FACTORS BEHIND RECENT PATRONAGE TRENDS IN BRITAIN AND THEIR IMPLICATIONS FOR FUTURE POLICY

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INTRODUCTION

At the time of the first 'Thredbo' conference, evidence was already available on trends in bus use in Britain, following introduction of deregulation outside London and Northern Ireland in October 1986, and the start of competitive tendering within London around the same time. By 1989 a broadly stable market was observed in London, but a noticeable drop elsewhere, especially in the other major conurbations, despite a greater growth in bus-kilometres run (an indicator of service frequency and availability) outside London (White 1991).

In broad terms, the same pattern may be seen today, London out-performing other regions of Britain, and especially the other major conurbations, in terms of ridership. In both cases, a more favourable trend may be seen in recent years, with a striking absolute growth in London, and a lower rate of decline in aggregate elsewhere. The other striking feature is a sharp growth in bus-kilometres run in London, compared with a net reduction elsewhere.

Both in London and other regions, a sharp reduction in real operating cost per bus-kilometre was attained, as a result of increased labour productivity, reduced overhead costs, and lower real wages. However, in recent years this has inevitably been reversed, in a tighter labour market.

Although the Transport Act 2000 made some changes in the legal framework, these have had little effect in practice, and the contrast between the regulated system in London, and deregulation elsewhere, remains very clear-cut. However, recent proposals, notably 'Putting Passengers First' (DfT 2006a) indicate some change of emphasis in proposed legislation, notably in making the introduction of quality contracts (broadly similar to the London approach) easier outside London, and reducing the conflict between competition policy and transport policy.

An underlying issue in bus policy debates is the extent to which the different regulatory framework in London has produced the results shown, or whether other factors are responsible. For example, the National Audit Office (2005) largely attributed the better outcome in London to differences in its 'delivery chain' for provision of services. Others point to the effect of the congestion charge introduced in 2003, and population growth. This paper examines components of the growth found in London, compared with other regions, and what lessons may be drawn for policy.

At the aggregate level, good quality statistical data is available in Britain on the key variables, such as ridership, bus-kilometres run, total revenue, unit costs and financial support. However, measurement of real fares changes is less precise, given the rapid change in market composition, notably the shift to almost wholly off-bus ticketing in London. Data is published for London, the metropolitan areas (covered by the Passenger Transport Executives), Scotland, Wales and the English regions (DfT 2006b, c). Further data for London is produced by Transport for London (2006a). However, at a more local level, wide variations are found, with some individual cities (such as Brighton, York, Oxford and Cambridge) reporting much better performance than the regions in which they are located, and in some respects comparable to London. Some reference will be made to those cases, but there are difficulties in systematically analysing trends in the same fashion as at the aggregate level.

PRINCIPAL FACTORS AFFECTING RIDERSHIP

Although some local factors will be unique, a number of common factors may be identified. Many of their can be quantified in terms of elasticities. The recent updating of the 1980 'Demand for Public Transport' (Balcombe et al 2004) provides the principal reference source. Major factors include:

- Real fare level. An overall short-run elasticity of about -0.4 is applicable, rising in the medium-term. In this paper the -0.4 value has been used, with a sensitivity test of -0.55 for the six-year period analysed.
- Service level. Bus users respond to changes in frequency, waiting time and other quantifiable aspects of service such as speed. In aggregate, the only consistent indicator available is total bus kilometres run, which in general acts as a proxy for average service frequency (however, it will also encompass effects of variation in length of operating day or week, and size of network). A similar short-run value of +0.4 may be assumed (likewise with +0.55 for the medium term). Speed and reliability may also be quantified, the latter in terms of waiting time effects, but a systematic data series is rarely available.
- Car ownership. Rising car ownership obviously has major effects, especially when a household moves from the 'O car' to '1 car' category, resulting in the loss of around 200-300 person trips per year to the bus system.
- Vehicle quality. Increased emphasis has been placed in recent years on improving vehicle quality. As yet, there is little firm evidence for ridership impacts, except in the case of low-floor buses, for which a growth of about 5% may be assumed, averaged from recent cases in Britain (although access of wheelchair users was the principal rationale for such designs, they form a very small proportion of passengers. However, the low-floor layout is also much more convenient for those with children in buggies, or shopping trolleys, which in turn stimulate ridership growth, especially in the off-peak). In the London case, rapid fleet renewal resulted in all buses being to low-floor layout by the end of 2006.
- Population change. Factors listed above will affect trip rate per head. A simple assumption would be that ridership would change pro rata to total population. This could be disaggregated by identifying trip rates for categories such as children, pensioners and working-age adults, then applying changes in those to total ridership.

