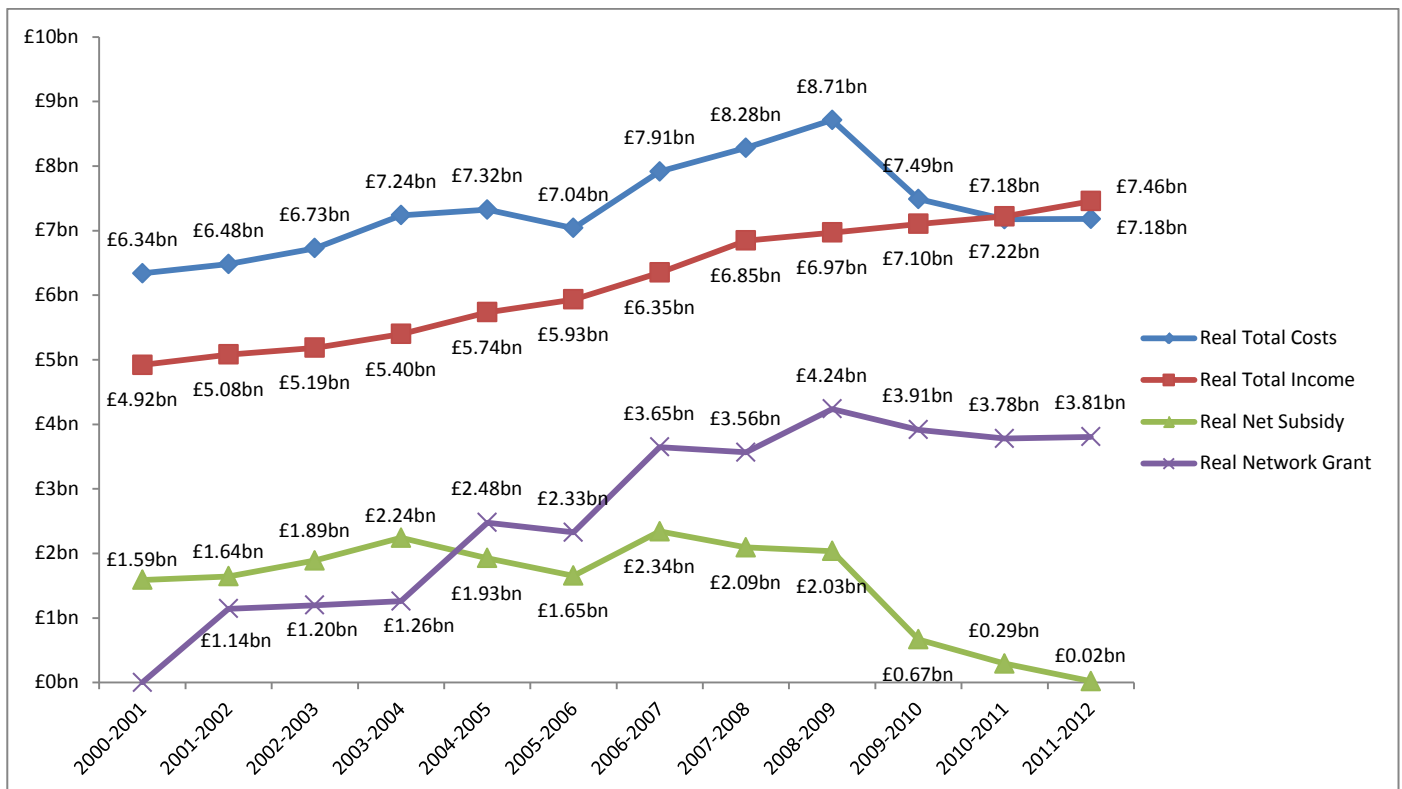
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<sup>3</sup> Operator costs exclude access charges and performance regime payments.

infrastructure users (i.e. TOCs, open access operators and freight operating companies).<sup>4</sup> In the absence of the network grant, Network Rail would have to charge TOCs much higher access charges and, in turn, the level of TOC subsidy would also need to be much higher. As such, it is important to bear in mind, when considering the fall in direct subsidy paid to TOCs, that it does not capture the implicit government subsidy they receive via the network grant's effects on access charges.

12. Figure 1 shows the history of TOC costs, revenues and subsidies between 2000-01 and 2011-12 and gives the level of network grant in each financial year as context. It is important to note, however, that the network grant does not go to TOCs directly in any sense – rather its effect on them is solely through reducing access charges, i.e. reduction of TOC costs.

13. The significant fall in costs and subsidies after 2008-09 is a consequence of the fall in access charges in the wake of the 2008 Periodic Review.



**Figure 1: History of total costs (incl. access charges), total income and net subsidy for all<sup>5</sup> franchised TOCs, as well as network grant paid direct to Network Rail, between 2000-01 and 2011-12 (2010-11 prices) (source: TOC management accounts/NRT) (Note that the network grant ought not to be added to the sum of costs, revenues and direct TOC subsidies, it is provided on this chart as context to the evolution of those figures)**

<sup>4</sup> In 2011-12 the network grant was £3.99 billion. It should be noted that this is not a subsidy to TOCs but affects them only in so far as it reduces the price they pay for access to the rail network.

<sup>5</sup> Excludes London Overground because of data limitations.

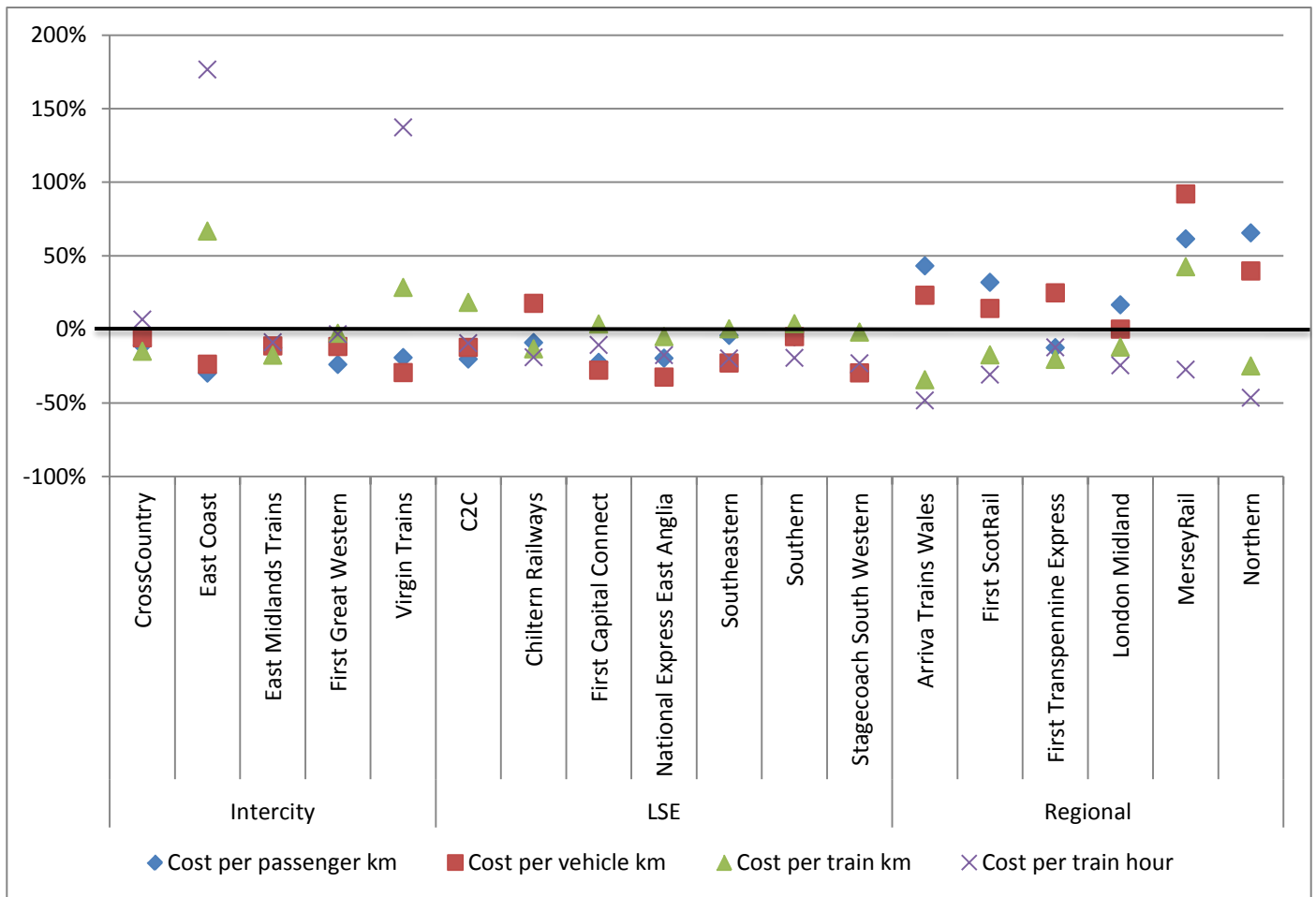
## Key Results – Differences in cost by train operating company

14. The approach taken in this report provides a transparent analysis of costs using simple measures of unit costs, specifically costs per train, vehicle and passenger kilometre, and costs per train hour. Using these different measures allows us to put variation in costs between TOCs into greater context. Train kilometres is the rail industry standard measure for volume of service provision. In comparison with train kilometres: using vehicle kilometres allows us to factor into account varying train lengths between TOCs, using train hours takes account of the variation in average speed between TOCs<sup>6</sup> and using passenger kilometres allows us to put cost levels in the context of service usage (though it should be noted that passenger kilometres are not a significant cost driver in and of themselves).

15. Using these measures, the report shows that no individual TOC is consistently above the average, and four TOCs have costs consistently on or below average for the first three measures. They are: East Midlands Trains, First Great Western, National Express East Anglia and Stagecoach Southwestern. Note that as we cannot yet separate cost drivers between market characteristics, franchise specifications or management policies, this analysis should not be used to establish a “league table” of TOC efficiency. Additionally, there are also links between costs and revenues not captured here - for example some operators may choose to spend more on marketing, customer service, or train quality to try to increase overall revenues. Figure 2 sets out how costs against these metrics vary across TOCs.

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<sup>6</sup> TOCs with low average speed will tend to look more costly when using train kilometres as a measure of output owing to the fact that they travel fewer kilometres



**Figure 2: Variation from TOC average on four unit cost measures (Source: TOC management accounts/NRT/DfT)**

16. Figure 2 illustrates that there is no one measure by which all TOCs can be compared unambiguously. Using costs per train kilometre makes those TOCs who travel shorter distances and stop more frequently (such as MerseyRail or Northern) seem more costly, while using costs per train hour makes high speed services (such as East Coast and Virgin Trains) seem more costly. Any comparison of costs between TOCs must therefore take into account their franchise characteristics and conditions in which they operate.

### Drivers of Cost

17. In understanding potential drivers of costs, there are two main categories to consider: costs drivers directly within operators' control, such as expenditures aimed at increasing revenue, and costs drivers outside of their direct control, such as inherent market characteristics and franchise specifications.

18. In considering these drivers ORR recognises that TOCs compete to be awarded franchises, and are not regulated companies in the same way that Network Rail or other utility companies are. They face investor pressures and capital market disciplines and compete with other modes of transport, and in some cases other franchises or open access operators.

19. So long as these competition and investor pressures are sufficiently strong, the significant drivers of overall costs will be underlying market characteristics and franchise requirements. ORR would like to make use of more sophisticated statistical techniques in subsequent annual reports to better isolate exactly how market characteristics and franchise specifications contribute to costs.

### **International comparisons**

20. Separately to this report, ORR has published an analysis undertaken by the economic consultancy firm Civity that compares TOCs in Great Britain to those in other European countries. This study provides an analysis of the variation in revenues and costs across operators in different countries, and assesses some of the potential drivers of these costs. The study is available on the ORR website.<sup>7</sup>

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<sup>7</sup> <http://www.rail-reg.gov.uk/server/show/nav.1856>



# 1. Introduction

## Purpose of the report

1.1 In this report, we present information on train operators' costs and revenues and show the results of comparative analyses of train operators' costs in Great Britain. We explore the key factors that drive train operators' costs, taking into account the different performance and operating characteristics of the operators. This report does not aim to establish a "league table" of TOC efficiency because at this stage we are not able to delineate clearly the cost drivers between market characteristics, franchise specifications and management policies. Our approach has been to provide a transparent analysis of costs using simple measures of unit cost and discuss why costs may differ between TOCs.

1.2 By publishing a report on train operators' costs and cost drivers, we intend to increase transparency and accountability in an area where little information is readily available in the public domain and to identify the drivers of difference in Train Operating Companies (TOCs) costs, including structural conditions such as market conditions, franchise requirements, and TOC management decisions.

1.3 We are also publishing this report to improve the understanding of costs and cost drivers in the rail industry. This is important because it is considered by many that GB rail costs are too high. In particular, the Rail Value for Money (RVfM)<sup>8</sup> study identified the need to improve value for money, including in passenger train operations. This work showed high passenger operations costs compared to European comparators and an increase in costs over time. It recommended that the ORR benchmark TOCs' and Rolling Stock Companies' (ROSCOs) costs nationally and internationally to better understand their costs. Our report, which focuses on TOCs, including their rolling stock costs, is a first response to this recommendation.

1.4 The expected benefits of publishing this report will be that:

- (a) Taxpayers and customers will have better information on what they are funding/paying in relation to what they are getting. They will be in a better place to participate in the public debate on the efficiency of the rail industry and seek improvements in costs but also in the delivery of what they want;

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<sup>8</sup> <http://www.rail-reg.gov.uk/upload/pdf/rail-vm-detailed-report-may11.pdf>

(b) the DfT, Transport Scotland and other franchise authorities will be better informed on the drivers of costs and will be in better position to make decisions on franchise requirements that provide better value for money; and

(c) TOC management will have more information on their costs in comparison to other TOCs. As such, they will be better incentivised to improve their cost efficiency, and in a better position to investigate further any differences highlighted in our work.

1.5 Ultimately, our long-term aim is to see this work contribute to a reduction in the cost of operating the railway ranging from changes in franchising policy to improvements in decision-making by TOCs.

## **Structure of the report**

1.6 Chapter 2 shows the historic development of costs and revenues of franchised TOCs operating in Great Britain over the last decade. We analyse the changes that occurred during these years, taking into account the evolution of train operators' production (for example the number of train kilometres operated) and overall outcomes (for example, their reliability and passenger satisfaction score).

1.7 In Chapter 3, we compare the costs and revenues of train operators in Great Britain, looking at the financial year 2010-11. We highlight reasons that can explain differences in costs, taking into account market characteristics (for example overall demand) and franchise requirements such as requirement on service frequency.

1.8 An appendix to this report includes more detailed analysis of TOC cost drivers and service characteristics.

## **Comparison with other European TOCs**

1.9 Separately to this report the ORR has published analysis undertaken by the economic consultancy firm Civity that compares TOCs in Great Britain to those in other European countries. The objective of this European study is to build on the results shown in the RVfM study and understand better what drives differences between train operators' costs in Great Britain and in other European countries. Working with operators in Great Britain and in Europe, Civity, the consultants who led this study, looked at the costs, revenues and performance of TOCs in 7 countries. The report provides some high level analysis of the variation in revenues and costs across operators, and assesses some of the potential drivers of rolling stock and train driver costs.

## Background

1.10 We are publishing this first report on train operators' costs and cost drivers to respond to the need for greater transparency in the rail sector. More generally, openness and transparency are playing an increasingly important role in delivering the UK Government's objectives for strengthened public accountability; public service improvement; and stimulating wider economic growth by helping third parties to develop innovative products and services based on public sector information. It is also viewed as a way to empower the consumer to exert pressure on businesses to improve their performance and to be more innovative. Likewise, the Scottish Government is of the view that providing better information on public services will help increase the usefulness of those services, improve accountability and create economic opportunity.

1.11 The Department for Transport's (DfT) Command Paper 'Reforming our Railways: Putting the Customer First'<sup>9</sup> stresses the importance of improving the availability of data and information to passengers and taxpayers. DfT notes that in the context of the rail industry, where £4 billion of public subsidy was provided in 2010-11<sup>10</sup>, the public has a right to clearer and more transparent information on costs and on all aspects of performance. In our consultation document on transparency published in July<sup>11</sup>, we confirm our support for DfT's transparency agenda. We also explain that transparency has a vital role to play in driving the behavioural changes necessary for industry reform, delivering better value for money and delivering an industry that has a sharper focus on its customers.

1.12 Much information is already made available on the rail sector. For example, we publish whole industry performance information on safety, punctuality and passenger satisfaction. We also publish information on Network Rail's finances and progress against efficiency targets. In addition to the information published by the ORR, the Association of Train Operating Companies (ATOC), Network Rail and the Department for Transport also publish information on the rail sector.

1.13 There is, however, significantly less financial information available on other key parts of the sector such as TOCs and ROSCOs. This limits the visibility of whole-industry financing and potential cost saving initiatives at a whole-industry level. In January we took a first step towards increasing transparency and promoting a whole industry perspective by publishing for the first time transparent financial accounts on a whole-industry basis, route-by-route<sup>12</sup>. Figure 3 below, shows the relative shares of expenditure of TOCs and Network Rail in 2010-11. Total TOC expenditure was £5.24bn, which accounted for 48% of the whole industry expenditure.

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<sup>9</sup> <http://www.dft.gov.uk/publications/reforming-our-railways/>

<sup>10</sup> National Rail Trend data - <http://dataportal.orr.gov.uk/>

<sup>11</sup> <http://www.rail-reg.gov.uk/upload/pdf/transparency-consultation-july-2012.pdf>

<sup>12</sup> [http://www.rail-reg.gov.uk/upload/pdf/gb\\_rail\\_industry\\_financial\\_information.pdf](http://www.rail-reg.gov.uk/upload/pdf/gb_rail_industry_financial_information.pdf)

1.14 The drive towards greater visibility of operators' financial information is also happening at a European level. The revision of the First Railway Package directives has been adopted by the European Council, and must be transposed into domestic legislation by spring 2015. It includes provisions which require railway operators to keep and publish separate profit and loss accounts for passenger and freight services, showing separately public funds. It will also require them to supply information to the regulatory body upon request, including data on financial performance.<sup>13</sup> The Commission is currently preparing draft legislation for the Fourth Rail package, which is likely to include further provisions on transparency and the compulsory competitive tender of franchises.

1.15 With franchises now being designed to last longer, up to 15 years, there will be fewer opportunities to market test each franchise through franchise competitions<sup>14</sup>, which is an important way of driving TOC efficiency. In this context, increased transparency on TOCs' costs and revenues will be even more important.

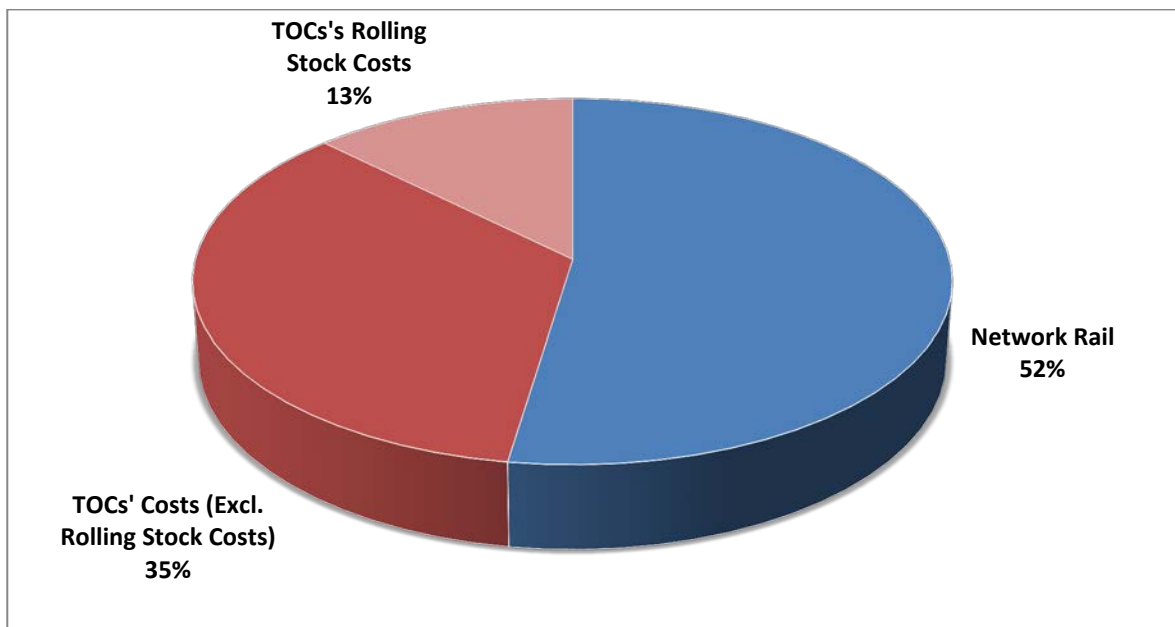


Figure 3: Shares of whole industry expenditure (TOC costs exclude track access charges) (source: ORR Report<sup>12</sup>)

## Scope

1.16 Our analysis covers all franchised TOCs. It excludes freight and open access train operators as these are significantly smaller components of the industry<sup>15</sup>, information is less readily available on them, and the

<sup>13</sup> Further information is available here <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/12/520&format=HTML&aged=0&language=en>

<sup>14</sup> Although it should be noted that some franchised TOCs face significant on-rail competition through open access operators and that all TOCs face, to some degree, off-rail competition from other modes of transport.

<sup>15</sup> For example, franchised train operators accounted for 99.36% of total passenger kilometres travelled in 2010-11

report is designed to focus on the cost drivers of passenger train operations – freight operating companies have different cost drivers.

1.17 We have used data from 2000-01 to 2011-12 for the historical trend analysis and from 2010-11 for the comparative analysis of individual TOC costs. Unless otherwise stated, real cost and revenue figures are presented in 2010-11 prices.<sup>16</sup>

1.18 Our report draws largely on the following sources of information:

- (a) Management accounting data submitted by TOCs to government under their franchise obligations;
- (b) Financial and timetable data from the Network Modelling Framework where specific data were unavailable in the management accounts submitted DfT<sup>17</sup> ;
- (c) Timetable data provided by DfT;
- (d) Financial and operational data published in the ORR's National Rail Trends Portal<sup>18</sup>; and
- (e) Operational data from Network Rail.

## Approach

1.19 This work has been undertaken in collaboration with the Association of Train Operating Companies (ATOC) and its members, the DfT, TS, Transport for London (TfL), Mersey Travel and the Welsh Government. We are grateful for the support and cooperation they have provided throughout this study.

1.20 Although the focus of this work has been to understand train operators' costs, and to a lesser extent their revenues, whenever possible, costs have been analysed in relation to train operators' performance, safety, market characteristics (for example overall demand) and franchise requirements (for example requirements related to service frequency). As a result, to inform our analysis we consider measures like cost by train kilometres operated and cost by passenger kilometres transported. This approach provides a basis for better comparability over time and between operators. However a single measure will only capture one aspect of TOC costs; for example, the measure "cost per train kilometre" gives a good measure of costs in relation to volume of service provided but it does not take into account, for example, levels of crowding. We have, therefore, considered a range of measures (including cost per train kilometre, cost per seat kilometre, cost per passenger kilometre etc.) to help better understand the factors that may affect TOC costs and revenues.

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<sup>16</sup> Adjusted using all items RPI inflation.

<sup>17</sup> The NMF is a modelling tool and database developed for the DfT and ORR by SDG in conjunction with the Institute for Transport Studies at the University of Leeds.

<sup>18</sup> <http://dataportal.orr.gov.uk/>

1.21 As we have already noted, this report does not aim to establish a “league table” of TOC efficiency. In comparing unit costs and looking at costs drivers we have taken into account that TOCs compete to be awarded franchises and are not regulated companies in the same way that Network Rail or other utility companies are. As such, they face investor pressure and capital market disciplines and, to some extent, they have to compete with other modes, other rail franchises and open access operators. In our analysis, we therefore highlight how TOC costs and revenues vary due to various factors that are not controllable by TOC management such as the inherent market characteristics and franchise specifications.

1.22 The conclusions reached in this report have been informed by a number of methods of analysis. We have analysed unit cost measures and carried out interviews with TOCs and workshops to discuss explanations for observed trends and set them in their context – this includes discussing key cost drivers with TOCs, comparing unit cost measures and looking at possible explanations of between TOC differences.

## Next steps

1.23 This is the first of what we expect to be an annual publication on TOC costs and revenues. We anticipate that the contents of the report will evolve with time. For example, we intend to strengthen the analysis to better delineate cost drivers between market characteristics, franchise specificities and management choices. We will explore the possibility of using econometrics to build on our current analysis. In the longer-term, the aim of this work is to quantify the impacts of cost drivers and support the identification and promotion of best practice in delivering efficiencies. We will also give further consideration to rolling stock costs, as recommended in the RVfM study.

1.24 In January 2012, we published the GB rail industry financial information for 2010-11<sup>12</sup>. This was a first step towards increased transparency on the industry costs and revenues. It provided financial information about the TOCs and Network Rail (NR) disaggregated by regional routes. Although the publication on whole-industry financial information has a different scope than this report, the two reports complement each other well. We will consider bringing closer the two reports by combining those analyses or aligning publication dates.

## 2. Evolution of train operators' costs and revenues

2.1 In this chapter, we first give some background information on the regulatory framework in which TOCs operate. We then provide a brief overview of the development of TOCs' performance, before we discuss in more detail the change in their revenues and costs over the last decade.

### Regulatory framework of franchised passenger TOCs

#### Pre-Privatisation

2.2 Before 1993, Britain's integrated railway was operated and maintained by British Rail, which was responsible for both the planning and delivery of passenger operations. The 1993 Railways Act sought to privatise the British railway industry; in doing so, it split responsibility for delivery of passenger rail services from the management and maintenance of infrastructure.

2.3 The privatisation of passenger train operations began with the re-organisation of British Rail's passenger rail operations into 25 separate, publicly owned franchises. The newly created Office of Passenger Rail Franchising was then given the responsibility for selling these franchises to privately owned Train Operating Companies (TOCs). Although the bidding process and contract specificity have changed over the years, this model remains broadly the same today.

2.4 The rolling stock that was previously operated by British Rail was sold to three Rolling Stock Operating Companies (ROSCOs). The TOCs continue to lease the majority of passenger trains from ROSCOs, who are typically also responsible for heavy maintenance; the relatively short life of franchises generally makes investment in rolling stock assets unattractive to train operators.

#### Franchised Passenger Operations

2.5 The aim of franchising is to promote competition "for the market"<sup>19</sup>, with a view to ensuring that each contract is awarded to the operator that can carry out the activities most efficiently. The principle of the franchise bidding process is that competition in service offerings ought to exert competitive pressures on all

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<sup>19</sup> TOCs compete to operate the franchise on an (almost) exclusive basis (some TOCs compete with a limited number of open access operators)

participants, thereby mimicking the effects of a competitive market and promoting efficiency. It is worth noting that there is also some “in the market” competition, where open access operators compete on a commercial basis, as well as between TOCs on some routes. However, the extent of such competition is limited; for instance, open access operators accounted for only 0.7% of total passenger kilometres in 2010-11. As well as “on rail” competition, TOCs also compete, to a greater or lesser extent depending on the nature of their service, with other “off rail” modes of transport.

2.6 In 2001 the responsibility for allocating franchises moved to the newly created Strategic Rail Authority and in 2006 it was moved again to the DfT, with whom it currently resides (specific franchises are also allocated by Transport Scotland (First ScotRail), the Welsh Government (Arriva Trains Wales), MerseyTravel PTE (MerseyRail) and Transport for London (London Overground)) . Passenger franchise contracts are awarded to TOCs through a competitive tendering process. There is a range of franchise durations, but they typically last for up to seven years, although the DfT is now moving towards awarding longer franchise contracts, up to 15 years. Automatic extensions can be available if the TOC meets certain performance targets. DfT’s invitations to tender include “Service Level Commitments” (SLCs) that define the services that the successful bidder must provide. SLCs are specified to a relatively high degree of detail. For example, they include detailed specifications of train frequencies and stopping patterns.

2.7 TOCs service quality is closely monitored with reference to a Service Quality Management System. Because of the level of specificity of the SLCs (and the frequent unviability of some of the commitments), TOCs are required to specify the level of subsidy they expect to receive as part of their bid. It has, however, become more common in recent years for TOCs to specify instead the size of the premium they expect to pay to the franchise authorities, this has occurred chiefly as a result of increased passenger demand for rail travel. The franchise authorities evaluates the subsidy/premium along with the service offering as part of the overall franchise bid for each TOC.

