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"Overall Impacts of Local Bus Deregulation in Britain"

by

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1. INTRODUCTION

The deregulation of local bus services in Britain since October 1986, under the Transport Act 1985, may be seen as a grand experiment, to test a theory (broadly speaking, that of the efficiency of the 'free market' economy).

However, the British 'experiment' lacks an explicit control case. Not only are many variables being changed at the same time (such as the method of licensing, structure of the industry, and role of local authorities), but such changes are being made in an industry to which other important, external factors also apply - such as the form of the labour market, changes in land use, and so on.

To some degree, however, London can be taken as a control case, since although radical changes have occurred there also, they differ substantially from the deregulation applied to the rest of Britain. Under the London Regional Transport Act 1984, control of bus and underground services in London passed to central government. A degree of regulation remains, but a competitive tendering system has been introduced.

Extrapolating from previous aggregate trends in Britain is of limited assistance, since these themselves displayed marked variation in the period leading up to deregulation. Other countries cannot be taken readily as 'control' cases, due to the very different circumstances already applying before deregulation occurred in Britain. In this paper, we use well-established elasticity coefficients in a time-series model to estimate the anticipated effects on ridership of the actual changes which occurred in real fares and service levels. These are compared with the actual outcome. Changes in productivity and financial performance are also examined.

A scientific experiment is also distinguished by the ability to measure the effects of change in the crucial variable(s) through use of instrumentation under the supervision of the experimenter. In the bus industry, data collection has improved in some respects, notably through use of electronic ticketing systems, but remains highly inconsistent both over time and space. However, even though data available to management has improved, the degree of disclosure to others has greatly diminished. Under a competitive market, operators are naturally unwilling to supply data on ridership, revenue or costs, that may fall into the hands of potential competitors.

The situation is aggravated by an endemic degree of secrecy in British society and government, which appears to be increasing. Although reasonably good data

is now available for each sector of the industry up to 1987/8 inclusive, no detailed published data is available for individual operators or areas (except London Regional Transport), even those remaining in public ownership.

Added to these problems is the short time since deregulation occurred. Many short-term effects are still evident, and it is likely, for example, that some examples of intense competition, and probable over-supply, between existing operators in certain areas will result in one or other giving way, as has already occurred in some instances.

There is, however, one advantage in the political nature of the 'experiment'. It is intended by the present government as a permanent policy change, and seen as such by operators. Hence, the industry is responding in a fashion which may be seen as realistic. A short-term experiment (as with some specific types of services in the past), being seen as only temporary, may fail to elicit a meaningful response.

In this paper, the broad national picture will be drawn, with specific examples from studies we are conducting, including that of intensive urban minibus operations in Britain as a whole.

Although certain issues such as the degree of competition, changes in industry structure, extent of contestability, etc. are of interest in their own right, it is surely in the overall performance of the industry that the deregulation 'experiment' should be judged. Greater competition, for example, is not of importance in its own right, but only insofar as it may lead to a better overall performance (through lower cost, improved service quality, and so on) which will be reflected ultimately in greater efficiency and patronage for the industry as a whole. For example, the 'Buses' White Paper of 1984 suggested that deregulation would reverse the decline that had been occurring over the previous three decades (1). Is this the case?

2. MAJOR EVENTS PRIOR TO LOCAL BUS DEREGULATION

Reviews of previous regulatory systems and changes in the structure of the industry has been provided elsewhere by the authors (2). Only essential features are highlighted here.

The election of the Conservative government in 1979 brought about a general shift to a market-based economic philosophy. This has been evident in changes in labour legislation, for example. The bus and coach industry was affected initially by the Transport Act of 1980. This deregulated the quantity control of express coach services and also liberalised, to some extent, the licensing of other bus and coach services. Price control was effectively abolished, leading to significant changes in fare structures, and greater ease in changing fare levels (including increases to match cost inflation) by operators.

At the same time, the 1980 Act strengthened quality control by introducing a system of operator licensing, following success of a similar system in road freight. This has remained under subsequent local bus deregulation, under the 1985 Transport Act.

The effects of express coach deregulation, from October 1980, were dramatic. Fares were sharply reduced, sometimes by over 50%, on trunk routes, with rapid growth in traffic. On long-distance services an overall demand increase of about 50% had occurred by 1984 (3). Trunk routes, which had often experienced strict capacity control to protect railways, saw greater increases. Service frequencies were increased, and higher-quality services, offering toilet facilities and refreshments, are now provided on most long-distance routes. Many new coach users were drawn from railways.

Major publicly-owned operators, notably the National Bus Company subsidiary National Express Ltd., continued to dominate the market. Although much traffic was focussed on trunk routes to large cities, notably London, direct services to major airports represented a major network innovation. These have continued to grow, offsetting some recent decline in patronage on routes into central London, and producing overall stability in express coach traffic.

Patronage of 'stage' bus services declined during the 1970s, from 7,533 million passenger journeys in 1975 to 5518 million in 1982 : see diagram 1. This decline, however, varied widely from operator to operator. It was generally lower in the metropolitan counties, where assistance to fare levels was greater, and was reversed in several in the early 1980s following the implementation of low fare policies, raising national stage bus trips to 5,650 million in 1984 (3).

3 THE MAIN ELEMENTS OF DEREGULATION

The Transport Act 1985 implemented the proposals of the 1984 'Buses' White Paper (1), with some minor amendments. The major elements were :

Definition of service. The previous distinction between 'stage' and 'express' was changed to one based on a 15 mile distance (i.e. any service carrying all passengers at least 15 miles, rather than 30, became 'express'). The antiquated term 'stage carriage service' was replaced by the more appropriate 'local bus service'. The notification of express services required under the 1980 Act was dropped. Thus very little information is now recorded on such operations.

Route licensing. It is in this sense that the industry has been 'deregulated'. Road service licences are no longer required. Instead, any operator wishing to run a public service simply registers details of the route to be covered with the appropriate area Traffic Commissioner's office. A period of 42 days' notice applies for commencement, significant modification, or withdrawal.

Financial support. 'Network support' to fares and service levels is no longer permitted. In its place, local authorities who wish to ensure provision of services in addition to those registered as commercial by operators may do so by specifying the services required, and then putting them out to competitive tender. Generally, the lowest-cost tender is then selected. In this manner, efficiency may be improved, but some fragmentation of service provision has also become evident : compare with the tendering system of entire routes under London Regional Transport, described in the paper to this conference by Higginson (5). No specific constraints were placed on the budgets of non-metropolitan counties for this purpose, but the Passenger Transport

Executives (see below) had to meet all their expenditure within a strictly defined Expenditure Level (EL).

The removal of network support, coupled with the threat of competition on profitable services, intentionally reduced the scope for cross-subsidy, which in some areas had remained at least as important as direct external support.

Concessionary fares. Provision for concessionary fares to groups such as the elderly and disabled was continued (children were also included as an explicit category in the 1985 Act, and some minor categories have been added since), subject to their availability applying equally to all operators in the same area, who are then compensated for the net loss of revenue which results.

Structure of the industry. The operations under local authority control, whether the 'municipals' under district or regional councils, or the PTE bus operations in the metropolitan counties, were placed under separate Passenger Transport Companies (PTCs), owned by the local authority or PTE. No subsidy, other than certain transitional costs, could be provided, except in the same form as to any other bus operator (concessionary fares, tendered services, etc.). The National Bus Company (NBC) has been split up and privatised, each subsidiary being sold off separately (although some have since re-merged, or have been acquired by new holding companies). At one time it was thought that National Express might be split up, but in the event it has been privatised as one company. In contrast to NBC, the state-owned Scottish Bus Group (SBG), a set of similar regional companies, was neither privatised nor split up under the 1985 Act, but legislation is now in progress to implement this.

Reorganisation of local government. Following earlier conflicts between central government and the metropolitan councils - of which their support for low bus fares was one major example - the six English metropolitan counties, and the Greater London Council (GLC), were abolished from 31 March 1986 under the Local Government Act 1985. The GLC had already lost control of London Regional Transport to central government 1984. In the metropolitan counties, the Passenger Transport Authorities continued in being, to some extent resuming their earlier role as bodies composed of elected members nominated from the constituent local authorities (metropolitan districts) in the area covered. Strathclyde PTE in Scotland continued under the control of the regional council.

Central government grants. The 100% rebate of fuel duty has remained, applying to 'local bus' services which are generally available to the public. The new bus grant, originally 50% of the cost of bus purchase, had already been phased out by 1986. Some limited assistance for capital schemes is possible under section 56 of the 1968 Act, but in practice little has been available.

In view of the threat posed to rural areas from reduction in cross-subsidy two specific new grants were introduced:

- a transitional grant to rural services, paid in the same manner as fuel tax rebate, for all service mileage run outside areas of over 25,000 population. This grant has been paid at a tapering rate: 6p per bus-mile in the first year (1986/7), falling to 5p in 1987/8, currently 3.25p and to cease entirely by 1990-91.