In addition, many other aspects of service quality may be important, as highlighted in the recent report for the 'Ten Per Cent Club' (2006). They include the 'image' of bus travel, better marketing, passenger information, improvements in vehicle quality other than low-floor accessibility, and closer attention to the local market by management. However, it is important to disentangle such effects from those which can be more easily quantified, as described above. One approach is estimate the expected effect of quantifiable factors, the extent to which these ‘explain’ the observed ridership changes, and hence the net impacts (positive or negative) attributable to other factors.

OVERALL TRENDS IN BRITAIN

Within this paper, the period between the 1995/96 and 2005/06 financial years is examined, and especially that between 1999/2000 and 2005/06 (data for 2006/07 are not yet available at the time of writing).

Table 1 shows trends in bus passenger trips : note that ‘trips’ as reported by operators to the DfT correspond more closely to ‘boardings’, i.e. each time a person boards a bus it is regarded as the start of a trip. The Great Britain (GB) total rose by 8% between 1999/2000 and 2005/06, but this was a result of a 40% growth in London offsetting an aggregate 5% decline elsewhere. However, Scotland and Wales also showed small increases over the period. Net decline was greater in the PTEs, at 8%.

Table 1: Trends in bus passenger trips 1995/96 to 2005/06

Region	1995/96	1999/2000	2005/06
London	1155	1294	1810
English PTEs	1358	1213	1117
Rest of England	1303	1297	1198
Scotland	506	455	477
Wales	130	117	118
GB total	4489	4718	4719
GB excluding London	3296	2941	2909

TRIPs are shown in millions.

Source : DfT (2006c), table 1.

The London market at the start of the period being discussed

London already displayed a high level of bus trips per capita. While inner London clearly has markedly different characteristics from most other parts of Britain in terms of high population density and low car ownership, it is noteworthy that outer London also displayed a high level of bus use vis a vis other similar areas. The London Area Transport Survey (LATS) conducted in 2001 provides a useful comparison, since it also covered some of the adjoining built-up areas outside the administrative area of Greater London as such (i.e., in the deregulated zones). By comparing household trip rates from the outer London Borough of Harrow, with Watford (both having very similar population densities, car ownership levels and bus-km per head of population) it can be shown that the bus trip rate within Greater London was about three times as great. This was particularly noticeable in respect of non-work/education travel, and may be associated with the simpler network structure, greater stability of provision, much better evening and Sunday services, and a simpler fare structure (Hendon 2006, White and Hendon 2007).

Taking 1999/2000 as a 'base year' it should noted that London at that stage was operating with virtually no financial support other than concessionary fares compensation. A very simple fare structure, with just two levels of cash fares, and extensive off-bus ticketing, was already in place. This period was prior to the establishment of the Greater London Authority, Transport for London, and an elected Mayor of London, public transport policy being determined by a board appointed directly by central government. Almost all London services had been privatised (apart from a residual 'East Thames Buses' operation retained as an in-house provider) and services allocated through competitive contracting. Elsewhere, most of the bus companies had been privatised (although a number of local authority-owned operators still remain today in some urban areas), and the majority of bus-kilometres were provided commercially (about 84%).

It should also be noted that the bus in London plays only a limited role for radial travel into the central area, which is dominated by the heavy rail systems (the Underground, and the Train Operating Companies). In the morning peak (0700-1000) in 1999, only 6.3% of trips by users of all modes crossing the central area cordon were made by bus occupants. By 2005 this had risen to 10.8%, partly as a result of the congestion charge (discussed further below) but rail remained dominant at 76.6% (derived from TfL 2006a, table 1.4.1). Conversely, in 2005/06, only 24.2% of all bus journey stages involved zone 1, being either wholly within that zone or between and other zones, mostly zone 2 (from TfL 2006a, table 1.2.1). 'Zone 1' is the central area as defined in the Travelcard system, whose boundary is similar to that used for the peak cordon counts.