2.8 The subsidy/premium paid by TOCs, considered in isolation, can misrepresent the degree to which the industry as a whole is subsidised: DfT and TS pay a grant to Network Rail which dwarves the levels of subsidies and premia paid to/by TOCs, and were Network Rail to stop receiving this grant they would be TOCs would face much higher access charges and would require much larger subsidies to make the provision of passenger rail services viable.

2.9 TOCs tend to be thinly-capitalised companies with few assets and relatively little ability to bear downside risk (the risk involved in higher than expected costs or lower than expected revenues). To help manage this issue, revenue risk-sharing mechanisms were introduced into franchise contracts. Although bidders could propose their own design for revenue risk-sharing mechanisms, a standard model emerged, commonly referred to as a “cap and collar” mechanism, which typically activates four years into the life of a franchise. The main features of a typical cap and collar are that, where the franchise is contracted with the DfT:



(a) 50 per cent of any fares revenues in excess of 102 per cent of the TOC's original forecast go to the DfT;

(b) The DfT makes a contribution equivalent to 50 per cent of any revenue shortfall below 98 per cent of the TOC's original forecast; and

(c) For any shortfall below 96 per cent, the DfT's contribution increases to 80 per cent.

2.10 In 2010-11, through cap and collar mechanisms, 7 TOCs received a total of £325m from the DfT in revenue support, and 2 TOCs paid a total of £23m to the DfT as revenue sharing. Franchise contracts awarded since 2011 have excluded the cap-and-collar clause, reflecting changes to franchise policy that aim to address some of the perverse incentives it creates.

2.11 There are now 19 passenger rail franchises in Great Britain (including London Overground and MerseyRail, whose franchises are atypical and are awarded by TfL and Merseyside PTE, respectively). The timeline in Figure 4 shows the changing composition of passenger rail franchising since it started in 1999, indicating which TOCs currently operate which franchise and how long the existing franchise contracts will last.

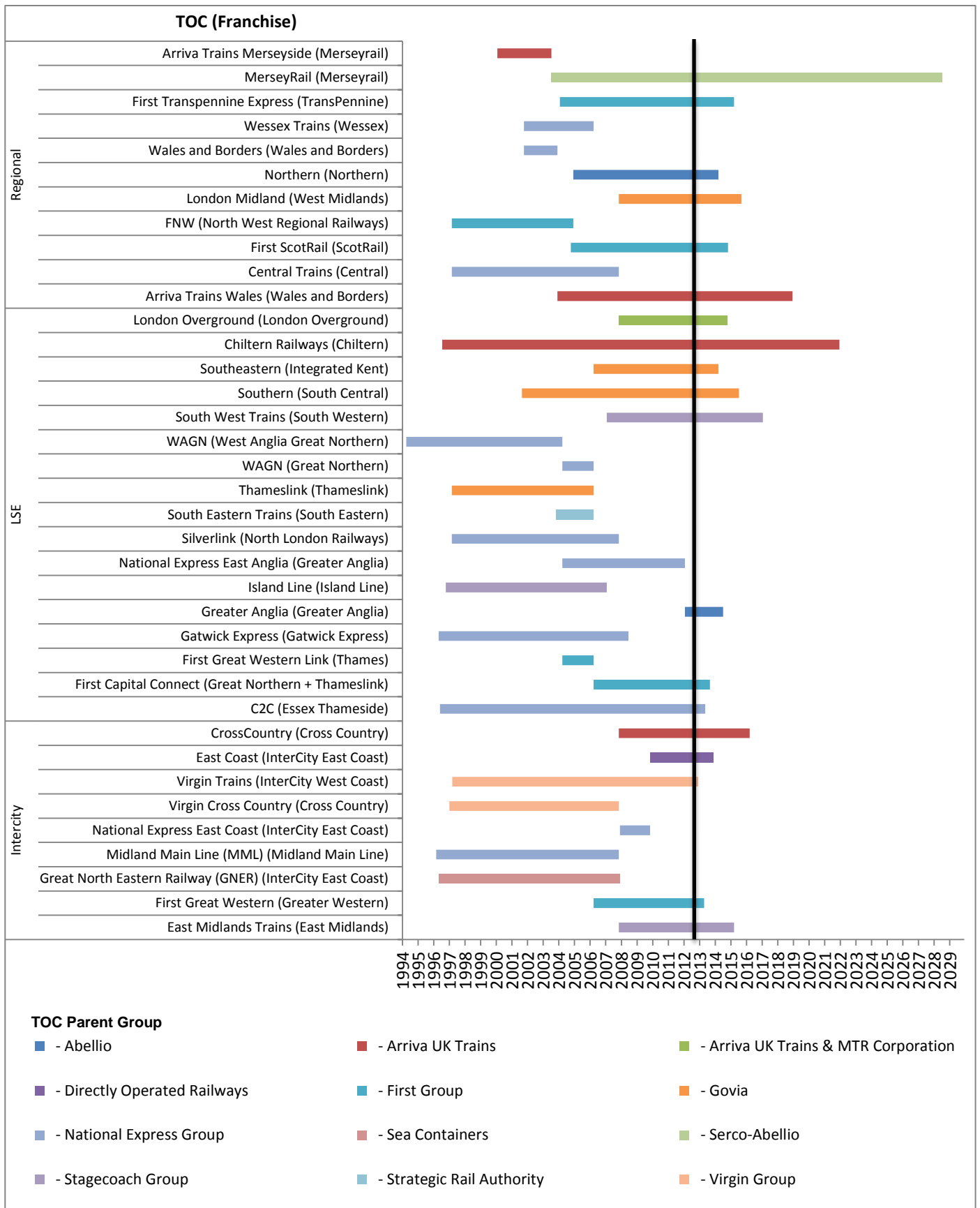


Figure 4: Timeline of TOC ownership of passenger rail franchises

## Government Support

2.12 Before focussing on the evolution of revenues, costs and subsidies of TOCs in isolation, it is important that they should be considered in the context of government support as a whole.

2.13 Subsidies paid directly to TOCs have fallen significantly between the 2000-01 and 2011-12 financial years. However, this does not capture the much larger increase in the network grant paid by DfT and TS to Network Rail during the same period. Since, in the absence of the network grant, Network Rail would have to recoup much of the cost of running the rail network from TOCs, at least part of the grant can be considered to be an indirect subsidy to TOCs (effectively reducing the price they pay for access to the rail network).

2.14 As Figure 5 indicates, the network grant increased significantly over the period and by much more than the fall in TOC subsidy. A large proportion of the increase could be accounted for by the increased volume of maintenance and renewals conducted in the wake of the Hatfield incident. Since the network grant effectively functions to suppress access charges paid by TOCs to Network Rail, the fall in TOC subsidy should be considered in this context; that is, while the fall in government support is notable, in so far as both the network grant and TOC subsidies have fallen since 2008-09, the industry as a whole remains heavily subsidised.

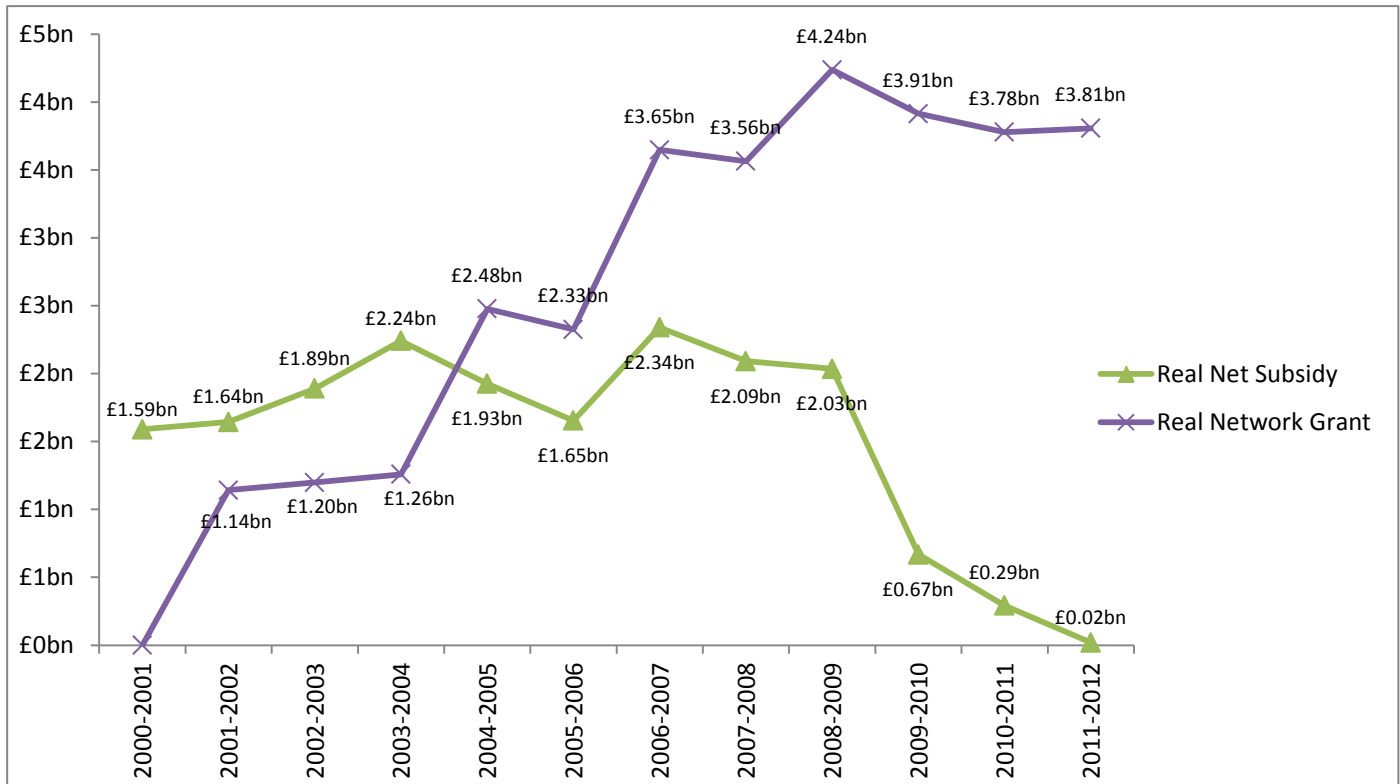
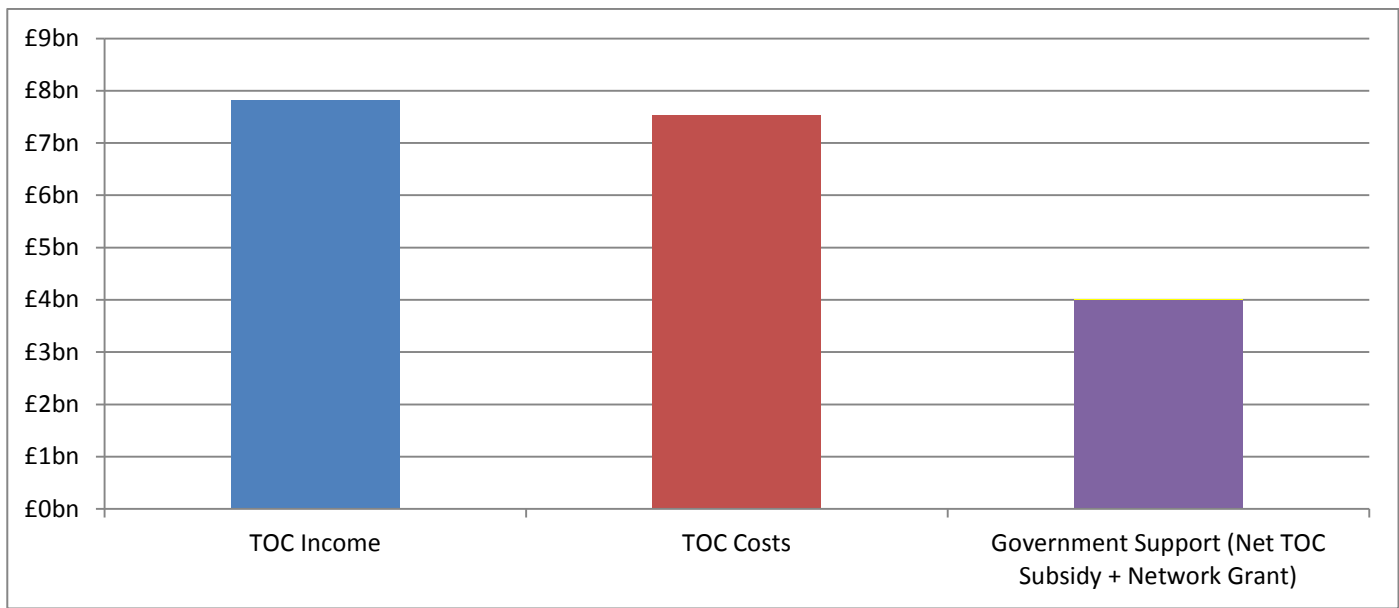


Figure 5: Government support to TOCs and Network Rail between 2000-01 and 2011-12 (2010-2011 prices) (source: Network Rail/TOC Management Accounts)

2.15 To put the level of government support in context it is useful to look at the relationship between costs, revenues, direct TOC subsidies and the network grant. It is important to note that the network grant may also cover the effects of inefficiencies in Network Rail and that if it were to be removed both freight and open access operators would also face higher access charges (i.e. the entire reduction in the network grant would not be passed onto TOCs) – but, for the purpose of providing some context, Figure 6 compares the level of government support to Network Rail with total TOC income and TOC costs, and, as it suggests, because of the costliness of running rail infrastructure, if the network grant were withdrawn the effect on access charges would be such that TOCs themselves would require significant subsidy.



**Figure 6: Total TOC income and costs and government support in 2011-12 (Source: TOC management accounts/NR)**

2.16 This report does not consider the network grant in further detail on the basis that it does not have a direct bearing on the report’s main purposes of looking at TOC costs and revenues and of seeking to understand TOC cost drivers. The majority of the report excludes access charges when considering TOC costs (because they are beyond TOC’s ability to control) and so the effect of the network grant in reducing access charges is unobservable in most of the report’s analysis.

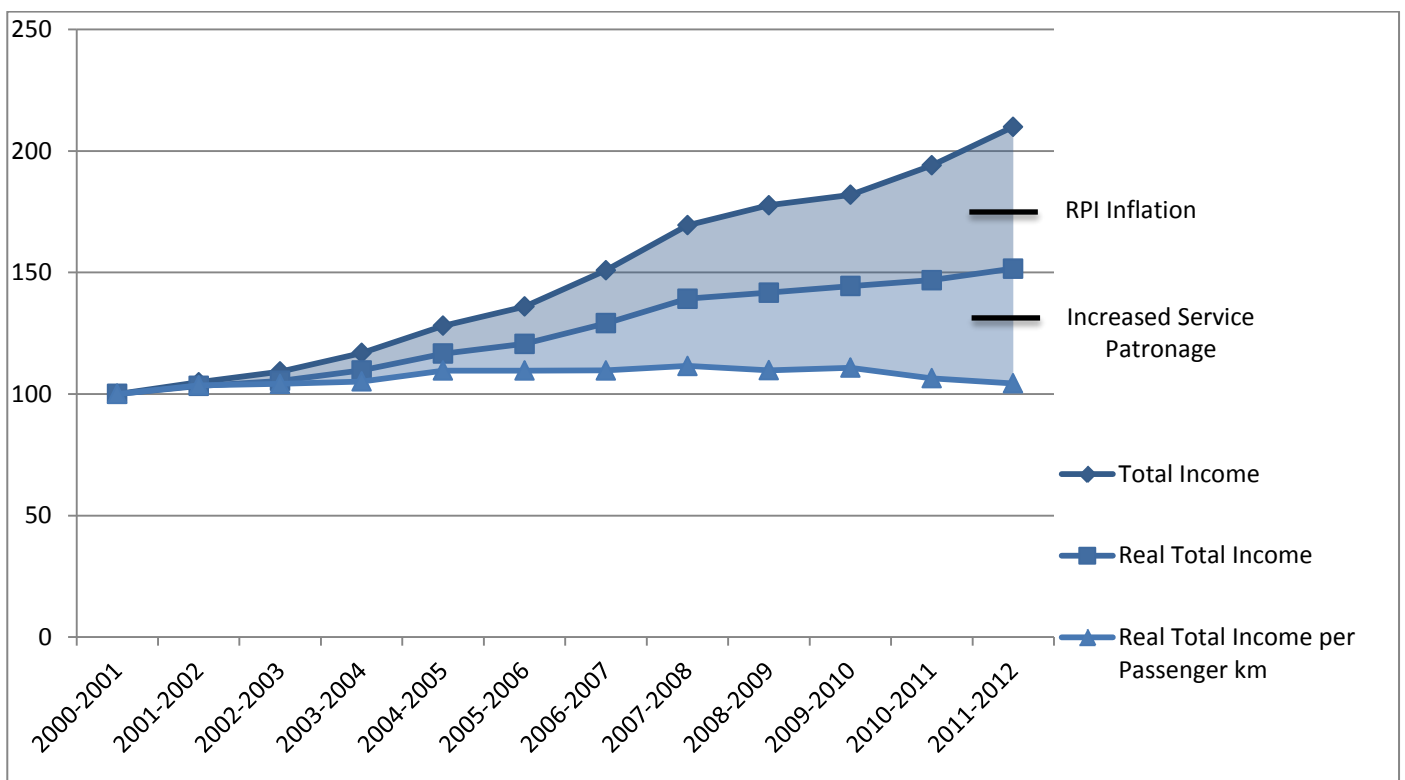
## Evolution of Revenues and Subsidies

2.17 As part of its franchise bid a TOC will specify both the revenues they expect to generate and the subsidy/premium they expect to receive/pay. As privately owned companies that bid competitively for franchises, TOCs face pressure from investors to generate revenue sufficient to provide real returns. However, because some franchises are awarded a significant subsidy to provide services that would not otherwise be viable, and because of the socio-economic benefits of passenger rail services, the amount of revenue generated by TOCs is a concern for government and taxpayers (as well as passengers themselves). This section looks at the evolution of revenue and subsidy payments to TOCs over time.

2.18 Data limitations have prevented the inclusion of London Overground in any of the historical revenue and subsidy analysis included in this section.

## Revenues

2.19 Figure 7 shows the growth in total income, across all TOCs, since the 2000-01 financial year. Total income includes farebox income (sales of tickets and railcards less refunds and delay compensation) and other income (e.g. car parking, on-board catering and advertising) but excludes subsidies. Although TOCs have some scope for setting discretionary fares on some classes of ticket, the majority of farebox income comes from tickets with regulated fares, which are set by government. Nominal total income grew 110% between 2000-01 and 2011-12; with a real rise in total income over that period of 52% (from £4.92 billion to £7.52 billion (2010-2011 prices)).

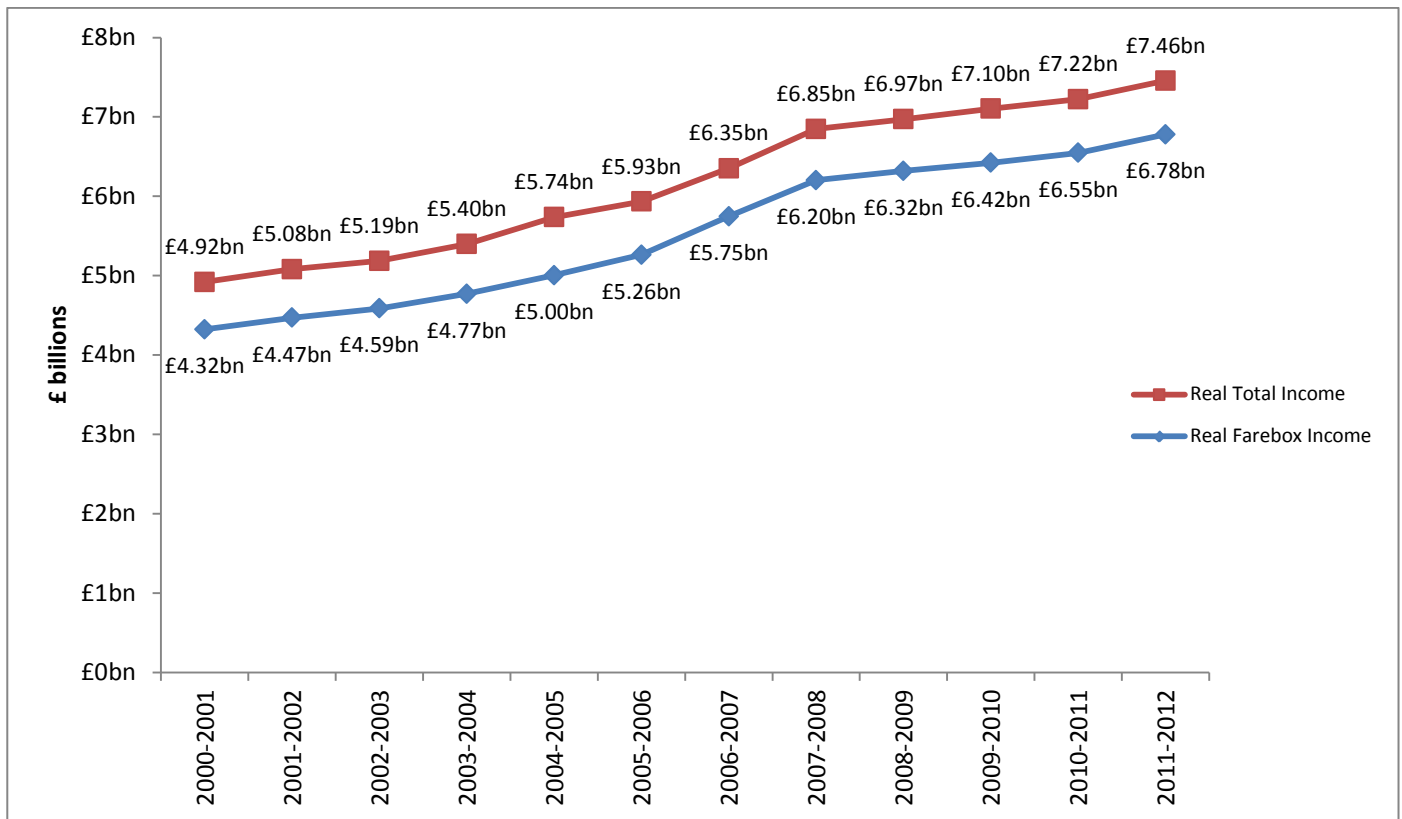


**Figure 7: History of total income for franchised UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC management accounts/NRT)**

2.20 As Figure 7 illustrates, the growth in real income accruing to TOCs can be mostly attributed to the growth in service patronage – real income per passenger kilometre<sup>20</sup> increased only 4% (from 12.5 pence per passenger kilometre to 13.1 pence) over the period; this would suggest that most of the rise in real income is due to the increase in the number of passengers.

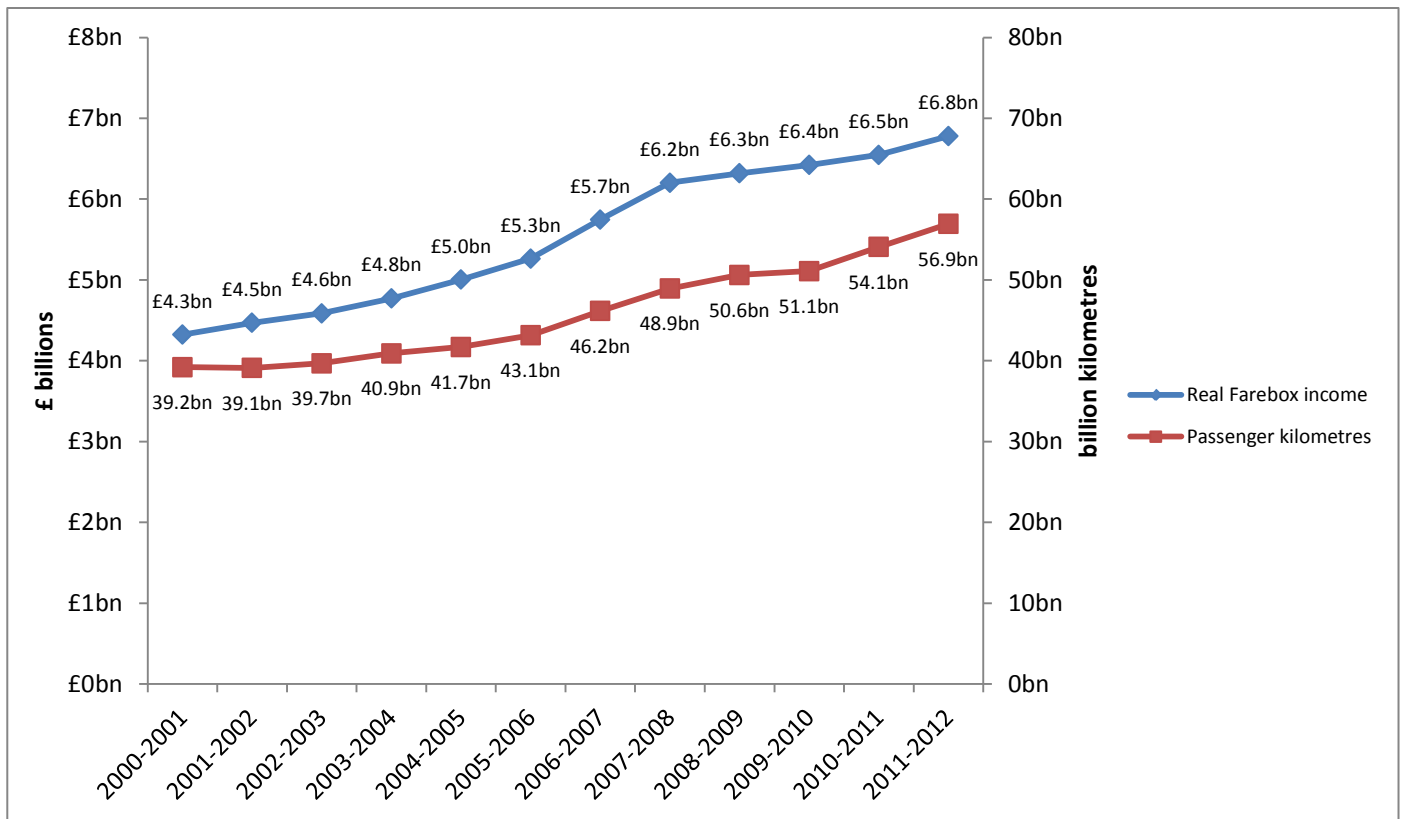
<sup>20</sup> When considering farebox income, passenger kilometres are a better proxy variable for service patronage than passenger journeys because they more closely reflect ticket prices alongside service usage. Note that neither measure controls for changes in the type of tickets being sold (i.e. first or standard class seating).

2.21 As Figure 8 illustrates, farebox income accounts for the majority of TOC income. Income from other sources, such as advertising and on-board catering, accounted for an average of 11% of total real revenue (exclusive of subsidies) over the period.



**Figure 8: History of real total income and farebox income for franchised UK TOCs between 2000-01 and 2011-12 (source: TOC management accounts)**

2.22 Given that “other” income both accounts for a small proportion of total income and has remained stable over the period, data shown in Figure 9 supports the view that the majority of the growth in real income can be accounted for by the growth in service patronage – farebox income has grown in tandem with passenger kilometres; farebox revenues increased 50% while passenger kilometres rose by 45% between 2000-01 and 2011-12.



**Figure 9: History of farebox income and passenger kilometres for franchised UK TOCs between 2000-01 and 2011-12 (source: TOC management accounts)**

## Subsidies

2.23 Figure 10 shows the evolution of total incomes and net subsidies. Subsidy data are drawn from the TOC management accounts and include payments under revenue sharing/support mechanisms such as cap and collar. Between 2000-01 and 2011-12 the total amount of subsidies paid by franchise authorities to TOCs fell significantly. Although base subsidy levels are specified in franchise contracts (excluding “cap and collar” arrangements), the larger driver of the reduction in the amount of subsidy paid is likely to be the increase in service patronage and the consequently increased viability of passenger rail service provision. Carrying additional passengers (once a service is already running) is not a significant cost driver, but is the primary revenue generator.

2.24 When considering Figure 10 it is important to remember the background of significant government support to the rail industry as a whole discussed in the previous section – the growth in the size of the network grant significantly eclipses the reduction in the size of subsidies to TOCs.

