

The Role of Speed in Scotland's Bus Network

Confederation of Passenger Transport UK
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1. Introduction

1.1 The Purpose of this Report

- 1.1.1 This report explores the importance of improvements in the speed of bus services. Ongoing reductions in speed have largely been driven by traffic congestion, indiscriminate parking, and the growing volume of traffic. This impacts all aspects of the bus network including service quality, operating costs, passenger satisfaction, and demand.
- 1.1.2 Adopting wide-ranging measures to improve bus speeds has the potential to transform the economics of bus operation, which in turn could reduce the need for public spending, improve productivity, help to deliver modal shift targets and strengthen the overall benefits that the bus industry brings to the economy.
- 1.1.3 The report illustrates the improvements that could be delivered by the use of worked examples and real-world illustrations.

1.2 The Structure of this Document

- 1.2.1 The report considers first in Chapter 2 the wider policy advantages of faster buses, before turning in Chapter 3 to examine why time and speed are so crucial to the costs of operation.
- 1.2.2 Chapter 4 looks at the effect that speed of services can have on passenger demand, in terms of both journey time and the consequences for the reliability of services and the predictability of journey times.
- 1.2.3 In Chapter 5, we provide a worked example of the effect that changes in speed can have on an individual route, looking at both costs of operation plus demand and revenue.
- 1.2.4 In Chapter 6 we go on to consider the network-wide effects that could be delivered by delivering higher bus speeds, not only to the viability of the industry but also the wider contribution that bus networks make to society.
- 1.2.5 In Chapter 7 we report on some real-world examples of changes in speed on bus services, and we draw some overall conclusions in Chapter 8.

1.3 About the Authors

- 1.3.1 2FM Limited was founded in 1987 as a vehicle for investment and consultancy work undertaken by Chris Cheek with the support and advice of fellow directors Michael Anderson and Tony Depledge. This work was undertaken by Chris Cheek.
- 1.3.2 The project would be the Bus Industry Monitor database of knowledge and research about the industry, developed over the last 30 years by 2FM's subsidiary company, Passenger Transport Intelligence Services Ltd (PTIS).

- 1.3.3 Chris Cheek has worked in the public transport industry for 53 years, in a variety of line management roles and, for the last 37 years, as an analyst and consultant. He is an experienced transport writer and author of both transport books and fiction.
- 1.3.4 Since the mid-1990s, Chris has been committed to the concept of quality bus operation and its promotion to the public, through his writing, his consultancy work and through the UK Bus Awards, the major award scheme he helped to found in 1996 and still helps to run.
- 1.3.5 He has worked extensively with and for CPT over many years, currently on the ongoing Cost Monitor project. Other projects have included:
- Economics of Bus Operation in a Post-Covid World, a seminar presentation to Scottish Government and other stakeholders, September 2022
 - Revenue Funding for Bus Services and Bus Passengers (2021/22), research and report
 - The Future of Bus Regulation in Wales, with Tracsis Transport Consultancy (2022/23)
 - Sustainable Buses for Scotland: presentation to a joint ATCO Scotland/CPT meeting (September//October 2018)
- 1.3.6 Several earlier projects with The TAS Partnership, including Investment for Congestion Relief: Options for Effective Public Funding for Buses (2004), The Economics of Bus Operation in Scotland (2013), A Five Year Vision for the Bus Industry (2014) and Catch the Bus in Wales (2015).

2. The Advantages of Faster Buses

2.1 Overview

- 2.1.1 Public transport forms the backbone of urban mobility, shaping the daily lives of millions of people living in and around our towns and cities. It is essential to delivering Government objectives, including growing the economy, tackling the climate emergency, eradicating child poverty, improving public health, and delivering high quality and sustainable public services.
- 2.1.2 Among the various public transport modes available, buses offer flexible, cost-effective, and widely accessible solutions. Yet, in many of our towns and cities, bus services are hampered by slow speeds – often the result of road congestion, frequent stops, and lack of priority in the allocation of scarce road space. Increasing bus speeds is a critical lever for improving public transport efficiency. In this introductory chapter, we explore the multifaceted advantages of boosting bus speeds, from operational and economic benefits to environmental and societal impacts.

2.2 Improved Efficiency and Reliability

- 2.2.1 One of the most immediate benefits of increasing bus speeds is the enhancement of service efficiency and reliability. When buses move more quickly, they can complete their scheduled routes in less time. This has several results:
- **Reduced Journey Times:** faster journeys for buses mean shorter journey times for passengers and more attractive schedules. This time-saving is especially significant for commuters, making public transport more competitive with other modes, including the private car.
 - **Consistency and Predictability:** increased speeds, often achieved by implementing dedicated lanes or signal priorities, help buses adhere to schedules more reliably. This predictability fosters trust among users and encourages greater ridership.
 - **Higher Service Frequency:** with reduced end-to-end journey times, the same fleet of buses can run more frequent services without requiring additional vehicles or drivers. More frequent buses reduce waiting times, further improving the attractiveness of the service.

2.3 Economic Benefits

- 2.3.1 Faster bus services provide numerous direct and indirect economic advantages for communities, operators, and passengers alike.
- **Cost Savings for Operators:** By reducing trip times, operators can serve more passengers with the same resources, improving operational efficiency. Fuel and maintenance costs per passenger decrease, as vehicles spend less time stuck in traffic.

- **Increased Productivity:** Shorter journeys free up valuable time for passengers, which can be channelled into work, study, or leisure. More generally, the country benefits from a more productive workforce and improved economic activity. This was highlighted particularly in the Eddington Transport Study, commissioned by the UK Government in 2005. The report¹ stated “There is clear evidence that a comprehensive and high-performing transport system is an important enabler of sustained economic prosperity: a 5 per cent reduction in travel time for all business and freight travel on the roads could generate ... cost savings [of] some 0.2 per cent of GDP.”
- **Boosting Local Business:** Efficient bus networks can encourage consumers to visit town and city centres, boosting local economies and aiding the revival of retail centres damaged by online competition and the Covid-19 pandemic. Reliable transport links are particularly valuable to small businesses that depend on regular flows of customers.

2.4 Environmental and Health Advantages

2.4.1 In an era of climate change and air pollution, the environmental implications of faster bus services are profound.

- **Reduced Emissions:** Buses that travel smoothly at steady speeds have lower emissions and use less energy than if they are slowing down, speeding up or sitting in traffic jams all the time.
- **Encouragement of Modal Shift:** When buses are fast and reliable, they attract riders who might otherwise choose private cars. This shift reduces the total distance travelled, lessening traffic congestion and the overall environmental footprint of road transport in Scotland, which in 2024 accounted for 70% of the country’s transport-related greenhouse gas emissions. This helps to deliver the reduction in travel required by the Climate Change Committee in order to deliver the government’s Net Zero targets.
- **Improved Public Health Outcomes:** According to the World Health Organisation (WHO)², there are four areas in which lower traffic levels and reduced congestion can contribute to improved public health. These are:
 - Cleaner air, reducing concentrations of particulate matter (PM) and ground-level ozone (O₃), including nitrogen oxides (NO_x) and carbon monoxide (CO). Higher air pollution concentrations increase the risk for cardiovascular and respiratory diseases, cancer and adverse birth outcomes, and are associated with higher death rates, estimated to cause up to 4.2 million premature deaths per annum worldwide. An estimated 1,800 to 2,700 deaths in Scotland are attributed to long-term exposure to outdoor air pollution each year³.
 - Encouragement of walking to and from stops, contributing to daily physical activity. WHO asserts that people who are insufficiently active have a 20% to 30% increased risk of death compared to people who are sufficiently active.

¹ Eddington Transport Study: Key Findings and Recommendations, para 1, December 2006

² See: <https://www.who.int/teams/environment-climate-change-and-health/healthy-urban-environments/transport/health-risks>

³ <https://publichealthscotland.scot/population-health/environmental-health-impacts/outdoor-air-pollution-and-health>

- Lower traffic levels also reduce accidents. In Scotland in 2024, 160 people were killed in accidents in 2024, with 1,931 seriously injured and 3,485 slightly injured⁴. Many of those injured face long-term adverse health consequences.
- Reduced noise: the WHO states that environmental noise pollution is responsible for increased risk of ischaemic heart disease as well as sleep disturbance, cognitive impairment among children, annoyance, stress-related mental health risks, and tinnitus.

2.5 Enhanced Accessibility and Social Equity

2.5.1 Public transport is a social leveller, and increasing bus speeds can magnify this role, through:

- **Expanded Access to Opportunities:** Faster buses allow people to reach jobs, education, healthcare, and other essential services more quickly and conveniently, especially those living farther from city centres or in underserved communities.
- **Greater Social Inclusion:** Reliable, speedy bus services enable participation in civic, cultural, and social activities, bridging gaps between neighbourhoods and fostering a sense of community.
- **Affordability:** Improved operational efficiency can help keep fares affordable, making public transport accessible to a wider segment of the population, including low income households.

2.6 Urban and Traffic Management Improvements

2.6.1 Raising bus speeds can help to transform urban landscapes and mobility patterns.

- **Alleviation of Traffic Congestion:** When bus services are faster, more attractive, and better utilised, fewer private vehicles are needed. This modal shift reduces congestion, making roads safer and more efficient for all users.
- **Optimised Space Utilisation:** Buses can carry dozens of passengers in the space typically occupied by a handful of cars. Prioritising bus movement through dedicated lanes and/or traffic signal priority ensures more efficient use of scarce urban road space.
- **Improved Land Use:** Enhanced bus corridors support transport-oriented development, encouraging higher-density, mixed-use communities that are less car-dependent and more sustainable.

2.7 Technological Innovation and Modernisation

2.7.1 Pursuing higher bus speeds often goes hand-in-hand with technological upgrades and transport innovation.

- **Adoption of Smart Systems:** Tools such as real-time tracking and traffic signal prioritisation are frequently introduced to improve bus speeds, benefiting both passengers and operators.

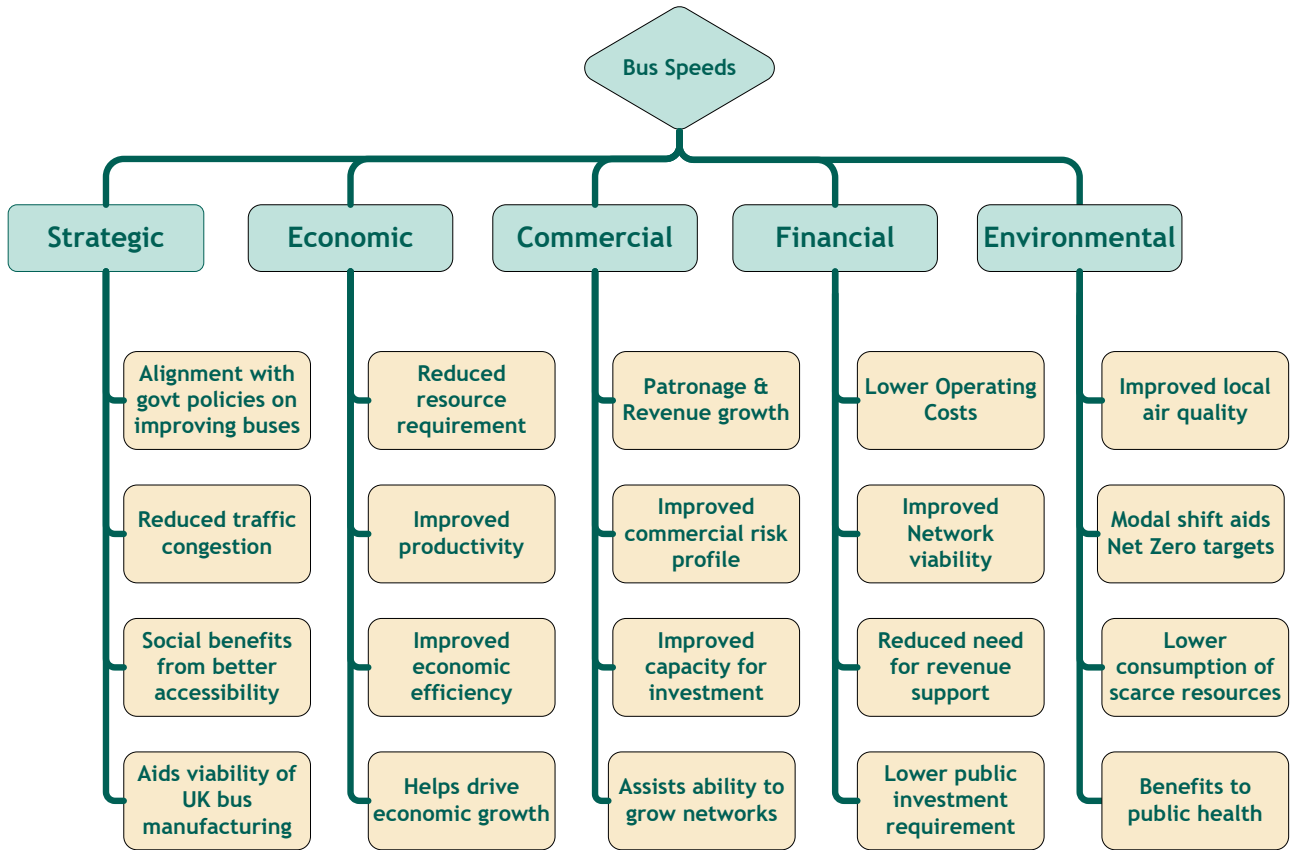
⁴ Key Reported Road Casualties Scotland 2024, Transport Scotland.

- **Integration with Other Modes:** Predictability of journey times and on-time running enable buses to synchronise more easily and reliably with other transport modes, such as trains, trams, ferries and cycling infrastructure, creating seamless and efficient multi-modal networks.
- **Future-Proofing Mobility:** Investment in faster bus services demonstrates a commitment to sustainable transport, attracting residents and businesses that value modern, efficient infrastructure. Efficient, productive networks encourage investment in new zero emission buses, further reducing environment impact, making services more appealing and at the same time supporting a viable UK bus manufacturing sector.

2.8 Conclusion

- 2.8.1 Increasing bus speeds is not merely a matter of shaving minutes from journey times. It can be a catalyst for wide-reaching improvements in efficiency, economy, environmental stewardship, and social equity. Fast, reliable buses empower individuals, strengthen communities, and underpin prosperous, sustainable communities.
- 2.8.2 Policymakers, transport planners, and civic leaders should view faster bus services not as a luxury, but as a necessity for holistic urban progress. By investing in infrastructure, technology, and service improvements that prioritise bus movement, towns and cities can unlock myriad benefits—reshaping the future of urban mobility for generations to come.
- 2.8.3 The benefits considered in this chapter can be summarised in a slightly different format, as can be seen in Figure 2-1 overleaf. This considers the potential advantages and benefits using a format similar to the five business case format used in Treasury Green Book project appraisals. We look at the Strategic, Economic, Commercial and Financial benefits that could be achieved, with a fifth strand looking at the Environmental case.