Trends in bus-kilometres run

Bus-kilometres run are shown in Table 2.

Table 2: Trends in bus-kilometres run 1995/96 – 2005/06

Region	1995/96	1999/2000	2005/06
London	353	362	465
English PTEs	695	661	547
Rest of England	1102	1060	1086
Scotland	350	363	357
Wales	123	123	115
GB total	2623	2670	2570
GB excluding London	2270	2308	2105

Units : millions   Source : DfT (2006b) table C.

As in the case of passenger trips, London displays strong growth, increasing by 28% between 1999/2000 and 2005/06, largely offsetting decline elsewhere, especially in the PTE areas where there was a reduction of 17%. The ridership growth in London was stronger still, implying an increase in average load per bus, also confirmed by TfL data as rising from 12.7 in 1999/2000 to 14.7 in 2005/06 (TfL 2006a, table 2.3).

Bus-kilometres as such are not an ideal indicator of service supply. They do not show changes in capacity as such (which will also be affected by vehicle size), nor the temporal distribution. For example, elimination of closely-duplicated daytime services of competing operators on trunk routes may have little effect on waiting times, whereas reduction or introduction of evening or Sunday services may represent a radical change in provision. It is noteworthy that in the London case, the greatest growth in bus use been in the evenings, and at night, approximately 65% and 100% respectively between 1999/2000 and 2005/06 (derived from TfL 2006a, chart 2.3.1).

Trends in real fare levels

Turning to real fare changes, data is somewhat more ambiguous. An index is produced by the DfT (1995 = 100), but quality of data for bus use lacks the detail that may be found in ticket types for railways, for example, which enabled the former Strategic Rail Authority to establish a weighted index for rail fares, explicitly sub-divided by class, three operator groupings, and regulated/unregulated fare categories (Office of Rail Regulation 2006, pp 61-64). As proportions of bus passenger types change - for example, an increase in free concessionary travel, or a shift from high cash fares to lower costs using off-bus tickets, a marked change in average fare paid can occur in a short period.

An alternative approach is to estimate average real revenue per trip received from passengers as such, by taking total passenger revenue received by operators, and deducting from this the compensation paid on behalf of concessionary travellers, then dividing this by trips made to give average real revenue per trip. While involving some crude ‘averaging out’ - for example, between those travelling free and those paying high cash fares - it nonetheless provides an a consistent and explicit indicator.

Table 3 shows the estimates from these sources, together with an indication of real fares per passenger-kilometre produced by TfL.

While broad trends from the different indicators are similar, the revenue per trip indicators show a lower change than the DfT index – for example, in London a drop of 9% between 1999/2000 and 2005/06, compared with a rise of 3% in the DfT index. For the GB total, the index over the same period shows a growth of 10%, but real revenue per trip rises by 4%. A shift toward off-bus ticketing, and growth in free concessionary travel, are the likely explanations. The TfL revenue figure indicates a sharper drop in London, 15% over this period, than either of the other sources.

Table 3: Trends in real fares 1995/96 – 2005/06

Region	Data source	1995/96	1999/2000	2005/06
London	DfT index	100.4	105.0	107.8
London	Revenue/trip (p)	44.8	48.0	43.7
London	TfL revenue per pass-km (p)	16.4	16.5	14.1
PTEs	DfT index	100.8	111.6	128.9
Rest of England	DfT index	100.4	109.3	128.1
Scotland	DfT index	100.1	112.3	111.6
Wales	DfT index	100.1	109.5	123.7
GB total	DfT index	100.5	109.3	120.6
GB total	Revenue/trip (p)	55.9	63.4	66.4

Sources : DfT (2006b) Table G for the fares index; tabulations provided direct by DfT for total revenue; and DfT (2006c) Table 5 for concessionary fares compensation.

Observed and Expected Ridership Changes

It could be argued that much higher levels, of financial support in London (discussed further below) are a major explanation of the ridership growth. In effect, in a market which is relatively inelastic in the short term, one can ‘buy’ ridership growth through financing lower real fare levels than would otherwise be the case, and higher service levels, which will produce growth in ridership, albeit not sufficient to cover the extra costs.