2.25 It is worth noting that although payments to TOCs have fallen, the industry as a whole remains heavily subsidised. The network grant, which is not reflected in Figure 10, represents a significant proportion of government support to the rail industry. In 2011-12 Network Rail received £3.81 billion of network grant (2010-11 prices) having started at £1.14 billion in 2001-02, which reached a high of £4.24 billion in 2008-

09, before falling to its current level. If Network Rail were to cease to receive this support and to mainly rely on revenue generated from access charges then all TOCs would require a positive, significant subsidy<sup>21</sup>.

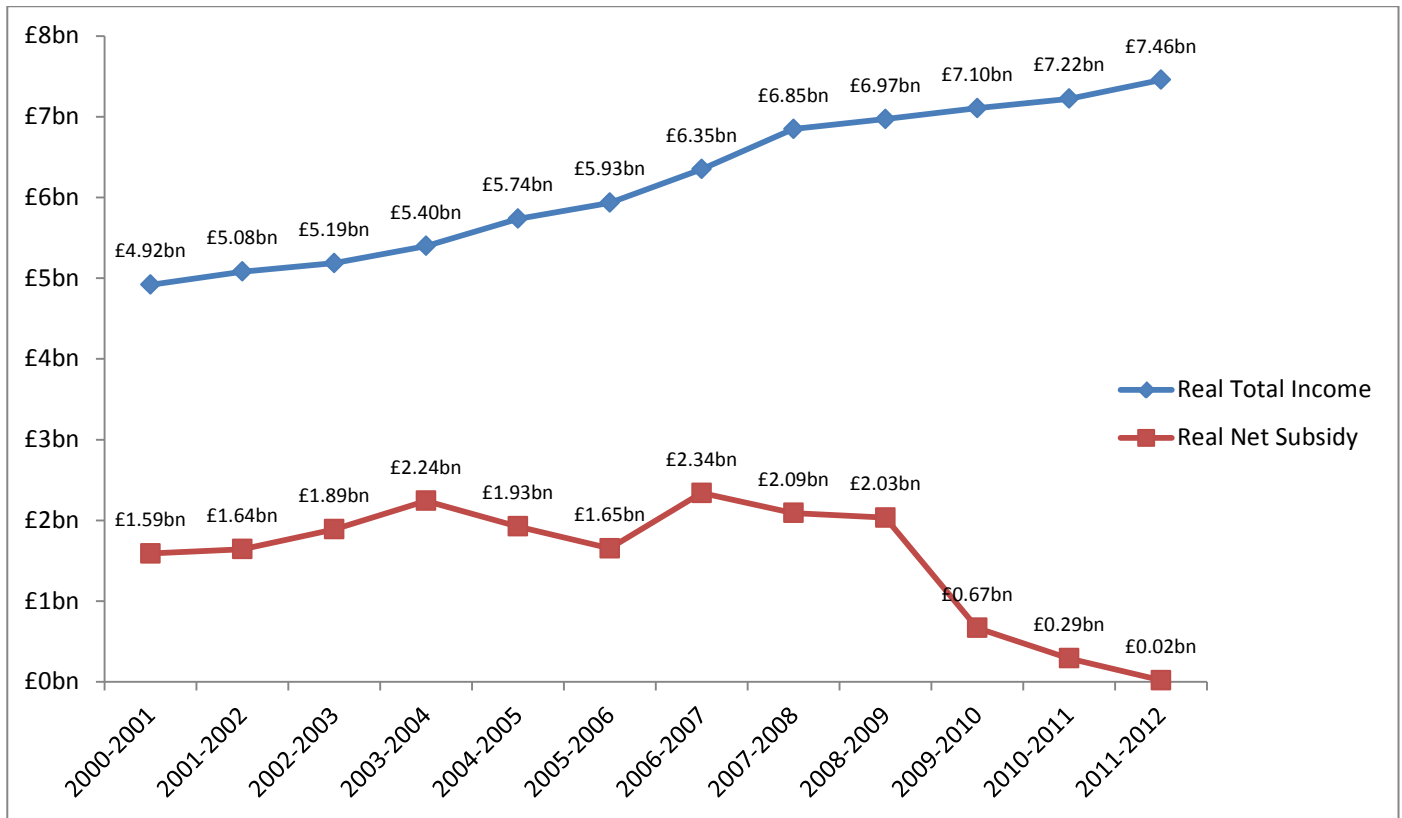


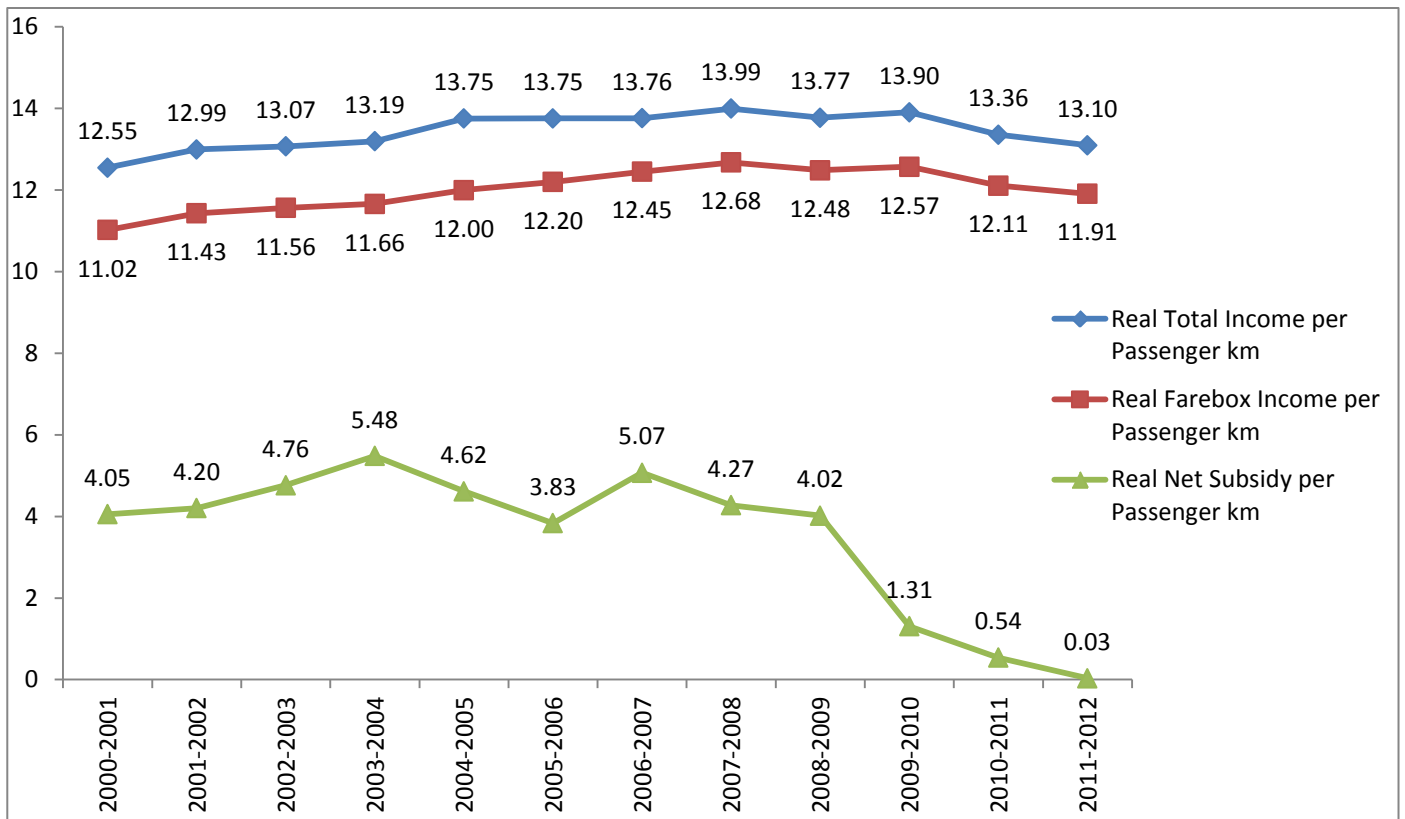
Figure 10: History of total income and subsidy for franchised UK TOCs between 2000-01 and 2011-12 (source: TOC management accounts/NRT)

### Evolution of revenue and subsidy per passenger-kilometres

2.26 Considering revenue and subsidy per passenger kilometre gives a measure of TOC service that is relevant to passengers and tax payers by providing a measure of average value for money. As Figure 11 indicates, despite some increase in the intervening period, farebox income per passenger kilometre is now comparable to the level it was at in the 2000-01 financial year; in 2000-01 the average TOC farebox income per passenger kilometre was 11.02 pence, in 2011-12 the same figure was 11.91 pence, an increase of 8%. This increase may be due to a number of factors, including a change in the composition of ticket types (e.g. more first class tickets sold) as well as above inflation increases in fare prices (which may also be mirrored by increases in service quality).

<sup>21</sup> See <http://www.dft.gov.uk/publications/dft-business-plan-indicators-input-07> for more detail





**Figure 11: History of total income, farebox income and net subsidy per passenger kilometre for franchised UK TOCs between 2000-01 and 2011-12 (source: TOC management accounts/NRT)**

2.27 Subsidy per passenger kilometre has fallen significantly between 2000-01 and 2011-12, despite peaks in the intervening period. In 2000-01 the franchise authorities paid to TOCs, on average, 4.05 pence per passenger kilometre, while, in 2011-12 the franchise authorities paid, on average, 0.03 pence per passenger kilometre. Although declining subsidies and increased premiums are, in principal, desirable from a taxpayer’s perspective, the subsidy per passenger kilometre measure can obscure the actual taxpayer burden because it also reflects changes in service patronage. So, although this measure is interesting from a value for money perspective, it must therefore be understood in the context of the change to total net subsidy paid, as well as, against the wider background of government support for the industry.

## Evolution of TOCs total costs

2.28 This section looks at the evolution of the total costs of franchised passenger TOCs for the period between the financial years 2000-01 and 2011-12.<sup>22</sup> All financial data are drawn from TOCs management accounts.<sup>23</sup>

<sup>22</sup> LOROL is not included

<sup>23</sup> TOC management accounts are provided to the DfT on a four-weekly basis as part of their franchise obligations.

## Composition of TOCs total costs

2.29 The “Total cost” category includes all staff costs, rolling stock costs and other costs excluding access charges, performance regime payments and any premiums paid to DfT as part of the franchise agreement, Table 1 provides more detail on the constituents of these cost categories. Where costs or revenues are given in real terms, they have been given in 2010-11 prices<sup>24</sup> adjusted for RPI (all items) inflation.

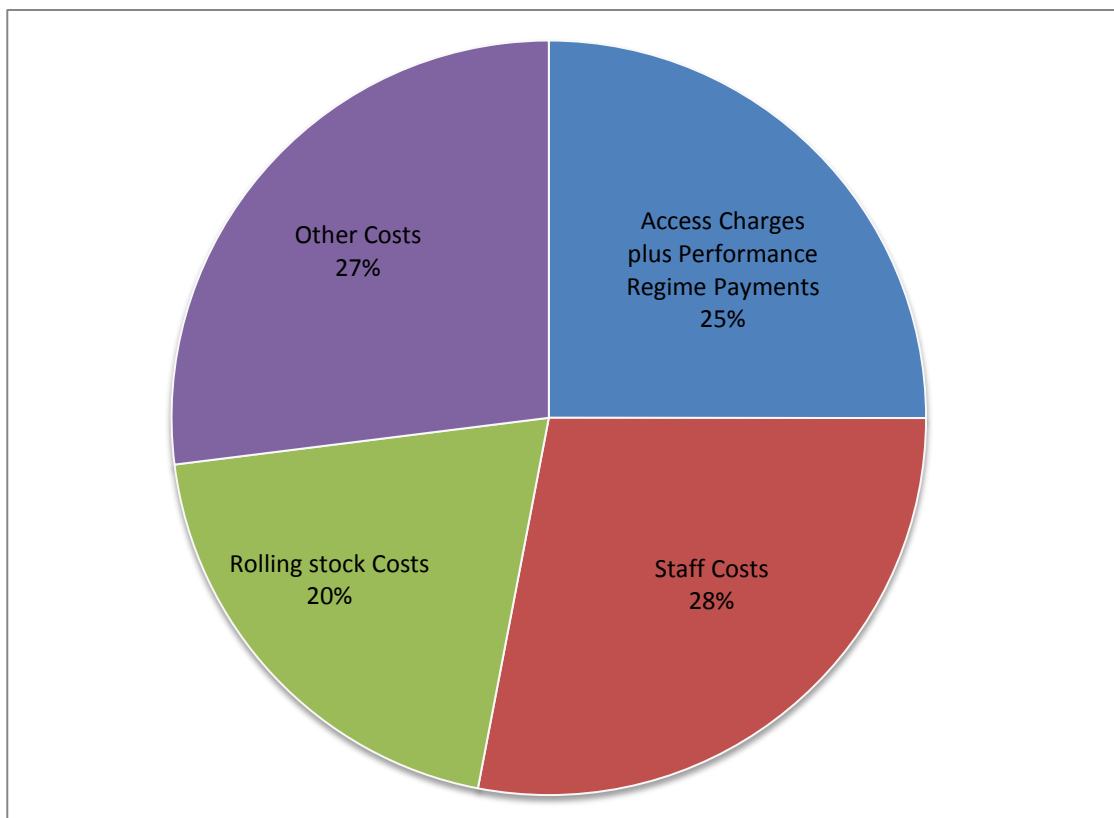
Cost categories	Included in Total Operating Cost
Staff Costs	✓
Rolling Stock Costs (includes ROSCO leasing charges and maintenance costs, as appropriate)	✓
Other Costs (includes fuel, EC4T charges, in-house train maintenance, train cleaning, other contractor charges, rail replacement, utilities, commission payable, catering, car park management fees, NRES ATOC charges, British Transport Police charges, station access, marketing, telecoms and IT, legal & professional, insurance and depreciation and amortisation)	✓
Access Charges (includes all Network Rail charges (e.g. fixed track access charge, capacity charge etc.) but excludes EC4T charges, which are included in other costs)	✗
Performance Regime Payments/Receipts	✗
Franchise Premium	✗

**Table 1**

2.30 Figure 12 shows the share of total costs accounted for by each cost type in 2011-12. Note that Access Charges and Performance Regime Payments are generally excluded from consideration when we look at total operating costs – this is because these payments are beyond TOC’s ability to control.

2.31 As with the previous section on revenues and subsidies, data limitations have prevented the inclusion of London Overground in any of the historical cost analysis included in this section.

<sup>24</sup> We have used 2010-11 prices, as opposed to 2011-12 prices because the Chapter 3, which compares TOCs costs, uses 2010-2011 data.



**Figure 12: Composition of TOC's total costs in 2011-12 across all TOCs (Source: TOC Management accounts)**

### Evolution of TOCs total costs

2.32 Figure 13 shows the evolution of TOCs total costs (excluding access charges and performance regime payments) over the period between 2000-01 and 2011-12. While total costs have risen 87% in nominal terms, the real rise, adjusting for RPI inflation, is 35%.

2.33 Changes in TOCs total costs need to be understood in the context of a significant increase in the volume of service provided over the period considered. To that end, throughout this chapter we look at changes in costs and revenue in the context of changes in timetabled train kilometres and actual passenger kilometres. As illustrated on Figure 14, there was a 20% rise in timetabled train kilometres and a 45% rise in passenger kilometres between 2000-01 and 2011-12.

2.34 Although other measures of volume of service are available (such as vehicle-kilometres, train-hours or seat-kilometres) we have used train-kilometres and, when relevant, passenger kilometres in this report. Train-kilometres is a key cost driver that will have an impact on cost functions like fuel, electricity, maintenance and leasing rolling stock costs, and passenger-kilometres is an important output for franchising authorities, taxpayers and customers. These two measures are also both publicly available and have been collected and audited consistently for a longer time period than other available measures.

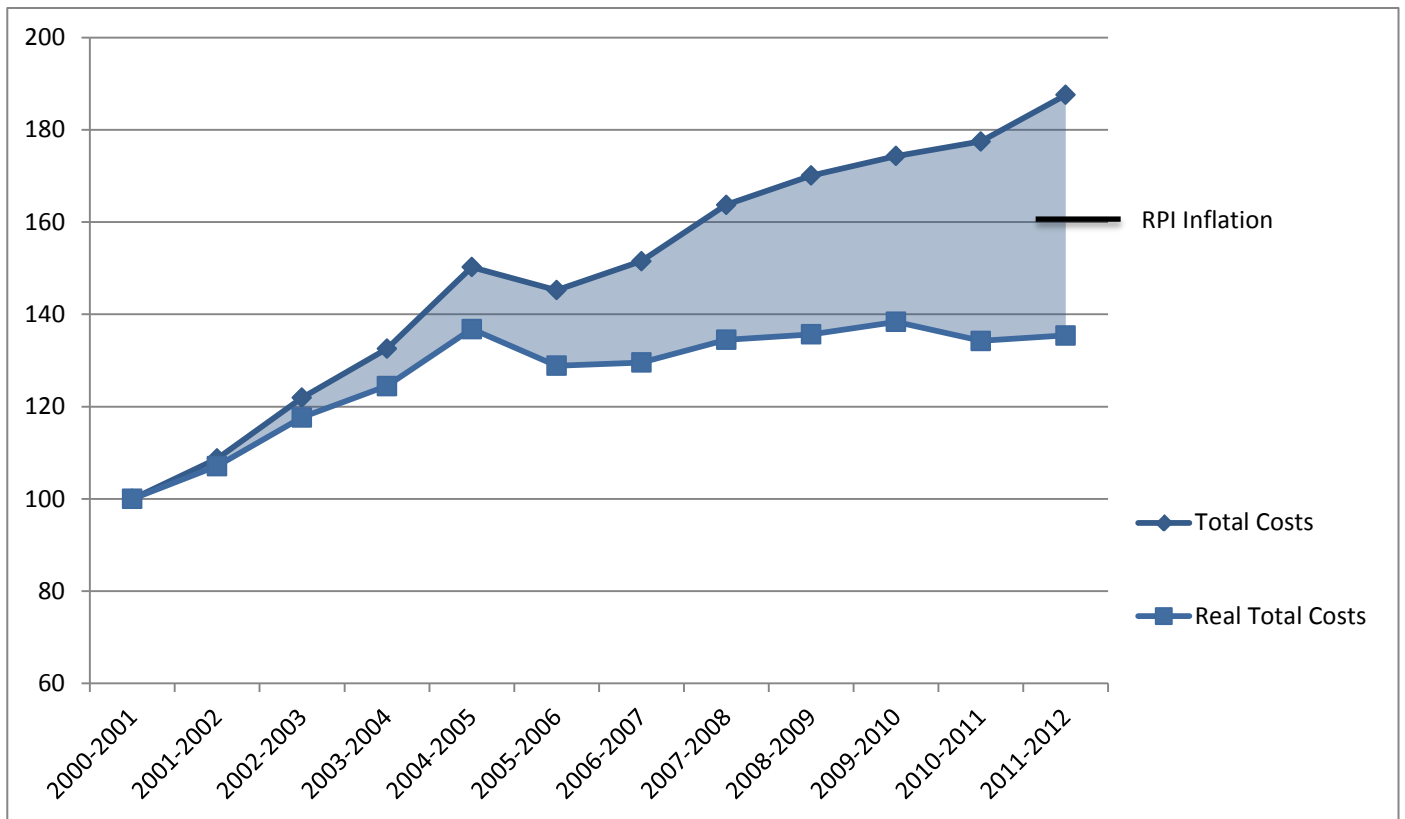


Figure 13: History of total costs for franchised UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC management accounts)

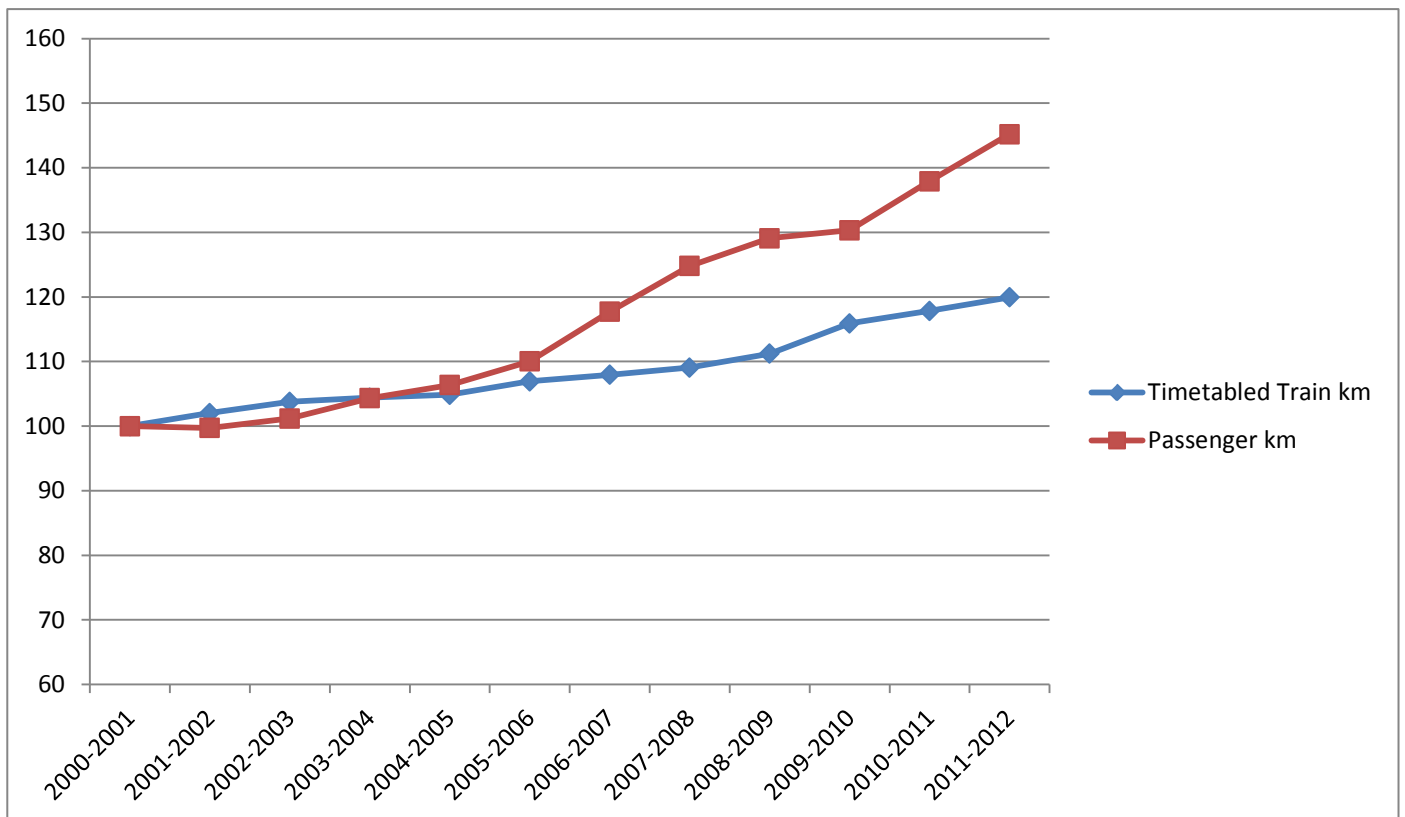


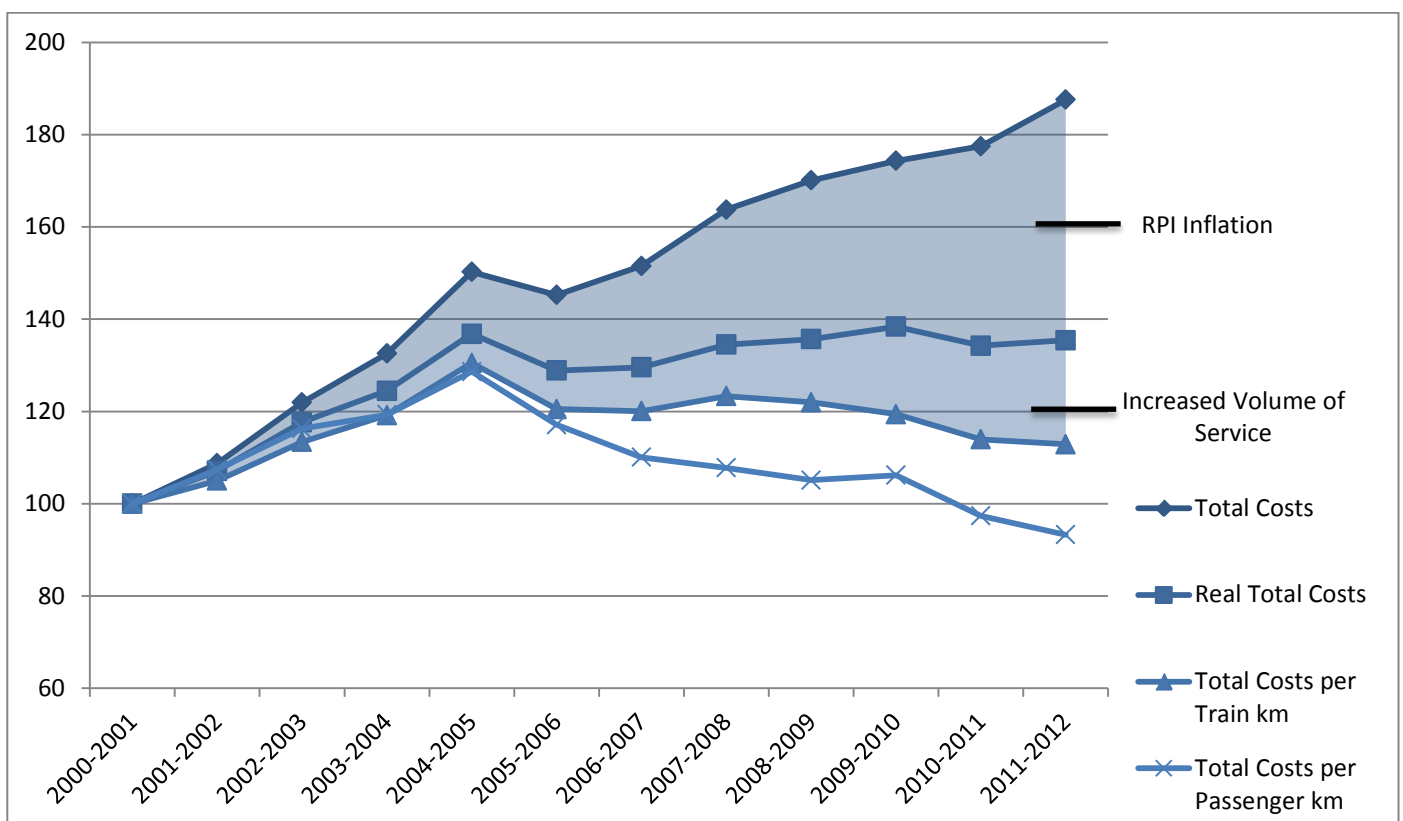
Figure 14: History of service provision/usage for franchised UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: NRT)

## Comparison between 2000-01 and 2011-12

2.35 As Figure 15 indicates, nominal total operating costs have increased by 88% in the period between 2000-01 and 2011-12. Controlling for RPI inflation, the real rise in total operating costs over that period was 35%.

2.36 As the previous section noted, the volume of service provided by TOCs increased significantly over the same period: annual timetabled train kilometres increased 20% in that time. Looking at total costs per train kilometre can help us take into account the effect of the increased volume of service on TOC costs. As Figure 15 shows, real total costs per train kilometre increased 13% over the period, significantly less than the 35% rise in real total operating costs.

2.37 There are several reasons that could account for this remaining 13% rise in cost per train kilometre; increases in service and safety standards, an increased level of service patronage and the associated staff costs, real wage inflation (above RPI), loss in efficiency, etc. However, it is beyond the scope of this report to provide a detailed account of precisely what has caused this rise – future reports will aim to investigate such issues in more detail.



**Figure 15: History of total costs, accounting for service provision/patronage for franchised UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC management accounts/NRT)**

2.38 The number of passenger kilometres a TOC carries is not, generally, a major cost driver for TOCs; carrying additional passengers is not very costly once a service is already being provided. However, it

should be noted that a significant increase in passenger demand could cause the addition of extra carriages or the provision of additional services, in which case the consequent cost increase would be significant.

2.39 Despite the less than direct effect on costs of changes in passenger kilometres, it is useful from the perspective of passengers and taxpayers to consider total operating costs per passenger kilometre – this gives an indication of how much, on average, it costs a TOC to move a passenger one kilometre. In 2011-12 the average cost of moving one passenger one kilometre was 8.9 pence, a 12% reduction from the 2000-01 value of 10.1 pence. Although falling costs per passenger kilometre are generally desirable, this fall cannot be taken to indicate efficiency gains due to the large increase in passenger numbers over the period.