Figure 2-1: The Case for Faster Bus Speeds



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3. The Potential for Cost Savings

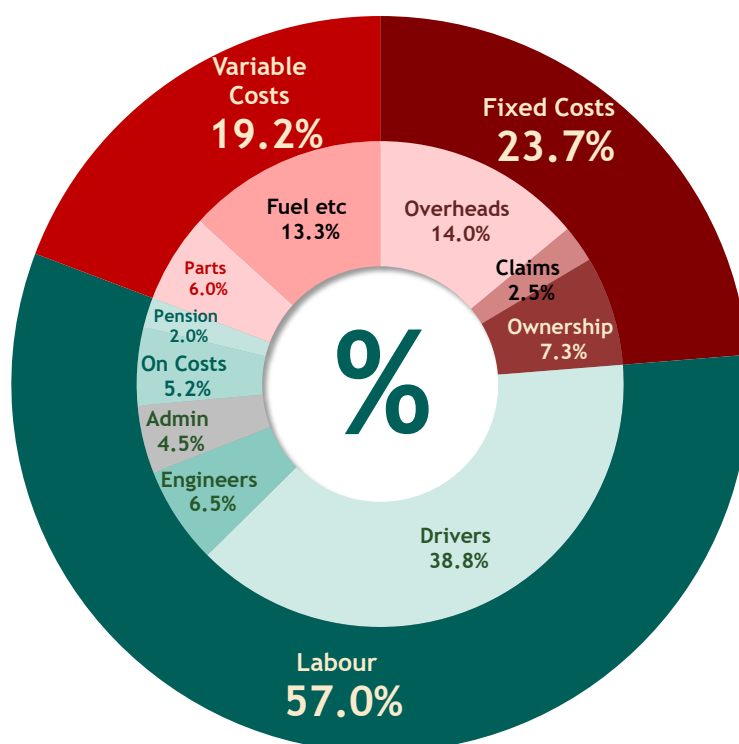
3.1 Modelling Movements in Costs

- 3.1.1 This chapter features a worked example of the cost changes prompted by different operating speeds on a notional urban bus route. The methodology is similar to that used in the author's previous publications, including the book *Understanding Buses*.
- 3.1.2 The latest version for this report has been comprehensively updated using unit cost and speed data collected from CPT members in February 2025 as part of the CPT Cost Monitor programme⁵.
- 3.1.3 The data shown can be viewed in two ways: as an illustration of the cost savings and improvements that can be delivered by speed improvements, but also as a warning of the cost consequences of the increased traffic congestion forecast by models of future demand.

3.2 The Structure of Bus Industry Costs

- 3.2.1 The graph at Figure 3-1 below shows how the costs of operating bus networks are broken down between the various components. As can be seen, by far the largest component is labour on 57%, and within that the largest is driver wages, which account for almost 39% of all costs. Next comes the fixed cost of running the operation, at 23.7% followed by the variable costs – fuel, oil, tyres and spare parts – on 19.2%.

Figure 3-1: Breakdown of Bus Industry Costs, February 2025
Great Britain outside London

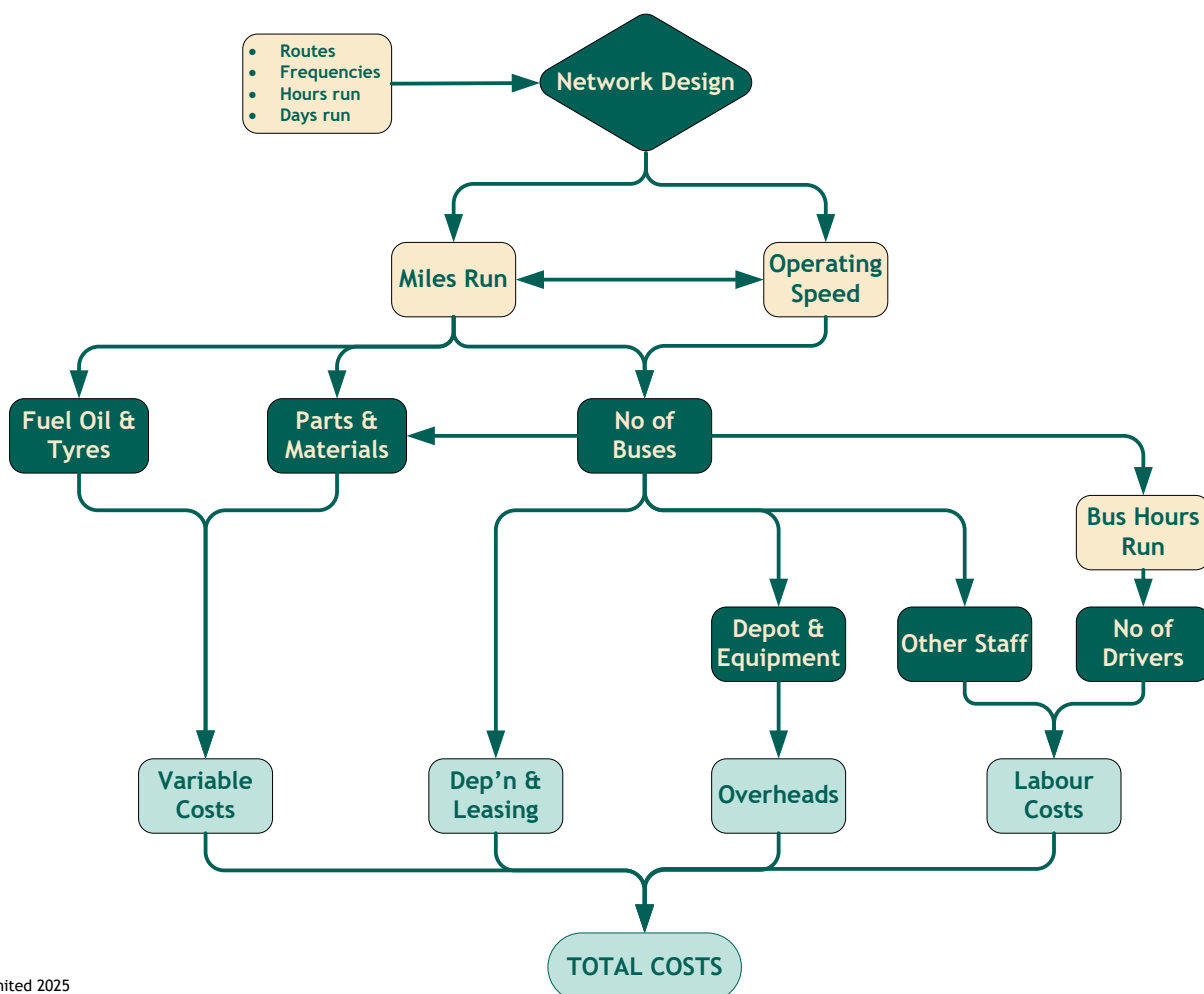


⁵ www.cpt-uk.org/cpt-cost-monitor

3.2.2 A surprising number of the components are influenced or determined by the time taken to run the buses from one end to the other of each route. This is illustrated by the chart at Figure 3-2. This shows how decisions about the design of a company or authority's network will translate into the costs of operation, and how the key component is the operating speed. This will determine:

- the number of buses needed
- the staff needed to drive and maintain them
- the size of the depot needed to house them
- the number of supervisory and administrative staff needed to manage them.

Figure 3-2: The Importance of Time and Speed in Bus Costs



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4. Changes in Demand

4.1 Demand Elasticities

- 4.1.1 In principle, making services run faster should generate additional demand and revenue. The established method of estimating this increase is to use a measure of demand elasticity. This proposes that for $x\%$ change in bus speeds, an elasticity of demand of e will result in a change in demand of $y\%$.
- 4.1.2 There are established measures of elasticity from published academic studies, most well-known of which is the TRL report which dates from 2004⁶. A major review of available evidence on the subject of time elasticities was published in 2012⁷. More recently, a further study was undertaken for the Department for Transport in 2017 and published the following year⁸. These studies can recommend a value, or a range of values for e , from which the expected changes in demand can be calculated.
- 4.1.3 The 2018 study noted the DfT's then current view in the Transport Appraisal Guidance was for a figure of -0.58. The recommendation from the 2018 study was broadly similar at -0.60. However, it also recommended that there was a need for much more research to widen the amount of data from which conclusions could be drawn. Note that these recommendations apply to the in-vehicle time, i.e. the duration of the journey from boarding the bus to alighting again.

4.2 Reliability and Predictability

- 4.2.1 As we have seen, the calculation is restricted to the actual time spent on the bus itself (referred to as “in-vehicle time” or IVT). We know, however, that consumers consider the time taken for the whole journey, literally from door to door, when evaluating different modes of transport – particularly private transport such as a car, bike or motorcycle.
- 4.2.2 Typically, this is measured using a concept called ‘generalised journey time’ (GJT) – which represents the total cost in time of a door to door journey. Thus, the GJT of a journey includes access time to and from bus stops, waiting and riding in the vehicle. This can then be added to the expenditure involved, to give the generalised cost that can be compared with the same figures for other modes.
- 4.2.3 The typical bus journey will involve four basic components, illustrated in the graphic at Figure 4-1 below:
- Walk time - from home to the bus stop to get on the bus
 - Wait time - time at the stop waiting for the bus to come along
 - In-vehicle time [IVT] – the time actually spent on the bus
 - Walk time – from getting off the bus to the ultimate destination.

⁶ Balcombe etc (2004), *The Demand for Public Transport, A Practical Guide*, published by the Transport Research Laboratory (TRL593)

⁷ Wardman, M. (2012), *Review and Meta-Analysis of U.K. Time Elasticities*. *Transportation* 39:465–490

⁸ Dunkerley, Wardman, Rohr and Fearnley (2018), *Bus Fare and Journey Time Elasticities and Diversion Factors for All Modes*, RAND Europe and Systra, for Department for Transport.

Figure 4-1: The Components of Generalised Journey Time (GJT)



4.2.4 The two factors of reliability and predictability can affect this equation in a number of ways, particularly:

- Whether the bus turns up on time, so that the waiting time is as predicted when the passenger leaves home
- Whether the bus adheres to the advertised journey time, or whether traffic conditions cause one or more delays. Congestion is notoriously unpredictable from day to day.

4.2.5 This is discussed further in our worked example in Chapter 5 below. The 2018 study by Dunkerley, Wardman, Rohr and Fearnley recommended a deduced elasticity measure for Generalised Journey Time of -1.1.

4.3 Applying the Elasticities

4.3.1 Local circumstances will, of course, vary and the impact of a journey speed improvement can often be lost in a package of measures such as new vehicles, improved infrastructure or changes in frequency. The overall effect of such a package can be estimated by calculating the resulting changes in the overall generalised journey time for using the bus, but this is a much more complex calculation and would not be appropriate for this exercise.

5. Worked Example: An Urban Bus Route

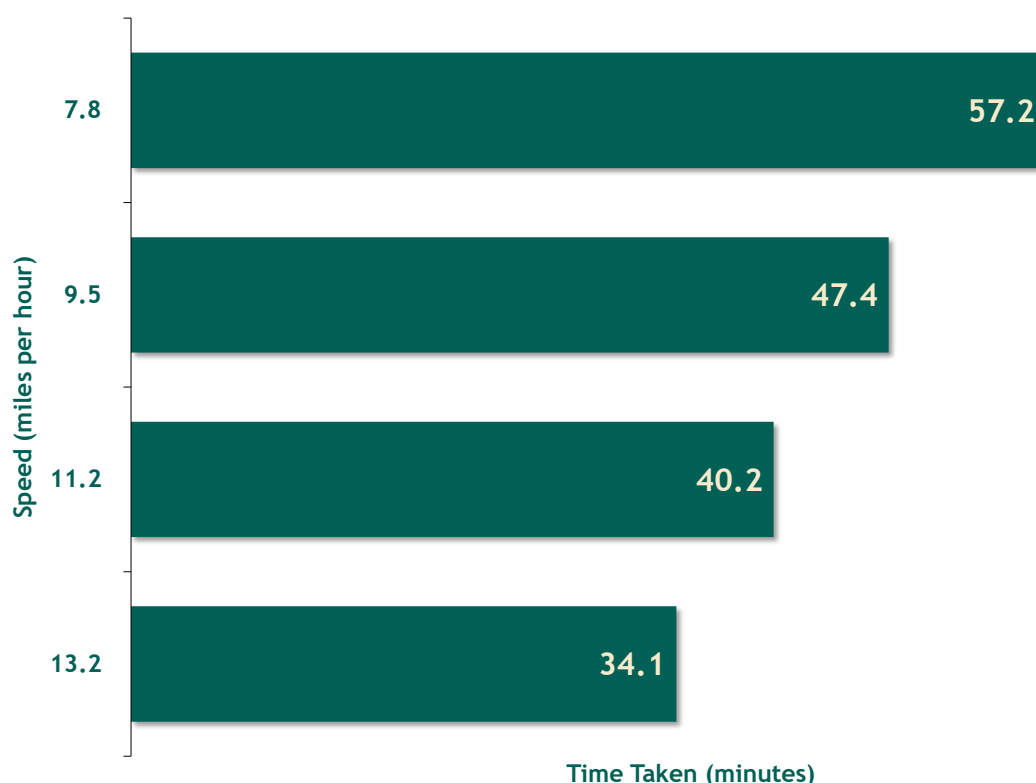
5.1 Key Variables

- 5.1.1 The key variables in driving the cost of our bus routes are **time** and **speed**. Some costs, particularly energy, lubricants and tyres, will also depend on **distance** – though energy consumption is also influenced to a measurable extent by speed.

5.2 The Sample Bus Route

- 5.2.1 An urban bus route runs for around 3½ miles (6 km) between the town centre and a local suburb – a round trip of 12 km. The service runs every ten minutes (six departures per hour) between 0600 and 1900 and every 20 minutes from 1900 to midnight.
- 5.2.2 Data from the CPT Cost Monitor shows that bus speeds in congested urban areas are limited to 7.8 mph. In our other cities and conurbations, this rises to 9.5 mph. In suburban areas, the average is 11.2 mph, whilst more rural and inter-urban networks achieve an average 13.2 mph. The effect of the different speeds is illustrated in Figure 5-1.