In considering what changes in ridership might be expected, prior to considering other factors, it is useful to estimate the expected effect of bus-kilometre and real fare change. Short-run elasticities of -0.4 (fares) and +0.4 (bus-km) have been applied in Table 4.

In the London case, it is clear that growth is much greater than would be expected from the real fares and service level changes alone, these accounting for only one quarter of the growth on the DfT fares index basis, up to almost half on the TfL fares data.

Table 4: Actual and Expected ridership changes due to real fare and service level changes 1999/2000 – 2005/06

Region	Basis of real fare Change	Actual	Expected
London	DfT index	+39.9	+10.2 (+14.0)
London	Revenue/trip	+39.9	+14.9 (+21.5)
London	TfL fare per km	+39.9	+18.7
PTEs	DfT index	- 7.9	-12.7 (-17.2)
Rest of England	DfT index	- 7.6	- 9.3 (-12.6)
Scotland	DfT index	+ 4.8	- 0.4 (-0.6)
Wales	DfT index	+ 0.9	- 7.7 (-10.4)
GB total	DfT index	+ 8.3	- 5.6 (-7.4)
GB total exc.London	Revenue/trip	+ 8.3	- 4.3

Units : percentage changes on a base of 1999/2000

Data shown in the ‘expected’ column is based on short-run elasticities of -0.4 and +0.4 for real fares and bus-kilometres respectively, with data in brackets on the medium-run values of -0.55 and +0.55 respectively.

Other regions also show a better result than might be expected, although not to the same dramatic extent as London. In Wales and Scotland the likely principal explanation is the introduction of region-wide free concessionary travel for pensioners during this period. For example, in the case of Scotland using the real revenue per trip indicator, expected growth using medium-run elasticities is 5.1% instead of -0.6 on the DfT index, a better match with the observed outcome of +4.8%. In the PTEs, while a decline is estimated, it is not as great as that observed. There may also be some general factors helping to increase public transport usage in Britain additional to those normally estimated through modelling processes. This difference has also been observed in the case of rail, and to greater extent.

Applying medium-run elasticities of -0.55 for fare and +0.55 for service level produces somewhat greater change – in the case of London, expected growth rises to 14.0% on the DfT fares index and 21.5% on the revenue per trip indicators.

Calculations above are on a basis on simple constant elasticities, in which expected change in ridership is derived from multiplying percentage change in the variable by the elasticity coefficient, changes being compounded for the effects of real fares and bus-kilometres run. Using arc elasticities (as defined in Balcombe et al, p47) produces only very small differences in the ‘expected’ changes (at most, 0.8 percentage points - in the case of London).

Exogenous Factors

One would expect population change to affect ridership as described above. Nationally, population grew by 2% between 2001 and 2005, but in the London case by 3%, and by 4% in inner London (TfL 2006a, table 6.1.1).

Car ownership growth has been very low in London, the level per capita rising from 0.324 in 1996 to 0.328 in 2004 (derived from TfL 2006a, table 3.4.1) - note that total cars in the London area have risen slightly faster, due to population growth. This contrasts with much greater growth nationally: total cars licensed rose by 13% between 1999 and 2004, and households with one or more cars rose from 72% to 75% (DfT 2006d, tables 9.1 and 9.14). Growth was especially strong in some of the regions which traditionally had low car ownership, such as the North East. In such cases, many of the new cars represented the first car in previously non-car households, with particularly marked effects on bus ridership.

Hence, in the London case, car ownership trends do not represent a ‘growth’ factor as such, but rather the absence of a negative factor.

Generally speaking, car ownership is seen as an exogenous factor, driven primarily by population growth, real prices and rising real incomes, rather then being influenced by public transport service provision. However, a noteworthy feature in the London case is the low level of two-car households – 18% in 2004/05, compared with 31% nationally. It could be argued that the very extensive public transport network (notably at evenings and weekends as well as the working day) enables a lifestyle without the car to be much more feasible than elsewhere. However, it would be very difficult to disentangle this factor from other constraints on car ownership, such as limited parking provision (both at home and other destinations).