### **Trend analysis**

2.40 Figure 15 shows three distinct periods in the evolution of TOC total costs, from 2000-01 to 2004-05, 2004-05 to 2006-07 and 2006-07 to now.

2.41 During the 2000-01 to 2004-05 period, real total operating costs increased sharply. Between 2000-01 and 2002-03, there was an increase of 35% in real terms – in only three years – without a very significant increase in the volume of service provided. This reflects sharp increases in staff, rolling stock and energy costs over this period. The incident at Hatfield in October 2000, which led to significantly reduced network speeds (through the introduction of temporary speed restrictions intended to allow a programme of thorough track safety inspections), may explain the escalation of cost in the absence of significant capacity increases.

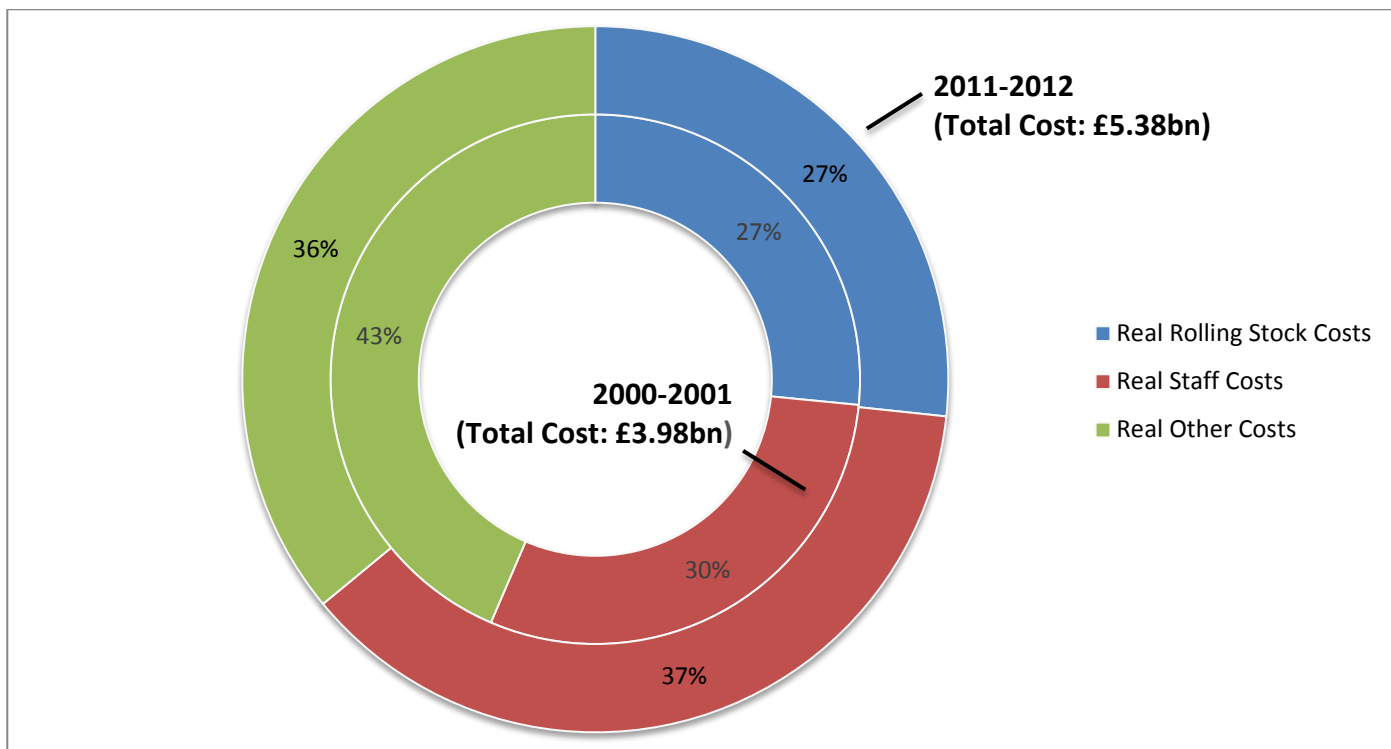
2.42 Real total costs decreased by 15 percentage points from 2004-05 to 2006-07. This corresponds to a period where many TOCs were at the end of their franchise contracts and possibly wound down their activities and spending at that time. TOCs costs increased again between 2006-07 and 2009-10 as some TOCs were starting their franchise contracts before decreasing between 2009-10 and 2011-12.

### **Evolution of staff, rolling stock and energy costs**

2.43 To understand better the changing composition of train operators' costs, it is useful to look at their main cost categories: rolling stock costs, staff costs and other operating costs (such as marketing, insurance, depreciation etc.) as defined in Table 1 at the beginning of this chapter.

2.44 It is important to note that TOCs might record similar types of expenditure in different lines within their management accounts. Also, depending on their leasing arrangements, TOCs may record rolling stock maintenance costs as part of their rolling stock leasing costs or, if they carry out their maintenance in-house, as part of their staff or "other" costs. Due to these potential differences, we only use these

categories (rolling stock, staff and other costs) to provide an overall picture of train operators' main types of expenditure and the rough proportion of expenditure accounted for by each.



**Figure 16: 2000-01 and 2011-12 split of real (2010-2011 prices) total operating costs by cost type across all TOCs (excluding access charges and performance regime payments) (Source: TOC Management accounts/NMF)**

2.45 Figure 16 shows the change in the proportion of staff, rolling stock and other costs as a percentage of total costs across all TOCs between the 2000-01 and 2011-12 financial years. Although rolling stock costs have been constant at 27% of train operator’s costs, the share of staff costs has increased while the share of other costs has decreased. As later sections consider, this change could be attributed to a number of factors, including some costs being reallocated from the “other” to the “staff” category (following for example, changes in outsourcing policy), higher responsiveness of staff costs to the growth in the volume of service or decrease in staff efficiency.

### Evolution of staff costs

2.46 Figure 17 shows the evolution of nominal total staff costs across all franchised TOCs between 2000-01 and 2011-12. It also shows the change in staff costs accounting for both RPI and real wage inflation as well as the growth in train kilometres and passenger kilometres.

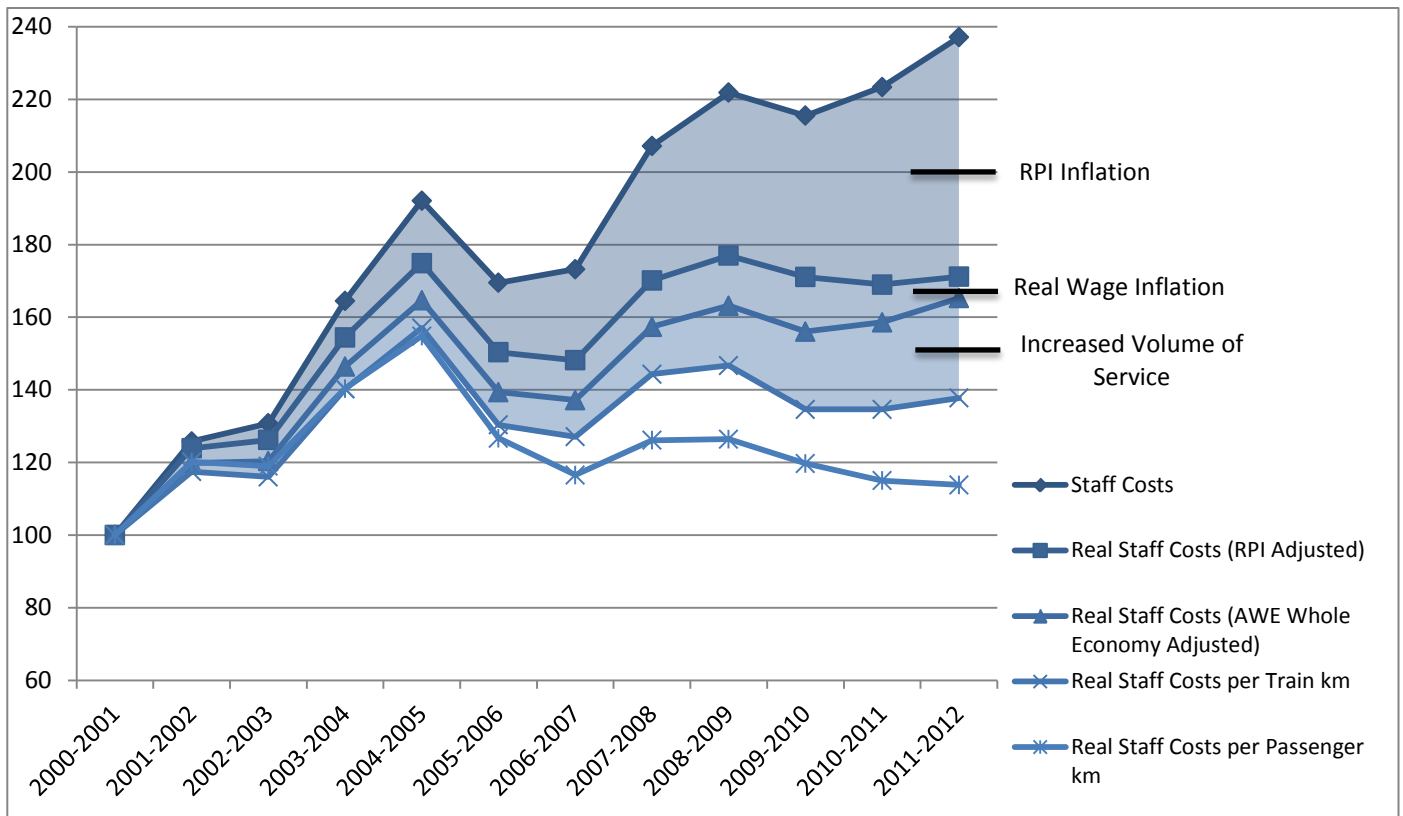


Figure 17: History of staff costs for franchised UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC management accounts/NMF/NRT)

### Comparison between 2000-01 and 2011-12

2.47 There has been a significant increase in nominal staff costs, which have doubled between 2000-01 and 2011-12. Half of the growth in staff costs can be accounted for by controlling for both RPI and real wage inflation, so that real staff costs increased 65% over the period.

2.48 Again, we can account for some part of the 65% rise in real staff costs by placing it in the context of the increased volume of service: staff costs per train kilometre increased by 37% over the period. A substantial proportion of the rise in real staff costs could therefore be explained as the consequence of the significant increase in the volume of service provided.

2.49 The residual 37% increase in cost per train kilometre might relate to lower staff efficiency but also 'added value' services, such as the provision of staff to enhance the on-board customer experience (catering, customer service, etc.), which cannot be captured by using train kilometres as a measure of volume of service. The gap could also be driven by the deployment of increased numbers of revenue protection inspectors and barrier staff, in order to meet tightening targets for ticketless travel. A further factor, which might need to be considered, is the potential cost impact of operators recruiting staff from each other, at least partly by offering either higher pay or better terms and conditions. This might contribute to faster than average increases in real earnings, at least for groups of railway employees in demand.



2.50 In the context of growing service patronage the growth in real staff costs is relatively low: staff cost per passenger kilometres increased by 13% over the period. Whilst passenger kilometres are not as significant a driver of staff costs as train kilometres, staff costs are nonetheless more sensitive to increased service patronage than, for instance, rolling stock costs, since increased passenger numbers put a greater burden on cleaning staff, on-board revenue protection inspectors and station staff. As such, there is some justification in saying that the level of the real rise in staff costs, when taking into account greater service provision, sits somewhere between the 37% rise in staff costs per train kilometre and the 13% rise in staff costs per passenger kilometre.

### **Trend analysis**

2.51 The evolution of staff costs over the course of the last 10 years is similar to the trend of total costs. We see a sharp increase between 2000-01 to 2004-05 followed by a decrease between 2004-05 and 2006-07. Costs increased sharply again between 2006-07 and 2007-08 before stabilising in the last three years, reflecting the impact on the recession as real earnings have shrunk slightly.

## **Evolution of rolling stock costs**

### **Comparison between 2000-01 and 2011-12**

2.52 Figure 18 shows the evolution of rolling stock costs over period between 2000-01 and 2011-12, across the same measures we considered for total operating costs and staff costs.

2.53 In nominal terms, rolling stock costs increased by 85% over the period. Controlling for RPI inflation the rise in real rolling stock costs over the same period was 34%. This 34% increase could be partly explained by the increase in the volume of service: when we take account of the increase in vehicle-kilometres, rolling stock costs per train kilometre have increased by 11%. This increase in costs has occurred while quality and safety standards of rolling stock have generally increased within the vehicle saloon, including the installation of CCTV and air conditioning.

2.54 It is difficult to say whether the improvement in rolling stock maintenance technology should have led to a further reduction in cost than has actually occurred. It is also worth noting that the reduction in rolling stock costs per train kilometre could also be explained by the reallocation of some rolling stock costs to other cost categories. This could possibly have occurred if some TOCs re-allocated some of their rolling stock maintenance costs to the “other costs” category which can include some of their outsourcing costs.

2.55 If we look at passenger-kilometres, rolling stock costs per passenger-kilometres are 8% lower in 2011-12 than in 2000-01 due to the fact that passenger-kilometres have increased more than rolling stock costs during this period.

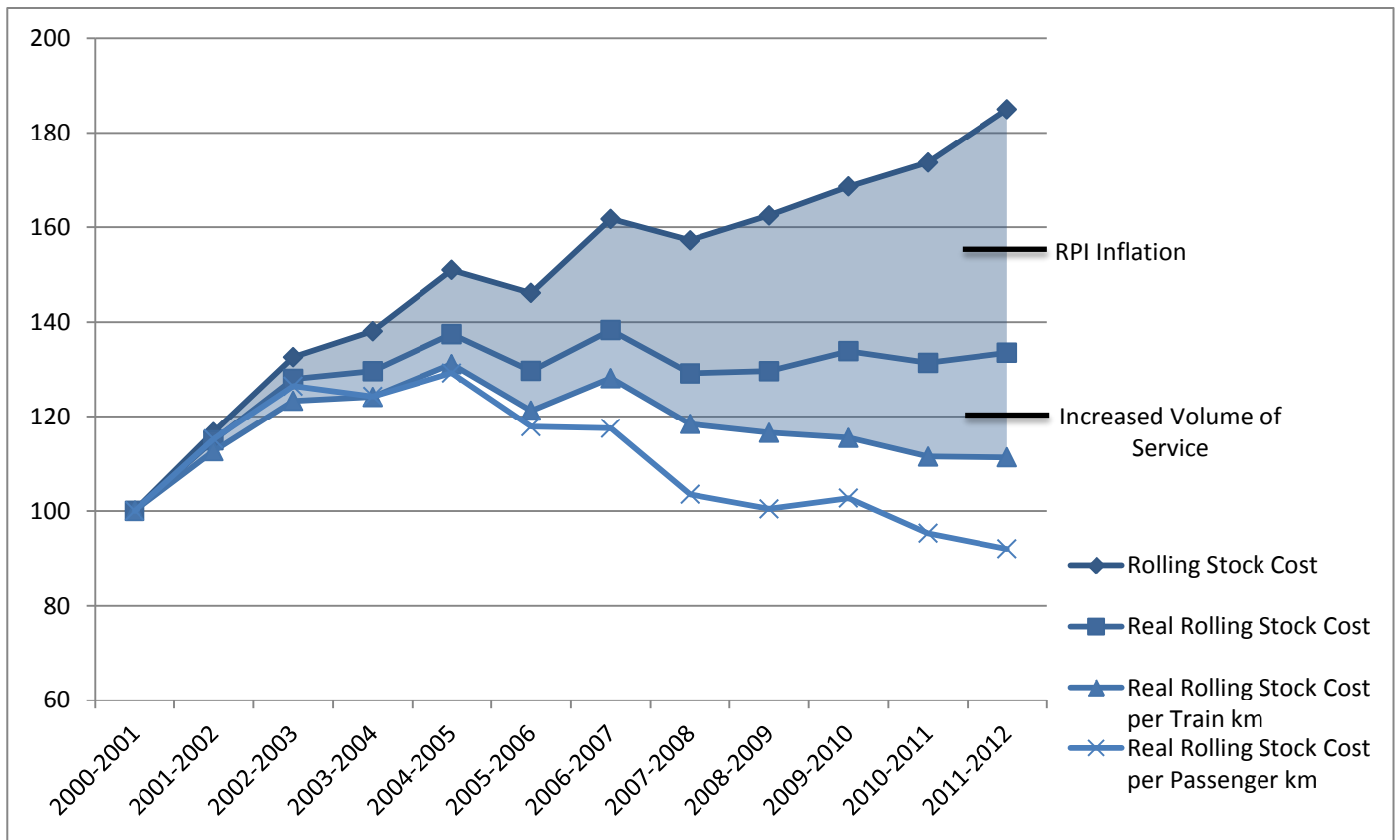


Figure 18: History of rolling stock charges for UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC Management accounts/NRT)

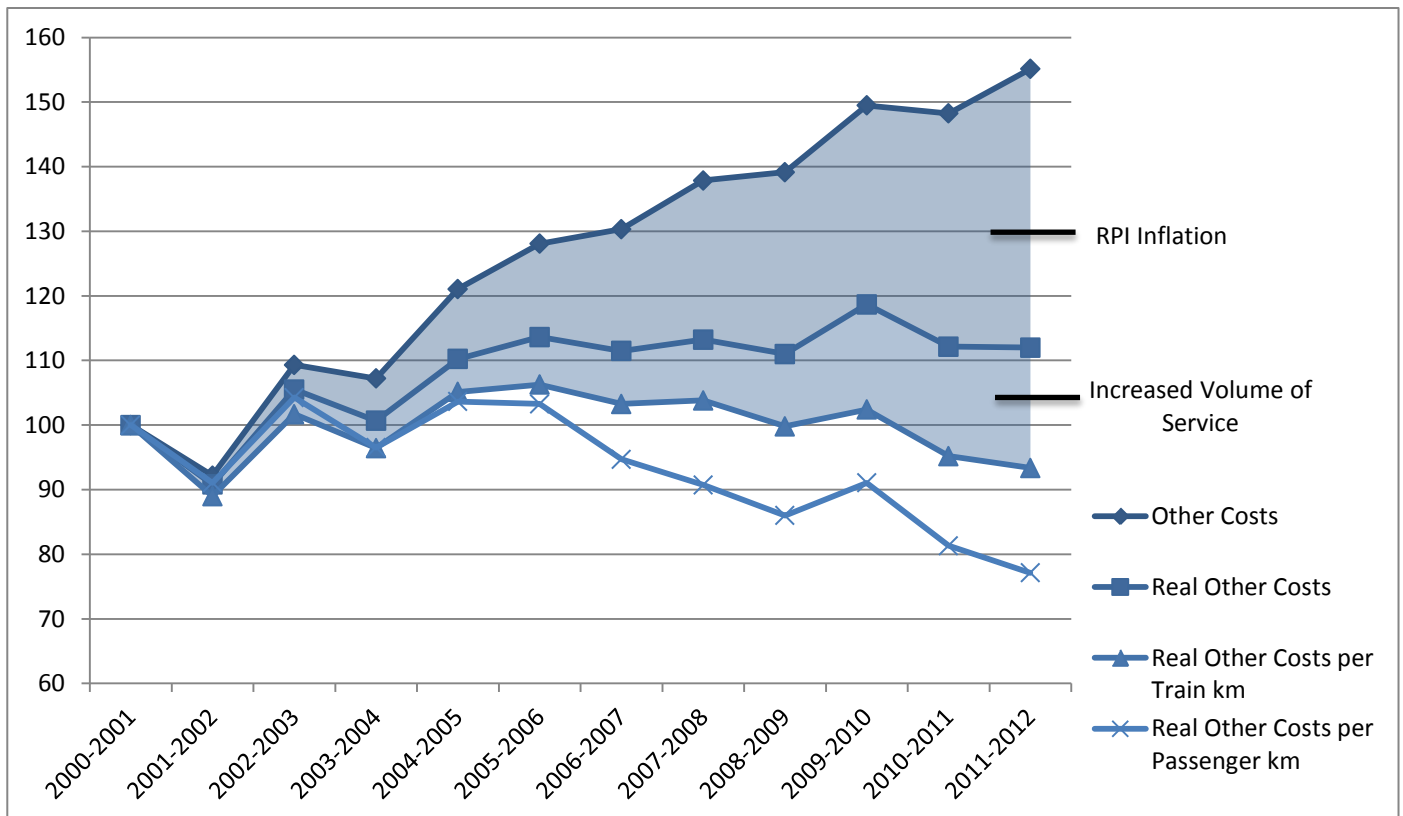
### Trend analysis

2.56 The evolution of rolling stock costs over the course of this period is similar to the trend of total costs. We can identify two periods: from 2000-01 to 2004-05 where costs increased significantly and from 2004-05 to 2011-12 where costs overall decreased.

2.57 Between 2000-01 and 2004-05, there was extensive investment in new and overhauled fleets. The investment focussed on replacing/refurbishing rolling stock rather than additional capacity. It is worth noting that disruption to services after the Hatfield incident led to a reduced network capacity and a lower than planned volume of service. Real costs have overall decreased from their peak in 2006-07. The investment in modern rolling stock design, with its ‘plug and play’ maintenance philosophy and state-of-the-art diagnostics may have helped deliver these cost reductions.

### Evolution of other costs

2.58 Figure 19 shows the evolution of train operators’ “other” costs (which include, for example, outsourced contract staff, fuel costs, insurance, marketing, etc).



**Figure 19: History of “other” costs (excludes EC4T charges as data not consistently available) for UK TOCs between 2000-01 and 2011-12 (indexed to 2000-01) (Source: TOC Management accounts/NRT)**

2.59 The nominal rise in other costs between the 2000-01 and 2011-12 financial years was 55%. Controlling for RPI inflation, the real rise in other costs over that period was 11%.

2.60 Taking into account the increased volume of service provided, other costs per train kilometre fell by 7% over the period. This is maybe due to the fact that many costs that feature in “other costs” such as marketing, legal fees and office accommodation do not rise in direct proportion with the volume of service provided (running more train services does not necessarily require more adverts) so that most of the fall is probably accounted for by the rise in train kilometres alone. It is also possible that the decline in costs is due to gains in efficiency or the fact that costs have been reallocated to different cost categories.

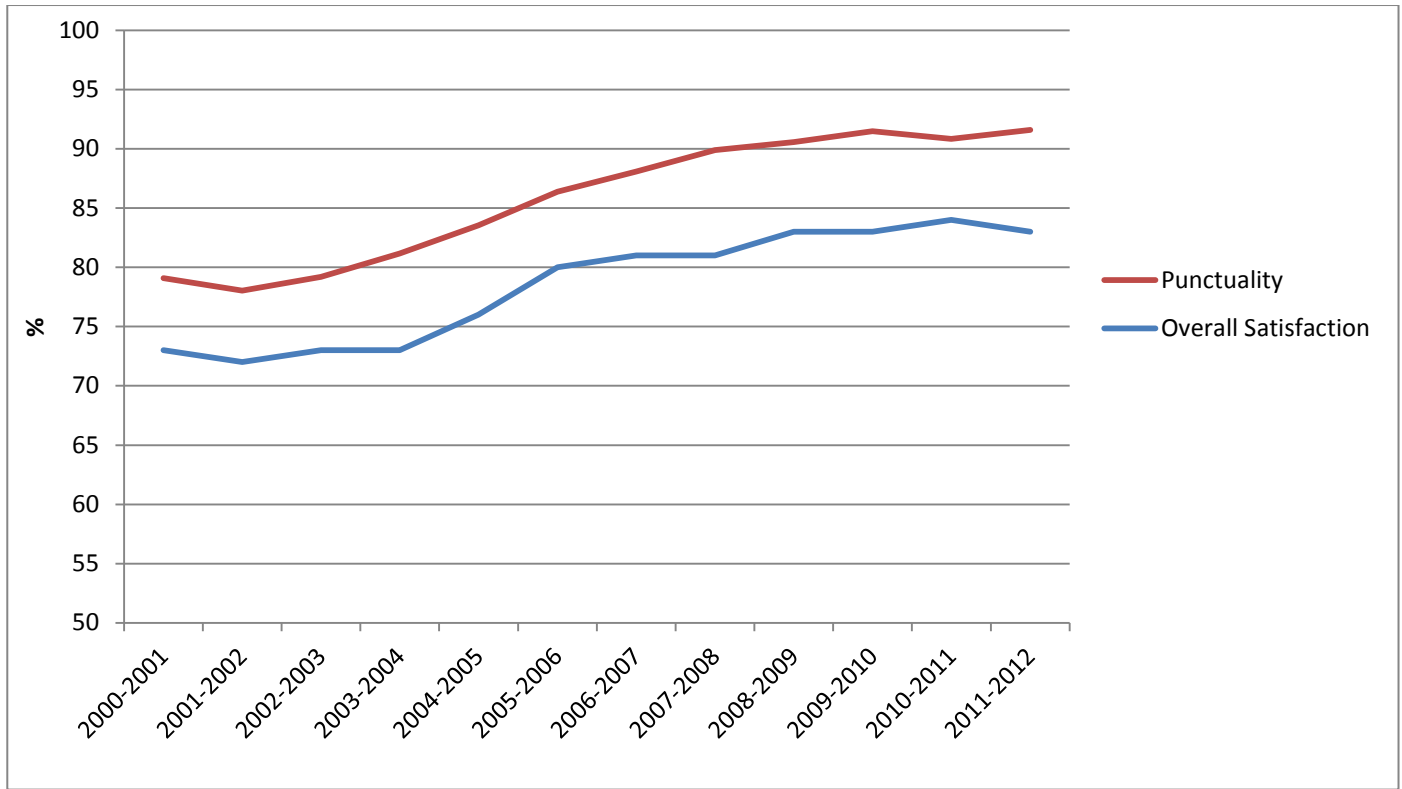
## Evolution of TOC’s Performance

2.61 The focus of this report is on TOCs’ costs and revenues. In previous sections we have sought to place the history of TOC costs and revenues in the context of changes to some of their main outputs, train kilometres and passenger kilometres. In this section we consider two other, more qualitative, measures of TOC output, that represent changes in performance, against which changes in costs and revenue should be understood and give an indication of how the value for money of TOC services has changed over the past decade.

2.62 We have selected two indicators to measure the history of TOC performance. The first is a measure of customer satisfaction taken from the National Passenger Survey (NPS) by Passenger Focus. We use the percentage of respondents replying a “satisfied or good” level of overall satisfaction with franchised TOC services. This provides a network-wide picture of customers’ satisfaction with rail travel and covers 31 specific aspects of service.<sup>25</sup> This measure indicates the quality of the services provided by TOCs as perceived by their customers.

2.63 The second measure selected is the Moving Annual Average (MAA) of the Public Performance Measure (PPM). This measures the proportion of trains that arrive at final destination on time in the past four quarters. On time is defined as within five minutes, or within ten minutes for the long distance sector. This indicator is used by franchise authorities and to set up targets for TOCs as part of franchise contracts, as well as being used by the ORR to set targets for Network Rail.

2.64 Figure 20 shows the change in both of these measures between the 2000-01 and 2011-12 periods. It shows that punctuality has increased by 24% since 2000-01 and overall satisfaction by 13%.



**Figure 20: Change in Punctuality (PPM MAA) and Overall Satisfaction between 2000-01 and 2011-12 (Source: NRT and National Passenger Survey)**

2.65 The number of fatalities and injuries on the network gives a good indicator of safety of the railway network. The RSSB compile data on fatalities, injuries and shock and trauma into a single figure, termed

<sup>25</sup> Further details can be found at <http://www.passengerfocus.org.uk/research/publications/national-passenger-survey-spring-2012-main-report>

Fatalities and Weighted Injuries (FWI) – this measure assigns weights to non-fatal injuries and shock to enable aggregation (e.g. 10 major injuries are equivalent to 1 fatality, 1000 non-reportable minor injuries are equivalent to 1 fatality etc). Figure 21 shows the change in the FWI measure since 2002-03. It shows a 12% fall in rate of FWI in the last decade.

2.66 Although they might be achievable through efficiency gains, these increases in service quality standards and safety performance can sometimes result in an increase in operating costs for TOCs and/or Network Rail. For instance, in order to improve punctuality TOCs may need to employ a larger number of contingency train staff and improvements in safety may come at the cost of fitting new technologies or introducing new procedures.