- the 'Rural Transport Development Fund' , to promote innovative services in areas containing population centres of less than 10,000 people. Total spending has been very low, at less than £1 million per year.

Competition legislation. Previous exemptions for the bus industry from competition legislation were removed. Agreements between operators which might be deemed restrictive have to be registered with the Office of Fair Trading (OFT) - these may affect, for example, joint operation of a service, or a co-ordinated fare scheme . This marked a sharp reversal from the duty given to 'co-ordinate' (non-metropolitan counties) or to 'integrate' (metropolitan counties) placed on local authorities by previous Acts. Although some jointly-operated services remain, extensive co-ordination agreements ceased at, or before, implementation of the Act from 26 October 1986 - for example, that in Maidstone between Maidstone Borough Transport and the NBC subsidiary Maidstone & District (6).

4. THE NATURE OF THE LOCAL BUS MARKET

Although the term 'local bus' includes some regional and rural services, the great majority of trips are found in urban areas. These are usually short, in which walking and waiting time may easily exceed in-vehicle time. Table 2 shows the components of generalised cost for a typical urban bus trip, with a length of 4 km, an average in-vehicle speed of 18 km/h, and in-vehicle value of time of £2.50 hour (7).

Table 2 : Generalised cost of a typical urban bus trip

		pence	(%)
Walks to/from stop	7.5 mins @ £5.00/hour	62.5	(30)
Wait at stop	7.5 mins @ £5.00/hour	62.5	(30)
In-vehicle ride	13 mins. @ £2.50/hour	55	(26)
Fare		30	(14)
Total		210	(100)

In accordance with the usual convention, walking and waiting time is weighted at twice the in-vehicle rate. The fare of 30p represents average revenue per trip in 1986/7.

The immediate interpretation many would place on this assessment is that service levels are of much greater importance than fares, and a hence higher frequency/higher fare combination would probably be optimal: for example, Walters (8). However, one needs to look more directly at user behaviour and perception of service level before jumping to such conclusions.

First, walking time. For a given network, this is fixed. However, minibus services may reduce this substantially through greater penetration of residential areas, and the 'hail and ride' facility, as we have documented elsewhere (9). In town centres, access for buses as a whole (for example, whether complete pedestrianisation is adopted, or combined bus/pedestrian streets) is more critical.

Second, waiting time. This is a function both of service reliability and frequency. It may be minimised by good knowledge of a service timetable (indeed, the prospective passenger is only likely to be waiting for the service in the first place given some knowledge of destinations offered and at least the approximate frequency). At wide headways, given reliable operation, a margin of about 5 minutes or slightly more would be allowed by most passengers. For example, a recent study in Milton Keynes found average waiting time on a highly reliable 30 min. interval double-deck service to be 7.8 minutes (10). For more frequent services, or those where the timetable is not known, waiting time may be assumed to be half the headway, provided that buses operate at regular intervals (i.e. passenger arrivals at stops are randomly distributed, independent of the bus schedule).

For a given reliability, any reduction in service headway will give a proportionate reduction in waiting time. For example, if the 7.5 minute wait assumed in the generalised cost calculation above were the result of random passenger arrivals for a highly reliable 15 minute service, then halving the service headway to 7.5 minutes would likewise halve the waiting time to 3.75 minutes. Even under these conditions, however, the absolute reduction in generalised cost will fall, the higher the initial service level (e.g. a further halving of headway, from 7.5 minutes to 3.75 minutes, would only produce a further 1.875 minutes fall in average waiting time).

If an increase in service level coincided with greater irregularity, one effect could offset the other to produce about the same waiting time as before. In the same Milton Keynes study (10), minibus services with a scheduled headway of 7.5 minutes produced a mean waiting time of 6.8 minutes, little better than the 30 min. double-deck service. This was associated with unrealistically tight running times in the working schedule.

Even where individual operators set realistic running times, irregularity may still result from lack of co-ordinated timetables over routes served by more than one operator. For example, if one ran every 20 minutes and the other every 12, they cannot 'mesh together' to give a combined 10 minute headway. In any case, recent actions of the OFT positively discourage such co-ordination as potentially anti-competitive!

At very high frequencies, perfectly regular running is in any case impossible due to perturbations of around 1-2 minutes which are inevitable due to delays at traffic lights, variations in passenger boarding rates, etc.

In short, actual passenger waiting times, rather than theoretical reductions, must be considered.

Third, in-vehicle time. This may be reduced by minibus conversion, due to greater manouverability and the simple fact that fewer passengers in total are picked up (passenger boarding time being a major component of vehicular running time). Conversely, a shift from off-bus tickets such as travelcards, to cash-paid fares, will usually increase running time.

Fourth, fares. Although a small component of generalised cost, they are perhaps more directly perceived, except where paid off-bus through travelcards or concessionary passes. As in the case of waiting times, lack of

co-ordination may lead to passenger disbenefits. Given the high component of generalised cost due to waiting time, users will normally prefer to board the first bus to arrive, rather than wait for one at a lower fare. We found this to be the case in a study of a corridor in Maidstone (6), where the formerly co-ordinated services of the two operators (the municipal PTC, and former NBC regional company) still served the same road, calling at the same stops. Although timetables were not co-ordinated, about the same service level as before was offered. However, whereas return tickets and travelcards were formerly inter-available, this is no longer the case. In order to enjoy the same service level as before, passengers have switched back to cash single fares, paying more for the same service. A shift back to cash fares also extends passenger boarding times, aggravating the problem of unreliability.

In the case of express coach deregulation in 1980, reduced fares were probably the most important factor increasing ridership, an elasticity of about -1.0 being derived (11). For such long-distance trips, fare forms a higher proportion of generalised cost, and trip purposes are generally optional, in contrast to the more inelastic nature of work, education and shopping trips which predominate on local bus services. The substantial fares reductions thus attracted traffic from rail, and generated new trips, to the extent that total revenue remained similar. Quality improvements such as the 'Rapide' services were also stimulated by competition. In the case of local buses, however, although competition may stimulate some gains in service quality, lower fares are unlikely to have a major effect, and increased irregularity could easily offset higher scheduled frequencies.

5. THE FIRST TWO YEARS OF LOCAL BUS DEREGULATION

Local bus deregulation was introduced from 26 October 1986 : from this date, previous network support was abolished, and commercially-registered networks, plus tendered services, were provided. Competition initially concentrated on the tendering process, but from early 1987 substantial 'on the road' competition between commercially-operated services grew, notably in medium-sized urban areas such as Bournemouth/Poole, Oxford, and Lincoln. Even before deregulation, substantial competition had already developed in the Glasgow area between Strathclyde Buses Ltd (the Metropolitan PTC) and SBG companies.

Earlier, from the start of the 1986/7 financial year (1 April 1986), sharp fare rises had occurred following the abolition of the Metropolitan Counties and imposition of Expenditure Levels by central government (see above). In South Yorkshire, fares rose by over 200%, and in Merseyside by about 40%. The year 1985/6 is thus the last year before the effects of changed central government policy became apparent.

Following the publication of the local bus service statistics for 1987/8 - the first full year after deregulation - by the Department of Transport (4), some overall conclusions can be drawn. However, the statistics available at the time of writing (March 1989) cover vehicle-km and patronage for local bus services only, and not the contract, express and tour market, which forms the great majority of independent operators' activities, and a growing part of the present and former public sector's work. Comparisons regarding staff and vehicle productivity are thus only partial. In addition, full revenue data is

not yet available, but only fares indicies. These do not necessarily reflect average fare per trip (which is better derived by dividing total revenue by total trips, due to change in the mix of traffic).

While confirming the government's claims for gains in bus mileage run and reductions in operating cost per mile, the 1987/8 statistics also show that the alarming drop in patronage has occurred, albeit at a slower rate between 1986/7 and 1987/8 than immediately after deregulation. The combination of extra mileage and lower traffic means that loadings have fallen sharply. As fares in most areas (other than certain metropolitan counties) rose roughly in line with inflation, revenue per vehicle kilometre has generally fallen in real terms, offsetting much of the gain in operating cost.

6. TRENDS IN PASSENGER TRAFFIC

Data comparing 1985/6 with 1987/8 is shown in absolute terms in table 1. However, comparisons are more clearly highlighted by looking at percentage changes.

Diagram 2 contains four graphs, all showing percentage changes between 1985/6 and 1987/8. Data is grouped by areas of Great Britain (GB). The term 'shires' covers all of England outside London and the Metropolitan Counties. Although much of their area is rural, most bus traffic within them is concentrated in urban areas, which include major regional centres such as Nottingham and Bristol in addition to smaller towns. London is not deregulated, but forms a telling comparison with the rest of Britain.

Diagram 2.1 shows the actual percentage change in trips between 1985/86 and 1987/8. Overall, there was a drop of 5.5% in Britain as a whole. However, in London there was an increase of 10.2% - in marked contrast to trends elsewhere. Taking all of Britain, excluding London - i.e. the deregulated area - the overall fall was 9.5%. It was most acute in the old metropolitan counties, at 16.2%. It was least evident in the English shires, at 3.8%; and Scotland, at 3.3%.