Effects of the congestion charge

Introduction of the central London congestion charging zone in February 2003, following election of a Mayor firmly dedicated to this policy, may be cited as an obvious contributory factor in bus growth. It encourages both a direct diversion from car to public transport and, by reducing congestion, enables improved public transport service quality. For example in 'Putting Passengers First' (DfT 2006a) it is cited as a major factor in bus use growth.

In practice, it effect is much smaller vis a vis other factors already discussed. Monitoring by TfL of movements across the boundary of the zone indicates a growth of about 120,000 bus passengers per day, both directions combined, at January 2005 (TfL 2005). The charge does not apply at bank holidays, or over the Christmas/New Year period, so assuming a year of 250 days (50 weeks) this corresponds to about 30 million passenger trips per year, only about 6% of the net increase in total ridership. Furthermore, it should be borne in mind that additional services crossing the boundary were introduced shortly before charging came into effect (two of which pass the writer's office). Their effects on ridership have already been included in the bus-kilometre calculations above.

Having said this, there may also be an element of growth for trips wholly within the charging area, since buses are now more attractive for short trips, due to faster speeds and shorter waiting times. Their door-to-door journey times become potentially attractive to some making short trips by underground, for example, especially where access to and from deep level 'tube' platforms is included.

The congestion charging zone initially had a tightly-drawn western boundary, but it was extend further west to include much of Kensington in February 2007. Car use has fallen as expected, but impacts on bus ridership are not yet clear.

Despite success of the congestion charge in reducing car movement and improving traffic speeds, its financial impact is limited. Greater the expected reductions in car movement meant that less revenue was obtained, and high operating costs using the ANPR system have resulted in only a small surplus being made (Prud'homme and Bocarejo 2005). Hence, the contribution to the cost of supporting the improved bus network from congestion charge revenues is quite small.

Quantified components of growth in London

Drawing together the components discussed so far, we can estimate the major elements of the ridership growth between 1999/2000 and 2005/2006 as follows:

54%	Compound effects of lower real fares and higher aggregate service levels, using real revenue per passenger and medium-run elasticities
up to 6%	Implementation of the congestion charge
up to 5%	Complete low-floor fleet
3%	Rising population (on pro rata basis)
Negligible	Changes in car ownership per head

This leaves about 32% still be 'explained'. Possible contributory factors are:

- Greater stability in patterns of service provided (note the Harrow v. Watford comparison made earlier).

- More comprehensive coverage of service, by time of day and day of week. In addition to evening, Sunday and all-night services, it is also noteworthy that London provides a consistent and fairly high level of service on most public holidays, with the exception of Christmas Day. Conversely, even in other large conurbations in Britain, levels of service in the Christmas/New Year period in particular are low and inconsistent (operators may not be willing to run their normal levels of commercial service on these days, and the ability of PTEs and local authorities to fill the gaps by tendering varies). This may affect attitudes toward bus use and car purchase.
- Very extensive bus priority provision, in the form of bus-only nearside lanes, priority at junctions, etc. The ability of TfL to initiate such measures London-wide is an important benefit, although it should be noted that implementation at local level also requires co-operation of the Borough concerned which in some cases may not be forthcoming to the extent TfL would wish (for example, Ealing and Barnet).
- Comprehensive passenger information at stops. A single, co-ordinated network makes it easier to provide consistent up-to-date information. Use of 'spider maps' has enabled clearer information to be given to users. It is noteworthy that in the national ratings given by bus users for service quality, London is noticeably higher in this respect, at around 74% compared with 65% in metropolitan areas (DfT 2007a).
- Simplified fares, with almost complete elimination of cash payment on buses. The latter has applied for some time within the central area and the whole length of routes run by articulated single-deckers. Over the network as a whole, only 3% of passengers now pay cash ('Transit' 20 April 2007, p2). Even outside the central area, the proportion of cash fare payment is now very low, around 5%. Marginal boarding times per passenger on suburban routes in 2004, even prior to the extent of non-cash fare payment now seen, were about 2 seconds, and on the articulated routes (with parallel boarding through all three doorways) under 1 second (Lizon 2004, pp58/59). This process has been accelerated by the 'pre-pay' version of the Oyster smartcard, enabling occasional users to travel at markedly lower prices than full cash fares. In other parts of Britain where a substantial proportion of cash fares is still found, average boarding times are in the order of 5-8 seconds. The effect on a morning peak run picking up, say, 60 passengers with a saving of 5 seconds per passenger, is a total time saving of 300 seconds (6 minutes), i.e. of the same order as the effects of bus priorities. Assuming a total in-vehicle time of 60 minutes for the one-way journey, this is a reduction of 10%. Elasticities in Balcombe et al (2004) for in-vehicle time of about -0.5 would suggest a growth of about 3% for this reason. Furthermore, regularity of service is improved, since running time varies less strongly with total numbers boarding.
- Ease of interchange. Considerable improvements have taken place in signing and layout. Extensive use of tickets as such travelcards and Oyster pre-pay reduces or eliminates the financial penalty imposed by interchange, enabling users to select the most appropriate route through the network – for example, taking the first bus to arrive at stop and interchanging en route rather than waiting for a less frequent through service. However, this could cause some exaggeration of the number of linked trips (see later comment).