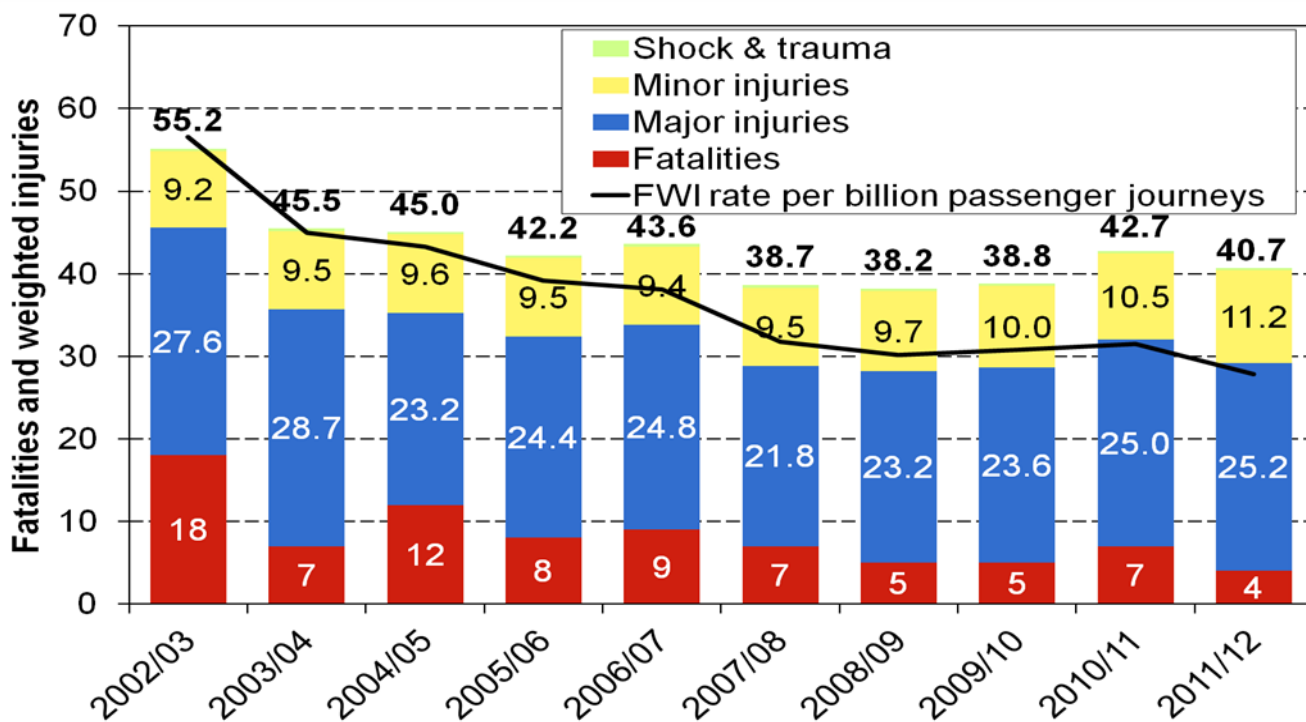


Figure 21: Change in the number of fatalities and injuries since 2002/03 (source: RSSB, Annual Safety Performance Presentation Report 2011-12)

# 3. Comparative analysis of TOCs' costs in 2010-11

## Introduction

3.1 The nature of the service provided varies dramatically between TOCs. Some TOCs operate services that are crowded or in high demand, whilst others operate services that are in comparatively low demand or under-utilised. One to one comparisons of TOCs costs must take into account this variation in service characteristics. This section highlights the differences between TOCs for some of the key service characteristics of UK TOCs before comparing total costs both absolutely and in the light of various measures of volume of service. Future reports will aim to isolate the specific effects of particular franchise characteristics on costs.

## Comparison of TOC's service characteristics

3.2 There are 19 franchised train operating companies in the UK. They are subsidiaries of ten privately owned groups and one state-owned holding company<sup>26</sup> as listed in Table 2. A map in the appendix shows their different operating routes. TOCs operate franchises that are classified into three sectors: London and Southeastern (LSE), Regional and Intercity. These sector classifications are based on the classifications originally introduced by British Rail.

Owning Group	Train Operating Company	Franchise	Classifications
Abellio	Greater Anglia	Greater Anglia	LSE
Arriva UK Trains	Arriva Trains Wales	Wales and Borders	Regional
	Chiltern Railways	Chiltern Railways	LSE
	CrossCountry	Cross Country	Intercity
Arriva UK Trains (50%) & MTR Corporation (50%)	London Overground	London Overground	LSE
Directly Operated Railways	East Coast	InterCity East Coast	Intercity
FirstGroup	First Capital Connect	Great Northern + Thameslink	LSE
	First Great Western	Greater Western	Intercity

<sup>26</sup> East Coast is owned by the state-owned holding group Directly Operated Railways, who have managed the service since National Express failed to deliver the contracted franchise conditions and its franchise rights were terminated in 2009.

Owning Group	Train Operating Company	Franchise	Classifications
	First ScotRail	ScotRail	Regional <sup>27</sup>
FirstGroup (55%) & Keolis (45%)	First Transpennine Express	TransPennine	Regional
Govia	London Midland	West Midlands	Regional
	Southeastern	Integrated Kent	LSE
	Southern	South Central	LSE
National Express Group	C2C	Essex Thameside	LSE
Serco-Abellio	MerseyRail	Merseyrail	Regional
	Northern	Northern	Regional
Stagecoach Group	East Midlands Trains	East Midlands	Intercity
	Stagecoach Southwestern	South Western + Island Line	LSE
Virgin Group (51%) & Stagecoach Group (49%)	Virgin Trains	InterCity West Coast	Intercity

**Table 2**

## Volume of Service Provided

3.3 The volume of service provided is the key cost driver for TOCs – total costs are very closely linked to it. The service level commitments set out in the franchise contract specify many of the services that a TOC is required to run and these vary between franchises depending on the needs of the regions served. There are several possible measures of the volume of service provided by a TOC, these include: train kilometres, train hours, vehicle kilometres or seat hours. Figure 22 shows the number of train kilometres and hours operated by each TOC in 2010-11.

3.4 Each of these measures presents a different picture across the TOCs depending on their service characteristics (for example, TOCs that travel greater distances at higher speeds (e.g. Virgin Trains) will have higher train kilometres relative to train hours than TOCs that travel short distances at slower speeds (e.g. London Overground)). In 2010-11 Northern had the largest number of timetabled train kilometres of all the TOCs at 44.4m km. The TOCs with the smallest number of timetabled train kilometres were C2C, MerseyRail and London Overground with 6.4m, 6.1 and 5.5 km, respectively. In the same year, the TOC with the highest number of train hours was also Northern, with 862,000 hours (to the nearest thousand). The TOCs with the fewest train hours were MerseyRail, Chiltern Railways and C2C with 166,000, 143,000 and 116,000 hours, respectively.

<sup>27</sup> The standard sector classification ordinarily only applies to TOCs operating in England and Wales, and therefore does not cover First ScotRail. However, for the purposes of this report, and given its service characteristics, we have classified First ScotRail as a regional TOC.

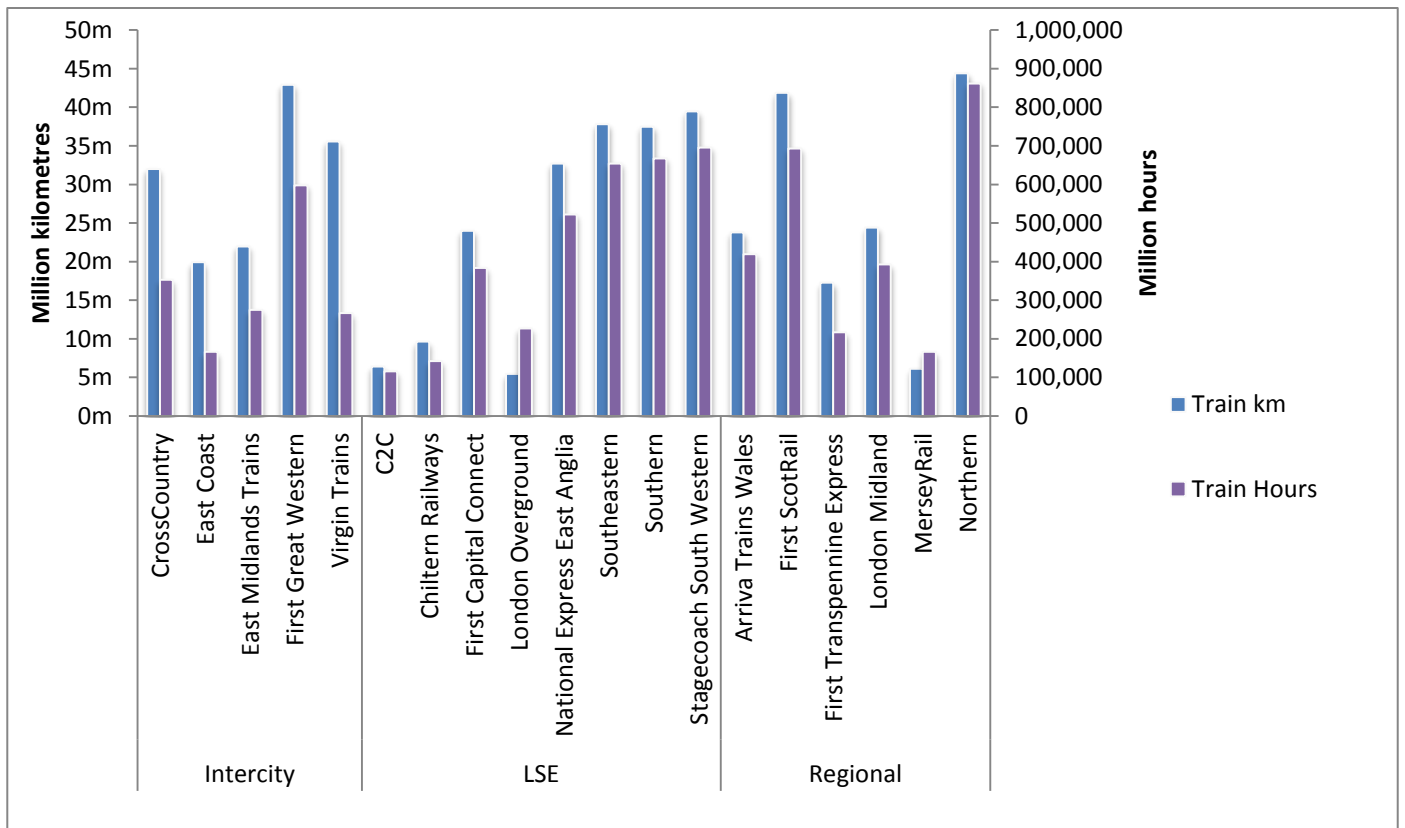


Figure 22: Volume of timetabled of service provided by TOC in 2010-11 in train kilometres and train hours (Source: NRT/DfT)



## Service Patronage

3.5 As previously noted, service level commitments laid out in franchise contracts sometimes specify that TOCs run services that may not be sufficiently in demand to make them profitable, as such the level of service patronage often does not correspond to the level of service provided. The number of passenger journeys per year is one way of measuring service patronage. Figure 23 shows the number of passenger journeys per TOC in 2010-11. Stagecoach Southwestern was the TOC with the largest share of UK passenger journeys in 2010-11, accounting for 14.9% of all passenger journeys. Govia was the largest owning group by passenger journeys, with 28.3% of all passenger journeys travelled on a Govia train.

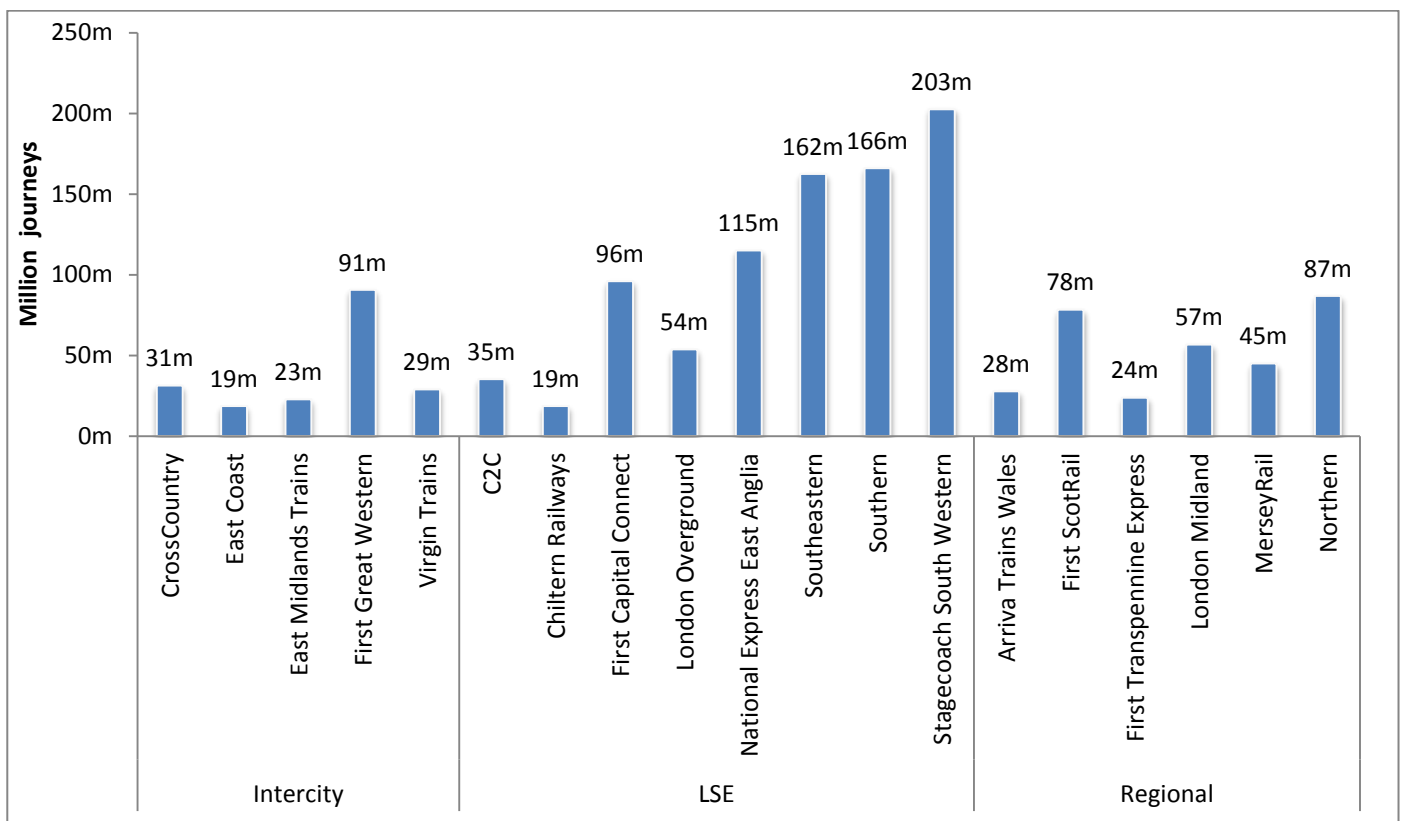


Figure 23: Number of passenger journeys in 2010-11 by TOC (Source: NRT)

## Passenger Movement

3.6 An alternative measure of service patronage is the number of kilometres that passengers have been moved in the course of a year, which better reflects the passenger load of longer distance TOCs. The passenger kilometres run by each TOC in 2010-11 is given in Figure 24. In 2010-11, the largest single TOC by passenger km was Virgin Trains, which accounted for 10.5% of all passenger-kilometres, closely followed by First Great Western, which accounted for 10.2%. The smallest TOCs by passenger-kilometres were the urban services, MerseyRail and London Overground, who delivered only 1.0% and 1.1% of passenger kilometres in the UK, respectively – this is on account of the short length of the routes they operate.

3.7 FirstGroup was the largest owner group in terms of passenger kilometres – 21.0% (excluding joint ventures) of all passenger kilometres were travelled on a FirstGroup train, with Govia having the second largest share, at 18.4%.

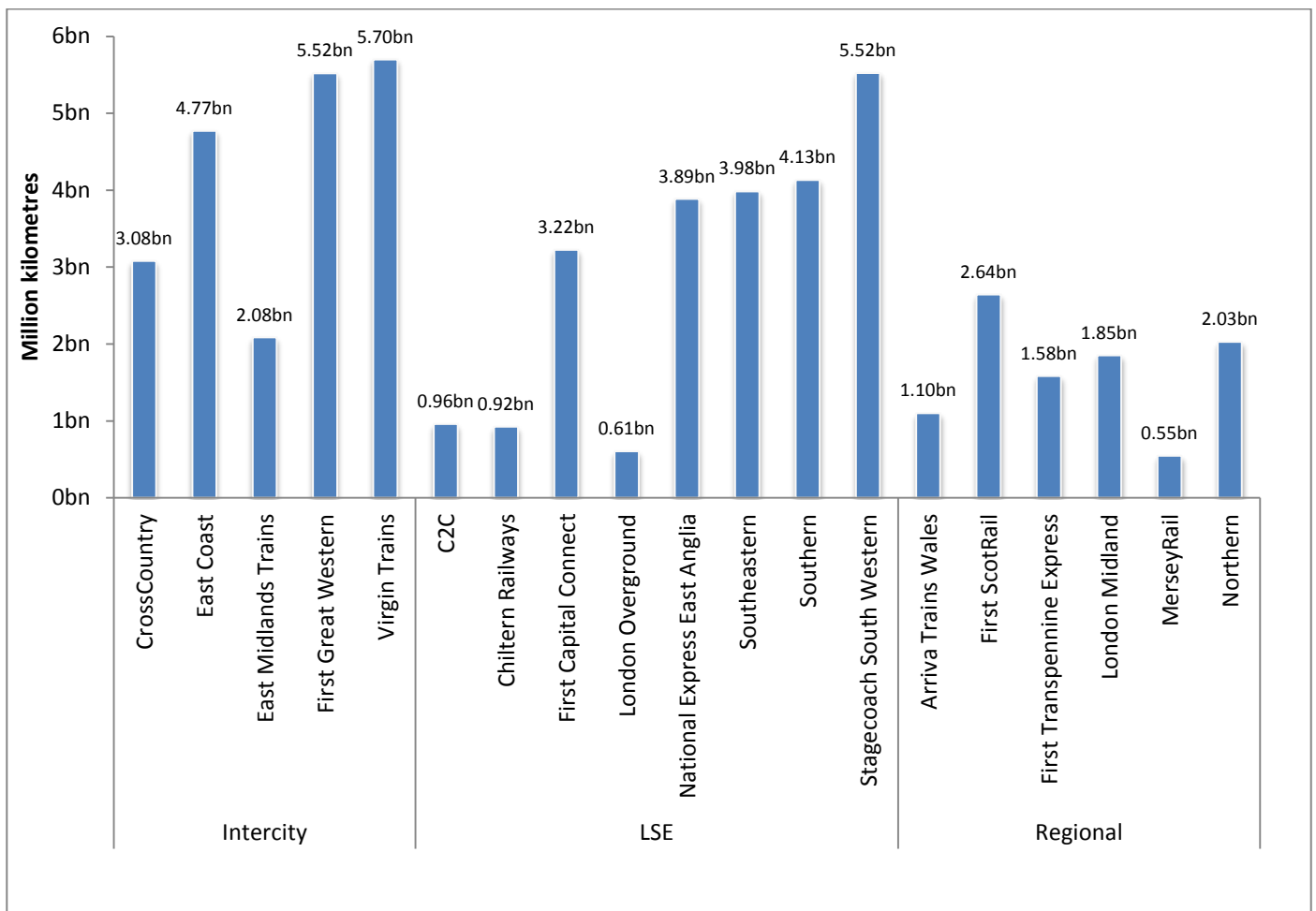


Figure 24: Passenger kilometres by TOC in 2010-11 (Source: NRT)

## Intensity of service usage

3.8 Looking at the number of passenger kilometres per train kilometre gives an indication of, on average, how busy a service is – it gives an indicative figure of the number of passengers per train.

3.9 Figure 25 shows the number of passengers per train across the TOCs in 2010-11. East Coast was the busiest TOC with, on average, 239 passengers per train. Northern was the least busy, with, on average 46 passengers per train. Note that the urban TOCs, London Overground and MerseyRail, which have low passenger kilometres, have relatively high numbers of passenger kilometres per train kilometre – despite the short operated route length, these services still carry a lot of passengers, as was noted in the number of passenger journeys for each of these TOCs.

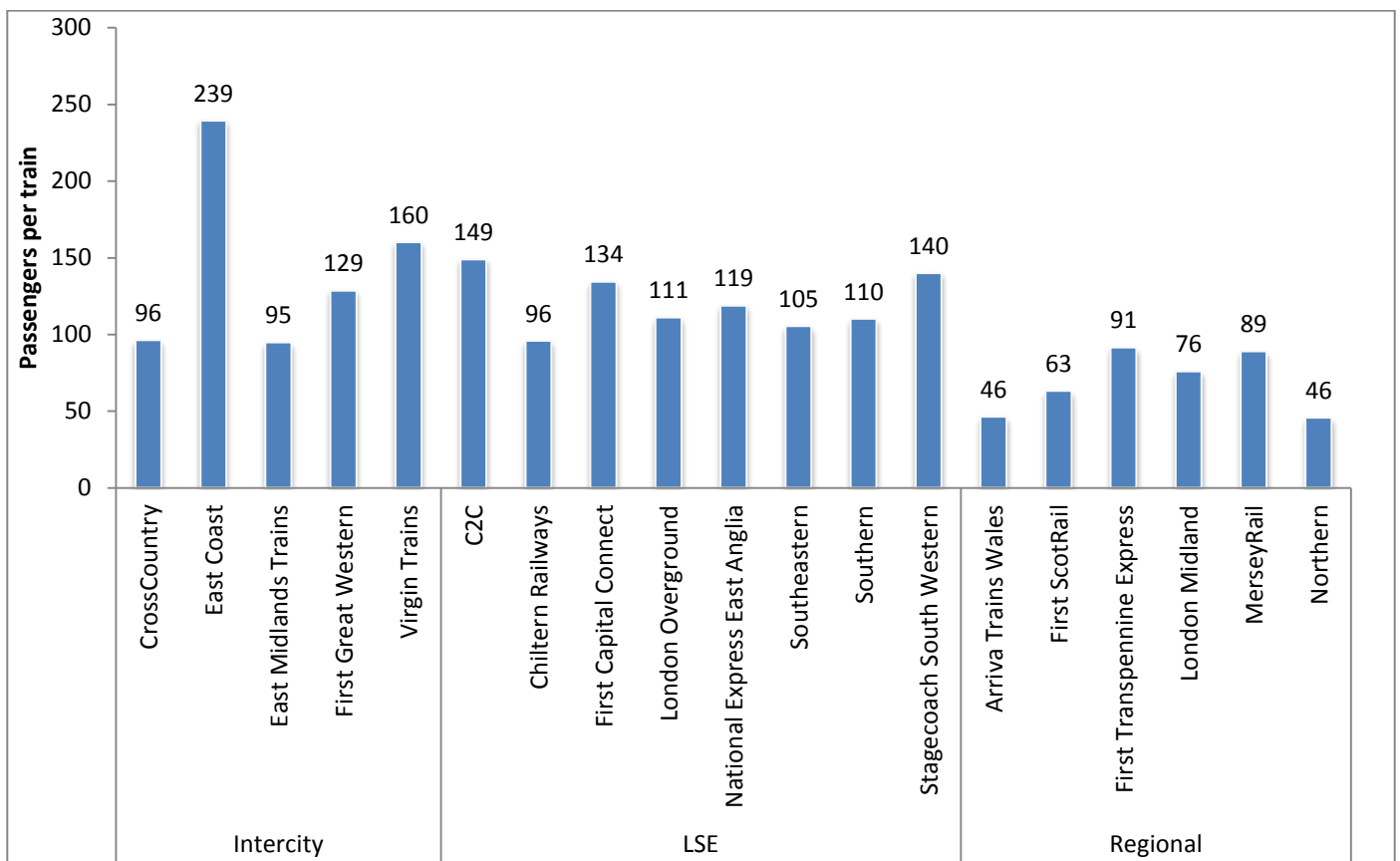


Figure 25: Average number of passengers per train by TOC in 2010-11 (passenger km/train km) (Source: NRT)

## Level of Seat Occupancy

3.10 The average number of passengers per seat gives a rough measure of how busy a service is, which gives an indication of utilisation of service capacity. This measure takes into account varying rolling stock characteristics and train lengths by looking at seat kilometres instead of train kilometres. However this measure should still be understood with some caution – services that expect a high volume of passengers often use rolling stock that has fewer seats (to allow for more standing room), as such, this measure will tend to overstate how busy such services are.

3.11 Figure 26 shows the average number of passengers per seat for each TOC in 2010-11. London Overground was the busiest service with, on average, 0.649 passengers per seat (or, if all passengers were seated, an average of 64.9% of seats would be occupied) – this result is unsurprising, given its role as part of the congested Transport for London network, though it should also be noted that London Overground services have significantly fewer seats per vehicle than the average. The least crowded TOCs were Southeastern and Northern with 26.4% and 26.5% of seats occupied, respectively.

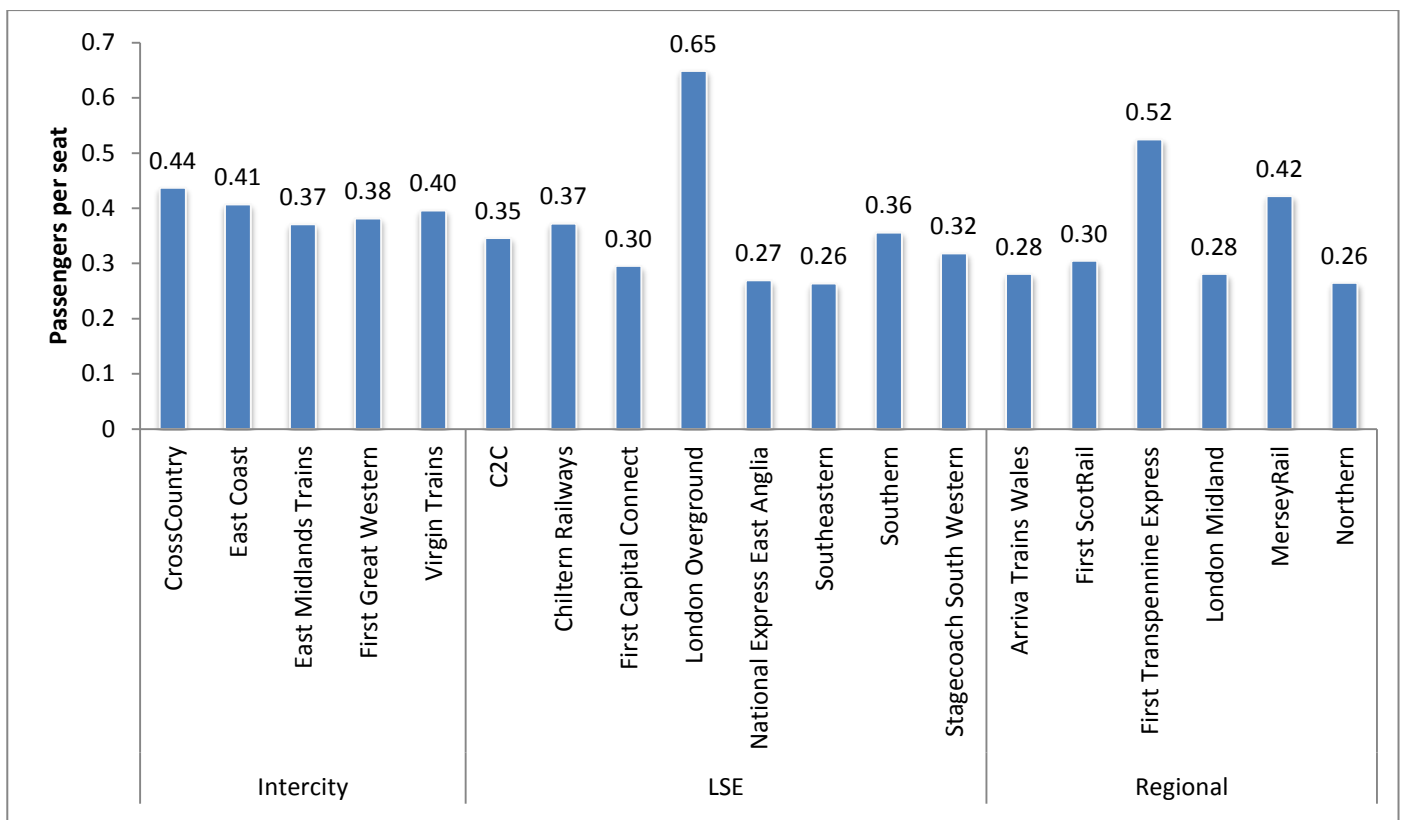


Figure 26: Average number of passenger per seat in 2010-11 (passenger km/seat km) (Source: NRT/DfT)

## Stations Managed

3.12 As part of their franchise contracts most TOCs are required to manage stations. TOCs generally tend to operate those stations for which they run the majority of the services that stop at it. Most of these stations are very small; Network Rail operate the largest 17 stations so that running costs for the majority of TOC operated stations are relatively low.