Figure 5-1: Time taken at Different Operating Speeds



Calculating the Resources Needed

- 5.2.3 Having established what governs the resources needed to run a bus service (time, speed and distance), it is possible to calculate the level of resources, or inputs, that will be required to operate a given route. From there, we can calculate the cost of providing the service.

5.2.4 The resources will be determined by:

- The time taken from one end of the route to the other and back again
- The hours of operation
- The frequency of operation
- The distance travelled.

5.2.5 From this information, we can calculate:

- the number of vehicles we need
- the number of drivers we will need to employ (allowing for sickness and holidays)
- the distance each bus will cover and therefore how much fuel and oil will be needed, and the number of tyres used.

5.2.6 The operating characteristics of the route at these different speeds are summarised in Table 1 below. As can be seen, the resources needed fall as speeds increase.

Table 1: Sample Bus Route - Operating Characteristics at Different Speeds

Speed (mph)	7.8	9.5	11.7	13.2
Journey time + recovery (mins)	70	60	50	40
No of buses required	7	6	5	4
Bus hours required per day	111	93	80	62
Annual Bus Hours, 363 days per year	40,293	33,759	29,040	22,506
Annual Driver Hours	49,560	41,524	35,719	27,682
No of drivers required	24	20	17	13
Annual Kms run	405,108	405,108	405,108	405,108
Diesel fuel consumed (litres, 000s)	418	418	418	418

The Impact on Costs

5.2.7 The annual cost of operating our sample service can be calculated using the resource data and the unit cost information taken from the CPT Cost Monitor. The results of these calculations are shown in Table 2 below.

Table 2: Operating Costs at Different Bus Speeds in Scotland

Speed (mph)	7.8	9.5	11.7	13.2
	£000	£000	£000	£000
Labour	1,430	1,225	1,021	773
Depreciation	19	16	13	11
Leasing	0	0	0	0
Semi-Variable Costs	56	48	40	32
Overheads	134	134	134	134
Fuel, Oil & Tyres	194	194	194	194
Maintenance	159	133	114	89
Claims & Insurance	48	41	34	27
Total Costs	2,040	1,792	1,552	1,260
% reductions over base		(12.1%)	(23.9%)	(38.2%)

Revenue and Profit Targets

- 5.2.8 Our current estimate is that the operator needs to make an operating profit of 16.6% to meet their financial obligations. This is significantly higher than earlier years since it includes the high cost of funding new zero emission buses with no planned future grant assistance.
- 5.2.9 This figure enables us to estimate what the annual cash profit needs to be and see how it changes with the speed of the service. When buses can go faster, the amount of equipment needed goes down, so reducing the amount of capital employed in this business. This in turn reduces borrowing costs, and means that a smaller operating profit is needed to meet an operator's financial obligations.
- 5.2.10 Given a target revenue figure, we can also estimate the number of passengers we will need to carry to achieve that target. In this example, we have used the average fare for Scotland in 2023/24, which was £2.00⁹.

Table 3: Target Operating Profit, Revenue and Patronage

Speed (mph)	7.8	9.5	11.7	13.2
Total Cost (from Table 2)	2,040	1,792	1,552	1,260
Target Operating Profit	406	356	309	251
Target Revenue	2,445	2,148	1,860	1,510
Annual Patronage Required (000s)	1,220	1,072	928	753

⁹ 2FM Analysis of Annual Bus Statistics, Department for Transport, Sheets BUS01 and BUS05.

5.3 Changes in Demand

- 5.3.1 In Table 4 below, we have applied the recommended elasticity figure discussed above to each incremental change in speed – from 7.8 to 9.5 mph, 9.5 to 11.2 mph and so forth. This gives an expected percentage increase in demand. The elasticity figure was -0.6.
- 5.3.2 Assuming a base patronage level of 1,351k passenger journeys from Table 3 above, we can use the percentage figure to suggest how many extra passenger journeys might be generated as a result of each improvement. To convert that into a revenue gain, we apply the average fare.
- 5.3.3 It will be seen that the potential gains from the shifts in speed are substantial, ranging between 6.5% and 12.2% depending on the time saving achieved. In each case, percentage change in journey time and therefore demand will vary along the route: these numbers refer to the outer terminus.

Table 4: Demand and Revenue Gains for Speed Increases

Speed (mph)	7.8	9.5	11.2	13.2
Single leg journey time (minutes)	28	23	19	17
% change	-	(17.5%)	(19.1%)	(10.5%)
Demand increase @ -0.6 elasticity	-	11.1%	12.2%	6.5%

5.4 Reliability and Predictability

- 5.4.1 As we discussed briefly in section 4.2 above, changes in reliability and predictability can also have an effect on demand. Customer research has indicated over the years that both wait time and walk time are perceived negatively by passengers. In calculating the Generalised Journey Time of a trip, they are therefore valued at double the actual¹⁰.
- 5.4.2 In our example in Table 5 below, we have assumed that an average lateness on our example route of three minutes, and also that the bus is typically delayed by a further three minutes during its journey. This can be caused by a whole range of factors, including extra congestion, road works or a change in road layouts, causing a deterioration in the predictability of the advertised journey time.
- 5.4.3 Such delays will cause an increase in the GJT experienced by the passengers, affecting their propensity to use the bus for their journey. As we saw in paragraph 4.2.5 above, the recommended elasticity measure for changes in GJT is -1.1.

¹⁰ Dunkerley, Wardman, Rohr and Fearnley (2018), *Bus Fare and Journey Time Elasticities and Diversion Factors for All Modes*, RAND Europe and Systra, for Department for Transport. We note that STAG guidance recommends 2.5 times actual, but cites no evidence for this.

Table 5: How Late Running and Delays Affect Generalised Journey Time

Item (minutes)	Actual Minutes	GJT as Scheduled	GJT as Experienced
Walk time	5	10	10
Wait time	5	10	16
IVT	19	19	22
Walk time	5	10	10
Total GJT		49	58
Difference			9

5.4.4 This example shows:

- if reliability deteriorates by nine minutes, demand from the outer terminus of our route could fall by 18.3%. This could be expected even if the increased GJT only occurred once or twice a week
- on the other hand, measures to make the service more reliable, and the journey time more predictable, could result in a demand increase of 18.6%, ***even without changing the scheduled journey time.***

5.5 The Lessons from the Worked Example

5.5.1 Bus routes cost less to operate the faster they can go.

5.5.2 Reducing the number of buses needed to run a route creates significant savings in driver wages, maintenance costs and items such as insurance, leasing costs and ancillary equipment such as radios and ticket machines. It lowers depreciation and/or leasing costs too.

5.5.3 By lowering the capital employed in the business, savings can also lead to lower interest and borrowing costs, reducing the profit needed to meet operators' financial obligations.

5.5.4 Importantly, though, those savings can then be reinvested – in extra routes or higher frequencies, so improving the bus network in the area.

6. The Wider Benefits

6.1 Overview

- 6.1.1 As we saw in Figure 2-1 in Chapter 2, there is a wide range of benefits to be gained from faster bus speeds. This and the following chapters provide more details and attempts to quantify some or all of them, looking in particular at:
- industry viability
 - economic benefits
 - social benefits
 - environmental benefits
- 6.1.2 Applying the potential gains we saw in our route-specific illustration in Chapter 3 to a wider area such as a county or region is not possible. In a given area, it is inevitable that some routes would benefit more than others, whilst routes that were predominantly inter-urban and rural in nature might only achieve marginal benefits when going into and out of town centres.
- 6.1.3 In order to assess the benefits using a common methodology, we have used the urban/rural definitions used by ONS and the Scottish Government, which are discussed in more detail below.

6.2 Assumptions

- 6.2.1 The central assumption we have used is that a network of bus priorities measures, including universal traffic signal priorities, bus lanes and other measures, would be introduced. The effect would be to increase average bus speeds in urban areas and small towns, benefitting 80% of existing passengers in large urban areas, 40% in smaller urban areas and 20% in small towns. Passengers in rural areas would not be affected.

6.3 Industry Viability

Patronage and Revenue Gains

- 6.3.1 The speed changes modelled are summarised in Table 6 below. The existing speeds are taken from CPT Cost Monitor returns from operations in the relevant areas. The urban/rural classification used is taken from the Scottish Government's analysis¹¹. Bus mileage and patronage have been estimated using the resulting population statistics along with data from historic bus statistics. These may be subject to error, but no current statistics of this nature are available in Scotland.
- 6.3.2 Using these assumptions, it is possible to estimate the patronage and revenue gains that would be available from such changes, alongside the changes in operating cost levels that could be expected to follow. These figures then underpin the analysis of other benefits that could accrue.

¹¹ See <https://www.gov.scot/publications/scottish-government-urban-rural-classification-2020/>.

Table 6: Speed and Journey Time Changes Modelled

Item	Large Urban	Smaller Urban	Small Towns	Rural	All Scotland
Patronage assumed to benefit (%)	80%	40%	20%	0%	
Current Speed (mph)	7.7	10.6	15.9	17.4	11.3
New Speed (mph)	8.7	12.1	17.8	17.4	12.2
% change	12.6%	14.7%	11.7%	-	8.0%
Current Time for Average Journey	20.97	15.33	10.18	9.31	23.0
New Time for Average Journey	18.62	13.37	9.11	9.31	21.3
% change	(11.2%)	(12.8%)	(10.5%)	-	(7.4%)

6.3.3 The resulting changes in demand and revenue are summarised in Table 7 below.

Table 7: Patronage and Revenue Gains

Item	Large Urban	Smaller Urban	Small Towns	Rural	All Scotland
Estimated Bus Patronage in 2023/24	139.0	108.0	4.1	83.2	334.3
Assumed to benefit	111.2	43.2	0.8	0.0	155.2
Assumed time saving	(11.2%)	(12.8%)	(10.5%)	-	(7.4%)
Elasticity	(0.6)	(0.6)	(0.6)	-	
Patronage gains	7.0%	8.0%	6.5%	-	-
Patronage Gain (million journeys)	7.7	3.5	0.1	0.0	11.3
New Total (million journeys)	146.7	111.5	4.2	83.2	345.6
% gain	5.6%	3.2%	1.3%	0.0%	3.4%
Revenue Gain @ £2 average fare (£m)	11.3	5.0	0.1	0.0	16.5
New Revenue Total (£m)					770.5
Revenue increase (%)					2.5%

Changes in Operating Costs

6.3.4 The costs for operating the Scottish network have been estimated at existing speeds and the proposed revised speeds, assuming the same level of service supply as was delivered in 2023/24¹². Operating assumptions and unit cost calculations are the same as in the example discussed in Chapter 3, with data taken from the February 2025 CPT Cost Monitor survey, with an adjustment to take account of the increase in National Insurance Employers' Contribution, which took effect on 1 April 2025. The results are shown in Table 8 below. It

¹² Scottish Transport Statistics 2025.

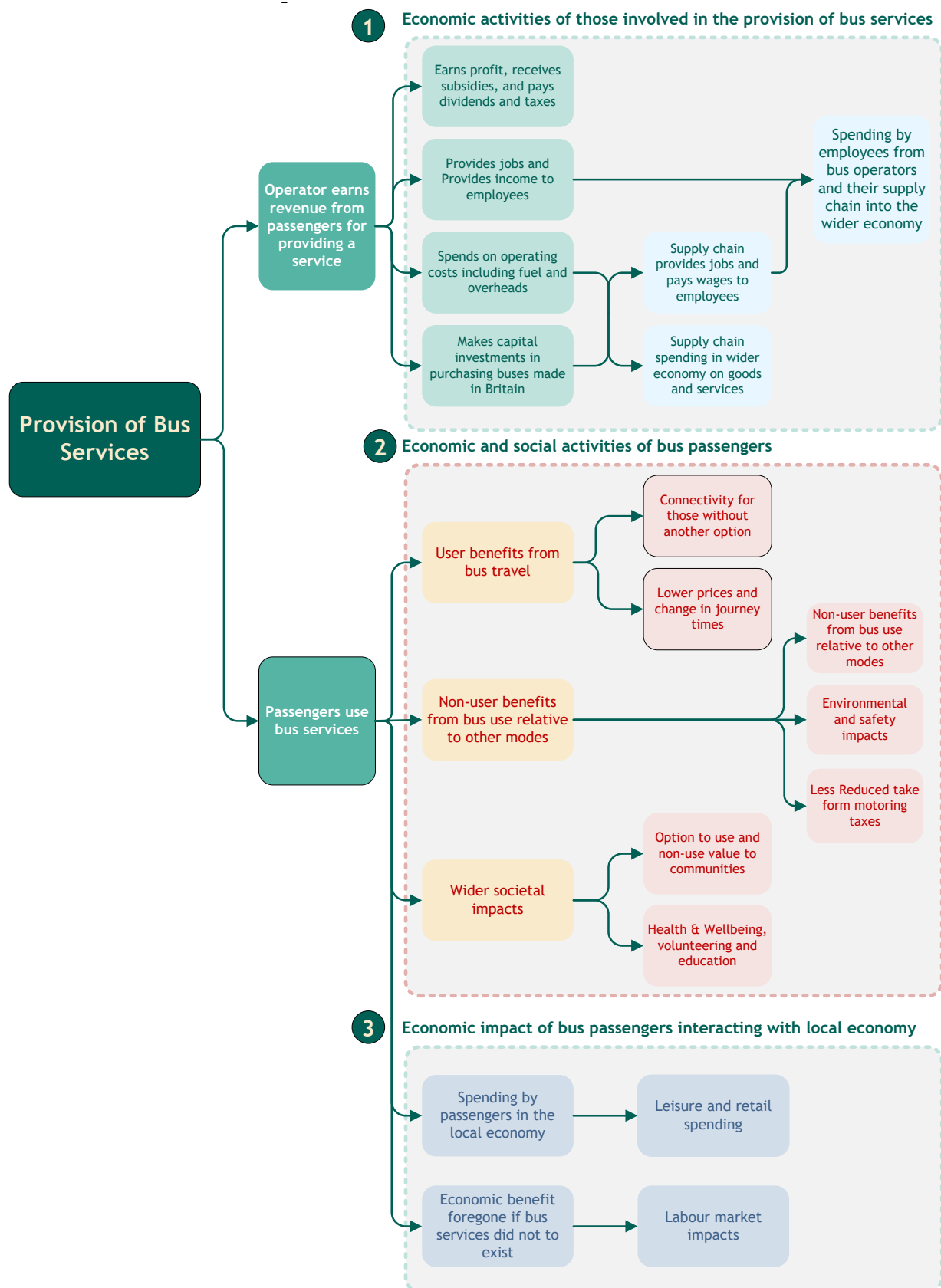
will be seen that the estimated cost saving from the change would be some £44m, or 4.9% of the total.