Trends on the Underground

Use of the Underground network in London has remained broadly stable in recent years, in contrast to sharp growth from the early 1980s. This growth continued in the first part of the period studied in this paper, rising from 784 million trips in 1995/96 to 927 million in 1999/2000 (by 18.2%). However, after reaching 970 million in 2000/01, a broadly similar level has been retained, comprising 971 million in 2005/06 (TfL 2006a, table 2.4). Constraints on available capacity, especially in the peak, are one factor (planned expansion of bus services associated with the introduction of congestion charging occurred even along corridors served by the underground, such as Marylebone Road/Euston Road, for this reason.

However, Underground use is strongly associated with peak travel to and from the central area, in turn linked with employment trends. Travel by all modes (including private) into the central area in the morning peak, which fell from 1108 million in Autumn 2000 to 1.064m million in Autumn 2005, within which the Underground/Docklands Light Rail total fell from 0.383 million to 0.342 million, i.e. by 0.041 million (i.e. almost equal to the net total drop of 0.044 million) (TfL 2006a, table 1.4.1). The bomb attacks of July 2005 undoubtedly affected off-peak traffic for some time, reducing the 2005/06 total. However, growth has since resumed in 2006/07 to an estimated all-time high of about 1,000 million.

It could be argued that some of the bus growth has simply represented a transfer of the growth trend previously associated with the Underground. So far as off-peak traffic is concerned, there may be some validity in this. However, by journey purpose the Underground is dominated to far greater extent than bus by the adult journey to work and radial trips to the central area, in which the bus market share is small. As already stated, the majority of bus use and growth is outside the central area, but only about 21% of underground trips do not involve zone 1 (from TfL 2066a, table 1.2.1). While some bus routes outside the central area do parallel underground lines, this would only apply to a very small proportion of the total bus network.

Trends in costs

The local bus industry in general secured radical changes in total costs per bus-kilometre (including depreciation and interest charges), falling by about 40% between 1985/86 and 1994/95 both in London and elsewhere (White 2005). However, this may not have been sustainable, given the low wages and poor working conditions which resulted. Some increase in real terms was probably inevitable: unit costs are given in DfT 2006b, table 1. National average operating costs per kilometre rose (at 2005/06 prices) from a low of 106 pence nationally in 1999/2000, to 129 pence in 2005/06 (i.e. by 22%). In London unit costs are inevitably higher (due to the labour market and congestion), being at 189 pence in 1999/2000, rising to 238 pence in 2005/06 (i.e. by 26%). In the PTE areas, the rise was from 115 pence to 130 pence, i.e. 13%, and broadly stable levels were found elsewhere. It should be noted that as bus-kilometres rose in London but fell in most other areas (see table 2) this would itself push up the national weighted average unit cost.

The rise in London is partly due to an increase in wage rates needed to retain existing staff, but also to a ‘supply curve’ effect, as substantial service expansion would require a higher wage level to be offered. Costs have also risen due to the very modern fleet now operated (TfL specify modern low-floor vehicles in their contracts, but operators are generally responsible for the purchasing or leasing costs to meet this – hence such costs will be reflected in contract prices). The use of Quality Incentive Contracts has helped to raise service quality, but can involve additional costs (for example, an extra bus and crew to improve reliability in maintaining a given frequency).