On the whole, the trends outside London were a combination of a sharp drop in 1986/87 and a lower reduction in 1987/8 (or, in the case of Scotland, a small recovery from the 1986/7 position). This was associated with the particularly severe disruption to networks immediately after deregulation, which was offset later in some cases by an element of stability, and increases in total vehicle-km. run.

This can be seen in the case of the Metropolitan counties, for which quarterly data is given in the Statistics Bulletin (4). Trips fell from 480 million in July-September 1986 (a period already affected by the sharp fare rises in South Yorkshire and Merseyside) to 440 million in October-December 1986 and a low of 400 million in the first quarter of 1987, then rising again to 430 million from April-June 1987 onward.

In the Statistics Bulletin, data is grouped by operator type as well as by area. The broad pattern is similar, but not identical. Where the established operators have lost parts of their traditional market through tendering or commercial competition, they have often lost more traffic than the industry as

a whole in the areas they serve. For example, the Metropolitan PTCs lost 18.7% of their trips over the two years (compared with 16.2% for all operators in the Metropolitan Counties) and SBG some 9.8%, compared with 3.3% for Scotland as a whole. This also applies in London, in that the encouraging overall growth of 10.2% is less when London Buses Ltd. as such is considered (4.7%), due to growth of tendering to other operators under LRT.

7. WHAT WOULD HAVE BEEN EXPECTED?

Clearly, some reductions in traffic would have been expected, especially in the Metropolitan areas where sharp fare increases occurred. An overall short-run fares elasticity of about -0.3 may be assumed (ignoring effects of change in fares structure, such as introduction of travelcards). This long-established figure has been confirmed in a survey of recent studies by Goodwin (12).

In addition, an underlying decline has been observed in patronage for many years, of about -1.5% per annum, due to factors such as rising car ownership, which reduce bus patronage, irrespective of fares and service quality as such. In the last two years, sales of new cars have been exceptionally high, which might suggest a bigger effect than the average for this reason. However, there has also been some recovery in employment, which would be expected to increase traffic in the short term. It would be fair to assume that these two effects offset one another.

The substantial increase in vehicle-km run would be expected to give an increase in traffic. Outside London, there was an overall rise of 13.6% between 1985/6 and 1987/8, ranging from 7.5% in the metropolitan counties to 17.8% in the shire counties. As experience of minibus conversion has shown, demand is highly sensitive to frequency of service. Derivation of elasticities from time-series work is more difficult for this variable than for fares, due to the smaller aggregate changes observed, and less clear cause-and-effect relationship of change. However, a value of about +0.4 appears consistent with earlier observations (13).

This is also confirmed in our research on minibus services prior to deregulation (where most changes were from low initial service levels, such as half-hourly to every 10 minutes). This produced estimates both from specific examples where operators were willing to disclose data, and calculations of the traffic generation needed to break-even under commercial operation, i.e. that extra traffic would, at constant fare levels, match the extra cost of providing similar total capacity through smaller vehicles at higher frequencies (9).

An 'expected' percentage change in patronage between 1985/6 and 1987/8 was calculated by assuming the -1.5% p.a. trend decline (i.e. a drop of 3.0% over two years), a fares elasticity of -0.3, and a service level elasticity of +0.4. The results are shown in the in diagram 2.2, and in table 1.

The broad pattern is similar to diagram 2.1, but the drop in the metropolitan counties, at 8.6%, is considerably less than that actually observed, of 16.2%. In some other areas, such as the English Shires, a net increase in traffic would have been expected, due to the very high growth in service level,

compared with the observed drop of 3.8%. Negligible changes would have been expected in Britain as a whole, and Britain excluding London - the underlying trend and effect of real fare increases being offset by rising vehicle-km.

Two main reasons may account for this :

(a) In the metropolitan counties, where the change in service level was relatively small (a rise of 7.4%), this would have been insufficient to offset other negative factors such as the increase in fares. However, the drop was considerably worse than would have been expected, by about 7 percentage points, probably attributable to passenger uncertainty in the face of an unstable network and poor information. It may also be appropriate over the two-year period considered to use higher elasticities than the short-term -0.3 value, as Goodwin indicates (12). However, even if a value of, say, -0.5, were taken, observed decline would still be considerably worse than expected.

(b) Elsewhere, the change is more or less what would have been expected without taking into account the service level increase, but the latter seems to have had very little effect compared with that which would be normally expected. In other words, the net effect is as if the extra mileage has generated very little new traffic overall. This also may be associated with passenger uncertainty. In cases where the increase in service level was due mainly to intense competition (as in Glasgow, for example), frequencies were raised on routes which already had high levels of service, and often consisted of unco-ordinated services, resulting in bunching and irregularity. The benefit to the passenger was small, compared with the earlier cases of minibus conversion, which were often associated with dramatic increases in service from a low initial level as mentioned above.

This was also found in Preston, where a increase in vehicle-km run of 124% following intense competition between the incumbent municipal operator, and a new minibus operator 'Zippy' (part of the United Transport group) produced a passenger increase of only 5% (14).

Despite the aggregate decline shown in all areas outside London, it is likely that some areas did show an increase in patronage, probably including cases such as Oxford, where intensive local minibus services were added by the new operator 'Thames Transit', also encouraging improved regularity of operation on the existing (ex NBC) operator's services. The latter is now reported to be carrying almost 19 million passengers per year, compared with a combined total for Thames Transit and South Midland (the ex-NBC operator of rural services around Oxford, with whom it has combined) of 12 million (15), a combined total of 31 million. This compares with 22 million for the combined Oxford/South Midlands company in 1984 (16). However, in the absence of published data, few firm statements can be made about specific areas.

Increases would also have occurred in networks where the existing operator converted to high-frequency minibus operation, following the pattern already established before deregulation, as described earlier (9).

Within the Met PTCs, all are believed to have lost traffic, but this is thought to be much less severe in West Midlands and West Yorkshire, where significant real fare changes did not occur.

8. VEHICLE LOADINGS AND COST PER PASSENGER TRIP

Outside London, the combined effect of falling patronage and rising vehicle-km. has had a disastrous effect on average loadings. Taking Britain as a whole, the average number of passenger trips boarding per vehicle-km fell by 15.7%. This is not, strictly speaking, the same as the trend in average loads, since it takes no account of changes in trip length. However, given that there is no evidence for a significant change in this variable over the last two years, its effect may be assumed neutral.

Diagram 2.3 shows the percentage changes in average passenger trips boarding per vehicle-km (referred to as 'passenger loadings'). As would be expected, the Met Counties show the worst result, a fall of 22.0%. However, the English Shires fared little better at 18.4% down, although due to rising vehicle-km rather than falling total traffic.

This decline is ironic in view of the emphasis placed on this indicator in the 'Buses' White Paper (17). The greater fall in passenger trips than vehicle-km from 1972, and resulting drop in boarding rates was highlighted as an example of 'mismatch' between supply and demand. The overall trend since 1974 is shown in diagram 3. 'Local bus passengers' (dotted line) fell to about 75% of the 1976 level by 1987/8. 'Vehicle-kilometres' (dashed line) fell until 1985/6, then rose steeply. The combined effect on 'Passenger boardings' (solid line) was to produce a fluctuating trend until 1985/6, thereafter a sharp fell in the last two years. On this criterion, performance has radically worsened since deregulation.

One should mention, however, that there is good reason to believe that average trip length has risen over time. Although this would not be significant within the two year period 1985/6 - 1987/8, over the whole period since the early 1970s it would result in a lower rate of decline in average loadings (measured as passenger km/vehicle-km) than the crude boarding figure would suggest (18).

These reductions in average loadings largely offset the savings in operating costs per bus-km. Such data was not collected on a national basis until very recently, and is available only for the period 1985/86 to 1987/88. Given the problems of definition, precise estimates are difficult, and those in the Statistics Bulletin are shown to only two figures (thus the average for all operators is shown as £1.0 per km. in 1985/6, falling to £0.8 per km. in 1987/88, at constant prices). For this paper, the Department has provided percentage changes from the original data, which enable a more precise picture to be drawn (19). These are also shown in table 1. This average fall of about 20% varies somewhat within the industry, being greater in the Metropolitan PTCs (about 25%) and least in London (about 10%). Note that these trends are for operating costs only, and do not include depreciation or leasing charges. The percentage changes are probably a more useful indicator than differences in absolute operating costs by operator type, since these vary according to operating environments.

The combination of lower operating costs per kilometre and lower average loadings largely offset one another. Costs per passenger trip have generally changed very little in real terms. Diagram 2.4 shows the results.

Overall, costs per passenger trip fell by about 6% in real terms, with little variation by area. In some it may even have increased slightly (in Scotland). However, given the crude nature of the cost data, the safest conclusion would be that in most areas outside London - apart, perhaps, from the Met Counties - no substantial change occurred.

London in contrast, has the best of both worlds : rising traffic and a falling cost per bus-km, giving a reduction of about 18% in cost per passenger.