Table 8: Changes in Operating Costs (£m)

Item	Existing Speed	New Speed	% change
Labour	481,201	453,687	(5.7%)
Fuel	121,055	121,055	0.0%
Oil & Tyres	8,772	8,772	0.0%
Maintenance	57,809	54,503	(5.7%)
Variable Costs	668,837	638,017	(4.6%)
Overheads	116,968	110,280	(5.7%)
Property Maintenance	1,682	1,586	(5.7%)
PSV & Traffic	25,393	23,941	(5.7%)
Marketing	2,802	2,642	(5.7%)
Claims	23,961	22,591	(5.7%)
PSV Leasing	3,476	3,278	(5.7%)
Other Leases	97	91	(5.7%)
Property Rental	287	271	(5.7%)
Total Operating Costs	843,215	802,425	(4.8%)
Depreciation (PSV)	56,357	53,134	(5.7%)
Depreciation (Other)	9,389	8,853	(5.7%)
Property Amortisation	1,600	1,508	(5.7%)
Total Costs	910,561	865,920	(4.9%)

- 6.3.5 The overall result is a substantial improvement in industry finances, amounting to £60m a year, which could be invested in a combination of new zero emission vehicles, additional services, lowering revenue support and improving network viability.

Figure 6-1: Identifying the Economic Benefits of the Bus¹³



¹³ Source: *The Economic Impact of Local Bus Services*, KPMG for the Confederation of Passenger Transport, September 2024, Figure 1

6.4 The Economic Benefits of Faster Buses

Introduction

- 6.4.1 The nature and extent of the bus industry's contribution to the wider economy has been well researched over the years, most recently in work commissioned by CPT from KPMG and published in September 2024¹⁴.
- 6.4.2 The report identifies three main areas (or “lenses”) of impact, and sets these out in a chart, an edited version of which appears at Figure 6-1 above. The three areas are:
- Activities of service providers
 - The economic and social activities of bus passengers
 - The contribution of bus passengers to local economies.

Activities of Service Providers

- 6.4.3 This area covers the economic activity generated by the provision of bus services, including:
- Employment and payment of wages
 - Purchase of materials and services
 - Investment in vehicles and equipment
 - Profits earned by bus operators
 - Taxes paid (especially Corporation Tax and National Insurance Employers' Contributions)
- 6.4.4 We have already seen how improved viability offered by faster services can benefit the economy through investment in more services, new and pollution-free vehicles. Though savings in direct operating costs will reduce the economic contribution from this source in the short term, it will enable considerable improvements in the medium to longer term.

Economic and Social Activities of Bus Passengers

- 6.4.5 This section of the evaluation considers:
- Increased connectivity and more affordable travel
 - Impacts on other road users
 - The option values of having bus as a mode
 - Wider social impacts

Economic impact from bus passengers interacting with local economies

- 6.4.6 Spending undertaken in local economies by bus passengers, particularly leisure passengers, commuters and shoppers. These were evaluated by KPMG using survey results to

¹⁴ *The Economic Impact of Local Bus Services, KPMG for the Confederation of Passenger Transport, September 2024. Available at <https://www.cpt-uk.org/campaigns-reports/economic-impact-of-local-bus-services/>*

determine the average spend per passenger journey for each of these three purposes. The spend is estimated at £3,253m a year at 2025 prices.

6.4.7 Patronage growth of the kind described in paragraph 6.3 above will enhance this contribution.

Valuation and Update

6.4.8 KPMG's valuation of the bus industry to the Scottish economy was £4,820 million. As time has moved on, we have updated the estimates to take account of changes in costs, the wider economy and alterations in both patronage and service levels during the year after their report was prepared. We estimate that the new valuation is £5,319 million. The breakdown is summarised in Table 9 below. The remarks column explains the changes we have made.

Table 9: Value of Buses to the Scottish Economy¹⁵

Item	September 2024 report	September 2025 update	Remarks
<i>Activities of Service Providers</i>			
Taxes, wages and industry profit	300	430	Increase in unit costs to February 2025 levels, plus allowance for NIC increase from 04/25 and changes to service levels in 2023/24
Supply chain impact of fleet renewal and labour impact	75	7	Heavily reduced new bus deliveries in 2024 ¹⁶
Spending by employees in operations and supply chain	100	109	Upated to 2025 prices using GDP Deflator. Small reduction in staff numbers
Total	475	546	
<i>The Economic and Social Activities of Bus Passengers</i>			
Increased connectivity and more affordable travel	815	894	Increased patronage during 2023/24. Upated to 2025 prices using GDP Deflator
Impacts on other road users	55	60	
Option of having buses as a mode	285	313	
Wider societal impacts	230	253	
Total	1,385	1,520	
<i>Contribution of Bus Passengers to Local Economies</i>			
Leisure spend	775	852	Increased patronage during 2023/24. Upated to 2025 prices using GDP Deflator.
Commuter spend	1,070	1,176	
Shopping spend	1,115	1,225	
Total	2,960	3,253	
GRAND TOTAL	4,820	5,319	

¹⁵ Ibid, Figure 7

¹⁶ 2FM Analysis of Annual Bus Statistics 2023/24, Department for Transport, Sheet BUS06.

6.5 Social Benefits

Overview

- 6.5.1 Buses play a vital role in providing affordable access to services and facilities, especially to educational, training and employment opportunities. This applies to the whole population, and particularly specific age groups or sub-groups in society, such as young people, older people and disabled people.
- 6.5.2 Speeding up buses helps bus services fulfil this role in several ways:
- Directly:
 - by making the services faster, so reducing the generalised cost of bus travel, both absolutely and in relation to other modes
 - Improving reliability and predictability, improving the appeal of services to potential users
 - Indirectly:
 - improving the viability of the network
 - facilitating expanded service provision
 - enabling fare increases to be mitigated or even avoided altogether.
- 6.5.3 The KPMG report already discussed¹⁷ identified five ways in which the contribution of the bus could be evaluated. They are:
- Fiscal savings in health services from increased employment
 - Fiscal savings from increased education
 - Improvements in overall health and well-being
 - The benefits derived from increased volunteering
 - Psychological well-being.
- 6.5.4 Taken together, these are estimated by KPMG to deliver benefits of £230m a year (£253m a year at 2025 prices).

Social Mobility

- 6.5.5 It is interesting to note that all four of the key drivers of social mobility identified by the Social Mobility Commission¹⁸ in their *State of the Nation 2022* report are dependent to a greater or lesser extent on good public transport links, especially (but not exclusively) for households without a car. The four are:
- Conditions of Childhood
 - Educational Opportunities and quality of schooling
 - Work opportunities for Young People

¹⁷ *Op cit*, Appendix 2, Table 9, in which these are listed, and evidence is cited.

¹⁸ <https://www.gov.uk/government/publications/state-of-the-nation-2022-a-fresh-approach-to-social-mobility>

- Social Capital and Connections.

Policies for Young People

- 6.5.6 Young people are a particular focus for improvements to social mobility, with the need being the greatest in socially deprived areas and the NEETs (Not in Education, Employment or Training) between the ages of 16 and 24. The proportion of young people aged 16 to 19 in Scotland who were not in employment, education or training (NEET) was 3.9% in the year ending March 2025, an increase of 0.2 percentage points over the year¹⁹ – a total of 8,900 people. Over a wider age group, there were 19,980 young people aged 18–24 on the claimant register in July 2025 for unemployment benefits²⁰.
- 6.5.7 In its evaluation of the Under 22s Free Travel Scheme²¹, surveys undertaken by Transport Scotland show that the free travel pass had opened up a wide range of new places and opportunities for passholders, including:
- 57% for social and leisure activities
 - 43% for apprenticeship or training programme
 - 42% for shopping
 - 37% for visiting family and friends
 - 25% for school/college/university
 - 17% for job/work
 - 16% for healthcare.
- 6.5.8 There was also evidence of the scheme opening up new opportunities for education and work, with both survey and focus group respondents sharing examples of this.

Older and Disabled People

- 6.5.9 It has been demonstrated that access to transport is an essential element of the quality of life agenda for all three of these groups. There is a growing body of evidence²² that mobility, especially on public transport, is positive for all three groups, as it can:
- Help maintain contact with friends and family
 - Reduce isolation and increase opportunities for interaction
 - Help reduce the impact of giving up driving
 - Reduce loneliness, mitigating consequent declines in well-being
 - Keep people more active, contributing to an active, healthy older population, and reducing demand for residential care and home visits.

¹⁹ 2025 Annual Participation Measure for 16 – 19-year-olds in Scotland. <https://www.skillsdevelopmentscotland.co.uk/media/2y3ex4it/2025-annual-participation-measure-statistics.pdf>

²⁰ NOMIS website, ONS and Durham University. nomisweb.co.uk/reports/lmp/gor/2013265931/report.aspx

²¹ Young Persons' Free Bus Travel Scheme – Year 1 Evaluation, Transport Scotland, <https://www.transport.gov.scot/>

²² The Future of Transport in an Ageing Society, Age UK. <https://www.ageuk.org.uk/>

- 6.5.10 Research by KPMG and Greener Journeys²³ in 2014, updated in 2017, suggested that, across the UK, the provision of free concessionary travel for older and disabled people (ODPS) provided benefits to the wider community that were worth around 3.9 times the costs of provision. The benefits included:
- Enabling volunteering
 - Physical health improvements
 - Benefits to other road users through reduced congestion, accidents and environmental impacts
 - Benefits to other bus users through increased service provision
 - Other benefits were identified in the report but not quantified, including enhanced retail activity, savings in social and child-care costs, savings in community transport provision and social inclusion.
- 6.5.11 It is inevitable that the decline in the use of concessionary passes since the pandemic has reduced the extent of the benefits generated. This fall amounted to 32.6% in Scotland between 2018/19 and 2023/24, though there may have been further recovery since. There are several reasons for this, including but not limited to:
- Changes in consumer behaviour, including greater use of online transactions for retail, financial services and health treatments
 - Stagnant or falling living standards during a period of high price inflation
 - Reduction in service provision
 - Unreliability of services especially during the driver recruitment crisis immediately after the pandemic.
- 6.5.12 There is an urgent need to appeal to ODPS concessionary passholders to recover the extent of societal benefits from the provision of concessions, and faster and more reliable buses is one way to assist this.

6.6 Evaluation of Environmental Benefits

- 6.6.1 KPMG calculated the environmental benefits of buses by determining the impact of additional car traffic in their absence. The benefits are calculated on the principles set out in the DfT's Transport Assessment Guidance. The evaluation methodology is set out in unit A5.4. From an environmental point of view, this covers:
- Congestion
 - Road Safety
 - Local Air Quality
 - Noise
 - Greenhouse gas emissions

²³ Bus 2020: The Case for the Bus Pass. <https://greenerjourneys.com/wp-content/uploads/2014/09/6-1.pdf>

6.6.2 These are valued at £55m in 2024, rising with inflation to £57m in 2025.

6.7 Net Zero Targets: The New Context

6.7.1 In addition to those quantified benefits, there is the question of modal shift from private car to public transport and active travel, which underpins the move towards Net Zero carbon emissions in Scotland by 2045. Recent changes to the Climate Change (Scotland) Act of 2009 have meant that the Scottish Government has now adopted the same approach as the UK and other devolved governments, with five-yearly legally binding caps on carbon emissions, known as Carbon Budgets.

6.7.2 In its Carbon Budget for Scotland²⁴ published on 21 May 2025, the Climate Change Committee (CCC) outlined its ambitions for movement towards net zero in transport by Scotland's accelerated date of 2045. The first budget covers 2026 to 2030, the second 2031 to 2035, the third 2036 to 2040 and the fourth 2041 to 2045. The budget states:

“Improvements to make buses and active travel more attractive, affordable, and accessible encourage 6% of baseline car demand (measured in car-kilometres) to switch to public transport and active travel by 2035.”

6.7.3 The committee states that their assumptions are informed “by evidence on successful public transport and active travel interventions in countries such as Germany and the Netherlands and in selected towns and cities in England and Scotland, as well as the urban/rural traffic share in Scotland.”. It notes that the 6% target is one per cent lower than other parts of the UK, “reflecting Scotland's more rural traffic distribution”.

6.7.4 Finally, the Committee recommends that the Scottish Government should deliver its modal shift ambitions by improving public transport services and active travel infrastructure through strategic investment in integrated networks, enhanced services, and dedicated walking and cycling routes, supported by long-term funding and powers for local councils.

6.7.5 It is important to understand the size of the change involved. Table 10 below shows the levels of transport demand in Scotland both before and after the Covid pandemic. In 2023/24, volumes of all travel had still to recover from the effects of the pandemic, with estimated total demand down by 10.2%. However, public transport modes – especially bus – suffered larger reductions than travel by car, van and taxi. As a result, car accounted for 89.4% of demand in 2023/24, compared with 87.3% before Covid. The shift is relatively small, but decidedly in the wrong direction.

6.7.6 As with previous CCC reports, it is envisaged that the target would be achieved by a combination of travelling less (e.g. working and/or shopping from home) and mode shift to active travel and public transport. However, as Table 10 demonstrates, the car is so dominant that even small shifts to bus or rail would represent a huge increase in demand.

²⁴ <https://www.theccc.org.uk/publication/scotlands-carbon-budgets/>

- 6.7.7 On the basis of the current modal split in terms of passenger kilometres travelled, each one per cent of car demand that switched to public transport would increase demand by 29.8% on the bus network or 31.9% on the railways.
- 6.7.8 **We would argue that adopting measures to help buses go faster and avoid traffic congestion would be a key part of the improvement that the Committee recommends.**

Table 10: Travel Demand and Mode Share in Scotland, Before and After Covid

Mode	2018/19		2023/24	
	Passenger Km (Billions)	Mode Share	Passenger Km (Billions)	Mode Share
Car, Van and Taxi†	45.0	87.3%	44.9	89.4%
Bus	2.6	5.1%	2.3	4.7%
Rail	3.2	6.3%	2.3	4.6%
Motorcycles	0.3	0.6%	0.3	0.5%
Cycling	0.4	0.7%	0.4	0.8%
Total Demand	51.5	100.0%	50.2	100.0%

† Calculated as 29.1 bn kilometres DfT traffic estimate @ 1.38 persons per vehicle (2019) or 23.3 bn km @ 1.55 persons per vehicle (2023).
Source: 2FM Analysis of figures from DfT, ORR and Transport Scotland.