3.13 Figure 27 gives the number of stations managed by each TOC in 2010-11. Northern operated the most stations of any TOC, at 462, however, since stations vary significantly in their size the cost of managing a station will vary significantly between stations and this statistic ought to be understood in that context – it gives only an indirect measure of the any additional costs that may be incurred from running stations.

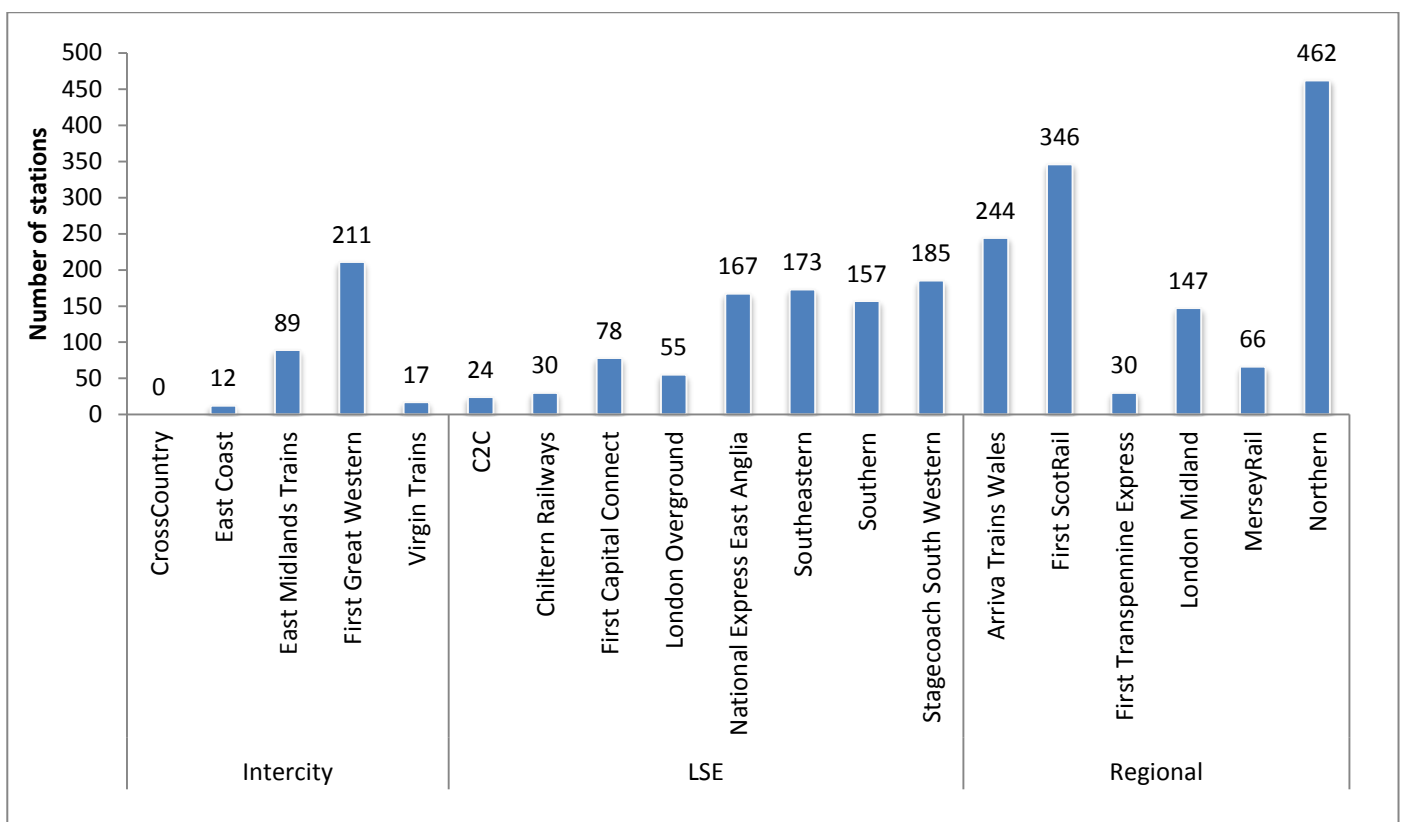


Figure 27: Number of stations managed, by TOC, in 2010-11 (Source: NRT)

## What factors drive TOCs cost

3.14 As illustrated in the section above, TOCs have very different service characteristics, often resulting from market characteristics (topography, demand) and franchise requirements. These service characteristics, along with other factors will drive their costs. Figure 28 and Figure 29 list the type of factors that may influence TOCs costs and revenues, respectively. The factors are sorted by revenues or cost categories and then by how much control TOCs have on them. The cost drivers listed at the top of boxes are generally cost drivers that TOCs cannot influence while those listed at the bottom are more under their control.

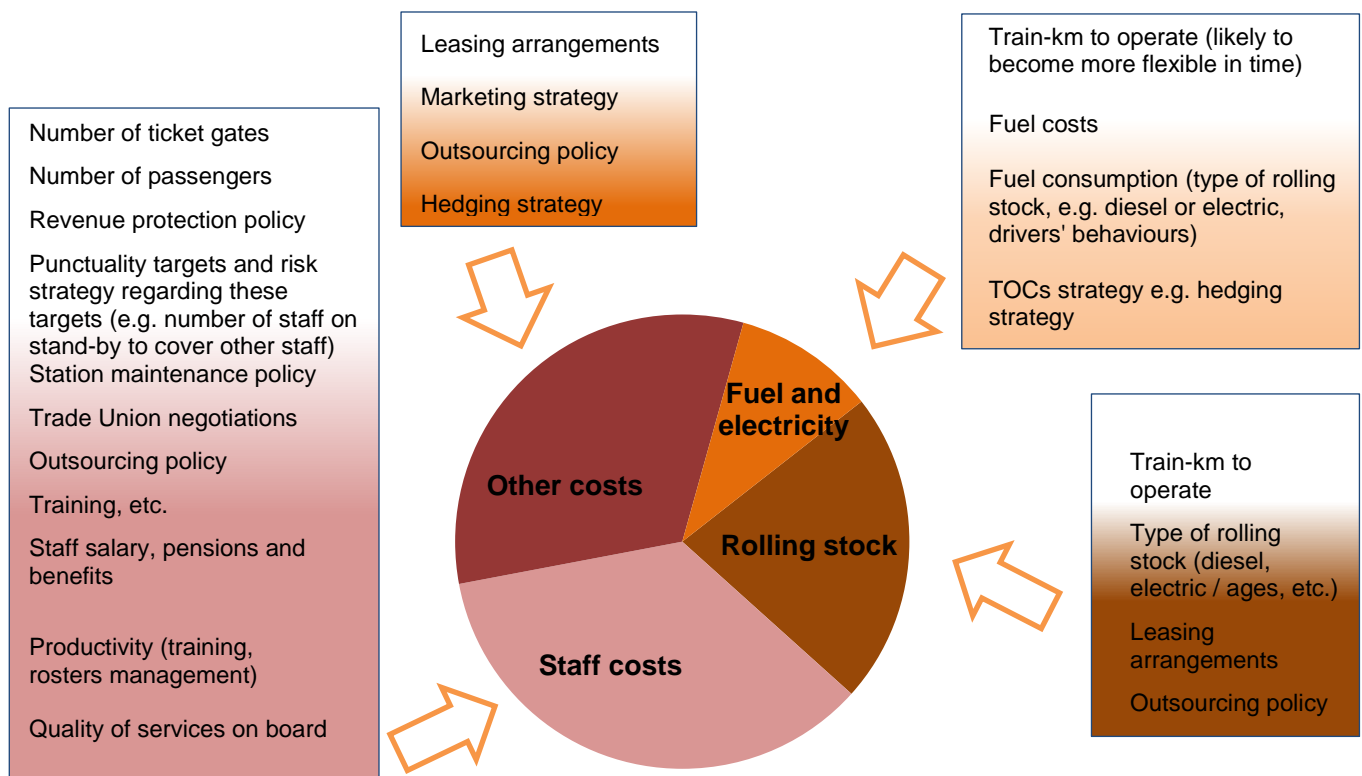


Figure 28: Example of factors influencing train operators' costs

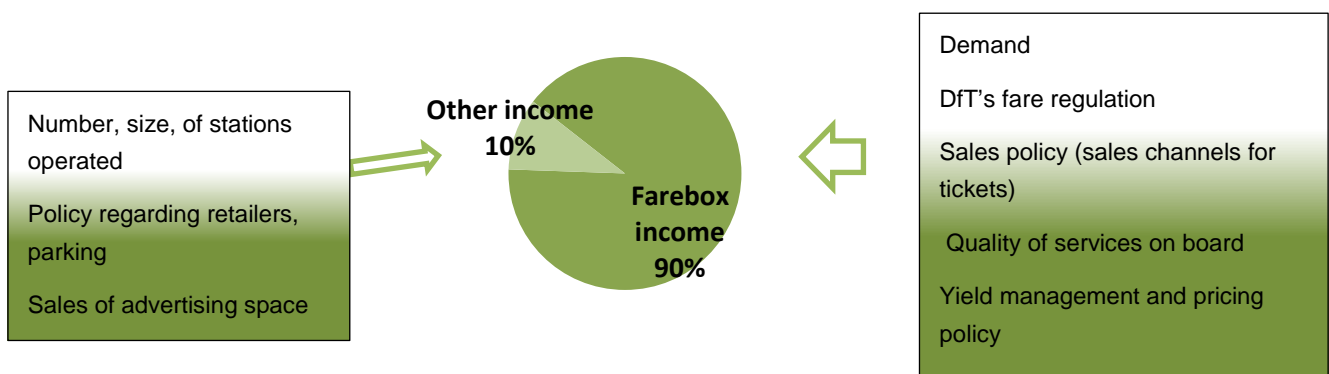
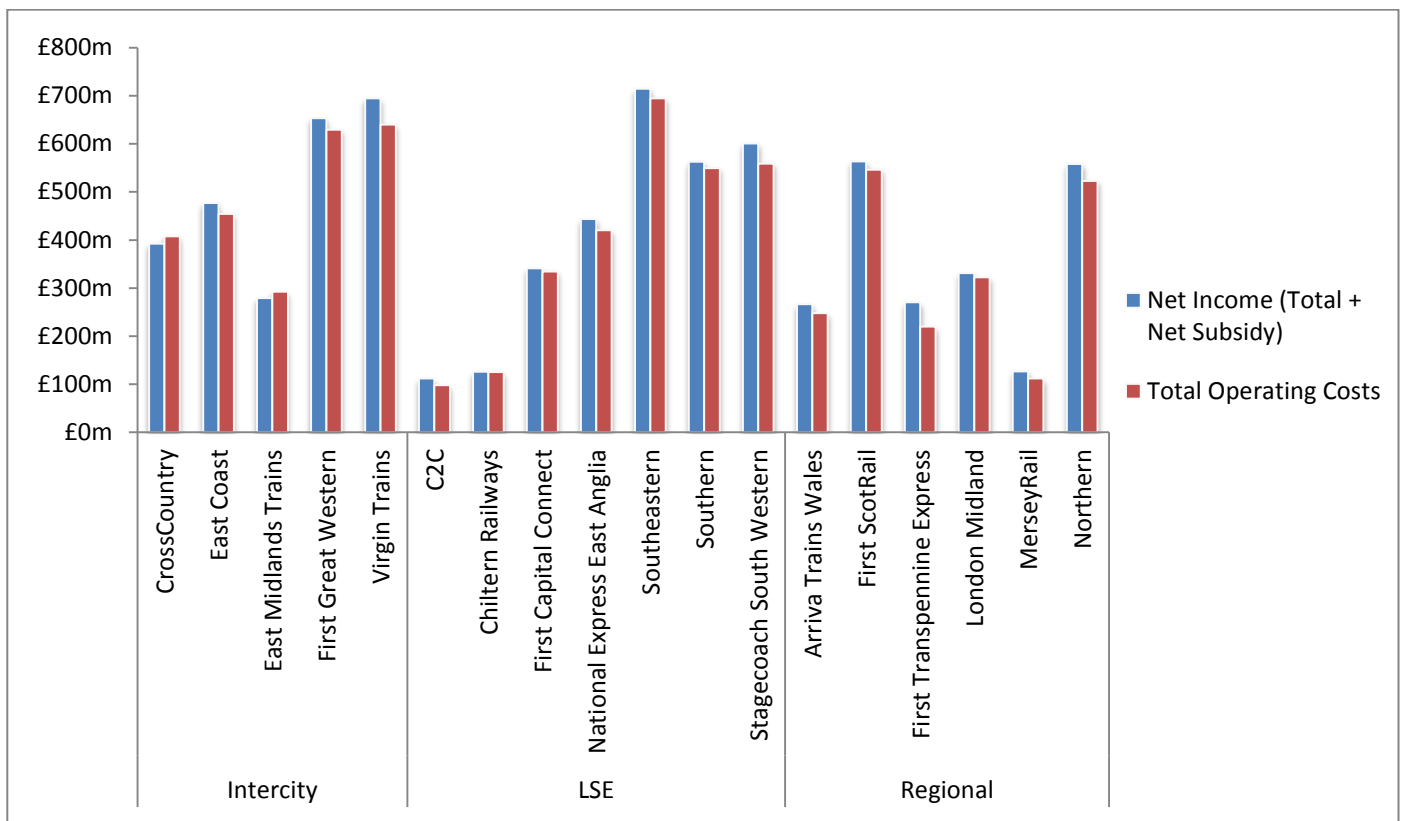


Figure 29: Examples of factors influencing train operators' revenues

## 2010-11 Total Cost and Income

3.15 This section looks at total cost, total income and subsidy levels in 2010-11 by TOC.

3.16 Figure 30 shows the total costs (including access charges and performance regime payments), and net income (that is, total income plus net subsidy) by TOC for the year 2010-11. Total income includes farebox income (sales of tickets and railcards less refunds and delay compensation) and other income (e.g. car parking, on-board catering and advertising) but excludes subsidies. Subsidy data are taken from the TOC management accounts and include subsidies/premiums received from/paid to franchise authorities by TOCs as well as revenue support payments/receipts, such as from “cap and collar” mechanisms. It excludes franchise authorities payments such as the network grant that is paid by the government to Network Rail.



**Figure 30: 2010-11 Total Costs (including access charges and performance regime payments) and Net Income by TOC (Source: TOC Management Accounts)**

3.17 In 2010-11 the average total costs (including access charges) of the 18 TOCs considered<sup>28</sup> was £399 million. Southeastern had the largest total costs at £694 million and C2C had the lowest at £98 million. If we exclude access charges and performance regime payments (which are outside of TOC’s control), then the average total cost was £297 million, Virgin Trains had the highest total cost at £498 million and C2C had the lowest, at £81 million.

<sup>28</sup> London Overground is excluded because of data limitations.

3.18 Figure 31 shows the split between income and subsidy by TOC. On average, the 18 TOCs generated of £405 million in income (excluding subsidies) in 2010-11, with Virgin Trains having the highest income at £811 million and MerseyRail having the lowest at £55 million. In 2010-11 the average net subsidy was £15.9 million. Northern received the highest level of subsidy at £322 million and Stagecoach South Western paid the highest premium, at £185 million.

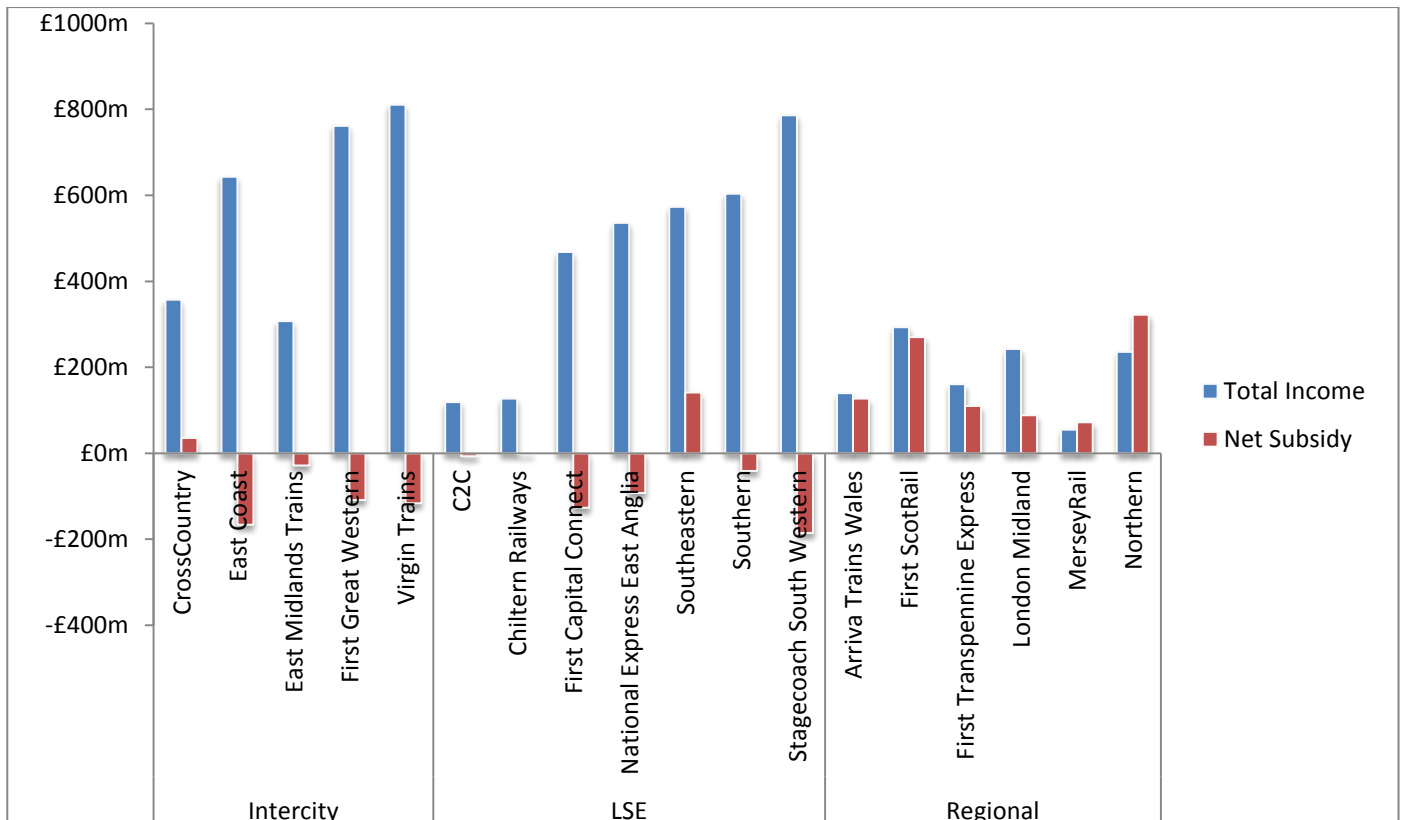


Figure 31: Net subsidies and total incomes by TOC in 2010-11 (Source: Management Accounts)

### Comparative analysis of 2010-11 costs

3.19 Unless stated otherwise, TOC total costs considered in this section include rolling stock leasing charges, staff costs and other operating costs (such as marketing, insurance, depreciation etc.) but exclude access charges, net performance regime payments and any premiums paid to the franchise authorities.

3.20 The figures given are stated on a cash basis and exclude any payments under the incentive regimes but include adjustments made to reflect the consequences of the Regulator's charges review. As illustrated in the previous section, a number of factors drive train operators' costs. TOCs can control some of these factors, such as their marketing policy, but have limited control over others, such as the frequency with which they stop at stations. When looking at the results below, it is therefore important to understand that a TOC's financial performance is affected by franchise requirements and service characteristics as well as TOC management decisions.



3.21 The analysis in this report does not aim to identify the effects that any given controllable or structural factor has on TOCs' costs independent of all other factors, and, as such, none of the results presented below can be understood as a "league table" of TOC efficiency. These findings should not be understood in isolation as each measure will only capture an aspect of TOCs' costs. However, the analysis below sheds some light on the key drivers of TOC costs, as well as some of the relationship between those drivers and TOCs' service characteristics.

3.22 The core driver of TOC costs is the volume of service it provides. As previously discussed, there are several ways of measuring volume of service but, from a cost perspective, two of the main drivers are the distance travelled by TOCs trains (train kilometres) and the time they have spent travelling (train hours). In addition to these, because the addition of extra vehicles to a train has a non-negligible effect on TOC costs (even excluding the vehicle lease) another potentially key cost driver is vehicle kilometres.

3.23 Although seat-kilometres and passenger-kilometres are useful measures of capacity and output from the perspective of end users and the franchise authorities, they are not significant drivers of costs. As a measure of output, vehicle-kilometres ought to capture all the influence of seat-kilometres on costs since TOCs tend to operate vehicles with a pre-determined number of seats and ROSCO leasing charges are, in general, not determined by that number. With regards to passenger-kilometres, they ought to have some effect on TOC costs, in particular through staff costs on areas such as revenue protection and cleaning. However, we would expect this effect on costs to be very minor and therefore would not consider this to be a key cost driver.

3.24 The analysis below focuses on cost per train and vehicle kilometre and cost per train hour. In addition, although they are not significant cost drivers, given its importance as a measure of capacity and output for passengers, we have considered cost per passenger kilometre for each TOC to see how train operators compare with one another. The analysis provided in the appendix looks at the relationship between each of these measures of output and operating costs.

3.25 Where significant differences arise between TOCs we highlight these and provide candidate explanations for these differences; some of this material can be found in the appendix, this is indicated where relevant.

## **Comparison of operators' costs per train-kilometre and vehicle-kilometre**

3.26 The number of train kilometres operated is closely correlated with the costs of fuel, electricity and rolling stock costs. The "cost per train kilometre" measure is calculated for each TOC by dividing their total annual cost by the number of train kilometres timetabled. The data on timetabled train kilometres are

sourced from DeltaRail<sup>29</sup> and are the same data used in the National Rail Trends. We have used timetabled train kilometres in favour of actual values as the former are historically available on a more reliable basis and, where actual data is available, the deviations from the timetabled values are relatively small and non-systematic.

3.27 As a measure of volume of service, train kilometres do not precisely reflect the passenger bearing capacity as it does not differentiate between TOCs that, for example, generally operate 2 or 3 car trains (Merseyrail, Northern, etc.) and TOCs that typically operate much longer 8 to 12 car formations (Virgin West Coast, East Coast, Southeastern, Southern, etc.). The operation of fewer but longer trains generally results in a lower total cost per unit of passenger carrying capacity, but this is not captured when looking at costs per train kilometre. To put these cost drivers in context, Figure 32 presents total costs per train kilometre by TOC and Figure 33 presents total costs per vehicle kilometre.

3.28 On average, TOCs spent £11.2 per train kilometre operated and £2.2 per vehicle km operated in 2010-11. Costs per train-kilometre vary from a maximum of £19.4 (East Coast) to a minimum of £7.6 (Arriva Trains Wales). Costs per vehicle-km vary from a maximum of £4.9 (MerseyRail) to a minimum of £1.7 (National Express East Anglia).

3.29 The main conclusions that can be drawn from these results are:

(a) TOCs with longer train formations (with higher number of vehicles) like Virgin Trains, East Coast and First Capital Connect had relatively high costs per train kilometre but relatively low costs per vehicle kilometre – this is likely because, as discussed, the train kilometre measure obscures the cost of running longer trains<sup>30</sup>. We discuss the relationship between cost per train-kilometre and the length of the train formation in the appendix.

(b) LSE TOCs have lower cost per vehicle-kilometre than average, reflecting longer train formations.

(c) Costs per train-kilometre and costs per vehicle-kilometre are not uniform across TOCs. It is important to note that this does not imply that some TOCs are more efficient than others – there are many structural factors (e.g. some TOCs are required to use a particular type of rolling stock) that are not reflected in this analysis. What it does indicate is that there is considerable variation in running costs between TOCs that cannot be attributed just to differences in volume of service.

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<sup>29</sup> Train miles are received for both winter and summer timetables for each TOC. Each timetable has train miles for a typical Wednesday, a typical Saturday and typical Sunday. The days chosen relate to the timetable planned to run on the sample ORCATS dates. All trains that are due to run on these days are included regardless of whether they actually do.

<sup>30</sup> It should be noted that this effect works in the other direction for vehicle kilometres. That is, whilst looking at costs per train kilometre obscures the effect on costs of running longer trains, costs per vehicle kilometre places disproportionate weight on it – the cost of running the first vehicle is significantly larger than subsequent ones.