9. SOURCES OF REDUCED COST PER VEHICLE-KM

In examining unit costs, staff productivity and vehicle utilisation it is necessary to group data by operator type rather than geographical area, as shown in diagrams 4.1 to 4.3. 'LBL' denotes London Buses Ltd., the subsidiary of LRT which still operates most buses in London. 'NBC cos' covers those companies which formed part of NBC prior to its privatisation, for which data is still grouped. Note that only operating costs - excluding depreciation and leasing charges, but including interest payments - are shown.

Reductions in cost are due to a combination of factors :

(a) Reductions in input costs, external to the industry. The clearest example here is fuel. As local bus services pay the cost net of duty, world market price fluctuations are reflected directly. Resulting from a sharp fall in summer 1986, price per litre fell from 20.8 pence in November 1985 (taken as mid-point of financial year 1985/6) to 13.6 pence in November 1987 (20) - a real fall of 38%. As fuel costs comprise only about 7% of operating costs, changes in unit fuel cost rarely have any significant effect on total costs. However, the change here is so great as to cut total costs by about 3%.

(b) Increases in staff productivity. Staff costs (including national insurance, etc.) comprise about 75% of operating costs. Output per member of staff rose very rapidly following deregulation. Diagram 4.1 shows the percentage increase in local bus-km per member of staff (for all types of staff together) between 1985/6 and 1987/88. An overall increase of 23% can be seen, rising to 34% in the case of Met. PTCs. Note that other types of bus and coach mileage are not included here. The absolute output per member of staff would thus be understated, but the percentage increases are probably a fair guide.

The productivity increase is mainly a result of a fall in staff numbers - shown in diagram 4.2 - but also of an increase in vehicle-km run, notably for Municipal PTCs and ex-NBC companies. Reductions were particularly marked in non-platform staff. Whereas total staff fell by 9%, maintenance staff fell by 20%, and 'other' (administrative, etc.) by 18% (although the effect could have been exaggerated slightly by some reclassification of part-time staff). Scope for efficiency gains on the maintenance side was shown in earlier work at PCL, which showed a rising share of total operating costs in the 'servicing and maintenance' category in the late 1970s (21).

Overall, staff input per vehicle-km fell by 19%. If staff costs represent 75% of total operating costs, this would account for a 14% overall reduction.

If fuel represents 8% of costs, and staff 75%, the remaining 17% would represent tyres, insurance, management costs, premises, etc. In the absence of any specific evidence, it may be assumed unchanged.

Fuel unit costs and staff productivity (assuming constant real cost per member of staff) would thus represent a 17% reduction in costs, of the overall 20% cost reduction per vehicle-km. Apart from minibuses (see below), average real costs per employee do not appear to have fallen overall, although this is undoubtedly true in some areas where previous national wage agreements were above local market rates. The increase in vehicle-km per member of staff may also be associated with changes which could be seen as a worsening of working conditions, such as raising hours driven per week (by longer shifts, a stricter approach to absences, unpaid meal breaks, shorter sign-on/sign-off times, etc).

The rise in vehicle-km per member of staff was particularly great in the Met. PTCs - some 35% - where the largest scope for improved productivity (especially among non-platform staff) probably existed. Staff input per vehicle-km fell by 26%, hence staff productivity would represent about 19% of the fall in total cost per bus-km. If fuel represented 2% of the reduction in this case, then about 4% of the reduction remains to be explained by minibus operation (some 13% of their fleets were vehicles of under 35 seats by March 1988) and wage cuts.

Despite these spectacular rises in staff productivity per vehicle-km, falling loads offset much of the gain. Diagram 4.3 shows the change in local bus passenger trips per member of staff. This is generally negligible (even negative for SBG), except for the Met. PTCs, where staff numbers fell even more rapidly than patronage; and LBL, where the combined effect of rising vehicle-km per member of staff and increased loads again combine to provide a very positive picture - a rise of 35%.

In the terminology of US researchers such as Fielding (22), one can say that efficiency (in the sense of cost per vehicle-km) has risen, but outside London this has been offset by a corresponding fall in effectiveness (in the sense of average loadings, or cost per passenger trip).

10 THE 'MINIBUS EFFECT' ON COSTS AND CAPACITY

Another aspect of the change in unit cost per vehicle-km is the rapid growth in the share represented by minibuses. Taking a typical wage differential of 20%, together with higher running speeds, and lower fuel and maintenance costs, their cost per vehicle-km is about 60% that of full-size buses (9). By December 1987 the proportion of the local urban bus fleet represented by minibuses had risen from a negligible figure in Autumn 1985, to about 15% (23). Minibuses are used very intensively, and typically provide about 60,000 km per annum, compared with about 45,000 for full-size buses. Given this, they probably represent about 20% of vehicle-km. Hence, minibus conversion alone would reduce the weighted average cost per bus-km for all local services by about 8%. Note that this figure is not wholly additional to the effects of fuel cost and increased bus-km per member of staff quoted above, due to the improvement in the latter being partly an outcome of minibus conversion in any case, especially among the ex-NBC companies.

The 'minibus effect' also has implications for the total capacity (as compared with vehicle-km) being offered, and change in unit costs per passenger place-km (i.e. a seat-km or standing-place-km). Taking the typical minibus as having 25 passenger places (about 20 seated and 5 standing) and the typical big bus as 75 places, then the overall increase in bus-km may be offset by the falling average size of vehicle. For example, taking the 13.6% increase in bus-km in Great Britain excluding London between 1985/6 and 1987/8, and assuming that 20% of the final figure were run by minibuses, place-km would have fallen marginally (by about 2%). Average places per bus would have fallen by about 15%. Thus, the 20% real reduction in operating cost per bus-km overall would translate to a drop of only about 5% in cost per place-km. However, the lower capacity per vehicle would also mean that the drop in absolute average loadings of about 20% would imply only a slight fall in load factor (i.e. the average load expressed as a percentage of capacity).

Table 3 summarises the effects of changed input costs, staff productivity and minibus expansion on total operating costs per bus-kilometre.

Table 3 : Major components of reduced real operating cost per bus-kilometre 1985/6 - 1987/8

Of the overall drop of 20% (outside London) :

Lower input fuel costs	2 - 3 %
Increased staff productivity	14 %
Other	3 - 4 %

OR 'Minibus effect'

Fuel costs	2 %
Minibus conversion and growth	8 %
Staff productivity and other cost reductions for 'full size' bus operation	10 %

Components of the overall 26% reduction in the Met PTCs :

Staff productivity	19 %
Input fuel costs	2 %
Minibuses, and other	5 %

11. ROLE OF THE INDEPENDENT SECTOR

The term 'independent sector' is used here to denote those firms that have remained in private ownership throughout, as distinct from public companies privatised since 1985. Apart from one regional bus company, and some large tour operators, this sector comprises mostly small concerns - averaging about 6 vehicles - concentrating mainly on the hire and contract market. In 1984 - the last year for which a detailed breakdown was produced - there were some 530 million passenger trips on 'other' services (i.e. all categories other than local bus), of which 395 million were hire and contract journeys, mainly school and works services.

Together with excursion and tour traffic, this represents the great majority of independents' work (despite the deregulation of scheduled express services in 1980, the impact by independents was fairly small : in 1984 of the 17 million express coach trips as then defined, 14 million were by National Express and another 1 million by SBG's Citylink, leaving only 2 million by independents). Of the total 585 million 'other' trips in 1986/7, independents took 465 million (some 80%).

The role of independents in the local bus market was confined mainly to some rural areas in which they have always operated in their own right, together with a growth in rural services from the 1960s, as routes were taken over from regional companies. This process was greatly accelerated at deregulation, as the tendering process gave lower-cost independents the chance to replace incumbent companies. A very limited amount of urban service was also provided by independents.

From a small absolute base, local bus traffic by independents has expanded rapidly. Passenger trips rose from 177 million in 1985/6 to 219 million in 1986/7 and 333 million in 1987/8. Vehicle-km rose from 173 million in 1985/6 to 334 million in 1987/8. The percentage growth is similar in each case, at 87% for passenger trips, and 93% in vehicle-km between 1985/6 and 1987/8. Note that the absolute average boarding rate is very low (1.0 passenger trips per vehicle-km in 1987/8, compared with 2.3 for all operators), confirming the independents' role as primarily in low-density rural services.

However, the elasticities used in respect of other operators earlier in this paper cannot be applied (being derived from changes in the whole market), since much of the growth is a direct transfer from other operators as a result of tendering. Although some independent services were supported financially before deregulation, it is likely that much of the 99 million vehicle-km in 1987/8 run as tendered services by independents represented transfer from other operators, and thus accounted for about 60% of the net increase in 164 million local bus-km by this sector between 1985/6 and 1987/8.