6.8 Evaluating the Modelled Speed Changes

- 6.8.1 The September 2025 update of the KPMG figures we saw in Table 9 have then been carried forward in order to estimate the benefits of the increased speeds discussed in paragraph 6.2 above. The results are shown in Table 11 below, again with explanatory notes in the remarks column.
- 6.8.2 As can be seen, we believe that the speed improvements modelled would improve the contribution by £565 million to £5,884 million.

Table 11: Improved Value of Buses from Speed Changes

Item	At current speeds	At new speeds	Remarks
<i>Activities of Service Providers</i>			
Taxes, wages and industry profit	430	449	Improved financial performance, but lower operating costs
Supply chain impact of fleet renewal and labour impact	7	71	Revenue growth permits investment levels recover to levels required to maintain fleet age
Spending by employees in operations and supply chain	109	94	Reduced as a result of workforce savings
Total	546	615	
<i>The Economic and Social Activities of Bus Passengers</i>			
Increased connectivity and more affordable travel	894	894	No change in service levels assumed initially
Impacts on other road users	60	62	Additional passengers improving benefits
Option of having buses as a mode	313	313	No change in service levels assumed initially
Wider societal impacts	253	261	Additional passengers improving benefits
Total	1,520	1,530	
<i>Contribution of Bus Passengers to Local Economies</i>			
Leisure spend	852	979	Additional passengers improving level of spend
Commuter spend	1,176	1,352	
Shopping spend	1,225	1,408	
Total	3,253	3,739	
GRAND TOTAL	5,319	5,884	

7. Case Studies

7.1 Introduction

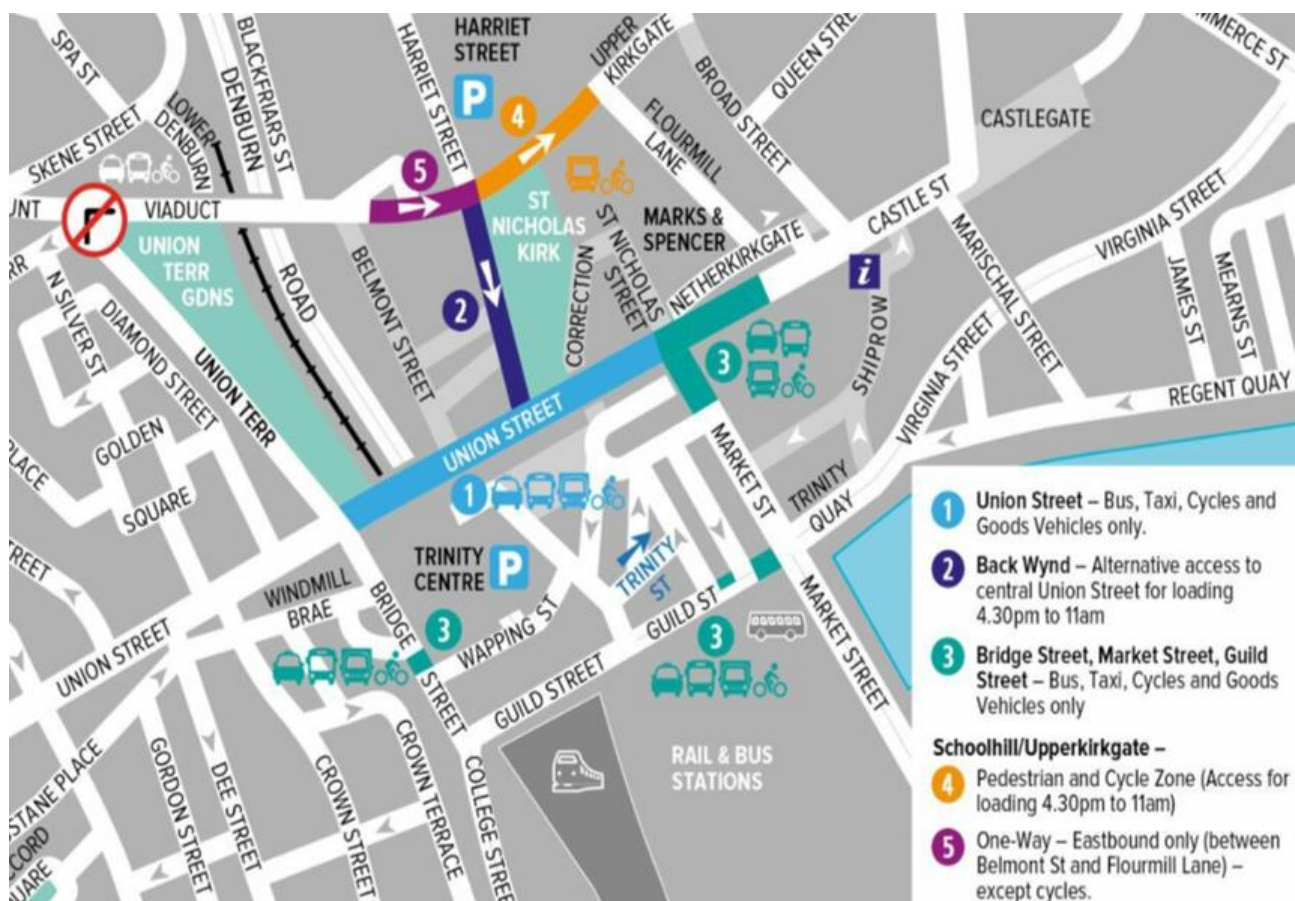
- 7.1.1 CPT members in Scotland were invited to submit examples of projects and outturns which either (a) delivered benefits from speed enhancements or (b) could offer opportunities to reverse previous resource increases caused by falls in speeds. Several responses were received, which are reproduced here. Other research also from elsewhere also offers some insights.

7.2 Aberdeen Bus Gates

The Scheme

- 7.2.1 New bus gates were introduced to Aberdeen city centre as part of a major traffic management scheme. The gates restrict certain streets in the city centre to bus, taxi, cycle and goods vehicles only, including Union Street, Bridge Street, Market Street and Guild Street (see map at Figure 7-1).

Figure 7-1: The Aberdeen Bus Gates Scheme



- 7.2.2 The scheme was introduced in August 2023, with the priority works delivered by Aberdeen City Council, funded by a £200k grant from the Scottish Government's Bus Partnership Fund (BPF) through the North East Bus Alliance. The new priorities affected five of First

Aberdeen's routes, with a combined daytime frequency of 15 buses per hour in each direction. The routes are shown in Table 12.

Table 12: Aberdeen Bus Gates: First Bus Routes Affected

Service No	Terminals	Via	Daytime Frequency (buses per hour)
3	Mastrick - Cove (Thistle)	City Centre	3
12	Torry - Heathryfold	Union Square and City Centre	4
13	Scatterburn - Golf Links	Queens Links Leisure Park	3
15	Airyhall - Balnagask Circle	Union Grove and Union Square	3
20	Guild Street - Hillhead Of Seaton	Old Aberdeen	2

The Results - First Bus

7.2.3 Over the two years since the gates were introduced, First Bus has seen on-time performance and passenger numbers rise and journey times reduced, despite the closure of Union Street for major road works since April 2024. Revenue gains and cost savings have been reinvested in service improvements and other initiatives.

Journey Times

7.2.4 Following the implementation of bus priority measures, the operator has achieved notable operational efficiencies, particularly on two routes:

- On service 3, end-to-end journey times have been reduced from 53 to 44 minutes – a fall of 17%
- On service 12, end-to-end journey times have been reduced 48 to 39 minutes, a fall of 18.8%.

On-Time Performance

Prior to the closure of Union Street, punctuality improved on four of the five routes by up to 12%. Even during the closure and consequential diversions, improvements have continued on two of the routes: the 13 (17.9%) and the 20 (5.7%).

Passenger Growth

7.2.5 Four of the five routes have remained comparable across the two years, giving like-for-like patronage growth of 12.7%. Route 15 shows a small fall, but this followed service alterations which saw the introduction of new variations and extensions on the corridor. Even allowing for this fall, the total patronage gain is still 11.0%. This implies an additional 430,000 passenger journeys a year.

Reinvestment

7.2.6 These improvements have contributed to measurable cost savings across the company's network, which have since been reinvested in service improvements and other initiatives

across the core network. For example, mileage run has been increased on the four like-for-like services by 5.8%.

- 7.2.7 In 2024, these savings enabled First Bus to launch an initiative offering free bus travel every weekend throughout January, aimed at encouraging modal shift and enhancing the customer experience. The company continues to monitor year-on-year savings and remains committed to reinvesting efficiencies back into the network. This approach supports ongoing service enhancements and strengthens the customer offering.

The Results: Aberdeen City Council

- 7.2.8 Revenue generated from bus lane enforcement fines has been reinvested to support service improvements across both the city and the surrounding shire. A key outcome of this reinvestment has been the successful re-launch of Night Bus Services, introduced earlier this year. These services now operate across five key areas, providing vital connectivity during late hours and supporting the city's wider transport and accessibility goals.

7.3 Edinburgh

- 7.3.1 Lothian Buses has provided two examples of how bus journey times have grown over the years and affected their ability to provide viable, reliable services for their customers.

Service 43 City Centre to South Queensferry (Lothian Country Buses)

- 7.3.2 The 43 follows a radial route from the city centre to a stand-alone suburb via the main A90 Edinburgh to Aberdeen trunk road. This route is a relatively recent addition to Lothian's network, having replaced previous operations by First Bus and Stagecoach.
- 7.3.3 In recent years, South Queensferry has expanded through new housing developments and continues to do so with further development both planned and under construction.
- 7.3.4 Pre-Covid, a limited stop version of this service operated at peak times via the same route in order to maintain a reasonable journey time.

Infrastructure

- 7.3.5 The A90 provides the main access to Edinburgh for traffic from Fife. Key junctions at Barnton, Blackhall and Craigleith have always been known as congestion hot spots. As part of the Bus Priority Quick Wins Programme in 2021/22, funded by the Bus Partnership Fund, additional citybound bus lanes were installed at Barnton. A queue management system at this location has also been installed but is not yet functional. Bus Infrastructure Fund grants in 2025 are expected to bring forward plans for the remaining junctions at Blackhall and Craigleith.

Bus Operator Initiatives

- 7.3.6 Service 43 was moved from a zonal fare structure to a flat fare in 2024 to speed up boarding times and in turn assist with reliability. City centre bus stop relocation was added at the same time to reduce dwell times at stops.

Current Performance

- 7.3.7 Despite rising congestion Service 43 has managed to maintain journey times with the most marked improvement being the peak periods where the limited stop service has been replaced by the all-stop variant operating to the same timetable, providing access to a greater number of passengers.
- 7.3.8 The evolution of running times since 2019 on the outbound route is illustrated in the chart at Figure 7-2 below. It will be seen that there has been some deterioration in the AM Peak, but that daytime and evening peak journey times have been maintained. There has, however, been a notable deterioration in running times at weekends, especially on Sundays.
- 7.3.9 The figures for the inbound service from South Queensferry to the City Centre are shown in Figure 7-3. The graph highlights the improvement during the AM peak that has been achieved since the installation of bus lanes at Barnton, and illustrates that further time savings could be achieved by the delivery of similar priorities at Blackhall and Craighleith. At other times of the day and at weekends, there has been an increase in running time, associated with traffic congestion in the city centre and elsewhere on the route.

Figure 7-2: Lothian Country Buses 43: City Centre - South Queensferry
End-to-End Journey Times (minutes) since 2019