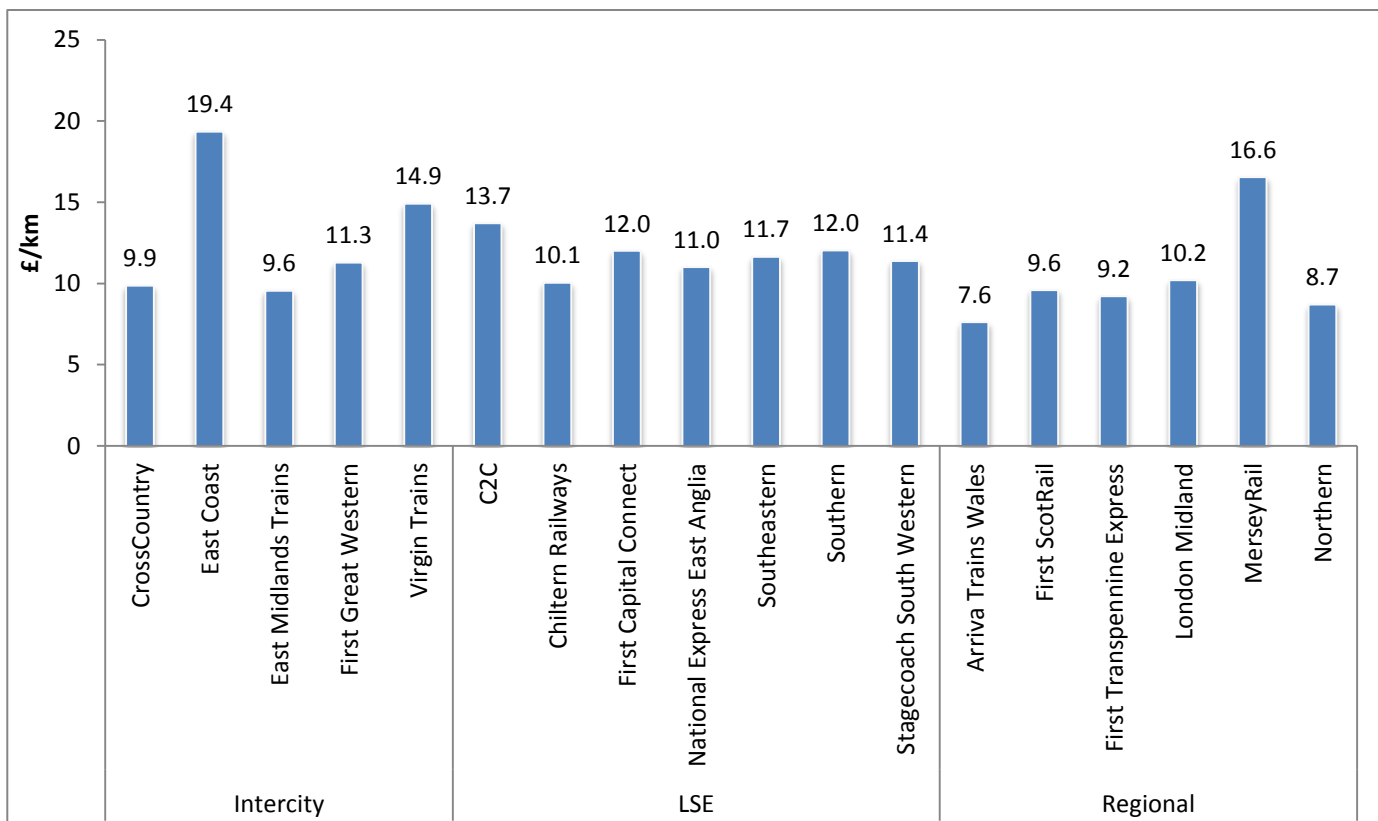


Figure 32: Total cost per train kilometre in 2010-11 (source: TOC management accounts/NRT)

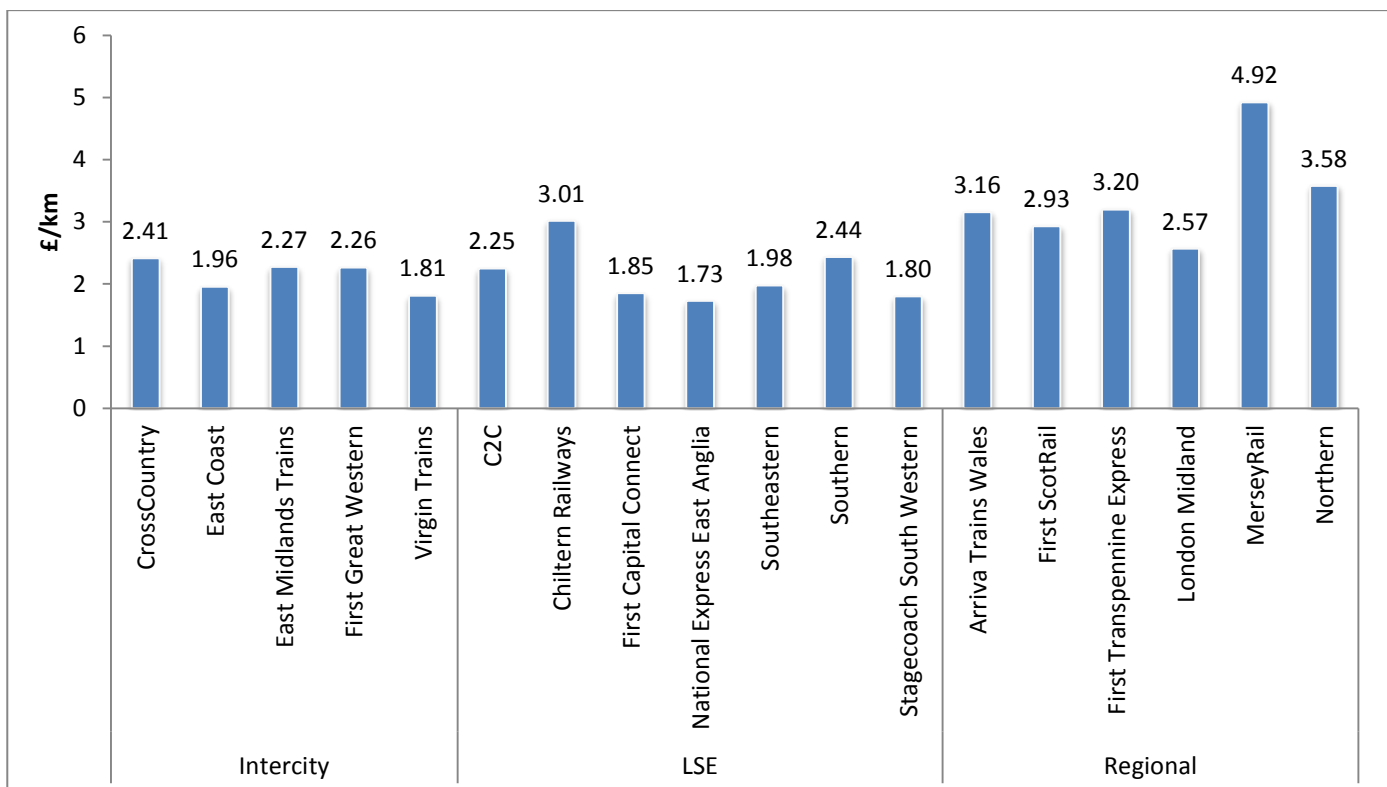
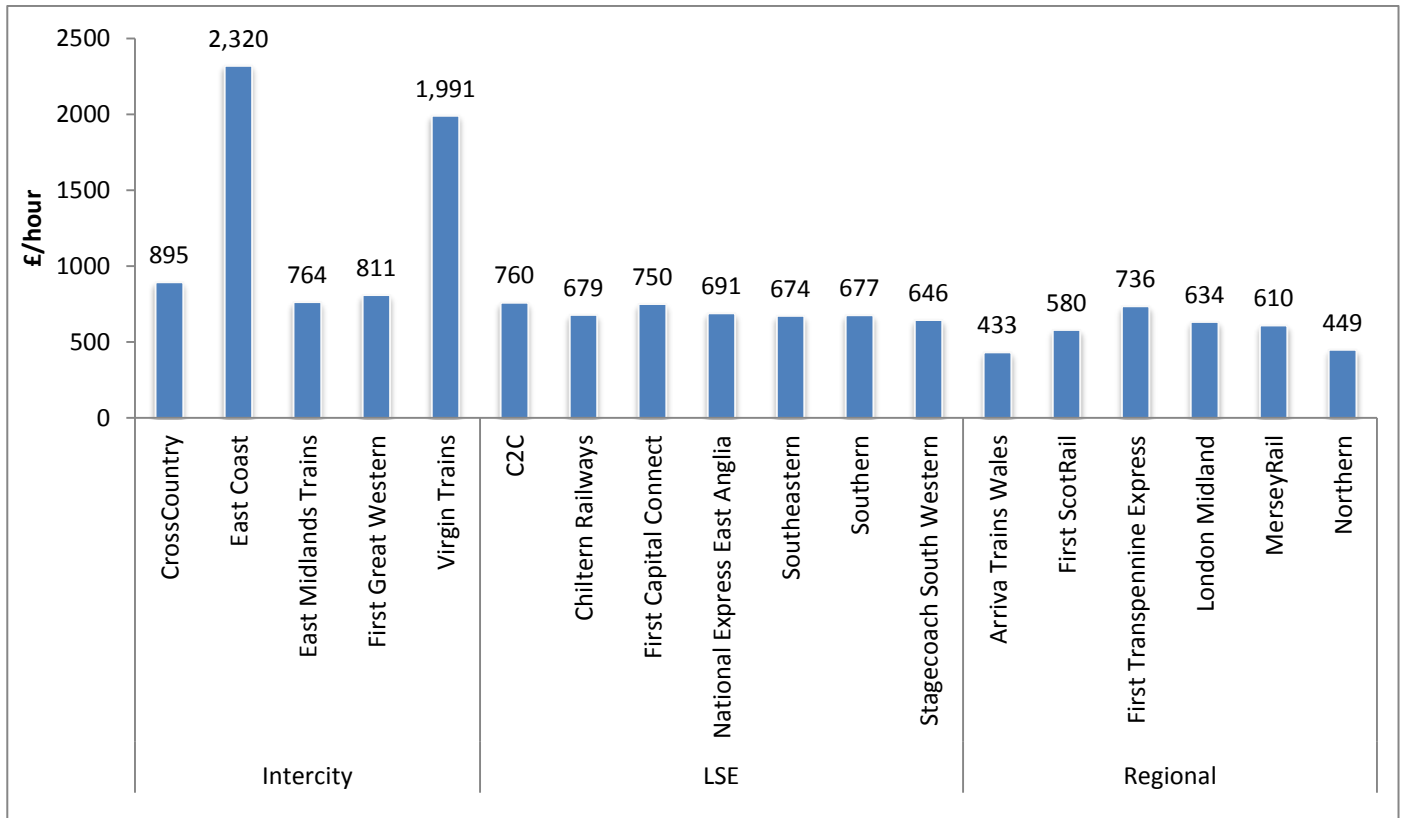


Figure 33: Total cost per vehicle kilometre in 2010-11 (source: TOC management accounts/NRT)

## Comparison of costs per train-hour

3.30 It is also informative to examine costs in relation to the number of train hours operated by each operator. The “costs per train hour” measure is calculated by dividing total operating costs by the total annual timetabled train hours for each TOC.



**Figure 34 Total cost per train hour in 2010-11 (source: TOC management accounts/DfT)**

3.31 Figure 34 shows TOCs’ total costs per train hour. On average TOCs spent £736 per train hour operated with a maximum of £2,320 for East Coast and a minimum of £433 per train hour for Arriva Train Wales.

3.32 The TOCs the higher commercial speed tend to have the highest costs per train-hours. For example, East Coast, Virgin Trains, which have the highest commercial speed, have the highest cost per train hour. It is probably due to the fact that the high-speed services of East Coast and Virgin are long-distance inter-city operations with relatively large numbers of on-board staff, including catering and cleaning that are not offered on service that offer shorter journeys. It is also worth noting that MerseyRail, who have relatively high costs per train kilometre and vehicle kilometre, have relatively low costs per train hour – this is owed to the low speed nature of their service; while they may cover a relatively small length of track, this does not indicate that the volume of service they provide is low.

## Comparison of operators' costs per passenger-kilometre

3.33 Passenger kilometres is a frequently cited measure of TOC output and has been used as a denominator for similar studies, such as the RVfM study, as it represents the output that DfT is concerned with in devising SLCs and determining subsidies; that is, the movement of passengers around the rail network. Passenger kilometres and journeys data presented in NRT are drawn from the rail industry's central ticketing system, LENNON. LENNON holds information on all national rail tickets purchased in Great Britain and is used to allocate the revenue from ticket sales between train operating companies.

3.34 Figure 35 shows the total cost per passenger kilometre in 2010-11 for each of the TOCs. As previously discussed, it would be misleading to interpret these results as being indicative of efficiency levels since carrying passengers is not a major cost driver for TOCs; once a train is running the cost of adding additional passengers is relatively low. Nonetheless, looking at passenger kilometres transported by TOCs is useful in assessing the cost of delivering the core output that DfT and service users are concerned with.

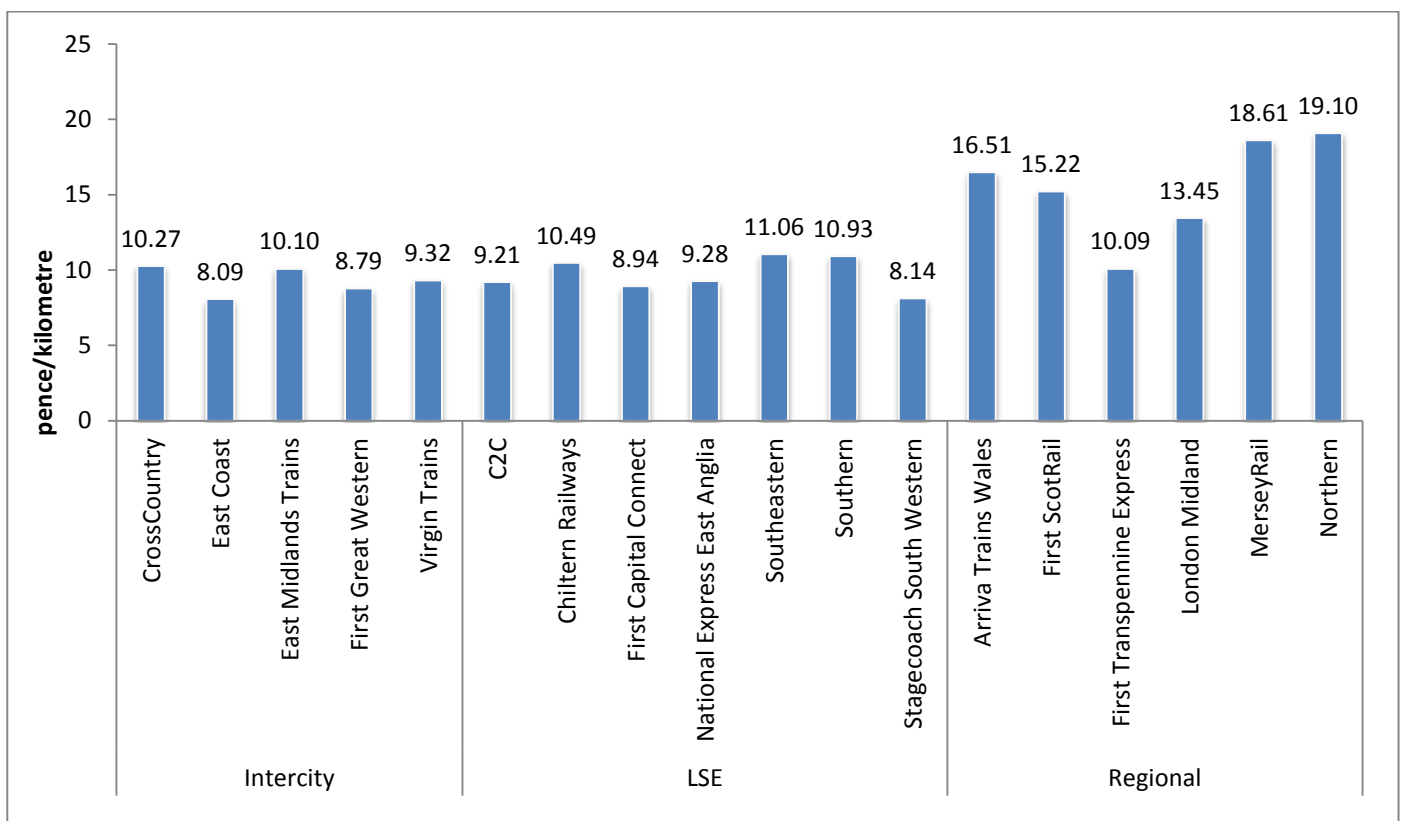


Figure 35: Total cost per passenger kilometre in 2010-11 (source: TOC management accounts/NRT)

3.35 On average, TOCs spent 10.4 pence by passenger kilometre transported in 2010-11, Northern had the highest cost per passenger kilometre at 19.1 pence per kilometre and East Coast had the lowest, at 8.1 pence per kilometre.

3.36 The results highlight the economics of the regional TOCs (MerseyRail, London Midland, Northern, First ScotRail, Arriva Trains Wales),<sup>31</sup> which have all higher costs than average. These operators comprise a large proportion of those franchises that may not be, in themselves, commercially viable but are subsidised as they help to meet socio-economic objectives.

### Overall comparison of TOC unit costs

3.37 Each cost measure used in our analysis helps to capture particular aspect of TOC's costs. For example, the analysis of costs per passenger kilometre shows the additional cost of providing services to fulfil socio-economic objectives in areas of low demand. Given the differing picture that each measure presents, it is revealing to compare TOCs performance against one another across all of them; Figure 36 thus shows the variation from average of TOCs' unit costs across total cost per train kilometre, vehicle kilometre, train hour and passenger kilometre.

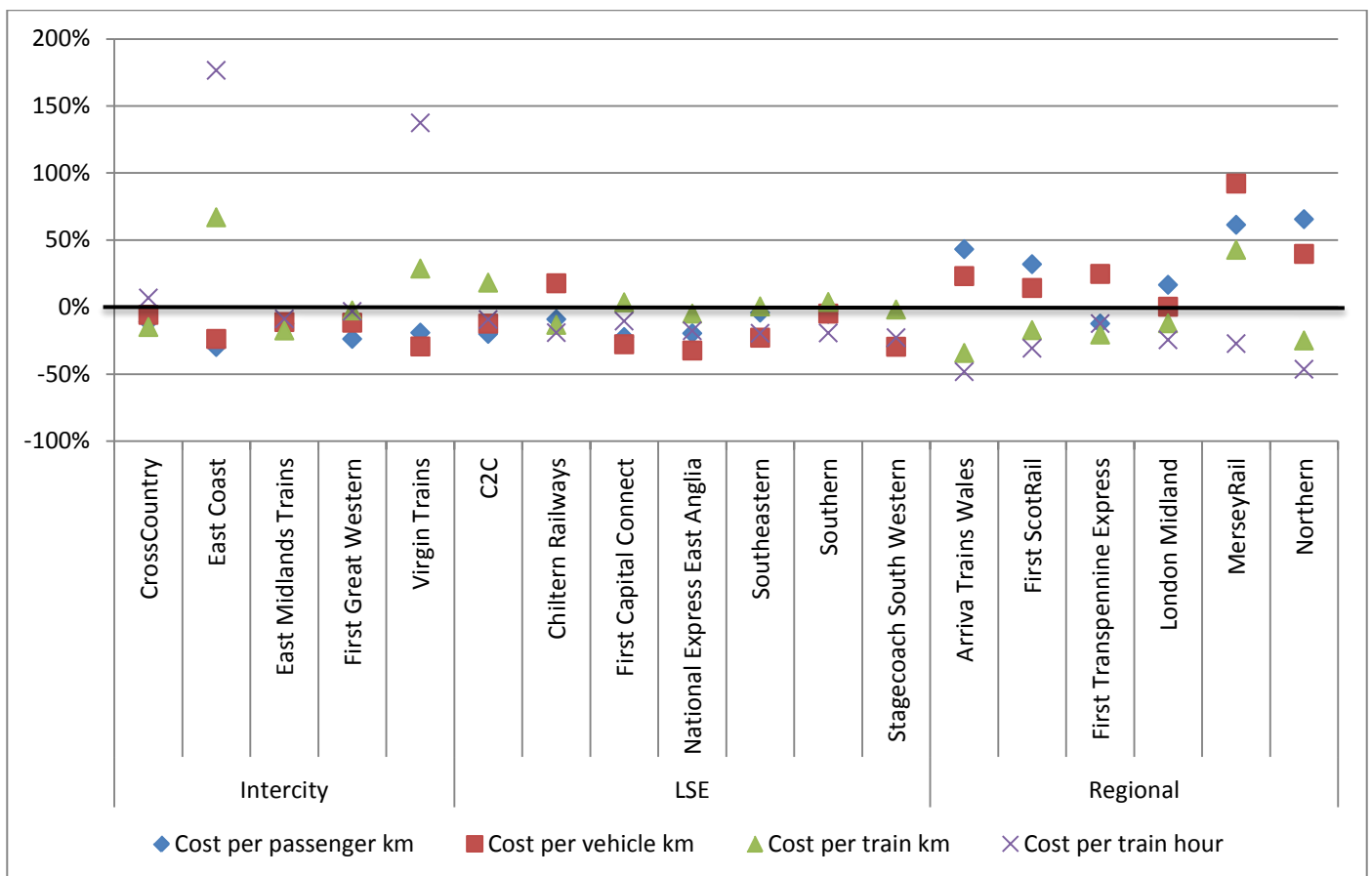


Figure 36: Variation from TOC average on four unit cost measures (Source: TOC management accounts/NRT/DFT)

3.38 Figure 36 illustrates that considering individual measures of unit cost in isolation can be misleading. For example, Northern has low costs per train kilometre but the highest costs per passenger kilometre.

<sup>31</sup> First Transpennine Express is not included in this list as it is atypical amongst Regional TOCs in that many features of its service (e.g. average speed, average distance between stops) are closer in character to Intercity TOCs

East Coast has the lowest costs per passenger kilometre but the highest cost per train kilometre. Whilst MerseyRail is significantly above average on measures of cost per train kilometre, vehicle kilometre and passenger kilometre, they are below average on cost per train hour, which, as previously discussed, can be attributed to the low speed character of their service.

3.39 Our analysis shows that no TOC is consistently above the average across the four selected unit cost measures. We have, however, found that four TOCs have costs that are consistently on or below average across on all measures: Chiltern Railways, First Great Western, National Express East Anglia and Stagecoach South Western.

3.40 For most of the TOCs that have costs that significantly stand out, we have identified plausible reasons to explain their difference. As we would expect, these are related to factors such as the number of train kilometres that a TOC operates, whether or not the frequency of the service, matches its demand, the length of the train formations, and the offer of services on-board.

## Conclusion

3.41 The aim of this report is to increase the transparency of the provision of franchised passenger rail services and to improve the understanding of costs and cost drivers in the rail industry. This report is a first step towards further, more detailed analysis of passenger rail provision in the UK.

3.42 At a TOC-wide level, the report sets increases in costs and revenue in the context of increases in volume of service, both in terms of trains run and passengers carried, and improvements in safety and punctuality. Comparing between TOCs provides information on the significant differences in key characteristics between franchises, as well as considering income, subsidy and cost differences between TOCs. Cost differences between TOCs are placed in the context of differing volumes of service and different ways of measuring it.

3.43 More in depth analysis of the drivers of train costs would require more detailed and reliable data than was available at this stage. The initial results presented in this report show the value of and need for increased transparency in the cost of providing passenger rail services; more detailed information will allow us to enrich the insights and analysis of this report in subsequent years. Future reports will seek to make use of more detailed information to conduct more rigorous statistical analysis and to isolate the effects on costs of particular franchise characteristics.

# Appendix

This Appendix to the report *Costs and Revenues of UK Passenger Train Operators* supplements some of the discussion on cost drivers and service characteristics of the original report.

The Appendix considers the relationship between total costs and the four different measures of output used in the report: train kilometres, train hours, vehicle kilometres and passenger kilometres. It looks at the differences in length of route operated and average speed between TOCs, which were not discussed in the main report. It also looks at identifying other drivers of costs besides differences in output, considering variation in the average number of vehicles per train and the number of staff employed. It concludes with a map of franchised UK TOCs for the reader's reference.

The Appendix is intended to provide context and further analysis to some of the material presented in the main report. Subsequent versions of this report will aim to develop the kind of analysis looked at in this Appendix by using econometric analysis to isolate the independent effects of particular cost drivers. This will enable more reliable comparison between TOCs and a more fruitful discussion of the direct effects of particular cost drivers.



## Volume of Service as a Cost Driver

Figures 1 to 4 indicate the relationship between total costs and volume of service across the four different measures considered in the report; train kilometres, train hours, vehicle kilometres and passenger kilometres. Total costs excludes access charges and performance regimes but includes charges for electric current for traction.

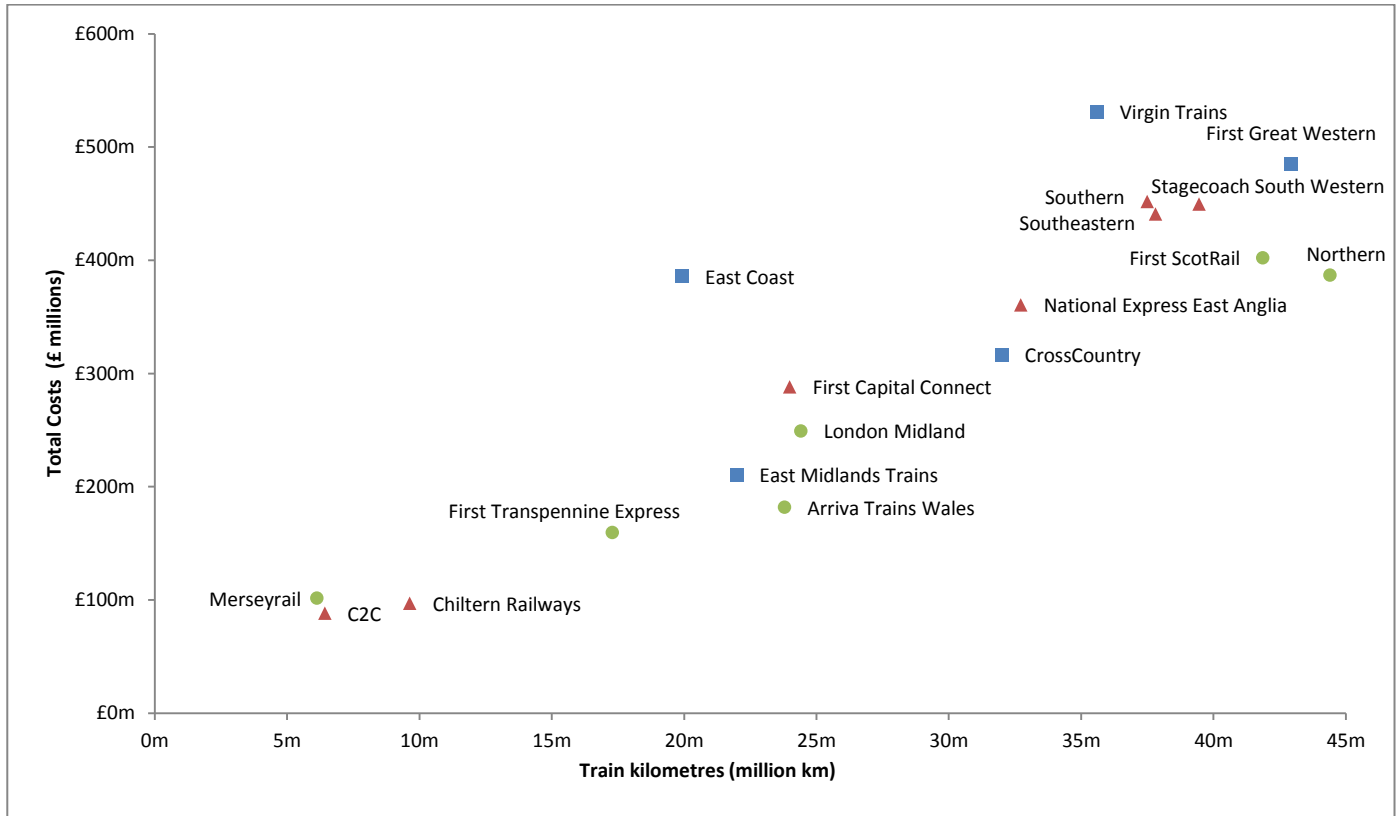


Figure 1: Train kilometres and total costs in 2010-11 (Source: TOC management accounts /NRT/DfT)



Figure 2: Train hours and total costs in 2010-11 (Source: TOC management accounts/ Network Rail/DfT)