Nonetheless, significant expansion of commercial services by independents has occurred in urban areas. Some is by old-established firms moving more strongly into the urban bus market but other growth is by new firms, such as Thames Transit in Oxford (a subsidiary of Devon General, the first NBC bus company to be privatised), the Trimdon Motor Services group in the North East, and, until mid-1988, the United Transport subsidiaries in Preston and Manchester. There are increasing signs of commercial bus operation by independents who initially entered the market running only tendered services. It should also be borne in

mind, however, than increased diversification from the early 1980s has led to substantial coaching work by PTCs, a market traditionally the preserve of independents and regional companies.

12. PROFITABILITY AND FINANCIAL PERFORMANCE

Profitability as such is not disclosed, although more data on revenue may become available by the time of the conference itself. Using the published unit cost per vehicle-km, approximate operating cost/revenue ratios may then be calculated.

However, data is not readily available on total costs (including depreciation and leasing charges). Given the failure to maintain the principle of replacement cost depreciation in accounting practice, some operators may have been able to improve their apparent profitability by reverting to historic cost depreciation (NBC, for example, based its accounts on replacement costs, following the CIPFA recommendations in the early 1970s, but practice in the now privatised subsidiaries is unclear). In the short run, operators have failed to maintain replacement rates of fleets (see separate paper at this conference). Thus historic cost depreciation may appear adequate in the short run. Some may not even meet this aim, but by postponing replacement, may still achieve positive cash flow. This factor has probably enabled operators to survive periods of intensive competition, in which vehicle-km have been increased with little gain in total traffic or revenue.

Eventually, it will be possible to examine returns to Companies House to determine overall profitability, although even then substantial ambiguities will remain. For example, there has been a shift - especially in minibus operation - to contract leasing of new vehicles : such assets are 'off balance sheet', and thus would not be reflected in capital value of the business, or depreciation requirements. Some figures have been quoted in the technical press, suggesting profits (on an unclear basis) for some operators, but losses for others.

Overall, the industry was roughly breaking-even prior to deregulation, i.e. total income (including network support, concessionary fare compensation, etc.) covered total costs (including depreciation and interest charges). Given largely unchanged real revenue per passenger trip (outside the Mets) and falling loadings which offset reduced cost per vehicle-km (other than in London) it would be fair to assume that financial performance in the industry as a whole has not changed radically - i.e. a similar net contribution from public funds per passenger trip is being received, despite the claims of large reductions in public expenditure following deregulation. Is this the case ?

Tables 5.1 and 5.2 of the Statistics Bulletin (4) show public expenditure on buses outside London, in real terms (i.e. at 1987/8 prices). These confirm the dramatic reduction in direct support from local authorities to bus operators, from £354 million in 1985/6 to £218 million in 1987/88, some 38%. In 1985/6 this was in the form of general network support (to fares and service levels) as well as support to specific services. Since deregulation in October 1986 it has applied only to tendered services. However, this was partly offset by a rise in expenditure on concessionary fare contributions (to all operators), from £231 m in 1985/86 to £242 m in 1987/8 (4%), in some cases because

concessions were identified explicitly that were previously covered through general support (notably those to children in some areas).

The major changes in public expenditure on bus services outside London are summarised in table 4.

Central government expenditure on fuel duty rebate fell marginally, from £121 million to £118 million (2.5%), but new costs were incurred in the rural bus grant (£17 m in 1987/8) so that total central government expenditure rose from £121 m to £135 m over this period (12%).

In addition, local authorities incurred additional costs in staffing and provision of service publicity, probably in the order of £5 million : a similar assumption was made in evidence to the Select Committee on Transport (24).

We thus obtain a total public expenditure at 1987/8 prices on bus services outside London of £706 million in 1985/6, falling to £599 million in 1987/88, i.e. by £107 million, or 15%. However, this must also be related to the fall in traffic outside London, of 9.5% (table 1). Hence the fall in public expenditure per passenger trip was only about 6% (from 15.7p, to 14.7p). This is slightly higher than the fall in real operating expenditure per passenger trip of 2% (diagram 2.4), which may be explained by the fact the depreciation may not be fully costed (see comments above) and increased real revenue per trip following fare increases in some areas.

This last point is clear when we examine the changes in the Met. counties. Of the drop in payments direct from local government to operators, excluding concessionary fares, of £354 million in 1985/6 to £218 million in 1987/8, (£136 m) the Mets. accounted for £101 million, or 74%. Much of this in turn may be associated with the average rise in real fare per passenger trip in the Mets. of .28.5%, although there were also some genuine efficiency gains as shown earlier in this paper.

If we take Great Britain, excluding the Mets. and London, local government expenditure on general support (1985/6) and tendered services, plus extra costs shown above (1987/8) fell from £136 m in 1985/6 to £107 m in 1987/8, i.e. by 21%. Given that trips dropped by 3.8%, a more substantial fall in direct support per passenger trip may be seen in this case. However, virtually all of the rural grant should also be attributed to this sector - £17 m in 1987/8 - effectively reducing the net savings from £29 million to £12 m. Allowing for this, support per trip fell from 5.6p to 5.3p, or only 5%.

Thus, in considering the extent to which public expenditure fell as a result of increased efficiency, rather than increased fares, or reallocation of expenditure from local to central government, the changes appear fairly marginal, around 5 to 10%. This again reflects the fact that falling average loads offset much of the reduction in real operating cost per vehicle-km.

Table 4 : Public Expenditure on local buses outside London, 1985/6 - 1987/8
(at 1987/8 prices)

	£ million		%
	1985/6	1987/8	change
Direct payments from local authorities to bus operators	354	218	- 38%
Concessionary fares	231	242	+ 4%
Central government (fuel duty rebate and rural grant)	121	135	+ 12%
Additional admin. & publicity costs	-	5	
Total public expenditure	706	599	- 15%
Public expenditure per pax. trip	15.6p	14.7p	- 6%

Data in the Statistics Bulletin on public expenditure exclude London. However, a telling contrast may be drawn, using data from LRT's annual reports and 'Transport Statistics Great Britain' (25). After allowing for grants going toward the underground (almost entirely capital) as distinct from buses within LRT, we have estimated the following :

Table 5 : Public Expenditure on buses in London

£ million, 1987/8 prices

	1985/6	1987/8	% change
Fuel duty rebate	20	17	
Concessionary fares	70	70	
Revenue support	104	56)	- 52 %
Capital grants	44	15)	
Total	238	158	- 34 %

The overall drop is £80m , or 34%. A more direct comparison with local government spending changes elsewhere in Britain may be obtained by looking at the revenue grant and capital grants only, which fell from £148 m to £71 m, by £77 m, or 52%.

As passenger trips on buses in London rose by 10% over this period, local public expenditure per passenger trip fell from 12.8p to 5.6p, by 56% (excluding concessionary fares).

13. CONCLUSIONS

Although deregulation has produced some impressive savings in cost per local bus-kilometre, these have been offset by falling loads to produce only marginal reductions in operating cost and/or public expenditure per passenger trip outside London. The industry remains very vulnerable to real wage increases. What outcome may be expected ?

An optimistic scenario would run as follows. After increasing rapidly, total local bus-km stabilised in 1988 (the level for the third quarter of 1988 was the same as that in 1987). Some reductions may now be occurring as competition in certain areas is reduced (such as Bournemouth/Poole). Insofar as the extra mileage seems to have done very little to increase traffic, hopefully its elimination may have little effect. Where some useful innovations have appeared during the phase of competition, they may be retained (for example, Bournemouth PTC and Wilts & Dorset, the incumbent operators in Bournemouth/Poole, have been stimulated to introduce minibuses in certain areas). There is some evidence of increasing traffic levels nationally, probably due to the improved employment levels.

Provided that existing gains in physical productivity per member of staff are retained, the resulting increase in average load per bus-km at constant real fares would raise profitability, helping to fund vehicle replacement and cope with higher real wage levels which are becoming necessary in some areas in order to attract staff. Greater co-ordination between operators (subject to the attitude taken by the OFT) may enable more comprehensive timetable information and off-bus ticketing to be offered (for example, a comprehensive all-operator travelcard in South Yorkshire has been reintroduced in March 1989).

A pessimistic scenario would be one in which continued instability in the network of services causes further traffic losses. Operating costs rise as ageing vehicles incur higher maintenance costs, and real wages rise as staff become more difficult to recruit. The latter might also make it difficult to retain some gains in productivity insofar as these rest on unpleasant working conditions (such as long spells of duty between meal breaks).

In neither case would there appear to be any great virtue in encouraging commercial competition.

In the case of London, an explicit forecast is available in the LRT 1989/90 Annual Business Plan. This anticipates an increase in bus-kilometres of 5%, with a fall in passengers (following the large increase in 1987/8) of 2%. This would offset the rise in loadings between 1985/6 and 1987/8 shown in diagram 2.3. However, cost per bus km. is expected to fall by 6% in real terms, giving only a very marginal increase in real cost per passenger trip of about 1%, thus maintaining the large reduction between 1985/6 and 1987/8 shown in diagram 2.4.