In addition to enabling low-floor access for all users, the very modern fleet now operated has also produced a sharp drop in emissions per bus-km and per passenger-km, since all vehicles now meet Euro II as a minimum standard, and have particulate filters. Between 1998 and 2004 total particulate emissions in tonnes fell from about 220 to about 50 tonnes, and in terms of kg per million passenger-km even more sharply (due to growth in passenger volumes), from about 510 to about 75, i.e. about 85% (Weston 2004).

It should also be borne in mind that a competitively-contracted network has remained in force throughout this period – hence, one would assume that operators able to offer significantly lower costs within the London labour market for a specified service quality would have made successful bids accordingly. A partial constraint does exist in that obtaining sites for new operating depots is difficult - this may have given an advantage to incumbent operators who took over existing depots when London Buses' operations were privatised, and it is noteworthy that many changes of operators at the end of contracts are between existing incumbents in the London market, rather than to newcomers.

Although unit cost per bus-kilometre has risen substantially in London in recent years, average load carried per bus has grown (see above), so that unit cost per passenger trip has risen less rapidly, from 50 pence in 1999/2000 (at 2005/06 prices) to 61 pence in 2005/06 (DfT2006c, table 1), i.e. by 22%. This remains lower than the average in other parts of Great Britain, of 76 pence, due to the higher number of boardings per bus-km run.

Public expenditure on buses in London

The combination of growth in unit cost per bus-km and rising output resulted in a sharp increase in total costs, from about £660m in 1999/2000 (at 2005/06 prices) to about £1110m in 2005/06 (derived from DfT 2006c, table 1), i.e. by £450m, or 68%. This compares with a revenue growth (net of concessionary compensation) from about £620m to £790m (or £170m) in the same period (derived from DfT 2006c, table 3; and revenue data supplied directly). Hence the net financial position has worsened by about £380m. A somewhat larger increase in public transport support to buses in London is indicated in DfT data, from £12m in 1999/2000 (at 2005/06 prices) to an estimate of £638m (DfT 2006c, table 5). This may include other items of expenditure, such as central administration, marketing, etc. If the £150m concessionary fares reimbursement in 2005/06 (DfT 2006c, Table 3) is added in, net public spending is approximately the same as revenue from users. This is not uncommon in Europe as a whole (Vivier 2006, table 28), but much higher than elsewhere in Britain.

It is noteworthy than the bus expenditure is almost wholly on 'current' items in terms of public spending (albeit the capital cost of new vehicles will be reflected in the contract prices charged by operators). This contrasts with the emphasis on capital spending elsewhere in Britain, as funded through the Local Transport Plan system. As Emmerson has commented, this might indicate the relative success of current spending in achieving strong outcomes in terms of ridership: indeed, capital spending per head over the last three years in London at £35 is lower than in the Metropolitan areas at £45 (Emmerson 2007). Conversely, in other areas it is easier to obtain grants for capital spending than current spending, even in rural counties.

The growth in public spending on buses in London was largely responsible for the national increase in this figure, from £330m in 1999/2000 (at 2005/06 prices) to £1029m (estimate) in 2005/06 (DfT 2006c, table5).

While the bus expenditure is undoubtedly high, it benefits are far more evident than the very high costs of renewal and upgrading of the underground system under the Public Private Partnership (PPP) system. Here, 30 year contracts have been let, to just two major consortia

(Tubelines and Metronet), which contrasts with the far greater number of contractors in the bus sector. In contrast to the very rapid bus fleet modernisation, large growth in service output, and ridership, there is at yet little to show for the underground expenditure. Indeed, the less successful contractor, Metronet, has run into severe financial difficulties, with an estimated potential overspend (at May 2007) of about £750 million over several years, i.e. of the same order as total annual public expenditure on bus services.

Some other factors in statistical interpretation

As indicated earlier, the London bus market differs from other large cities due to the major role of rail on the principal corridors to the central area. Hence, many bus trips are quite short, being local to suburban areas or within the central area. In addition, there is more bus-to-bus and bus-to-rail interchange in London than elsewhere, in part due to the complexity of the network, and also to ease of interchange for those passengers holding travelcards or concessionary passes, which incur no financial penalty on transfer.