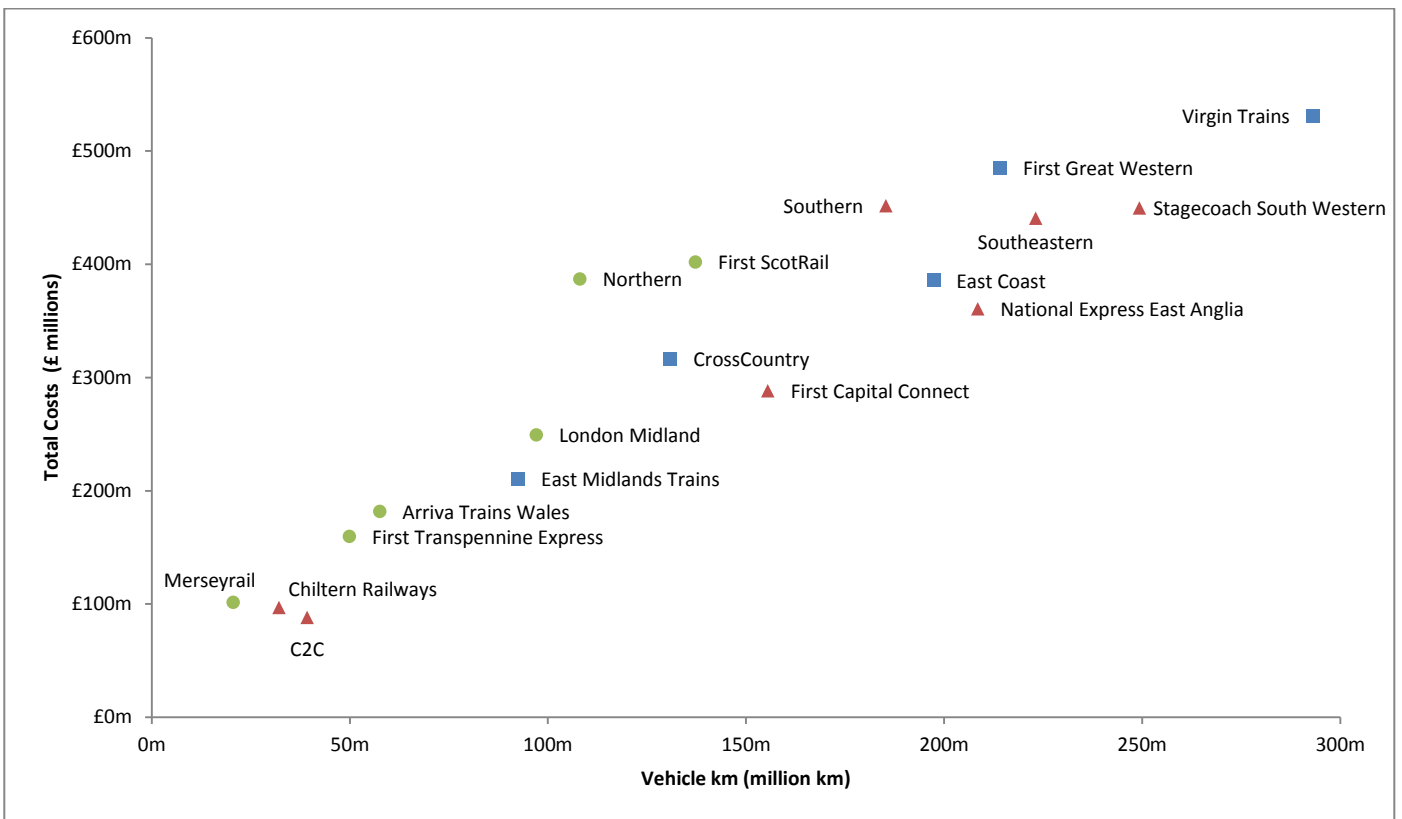
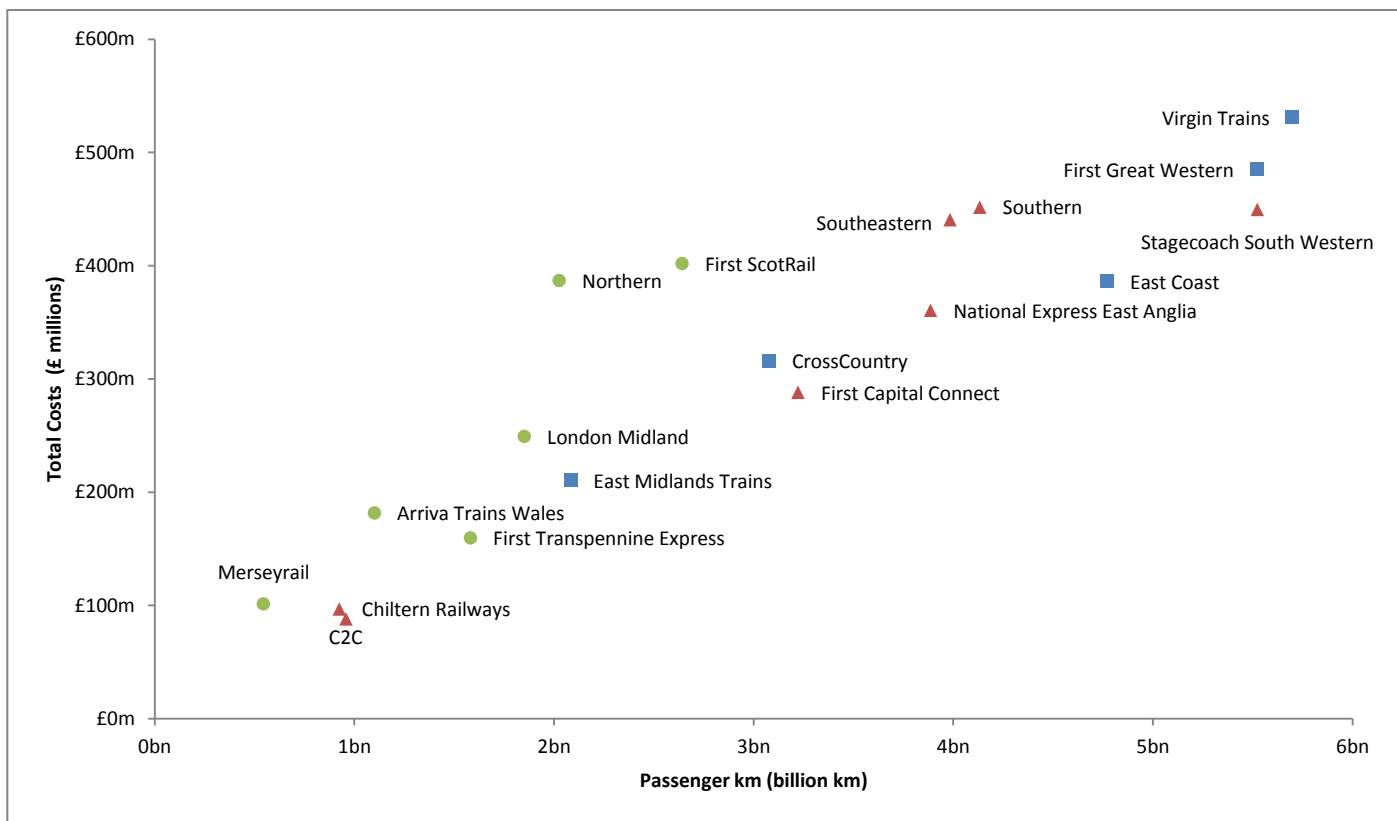


Figure 3: Vehicle kilometres and total costs in 2010-11 (Source: TOC management accounts/ NRT/DfT)



**Figure 4: Passenger kilometres and total costs in 2010-11 (Source: TOC management accounts/ NRT/DfT)**

Whilst there appears to be a close correlation between costs and each of these measures of output, this does not control for their interdependence, e.g. higher train kilometres will result in higher vehicle kilometres, and as such much of the correlation illustrated on any particular chart may be spurious. Nonetheless, a correlation clearly exists between operating costs and volume of service (however we choose to measure it) and the more striking outliers on each graph are likely explicable when TOC service characteristics are taken into account. For instance, in Figure 2, which plots costs against train hours, both Virgin Trains and East Coast appear to be outliers, having higher than average costs given the number of train hours run. However these services have much higher average speeds so that, per kilometre travelled, they have fewer train hours than other TOCs and train hours will thus likely understate how high we should expect their costs to be. When looking at train kilometres, then, these TOCs are considerably closer to the average, although they still deviate from it. This deviation is in turn explicable when we consider the number of vehicle kilometres run – both Virgin Trains and East Coast tend to have higher number of vehicles per train, which puts up their costs in a way that is concealed when looking at costs with respect to train kilometres, as is indicated on Figure 3.

## Other Service Characteristics

### Length of Route Operated

The length of route that a TOC operates (Figure 5) is set out in its franchise contract. By length of route operated, Scotrail is the largest TOC in the UK, operating 12.9% of franchised route kilometres. First Group and Arriva Trains UK are the largest owning groups by route kilometres, operating respectively 23.4% and 20.4% (excluding joint ventures) of franchised route kilometres in GB.

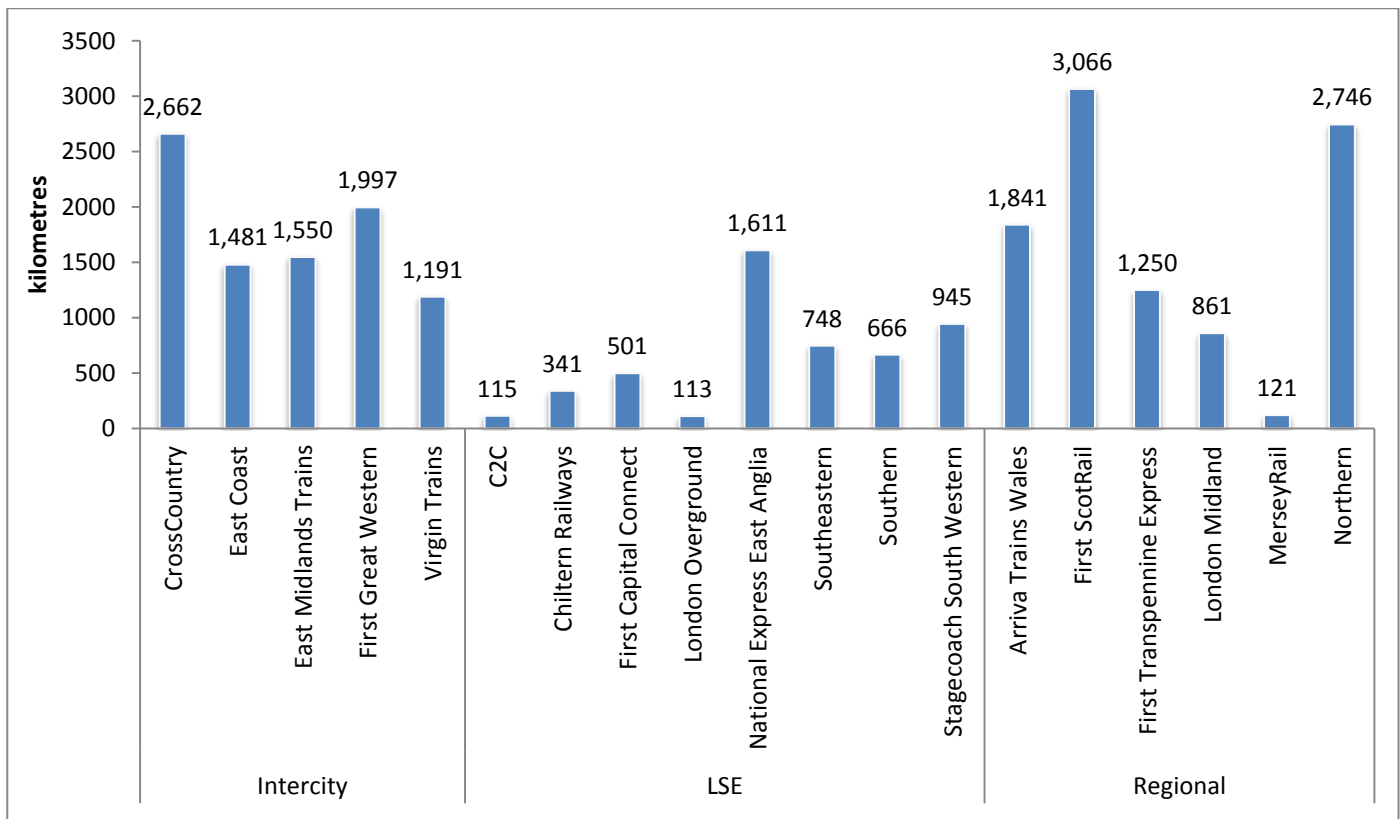


Figure 5: Length of route operated by TOC in 2010-11 (Source: NRT)

### Average Speed

Figure 6 shows the average speed of each TOC in 2010-11. Both the character of a TOC's service (e.g. route length, frequency of stops) and track and rolling stock constraints will affect the average speed of that service. London Overground and MerseyRail have the lowest average speeds (28.5km/h and 37.2 km/h) and, unsurprisingly, have the lowest average distance between stops (1.6km and 1.8km, respectively). In contrast Virgin Trains and East Coast have the highest average speeds (134.0km/h and 131.8km/h) and the highest distance between stops (54.9km and 45.5km).

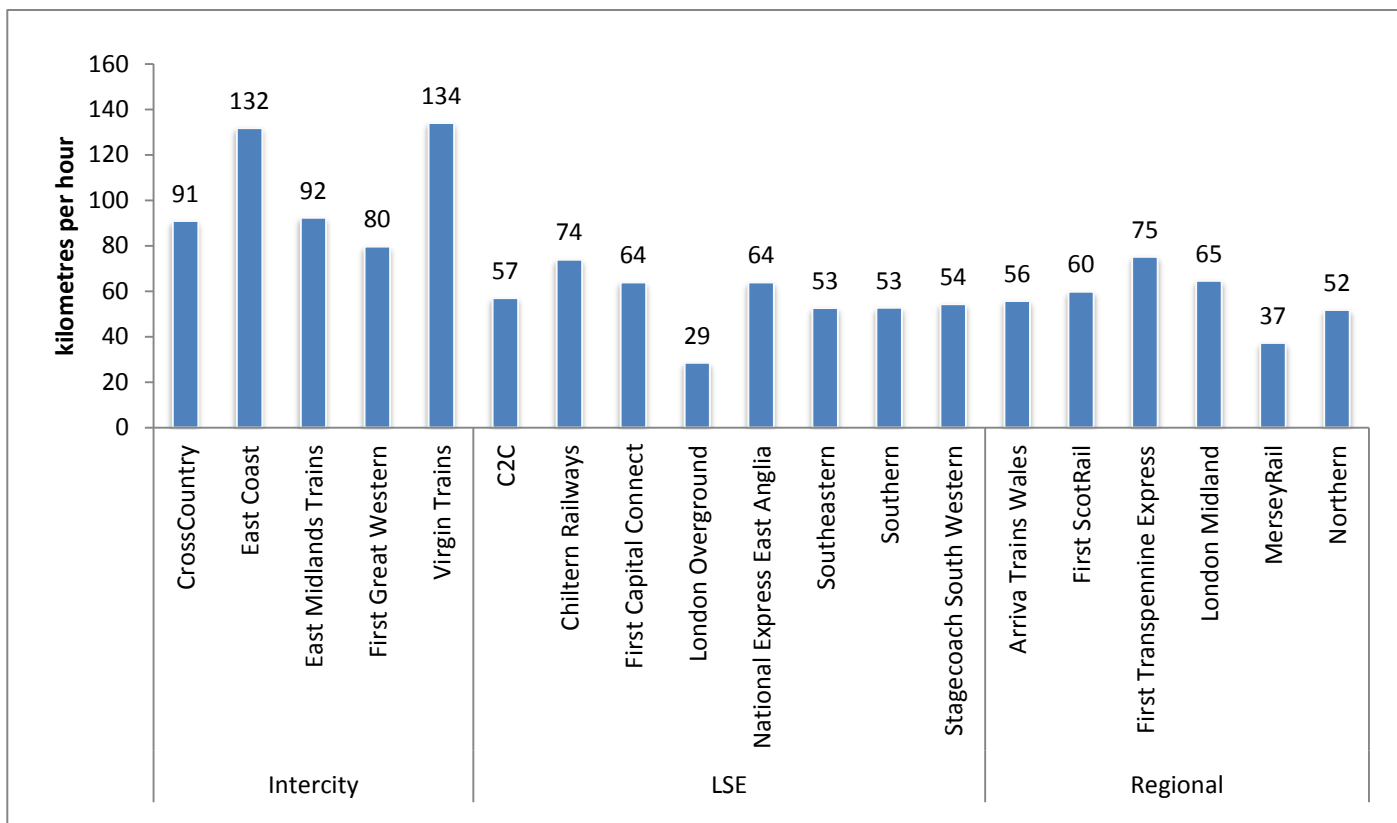
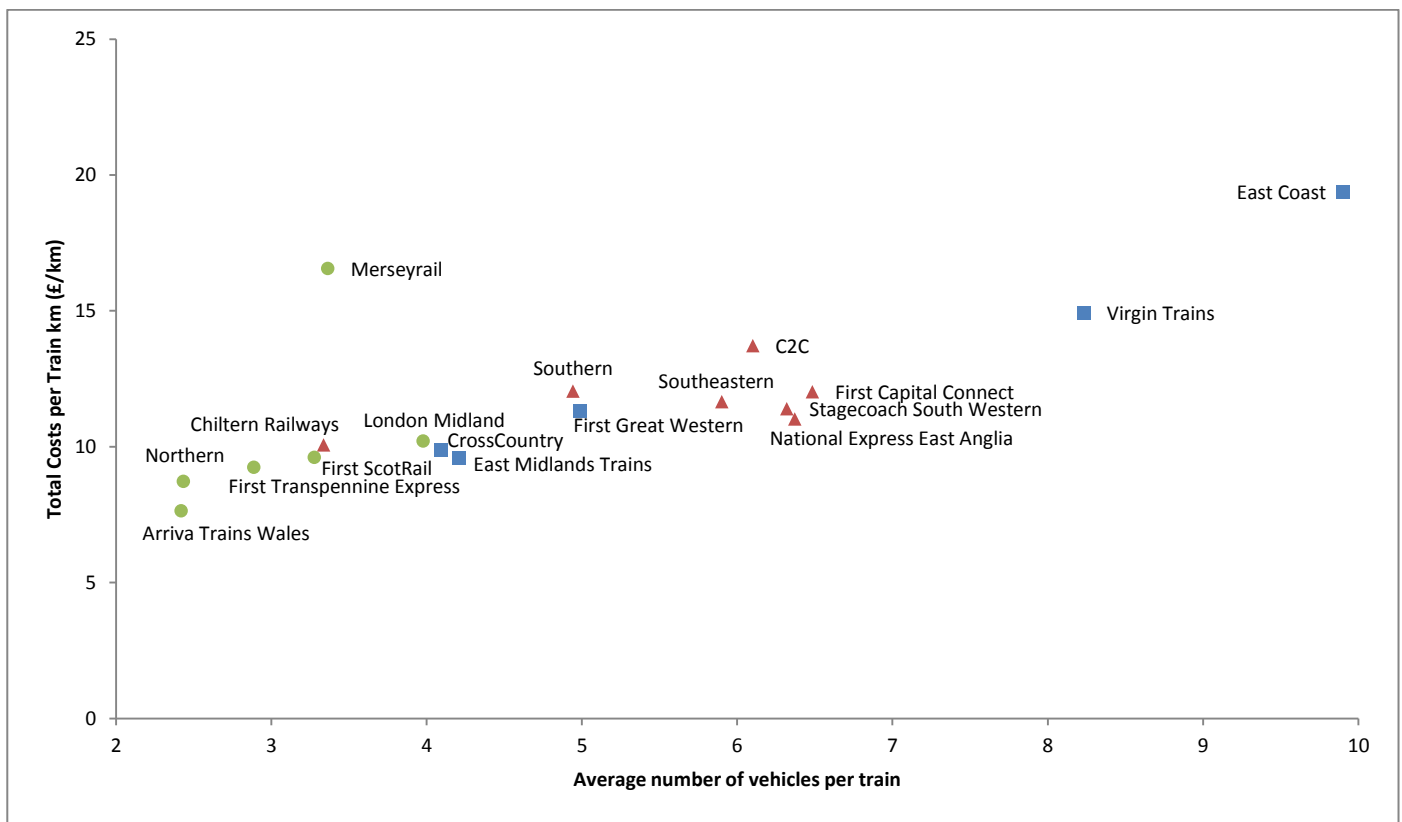


Figure 6: Average speed by TOC in 2010-2011 (Timetabled Train kilometres/Timetabled Train hours) (Source: NRT/DfT)

## Other cost drivers

### Train Length as a cost driver



**Figure 7: Train length as a driver of total costs in 2010-11 (Source: TOC management accounts/NRT/DfT)**

The close correlation between average number of vehicles per train and total operating costs per train kilometre, illustrated in Figure 7, supports the hypothesis that longer trains are more costly to run. The observation is not as trivial as it sounds – the relationship between cost and number of vehicles to a train is non-linear (a one vehicle train costs a great deal more to send out per vehicle than a two or three vehicle train) and Figure 7 helps show that the effect on costs of the addition of extra vehicles to a train is not dwarfed by this non-linear relationship between cost and train length.

MerseyRail appears to be an obvious outlier on Figure 7 – its costs per train kilometre are significantly higher than would be expected given the average number of vehicles per train. This result must be considered in the context of the MerseyRail’s unusual service characteristics – its low average speed means that it appears costly when train kilometres are considered as the measure of output, but not when train hours are used.

### Number of staff as a cost driver

Figure 8 demonstrates the intuitively obvious point that more staff results in higher staff costs. Because TOC staff costs included both the costs incurred from running trains and from managing stations, it is

difficult to give more detailed analyses of staff cost variation between TOCs at this stage. A more thorough analysis would demand that as well as taking volume of service into account, we consider both number and size of stations as drivers of the number of staff and staff costs of a particular TOC.

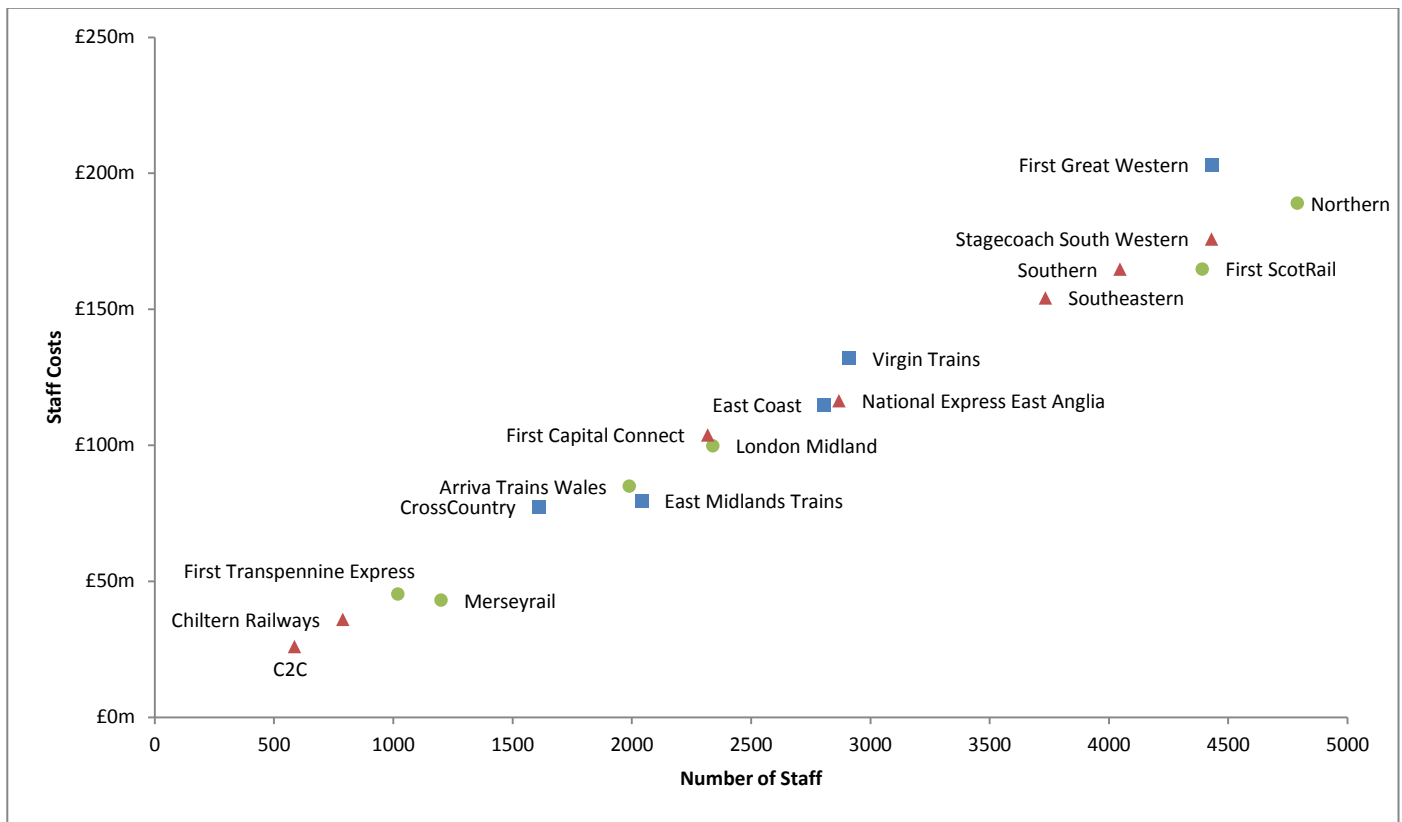
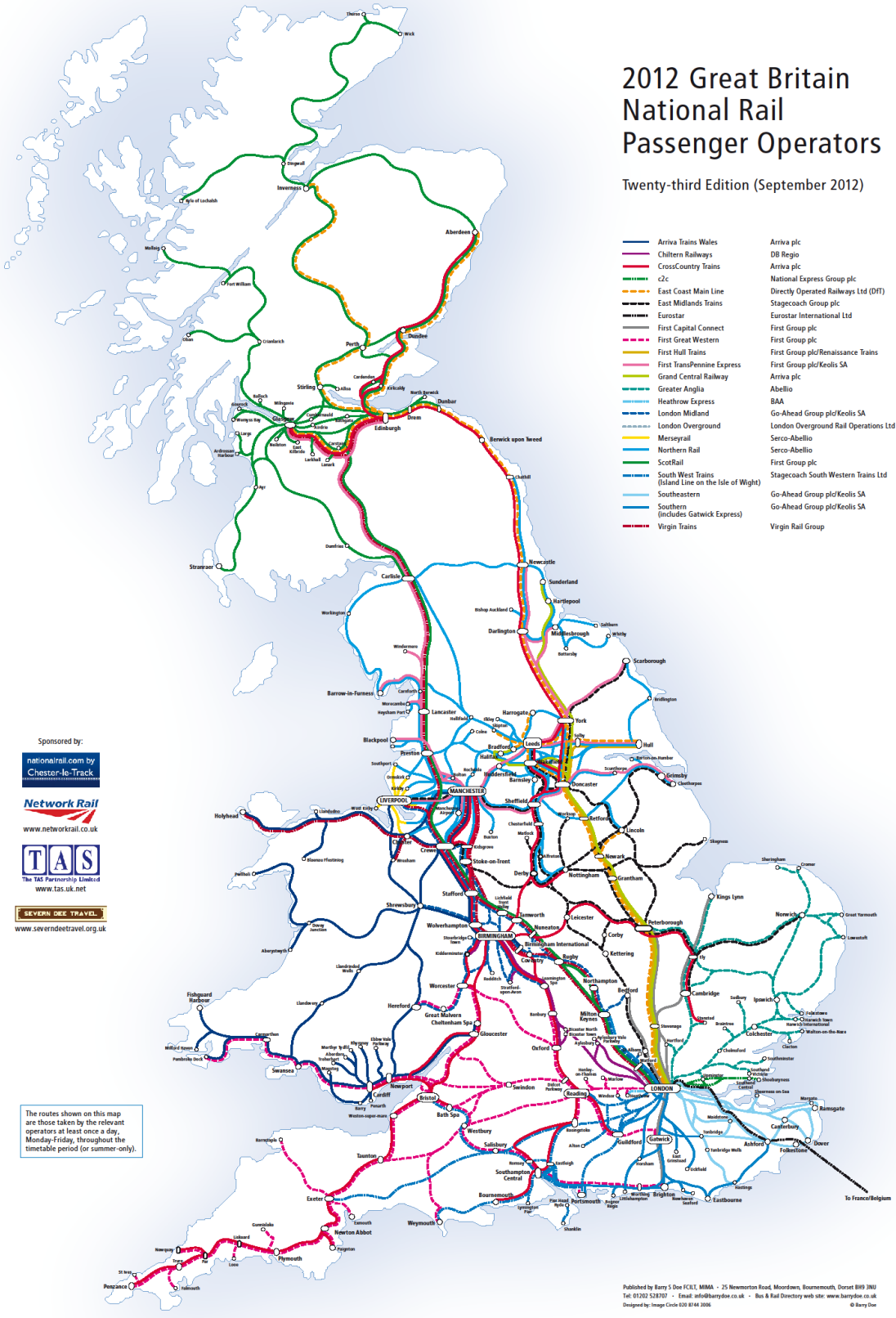


Figure 8: Staff numbers as a driver of costs in 2010-11 (Source: TOC management accounts/NRT)

# Map of Franchised UK TOCs<sup>1</sup>

## 2012 Great Britain National Rail Passenger Operators

Twenty-third Edition (September 2012)



- |  |                                       |
|--|---------------------------------------|
| — Arriva Trains Wales                                  | Arriva plc                            |
| — Chiltern Railways                                    | DB Regio                              |
| — CrossCountry Trains                                  | Arriva plc                            |
| — c2c  | National Express Group plc            |
| — East Coast Main Line                                 | Directly Operated Railways Ltd (DOT)  |
| — East Midlands Trains                                 | Stagecoach Group plc                  |
| — Eurostar   | Eurostar International Ltd            |
| — First Capital Connect                                | First Group plc                       |
| — First Great Western                                  | First Group plc                       |
| — First Hull Trains                                    | First Group plc/Renaissance Trains    |
| — First TransPennine Express                           | First Group plc/Keolis SA             |
| — Grand Central Railway                                | Arriva plc                            |
| — Greater Anglia                                       | Abellio                               |
| — Heathrow Express                                     | BAA                                   |
| — London Midland                                       | Go-Ahead Group plc/Keolis SA          |
| — London Overground                                    | London Overground Rail Operations Ltd |
| — Merseyrail   | Serco-Abellio                         |
| — Northern Rail  | Serco-Abellio                         |
| — ScotRail   | First Group plc                       |
| — South West Trains (Island Line on the Isle of Wight) | Stagecoach South Western Trains Ltd   |
| — Southeastern   | Go-Ahead Group plc/Keolis SA          |
| — Southern (includes Gatwick Express)                  | Go-Ahead Group plc/Keolis SA          |
| — Virgin Trains  | Virgin Rail Group                     |

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The routes shown on this map are those taken by the relevant operators at least once a day, Monday-Friday, throughout the timetable period (or summer-only).

Published by Barry S Doe FCIL, MMA - 25 Neumorton Road, Moor Downs, Bournemouth, Dorset BH9 2HU  
Tel: 01202 528707 - Email: info@barrydoe.co.uk - Bus & Rail Directory web site: www.barrydoe.co.uk  
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<sup>1</sup> The ORR is grateful to Barry Doe for allowing us to reproduce this map here ([www.barrydoe.co.uk/rail.pdf](http://www.barrydoe.co.uk/rail.pdf))



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