What policy should be adopted for London? Evidence to date certainly suggests no clear benefit in extending deregulation to the capital - if anything, the opposite. This is not to say that all is well at present. Further scope may exist for reducing cost per bus-km, and for minibus introduction (especially in suburban areas). The introduction of eleven area units is a welcome step in

this respect. However, full-scale deregulation would probably cause more harm than good in London. Instead, the existing liberal licensing system could be retained (it permits, for example, Harry Blundred's new services in Docklands), coupled with the right of all operators to participate in a comprehensive travelcard scheme.

References

1. White Paper 'Buses'. Cmnd 9300. Department of Transport, London, 1984.
2. P.R.White 'British experience with deregulation of local bus services'. Chapter 2 in J.S.Dodgson and N.Topham (editors) : Bus Deregulation and Privatisation. Avebury/Gower 1988.
Turner, R.P. & White, P.R. 'Recent UK experience of the influence of regulation on performance' Proceedings of the World Conference on Transport Research, May 1986, Vol 1, pp 355-374. University of British Columbia, Vancouver 1987.
3. P.R.White 'Deregulation of Bus and Coach Services in Britain from 1980'. Paper presented at OECD Conference 'Road Transport Deregulation : Experience, Evaluation, Research', Paris, November 1988.
4. Statistics Bulletin (88) 54 : Bus and Coach Statistics Great Britain 1987/88 (Provisional). Department of Transport, London, December 1988 (the source of all data quoted in this paper, except where other specific sources are cited).
5. M.P.Higginson 'Deregulate : Who Dares ? - The London Experience'. Paper for International Conference on Competition and Ownership of Bus and Coach services, Thredbo, Australia, May 1989.
6. R.P.Turner and P.R.White 'A case study of deregulation in Maidstone, Kent' PTRC Summer Annual Meeting September 1988, Proceedings of Stream C 'Public Transport-Planning and Operations', pp 121-142.
7. Average value of time for £5,000 - £10,000 p.a. income group, rounded up, from 'The Value of Travel Time Savings', Policy Journals, Newbury, 1987.
8. Walters, A.A. Costs and the Scale of Bus Services. World Bank Staff Working Paper no. 325, April 1979. Washington, D.C.
9. R.P.Turner and P.R. White 'NBC's urban minibuses : a review and financial appraisal'. Contractor Report no 42, Transport and Road Research Laboratory, Crowthorne, Berks. March 1987.
10. B.J.Hutton and J.M.Clark 'Monitoring Minibus services in Milton Keynes' UTSG Conference January 1989 (unpublished) (see forthcoming CR for TRRL).
11. N. Douglas : A Welfare Assessment of Transport Deregulation : the case of the express coach market in 1980. Gower, 1987.
12. P.B.Goodwin 'Evidence on Demand Elasticities 1980 -1988'. UTSG Conference, January 1989 (unpublished) and TSU Oxford draft working paper 427.

13. 'The Demand for Public Transport : Results of an International Collaborative Study'. Transport & Road Research Laboratory, 1980. Chapter 8, pp 136/7.
14. P.Mackie and J.M.Preston 'Competition in the urban bus market : a case study'. PTRC Summer Annual Meeting, September 1988, Seminar C : Public Transport Planning and Operations, pp 157-170.
15. Tony Pattison 'Minibus update'. Buses March 1989, p 104.
16. National Bus Company-Annual Report and Accounts 1984, p 56.
17. Ref. 1, table 4.1.
18. Turner,R.P. 'The Buses White Paper : A concrete edifice on stilts'. Surveyor 29 November 1984.
19. Department of Transport Statistics Division, personal communication, January 1989.
20. Derived from the index published in the 'Platform' , monthly newsletter of the Bus & Coach Council, London, from Nov/Dec 1985 inclusive.
21. M.P.Higginson and P.R.White The efficiency of British Urban Bus Operators. Transport Studies Group Research Report no.8, Polytechnic of Central London, December 1982. Chapter 7.
22. G.J.Fielding, T.J.Babitsky and M.E.Brenner 'Performance evaluation for bus transit' Transportation Research Vol. 19, 1985, pp 73-82.
23. R.P.Turner and P.R.White 'Experience of urban minibuses in the U.K.' Paper presented at symposium at City University, London, May 1988.
24. An estimate of £2 million p.a. for staff alone is quoted in House of Commons Transport Committee, Second Report, Session 1987-88, 'The Government's Expenditure Plans for Transport 1988/89 to 1990/91'. HC-442. HMSO June 1988, p 80.
25. Transport Statistics Great Britain 1977-1987, table 1.19. London Regional Transport Annual Report and Accounts 1986/87, pp 6,37. LRT Annual Report and Accounts 1987/88, p 43. LRT Annual Business Plan 1988/9, p 9.

Table 1 : Basic data for calculations in text, and diagrams

Derived from reference 4, except where stated otherwise.

C o l u m n										
Row	A	B	C	D	E	F	G	H	I	J
1	273	-5	1152	118	3.6	-3.4	-6.4	4.2	-11	82.2
2	575	43	2069	-336	28.6	-8.6	-11.6	4.0	-26	95.0
3	848	151	1587	-61	1.4	3.7	0.7	1.9	-21	96.8
4	1696	199	4807	-278	9.2	-1.1	-4.1	2.8	-20	94.9
5	285	44	671	-22	0.4	3.1	0.1	2.4	-14	102.6
6	95	8	164	-9	-	-	-	1.7	-14	98.7
7	2076	251	5642	-309	7.3	-0.4	-3.4	2.7	-20	94.9
8	1803	246	4490	-427	8.0	0.0	-3.0	2.5	-22	98.0
9	1228	203	2422	-92	1.0	3.3	-0.3	2.0	-20	97.0
10	261	-18	1146	54	5.4	-7.4	-10.4	4.4	-11	79.1
11	471	-6	1828	-342	25.4	-11.1	-14.1	3.9	-26	89.9
12	220	19	781	-86	2.1	-0.2	-3.2	3.6	-21	96.4
13	691	13	2609	-428	16.8	-7.3	-10.3	3.8	-23	93.8
14	169	3	307	-30	1.6	-2.8	-5.8	1.8	-14	97.0
15	783	91	1403	-61	1.6	1.2	-1.8	1.8	-22	91.0
16	173	161	178	155	1.6	-	-	1.0	-	-

	K	L	M	N	O	P	Q
7	174.3	-8.9	-2.0	11.9	23.0	32.4	3.7
10	25.7	-23.0	-25.1	10.2	20.8	44.6	35.9
11	36.0	-26.4	-16.7	13.1	34.1	50.8	10.4
12	16.1	-8.7	-2.1	13.7	19.0	48.5	-2.5
13	52.1	-20.9	-11.8	13.3	28.8	50.1	5.7
14	9.2	-3.2	0	18.4	5.2	33.4	-6.7
15	47.0	-7.4	1.8	16.7	20.6	29.9	3.3

KEY

Rows :

By area within GB :

- 1 London
- 2 Met Counties
- 3 English shires
- 4 England (all)
- 5 Scotland
- 6 Wales
- 7 All GB
- 8 All GB excluding London
- 9 All GB excluding London and Mets

By operator type :

- 10 London Buses Ltd.
- 11 Met PTCs
- 12 Municipal PTCs
- 13 Sum of PTCs
- 14 SBG
- 15 NBC group (including all former bus companies)
- 16 Independents (traditional definition)

A dash (-) indicates data not available, or results not meaningful. (For example, there is no fares index for row 6 (Wales) in 1987/8, hence subsequent estimates of real fare changes and any model output incorporating these are not meaningful).