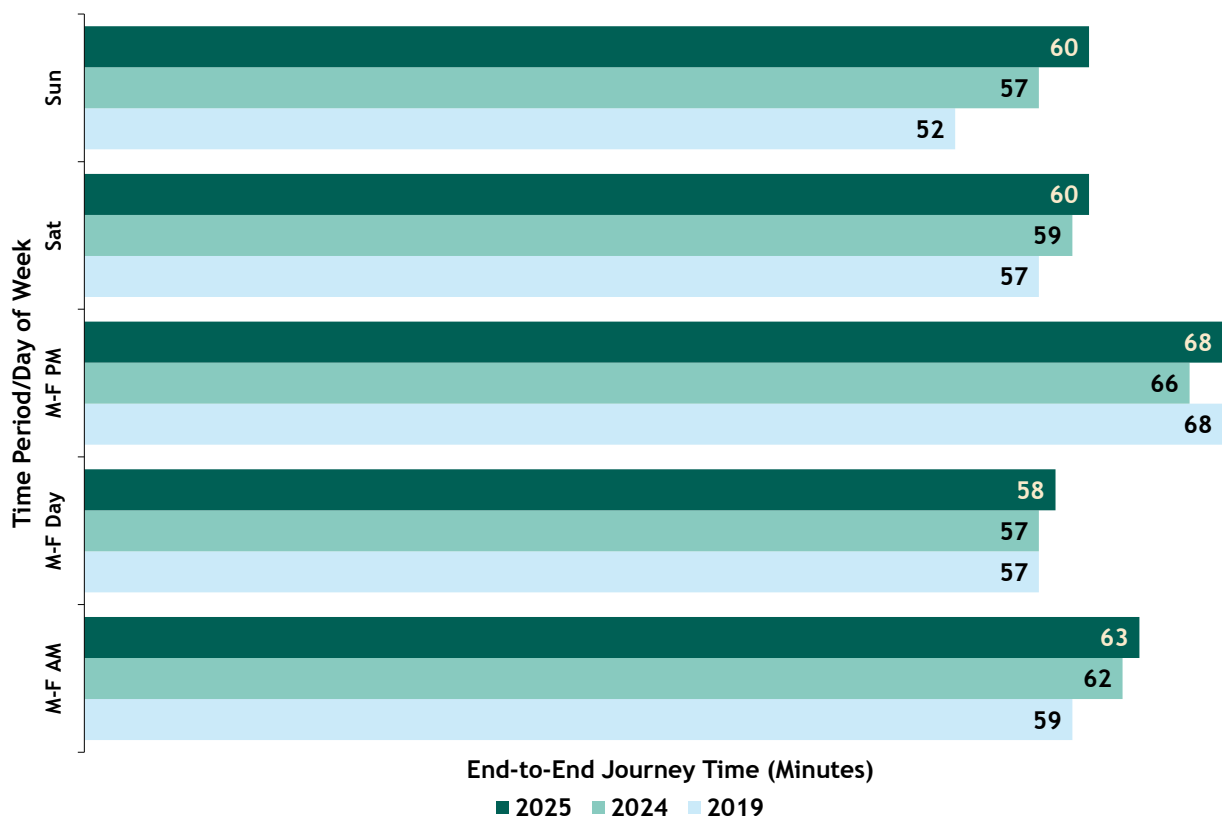
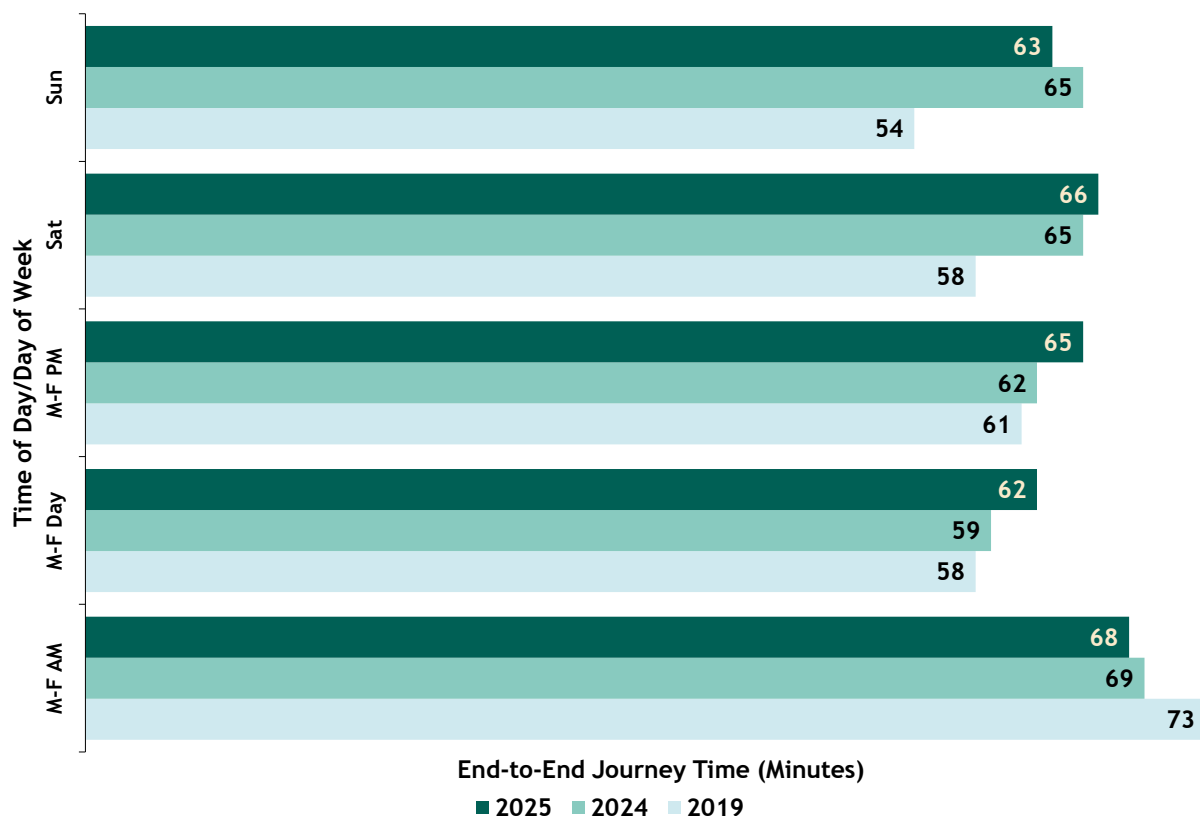


Figure 7-3: Lothian Country Buses 43: South Queensferry - City Centre
End-to-End Journey Times (minutes) since 2019



- 7.3.10 In terms of patronage, the company advises that growth of 42% has been achieved on this corridor between 2019 and 2025.

Service 38 West Granton to Royal Infirmary (Lothian Buses)

- 7.3.11 The 38 is an orbital route running on a north-south axis. It has major trip generators at each end (including a further education college and secondary hospital at the northern end, and the main hospital and university buildings at the southern end). The route traverses or crosses eight arterial roads and passes under a height-restricted rail bridge, necessitating single deck operation. The service requires an operating subsidy from local authority.

Infrastructure

- 7.3.12 No infrastructure improvements have been undertaken on this route, whilst much of its length has seen speed limits reduced from 30 mph to 20 mph. Despite crossing many arterial roads, there is no appetite from City of Edinburgh Council for bus priority signal improvements. Recent years have seen temporary segregated cycle infrastructure installed which restricts approach and departure from bus stops.

Bus Operator Initiatives

- 7.3.13 In light of frequency reductions (see below) larger capacity single deck vehicles have been deployed to maintain overall passenger volumes.

Current Performance

- 7.3.14 Due to the lack of positive infrastructure improvements, the frequency has been reduced to allow the same number of vehicles to operate the services whilst allowing more recovery time at terminal points.
- 7.3.15 The changes in journey time since 2005 are illustrated in the chart at Figure 7-4 below. It will be seen that there has been some improvement during the evening peak, but significant deterioration at other times, especially during the daytime on Mondays to Fridays and at weekends.
- 7.3.16 The reverse direction is shown in Figure 7-5. Here, the AM peak seems to have stabilised over the years, but there have been significant increases in running times during the daytime, evening peaks and at weekends.

Figure 7-4: Lothian Buses 38: West Granton to Royal Infirmary
End to End Journey Times (minutes) since 2005

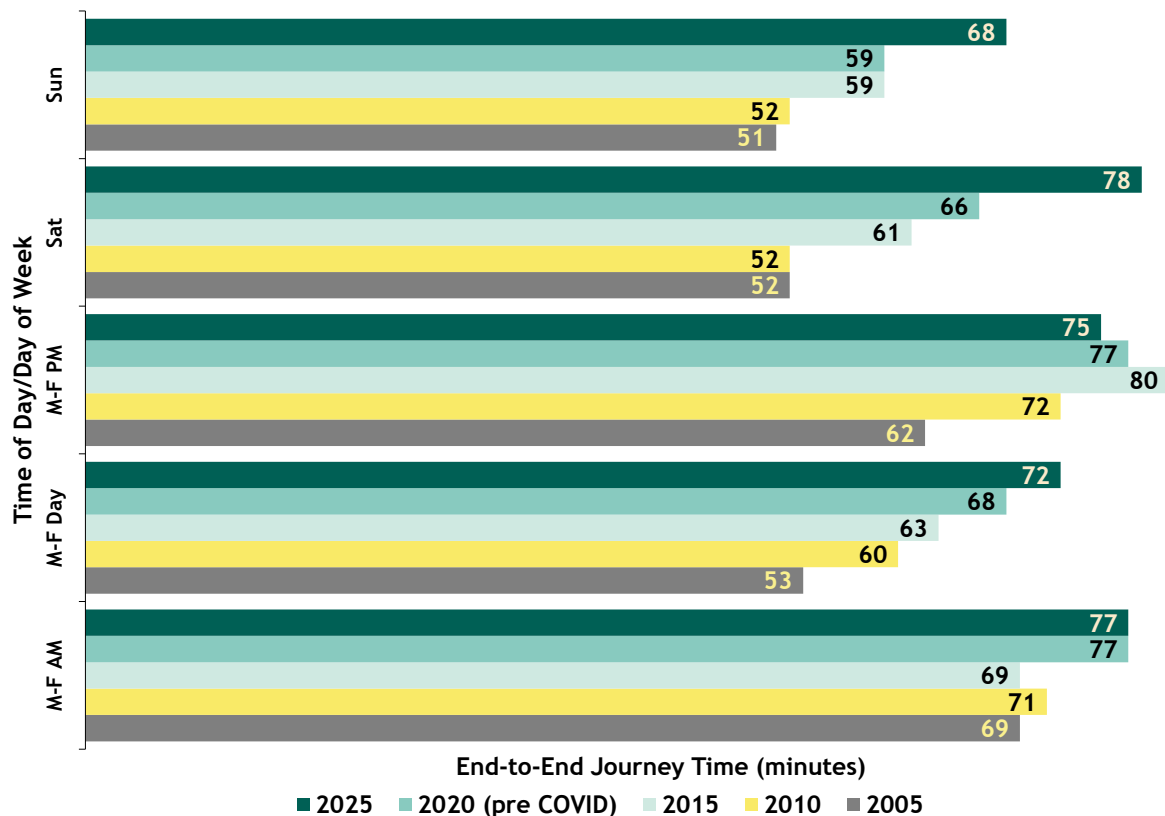
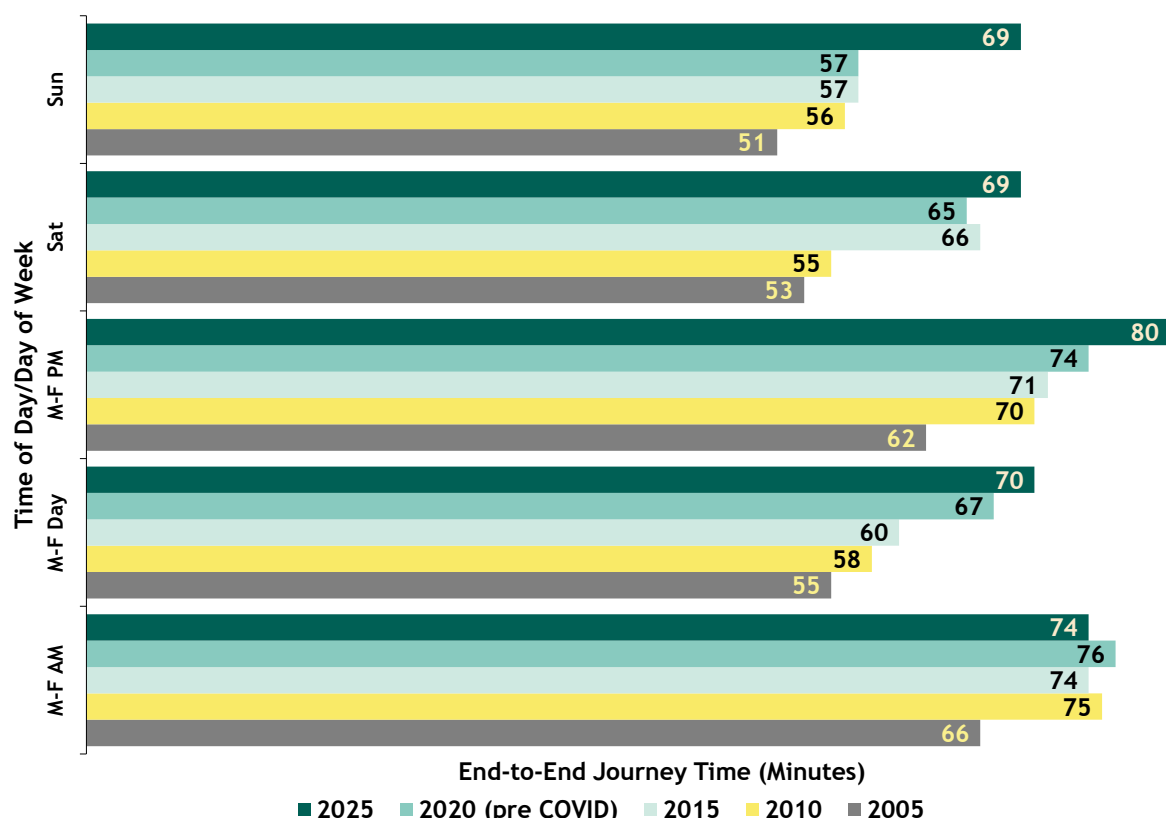


Figure 7-5: Lothian Buses 38: Royal Infirmary to West Granton
End to End Journey Times (minutes) since 2005



- 7.3.17 An index of patronage on route 38 shows an overall fall since 2005 of 3%. An initial 6% fall between 2005 and 2010 was followed by a steady state until 2015, followed by a 3% increase over the years to 2019, with a steady number since.

7.4 Falkirk - Edinburgh Corridor

Service X38: Falkirk - Edinburgh (Midland Bluebird)

- 7.4.1 Midland Bluebird's service X38 provides an all-day half-hourly service between Falkirk and Edinburgh, providing essential links to the intermediate settlements of Linlithgow, Kingscavil, Bridgend, Winchburgh and Kirkliston, using the main A8 road on its approach to Edinburgh City Centre. Prior to January 2025, the service required seven buses to deliver its frequency.
- 7.4.2 A revised timetable was introduced in January 2025 to allowed for increased congestion and the steady erosion of journey speeds along the corridor, especially through the busy junctions at Newbridge and Corstorphine. The new running times vary depending on the time of day between 1 hour 21 minutes and 1hr 43 minutes running from Falkirk into Edinburgh and between 1 hour 28 minutes and 1 hour 43 minutes from Edinburgh.
- 7.4.3 The new timetable from 27 January 2025 required an additional vehicle in the route's operational cycle, taking the requirement from seven to eight. At the same time, all the vehicles running the service were upgraded, with new route branding, customer charging

points and other quality improvements. The company reports that, in the immediate aftermath of the change, a 14% increase in punctuality was achieved. However, further growth in congestion during 2025 means that 4% of that improvement has been lost, they say. Any benefit that can be derived from bus lanes on this corridor is quickly absorbed by delays at junctions the closer to the city centre. These delays are unpredictable and therefore journey times are inconsistent. The additional operating costs incurred by adding an extra vehicle to the cycle (similar in magnitude to our worked example in Chapter 5 above) have not resulted in increased patronage, which has broadly been maintained at previous levels.

7.5 Paisley Suburban Services

Service 61 Foxbar to Gallowhill via Paisley (McGill's)

- 7.5.1 This busy suburban route links two suburbs of Paisley via the town centre. To the north east lies Gallowhill, a major housing development constructed over several decades between the 1930s and the 1970s. It has a mix of ownership. The Gallowhill and Renfrew South ward is home to approximately 15,000 people.
- 7.5.2 Foxbar is home to approximately 8,500 people and lies to the south west of the town. It contains a mix of local authority, housing association and privately owned housing. Recent years have seen significant housing investment, including new construction and refurbishment of existing buildings, including the area's tower block, one remaining of five built in the 1960s. The 61 route services Foxbar with a circular service operating one way round a loop through the area. The vehicle requirement is 6 buses throughout the day.
- 7.5.3 Depending on the time of day and the traffic conditions, the scheduled running time for the route varies between 42 and 58 minutes. In order to cope with this variability, and the peak time congestion that occurs in and around the Paisley one way system, McGill's reluctantly reduced the peak frequency on the route from every 7/8 mins (8 buses an hour) to every 10 minutes (6 buses per hour). This avoided the need to deploy additional resources, the cost of which could not be justified.
- 7.5.4 The change resulted in a 5% increase in punctuality, but resulted in a 2% loss of patronage. The company reports that "the variability of journey time on this corridor is incredible", which it attributes to "the inconsistency of congestion and poor traffic management across the Paisley one way system".