The effect is that ‘trips’ when measured by operators as ‘boardings’ may overestimate the apparent trip rates in London vis a vis other cities. However, although important in considering cross-sectional comparisons, this does not seem to have much effect on analysis of trends.

TfL themselves estimate that 4.9 million bus boardings per day occurred in 2005, but only 3.4m trips (a ratio of 1.44) where bus was used as the main mode, i.e. excluding further bus boardings in the same trip, or where bus was used as a feeder to rail (TfL 2006a, tables 1.1.1 and 1.1.2). However, this ratio changed little between 1999 and 2005 so that the trends on both indicators were similar. DfT data, using the National Travel Survey, NTS (which distinguishes between boardings and stages; the latter being that part of the journey where one mode is used) gives a similar picture, a ratio of 1.18 boardings to stages within the bus mode in London (for 2002 to 2005) and 1.09 elsewhere (DfT 2006b, page 35). The NTS itself also indicates a lower average trip length for buses in London at 3.8 km in 2005 compared with 4.6 for local buses elsewhere in Britain (DfT 2006e, table 3.2).

In terms of the distribution of benefits through increased public spending on buses in London, it is noteworthy than bus use tends to be much more concentrated among the young, elderly and lower-income groups than rail use, which tends to be focussed on working-age adults and groups of higher income than buses. Hence, social effects could be seen as progressive, by increasing mobility within this group, who generally display lower trip rates. However, a somewhat uneven distribution may be seen, in that the elderly and young benefit from free travel, while lower-income working-age adults pay full-rate fares. Some lower-income groups have also been slower to switch to Oyster smartcards, which has resulted in them making high cash fare payments, but this has recently been offset by the offer of 100,000 free Oystercards without the usual advance deposit.

APPLICATION OF LESSONS FROM LONDON TO THE REST OF BRITAIN

As indicated earlier, it is naïve to attribute all of the growth in bus use in London to factors that may be easily replicated elsewhere in Britain. However, even allowing for the effects of greatly increased public spending enabling lower real fares than would otherwise be the same, and much higher service levels (and hence ridership growth), the congestion charge, some population growth, and negligible car ownership growth, we are still left with a substantial proportion of the observed growth due to other factors.

The government has now produced a draft Bill and supporting documents, which would reform bus deregulation outside London, making it slightly easier (although still difficult) to introduce quality contracts (approximately equivalent to the London tendering system) and also changes in the application of competition rules, which currently hinder inter-operator co-operation in ticketing and timetabling. In this respect London could be seen as fortunate in avoiding the attentions of the Office of Fair Trading and the Competition Commission in respect of its bus service provision, enabling a simple system of comprehensive ticketing, route planning and passenger information to be provided.

I suggest that the elements of the London case most readily transferable to other areas would be:

- greater stability of service, avoiding frequent network and timetable changes, and continuity of provision through the year (including public holidays)
- a simple fare structure, associated with a very high proportion of off-bus ticketing, which in turn improves speed and service reliability.
- comprehensive evening and Sunday services, rather than limiting good frequencies to the Monday- Saturday daytime period
- comprehensive passenger information at stops, assisted by real time displays, etc.

It is noteworthy that some of the more progressive companies in the deregulated regions also display similar features, such as the flat fares in Brighton & Hove, and reintroduction of commercially-registered evening and Sunday services by operators such as TrentBarton and Harrogate & District, the latter reporting a five-fold growth in evening ridership after a doubling of vehicles in service at that time (Fearnley 2007).

The proposed Local Transport Bill and associated documentation sensibly propose to avoid a 'one size fits all' approach, but to offer a range of opportunities for quality contracts or strengthened quality partnerships. What is important from the research angle is that a meaningful sample of each type of scheme is developed, and monitored systematically, so that lessons may be drawn, rather than prolonging an argument about whether the differences in London are due to unique factors or to elements which can be replicated. For this purpose, it is essential to avoid extreme situations (such as cases where there have been particularly unstable patterns of service) since they will not be representative of the broader picture, and hence results from them will be of little value in guiding future policy. The very comprehensive nature of statistics available in London – used extensively in this paper – is currently not matched elsewhere – and introduction of more comprehensive data collection in those areas where new policies may be tried is essential for effective monitoring to take place.

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