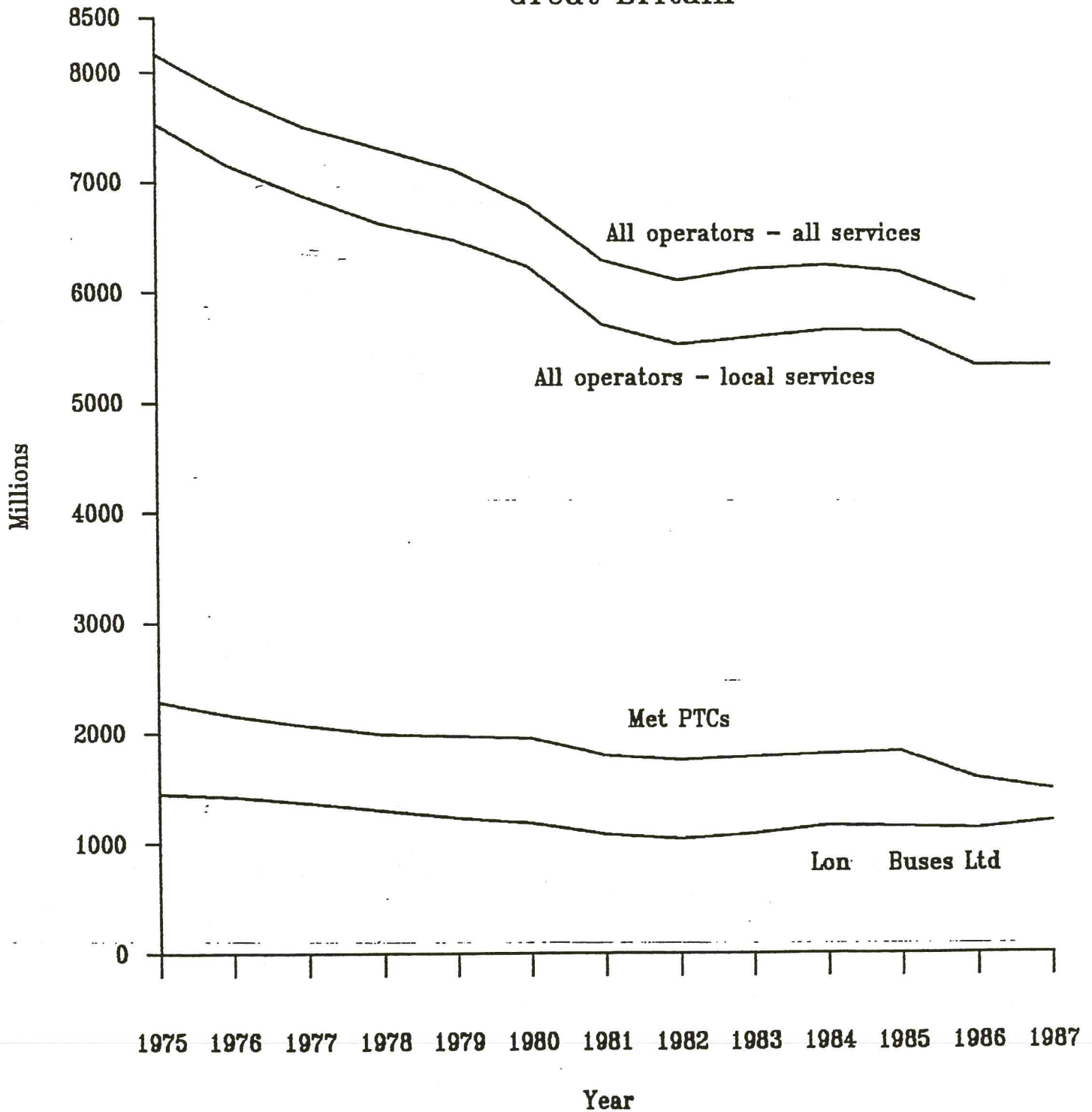
Columns :

- A Vehicle-km in 1985/6 : millions (from tables 1.1 and 1.3)
- B Absolute change in local bus-km. (m) 1985/86 - 1987/88
- C Passenger trips in 1985/6 : millions (from tables 2.1 and 2.2)
- D Absolute changes in pax trips (m) 1985/6 - 1987/88
- E Percentage in real fares index 1985/6 - 1987/88 (derived from tables 3.1 and 3.2, adjusted by RPI ratio of 101.1/108.6, denoting average values in each year)
- F 'Expected' percentage change in passenger trips 1985/86 to 1987/8 on -1.5% p.a. trend (i.e. -3.0% over two years), with -0.3 elasticity for percentage real fares increase (E) and +0.4 elasticity for percentage bus-km increase.
- G ditto. on -3.0% p.a. trend
- H Passenger boardings per vehicle-km in 1985/6 (= C/A)
- I Percentage drop in operating costs per bus-km (ref. 19)
- J Index of real operating cost per passenger trip in 1987/88 (1985/86 = 100)

Other columns relate to staff and productivity, and are shown by operator type and national total only :

- K ~~Total staff 1985/86~~ (thousands)
- L Percentage change in total staff 1985/86 - 1987/88
- M Percentage change in platform staff 1985/86 - 1987/88
- N Local bus-km/all staff 1985/86 (thousands)
- O Percentage increase in local bus-km/all staff 1985/86 - 1987/88
- P Local passenger trips/all staff 1985/86 (thousands)
- Q Percentage change in local pax trips/all staff 1985/86 - 87/8

Diagram 1 Passenger journeys by bus
Great Britain



Data shown for '1985', '1986' and '1987' corresponds to the financial years 1985/6 etc.

Data for other services in 1987/8 has not yet appeared.

Local Buses in Britain

Percentage changes: 1985/6 to 1987/8

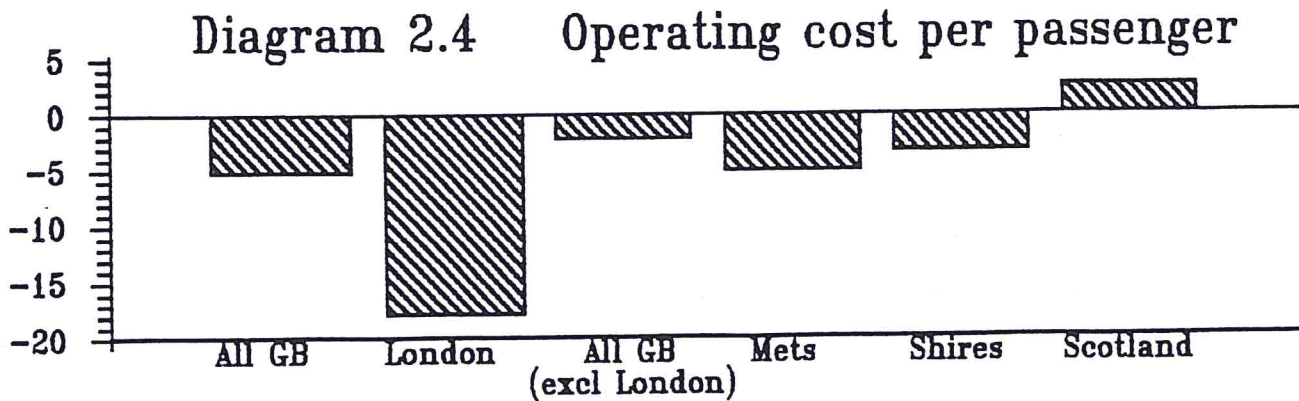
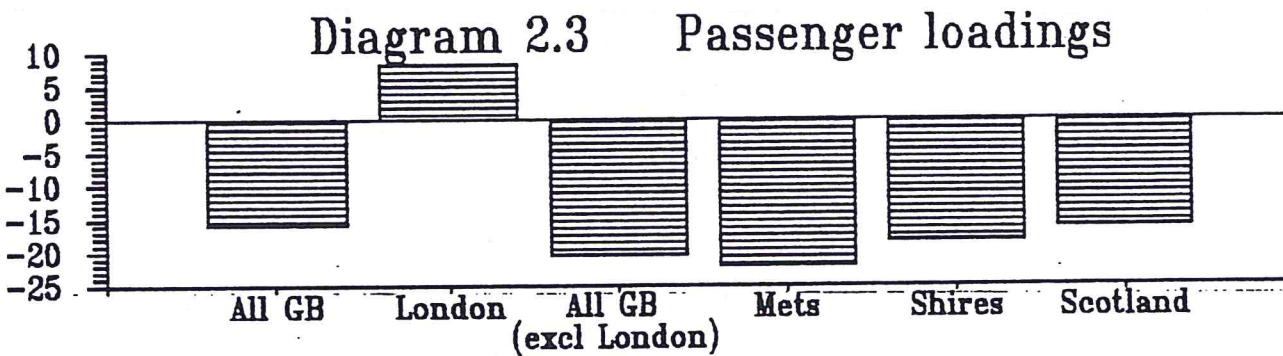
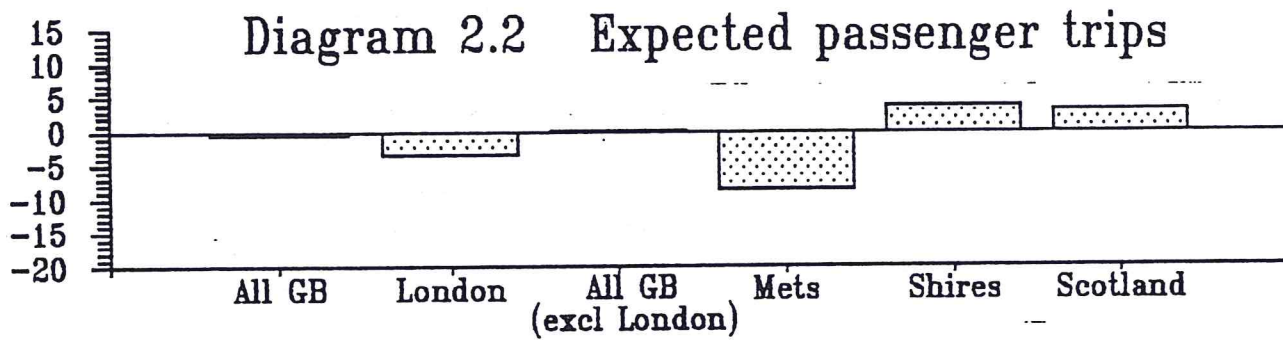
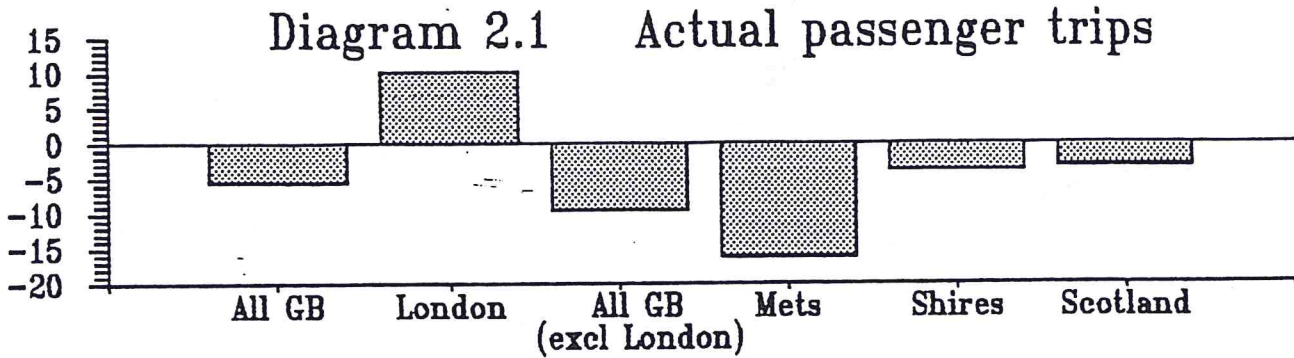
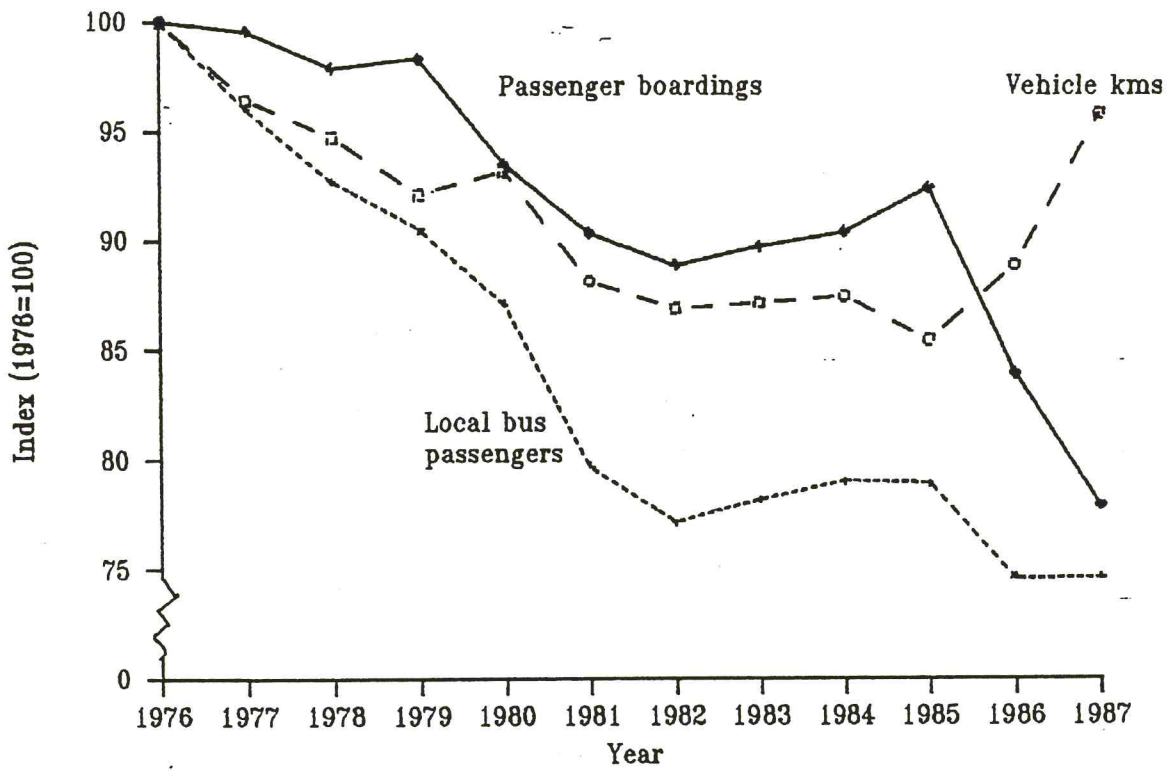