7.6 Glasgow Suburban Service

Service 3 Neilston to Glasgow via Barrhead and Pollokshaws (McGill's)

- 7.6.1 This busy suburban route provides a radial link between Neilston and Glasgow city centre, serving Barrhead, the popular Silverburn Shopping Centre (a major trip attractor), Queens Park, Strathbungo, Eglinton Toll and Laurieston. The route uses the busy A77 route into the city, and operates half-hourly throughout the day. The service is provided by zero-emission battery electric buses.

- 7.6.2 The running time for the route varies by the time of day from 1 hour 3 minutes to 1 hour 15. A steady erosion of journey speeds, driven by increased congestion – even though some junctions have been fitted with traffic priority for buses – meant that an additional electric vehicle was inserted into the schedule in July 2025, taking the requirement from five buses to six. This increase prompted a significant rise in operating costs, like our worked example shown in Chapter 5 above.
- 7.6.3 The investment in the additional vehicle resulted in punctuality improvement of 9% on average, but unpredictable congestion on the south side of Glasgow through Pollokshaws and Silverburn prevents the route from performing to the desired level of consistency. The company reports that patronage has risen by 6% since the change, but that this has not been sufficient to pay for the investment in the additional vehicle.

7.7 City of Portsmouth

- 7.7.1 Portsmouth is the most densely populated city in Great Britain outside London. The city is the economic centre of the South East Hampshire region, attracting people for work and leisure from Gosport, Fareham, Havant, Waterlooville and the Isle of Wight. It has a multi award-winning Enhanced Partnership in place with the local bus operators, including First Bus and Stagecoach South.
- 7.7.2 However, the city's roads are reaching capacity, which is having a negative impact on productivity, economic growth and air quality. The region's geography means that there is a limit to what the authorities can do to improve the road network, so another solution is required – improved public transport improvement through an integrated approach, known as South East Hampshire Rapid Transit. The latest phase of this project was opened in the summer of 2024, and delivered a major improvement in bus journeys in the city centre.
- 7.7.3 This was delivered through three projects:
- Lake Road
 - City Centre North
 - City Centre South

Lake Road

- 7.7.4 Lake Road is a busy east-west route from the city centre to the residential areas of Landport and Fratton. This route was identified as it experiences congestion at peak times, especially in the morning. It is a key route for many bus services travelling in and out of the city, and forms part of a popular cycling route. A new westbound priority lane was added, open to buses, taxis, and cyclists, between Lake Road Roundabout and Cornmill Roundabout. Accompanying this, the council also installed safer, more direct pedestrian crossings, dedicated cycle paths and landscaping and seating improvements. The works were completed July 2024.

City Centre North

- 7.7.5 This scheme delivered a new bus-only access corridor, to avoid buses getting caught in, and adding to, congestion in the city centre particularly along the busy stretch of the A3 known as Marketway. This is a popular route for many bus and coach services travelling in and out of Portsmouth city centre and major interchange between bus, rail and ferry services at The Hard. Two new bus gates have provided which enables the buses to avoid the congestion, alongside landscaping and pedestrian improvements.

City Centre South

- 7.7.6 Revised highway layouts, a widened junction and new traffic signals replacing a mini roundabout were introduced in the area adjacent to Portsmouth & Southsea station, to improve traffic flows and safety for pedestrians and cyclists.

The Results

- 7.7.7 Four bus routes in particular benefitted from the new routing and the associated priorities. The time savings within the city centre, kindly supplied by Portsmouth City Council, are summarised in Table 13 below. As can be seen, the time taken to travel on this section of route has been reduced by one third.

Table 13: Journey Time Savings in Portsmouth City Centre

Service Number	Running Time (minutes)		Savings	% of journey time saved
	Jul-2024	Jul-2025		
7	4:52	3:28	1:24	29%
8	4:53	3:22	1:31	31%
20	4:56	3:17	1:39	33%
23	4:43	3:16	1:27	31%
Overall	4:51	3:21	1:30	31%

- 7.7.8 These measures, alongside other improvements to bus services, including bus stop redesigns, zero emission buses and changes to the city's park and ride service, have together delivered a 41% increase in patronage over the last two years. This means that passenger numbers are now above pre-Covid levels.

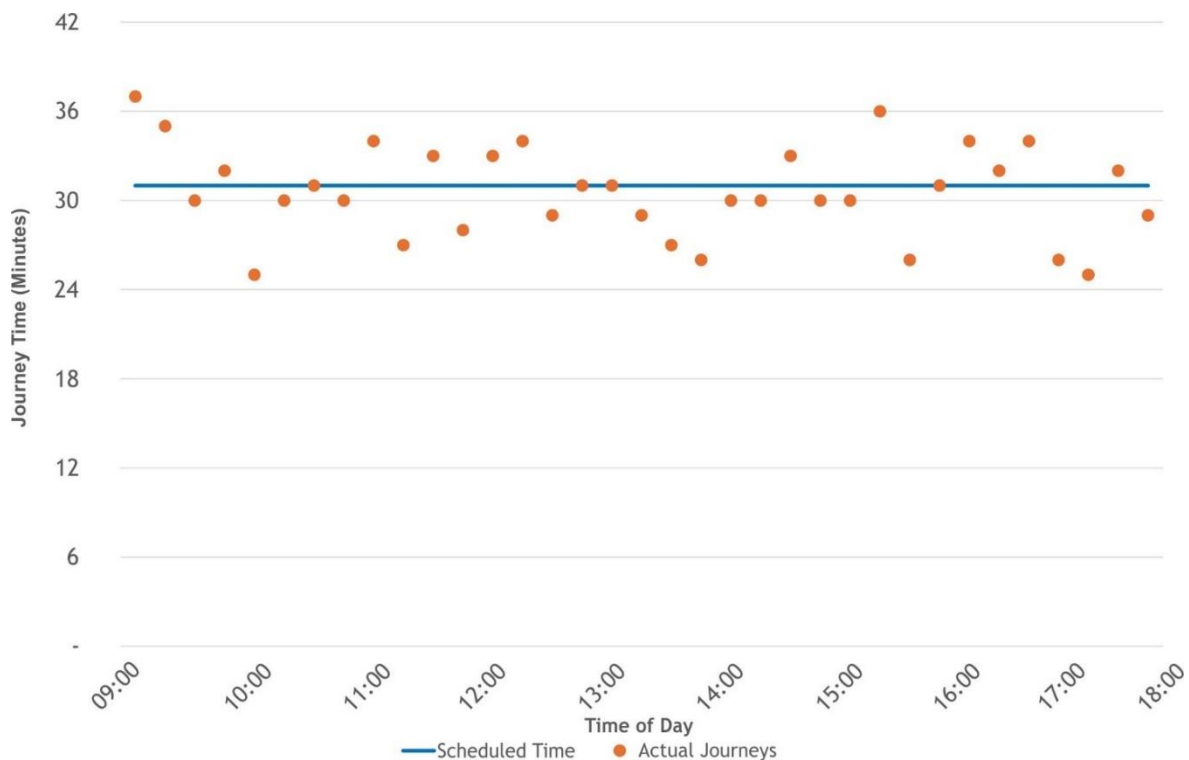
7.8 Longer Distance and Inter-Urban Services

- 7.8.1 Express coach and longer distance inter-urban bus services form a vital part of Scotland's transport network, providing good value services to, from and between city centres, airports, colleges and universities as well as tourist attractions. Like local bus services, the journey time is an important part of the consumer offer, and reliability and predictability is a key attribute in determining customer perceptions. Evidence from both Scottish Citylink and Stagecoach has provided examples of how increased congestion is affecting both the customer appeal and the viability of even the busiest services.

Edinburgh - Glasgow (Scottish Citylink Service 900)

- 7.8.2 This route operates 24-hours a day between Glasgow Buchanan Bus Station and Edinburgh Bus Station with a daytime frequency of up to every 15 minutes. It travels on the M8 motorway from Glasgow as far as Junction 2 and then switches to the A8 at Newbridge. It then continues through Corstorphine and Haymarket then Shandwick Place, Princes Street, Frederick Street, Queen Street and York Place.
- 7.8.3 The company reports that route east of Newbridge in both directions is particularly challenging for bus speeds and punctuality. In order to maintain the 15-minute headway and maintain an acceptable level of punctuality, they have found it necessary to add additional resources to the service. In 2024 an additional vehicle was added to the cycle, and a further vehicle was added from the service change which took place in October 2025. As the company points out, this has taken the total vehicle requirement from 13 to 15 in two years without providing any increase in service level or revenue earning potential. The timetabled end to end journey is typically 1 hour 23 minutes, with 22 minutes recovery at either end. However, Citylink says, “we are increasingly seeing all of that time being absorbed by traffic delays”.
- 7.8.4 At the eastern end of the route, it is 9.7 miles from Newbridge into Edinburgh Bus Station; the scheduled journey time is 31 minutes, giving an average speed of 18.8 mph. In reality, the actual average speed using a sample week in September 2025 was worse than this with some journeys dropping to an average speed of 15.7 mph in the peaks.
- 7.8.5 The chart at It will be seen that, of the 35 journeys recorded, 13 journeys exceeded their scheduled journey time whilst 18 journeys saw a faster journey than scheduled, and a further four were on time or within one minute of schedule. The average running time was 30.6 minutes, but the highest recorded was 37 minutes. It will be appreciated that, as the proportion of delayed journeys rises, it becomes increasingly difficult to provide a reliable service, so that resources have to be increased or frequencies reduced.
- 7.8.6 Figure 7-6 below shows the variability of the journey time across a sample day travelling inbound to Edinburgh. It will be seen that, of the 35 journeys recorded, 13 journeys exceeded their scheduled journey time whilst 18 journeys saw a faster journey than scheduled, and a further four were on time or within one minute of schedule. The average running time was 30.6 minutes, but the highest recorded was 37 minutes. It will be appreciated that, as the proportion of delayed journeys rises, it becomes increasingly difficult to provide a reliable service, so that resources have to be increased or frequencies reduced.

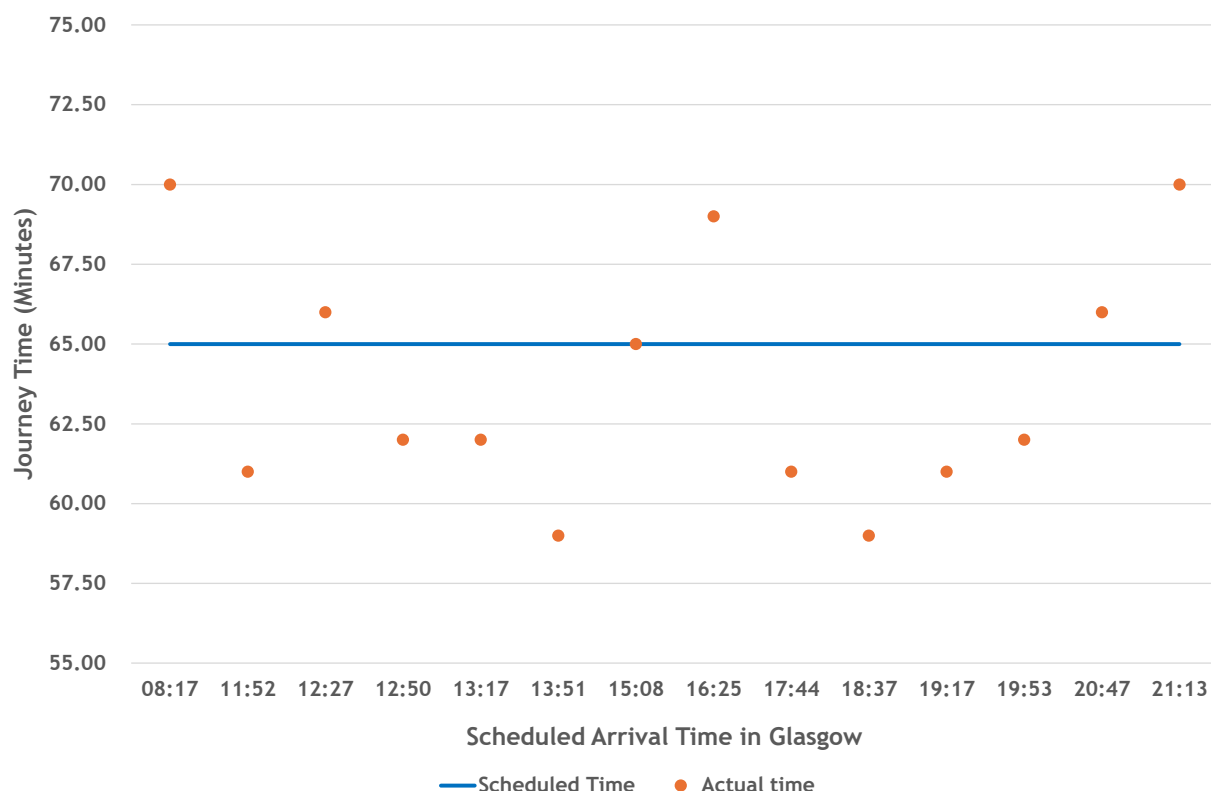
Figure 7-6: Real and timetabled journey time September 2025, Route 900
 Scottish Citylink, Newbridge to Edinburgh, Sample Day



Glasgow Motorway Congestion

- 7.8.7 Citylink’s intercity services into Glasgow rely on the M8 and M80 which can become heavily congested at peak times on approach to the city centre, especially where coaches leave the motorway at Junctions 15 or 16. Citylink points out that this situation would be improved greatly if hard shoulder running were facilitated for buses.
- 7.8.8 The scheduled daytime driving time from Perth (Broxden P&R) to Buchanan Bus Station is 1 hour and 5 minutes, which can comfortably be achieved off-peak. However, the running time shows great variability during the peaks. The company reports that the trip is routinely made in one hour but that this increases by up to nine minutes when traffic volumes are high. Measures to alleviate congestion would enable consistent completion of the journey in one hour, saving 13% of the journey time and improving reliability and predictability. This would improving the appeal of the service to existing and potential new customers, helping to deliver modal shift from private car.
- 7.8.9 As an illustration, the chart at Figure 7-7 below shows the running time between Perth and Buchanan Street in Glasgow on a sample day in September 2025. The journeys shown are on part of Citylink’s M9 route, which runs between Aberdeen and Glasgow. It will be seen that, of the 14 departures recorded, five exceeded the scheduled time, and eight were ahead of schedule. One was dead on time. It is noteworthy that that journeys that exceeded the allotted journey time were scattered throughout the day.

Figure 7-7: Real and timetabled journey time September 2025, Route M9
Scottish Citylink, Perth to Glasgow, Sample Day



Stagecoach Express and Inter-Urban Services

- 7.8.10 Stagecoach reports that no infrastructure improvements have been introduced during the last four years that would assist bus service reliability or attractiveness. In order to maintain reliability on six major routes, the company has revised stopping patterns and eliminated some lightly used stops. This reduces the appeal of the services and means less accessibility for residents in the areas no longer served.
- 7.8.11 Table 14 below lists some of the company’s key express and inter-urban routes to the east of the country, and shows how the average speeds achieved have evolved over the last four years. It will be seen that there has been some improvement on three of the routes, whilst one has remained unchanged. The remaining seven have become slower, by up to 8.8%.

Table 14: Stagecoach Express and Inter-Urban Services - 4 year speed change

Ser No	Route	2022	2023	2024	2025	4 yr change
99	St Andrews - Guardbridge - Leuchars - Dundee	29.75	30.60	30.09	29.15	(2.0%)
X24	St Andrews - Glenrothes - Halbeath P&R - Dunfermline - Kincardine - Cumbernauld - Glasgow	31.48	31.22	30.89	30.38	(3.5%)
X27	Kirkcaldy - Halbeath P&R - Dunfermline - Kincardine - Cumbernauld - Glasgow	24.65	24.49	24.29	24.06	(2.4%)
X54	Dundee - Cupar - Glenrothes - Halbeath P&R - Ferrytoll - Edinburgh	29.73	30.86	30.38	29.55	(0.6%)
X55	Dunfermline - Rosyth - Ferrytoll - Edinburgh	21.71	21.97	22.07	21.70	0.0%
X56	Perth - Bridge of Earn - Kelty - Halbeath P&R - Ferrytoll P&R - Edinburgh	26.01	25.82	25.75	25.67	(1.3%)
X58	St Andrews - Leven - Kirkcaldy - Dalgety Bay - Ferrytoll - Edinburgh	24.62	25.56	25.73	25.40	3.2%
X59	St Andrews - Cupar - Glenrothes - Halbeath P&R - Ferrytoll - Edinburgh	31.77	31.41	30.52	28.96	(8.8%)
X60	St Andrews - Anstruther - Leven - Kirkcaldy - Dalgety Bay - Edinburgh	25.78	26.03	26.45	27.54	6.8%
X61	Kirkcaldy - Halbeath P&R - Ferrytoll P&R - Edinburgh	22.97	23.09	23.12	22.77	(0.9%)
X7	Dundee - Arbroath - Montrose - Stonehaven - Aberdeen	29.80	29.20	30.73	31.71	6.4%

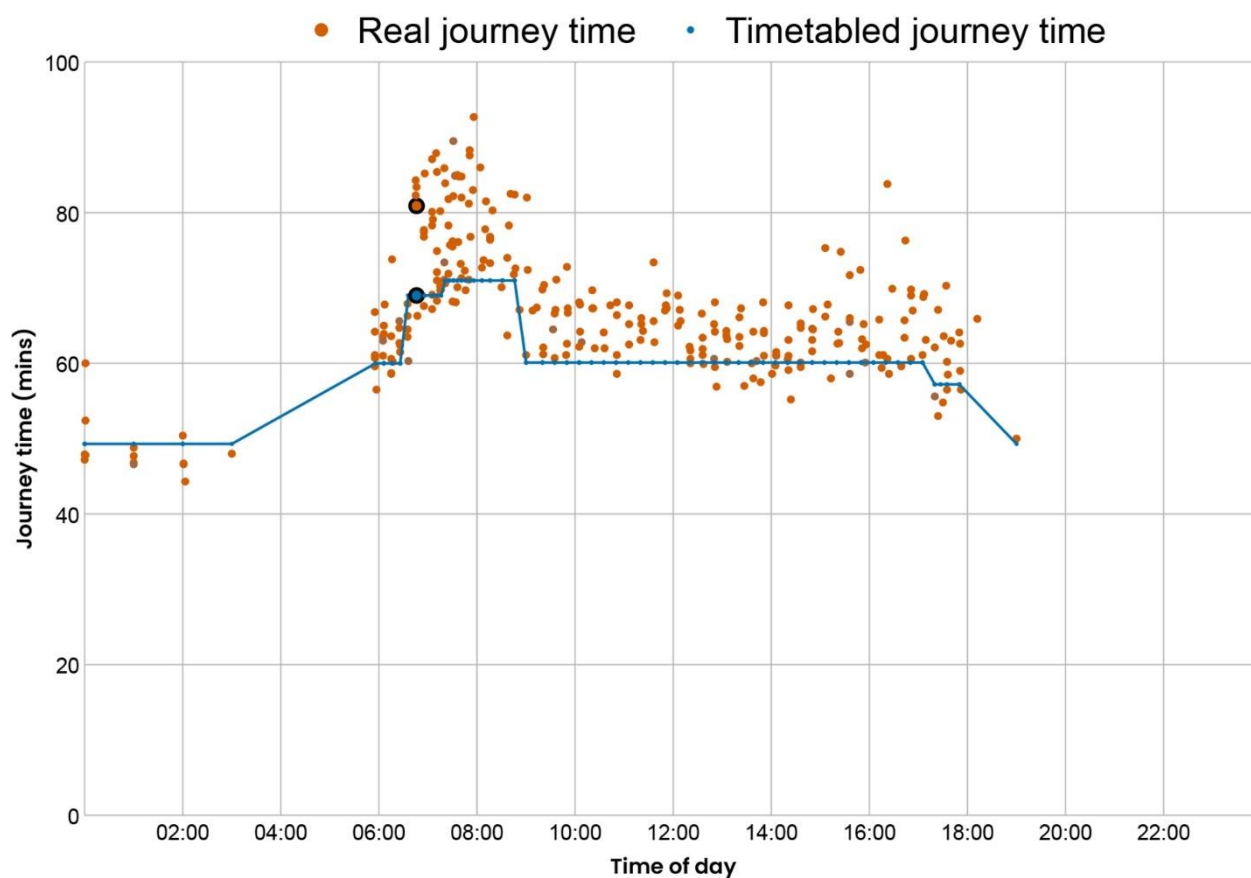
7.9 Journey Time Variability

- 7.9.1 In section 4.2 above, we considered the importance of reliability (the bus turning up on time) and predictability (the bus completing the journey in the advertised time). Both of these are affected by traffic congestion and other delays. As we saw, these factors can have a significant impact on public perceptions and hence on demand for services.
- 7.9.2 New research permitted by the availability of Bus Open Data enables us to illustrate the variability that occurs in dense urban areas. A firm called Open Innovations has developed a proof of concept, to assess bus reliability. At present, this is available for Yorkshire and Humber and the North West analysing a ten day period in September 2024. Full details can be found at <https://open-innovations.org/>. Two samples are provided in the graphs at Figure 7-8 and Figure 7-9 below.
- 7.9.3 The first considers route V1, which runs between Leigh and Royal Manchester Infirmary via Manchester city centre. It is part of Transport for Greater Manchester's Bee Network.
- 7.9.4 The timetable scheduled 50 minutes for the end-to-end journey, whilst the actual time taken is analysed by the software, and reproduced in Table 15 below. As can be seen, the longest time is almost double the shortest, and the median is 15 minutes greater than the scheduled time. The need for additional running time has since been recognised, and a new October 2025 timetable allocates between 65 and 70 minutes for the journey.

Table 15: Analysis of Actual Journey Time on Route V1

Measure	Time Taken (minutes)
Maximum	92.7
3rd quartile	71.1
Median	65.4
1st quartile	61.1
Minimum	44.3

Figure 7-8: Real and timetabled journey time September 2024, Route V1
Weekdays from Leigh, September 2024

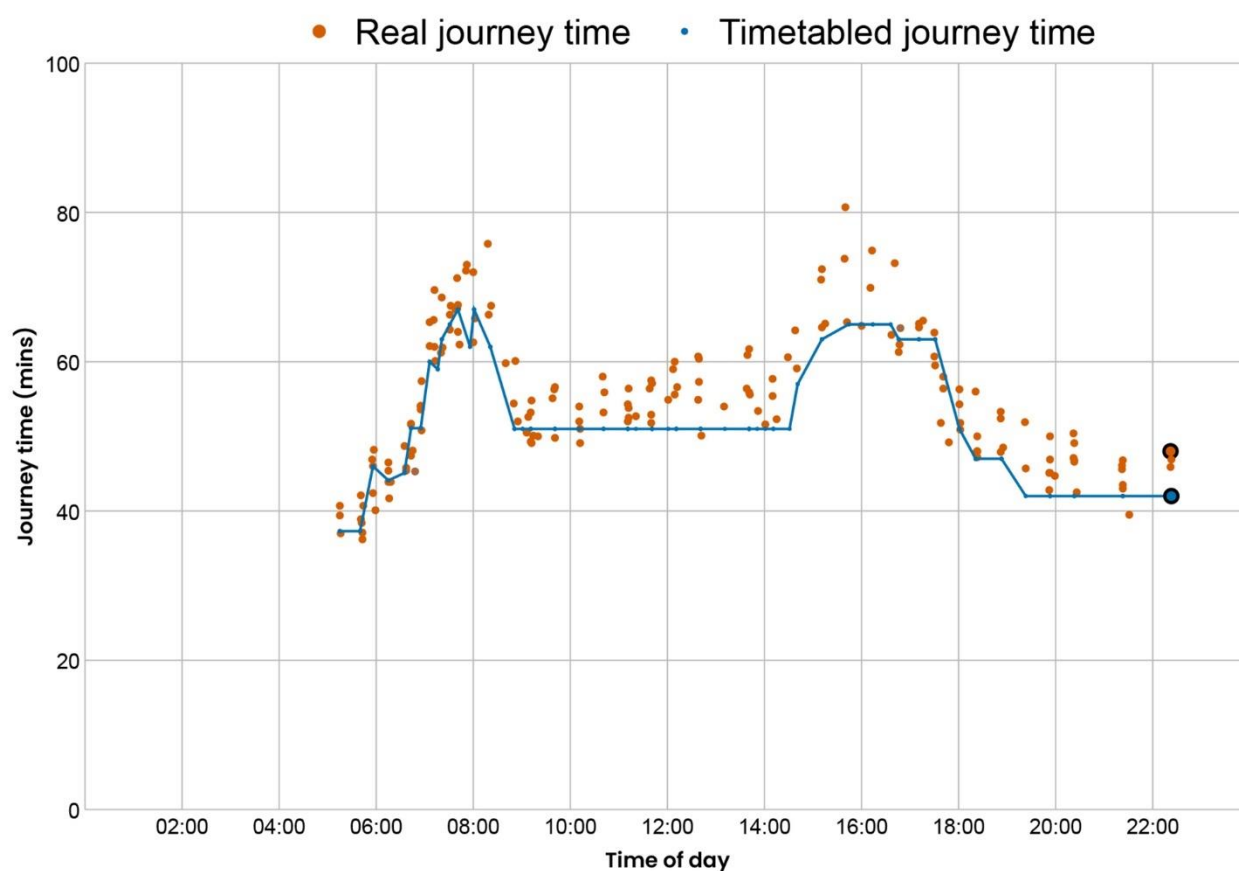


- 7.9.5 The second example is the flagship inter-urban service on route 36 between Leeds and Harrogate, run by Transdev's Harrogate Bus Company. The scheduled running time on the route for most of the day was 51 minutes, falling to as low as 37 minutes in the early morning and as high as 65 minutes during the evening peak hours. The daytime scheduled journey time has since been increased to 56 minutes (October 2025).
- 7.9.6 The actual times achieved are summarised in Table 16 below, whilst the graph of the journeys is shown in Figure 7-9 below.

Table 16: Analysis of Actual Journey Time on Route 36

Measure	Time Taken (minutes)
Maximum	80.7
3rd quartile	61.3
Median	54.0
1st quartile	48.0
Minimum	36.2

Figure 7-9: Real and timetabled journey time September 2024, Route 36
Weekdays from Harrogate, September 2024



8. Conclusions

8.1 Overall

- 8.1.1 This report has demonstrated the wide range of benefits that can be gained from enabling bus services to run at faster speeds.
- 8.1.2 For bus passengers, higher speeds offer:
- time savings on their daily commute
 - greater consistency and predictability for their journeys
- 8.1.3 For the wider economy, more efficient and less stressful journeys to work will help to improve productivity, whilst better and more efficient bus services, by making travel more attractive, will aid the revival of town and city centres.
- 8.1.4 For society at large, faster buses will reduce emissions, and improve local air quality. Making bus services more attractive will assist modal shift, helping to achieve Net Zero targets. Making buses more efficient will help to keep fares lower and enable higher service levels, thus improving the accessibility of the bus network.
- 8.1.5 Reduced traffic congestion and optimisation of road space allocation will aid economic efficiency and promote transport-oriented development, encouraging higher-density, mixed-use communities that are less car-dependent and more sustainable.

8.2 Cost savings

- 8.2.1 In chapter 3, we showed the overriding importance of scheduled speeds in determining the cost of providing our bus networks, whilst our worked example in Chapter 5 illustrated the cost savings that can accrue from improving speeds and reducing end-to-end journey times. Where a change in speed allows a service to be operated by fewer buses, cost savings of up to 3.5% per minute reduction can be achieved.

8.3 Demand growth

- 8.3.1 There is strong evidence that faster and more reliable bus journeys will increase passenger demand. Evidence suggests that:
- Every 1% saved on journey time is likely to generate 0.6% more patronage
 - Every 1% saved on door-to-door journey lengths (including stop access time and waiting time at bus stops) is likely to generate 1.1% more patronage.

8.4 Estimating Overall Benefits

- 8.4.1 Using the methodology pioneered by KPMG for CPT in 2024, we have assessed the current value of the bus network to Scotland's economy at £5.3 billion a year. We estimate that an increase of bus speeds by 8% could increase this value by 9.6% (£565 million) to £5.9 billion annually.

8.5 Case Studies

- 8.5.1 The case studies used in this report show both the benefits of bus priority measures and the disadvantages of slower journey times. In Edinburgh, Aberdeen and Portsmouth measures taken have resulted in reduced journey times which have in turn resulted in cost savings and patronage growth. However, there are also examples where a lack of positive infrastructure improvements has had a detrimental impact on operations such as reduced frequency, increased operating costs, and declining patronage.