Diagram 3



Data shown for '1985', '1986' and '1987' corresponds to the financial years 1985/6 etc.

Efficiency Indicators

Diagram 4.1 Local bus-km / all staff

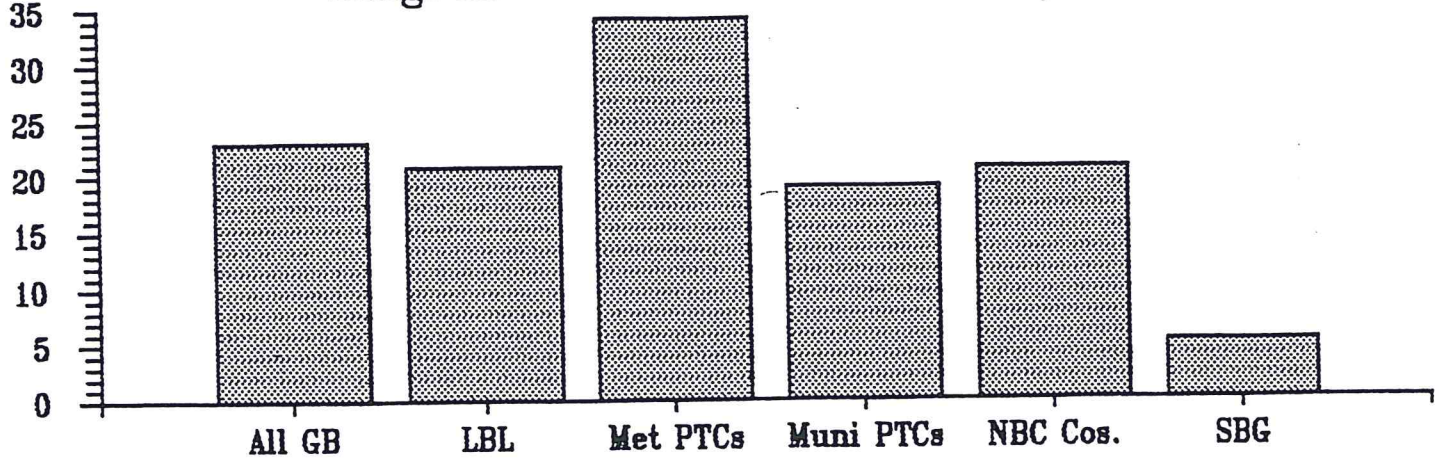


Diagram 4.2 Staff reduction

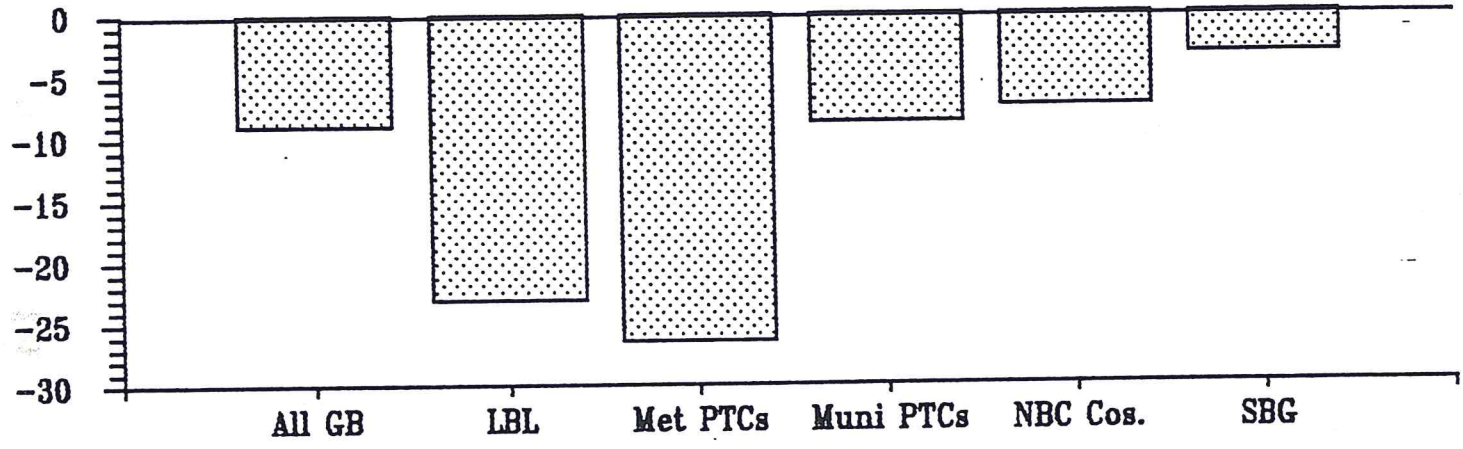
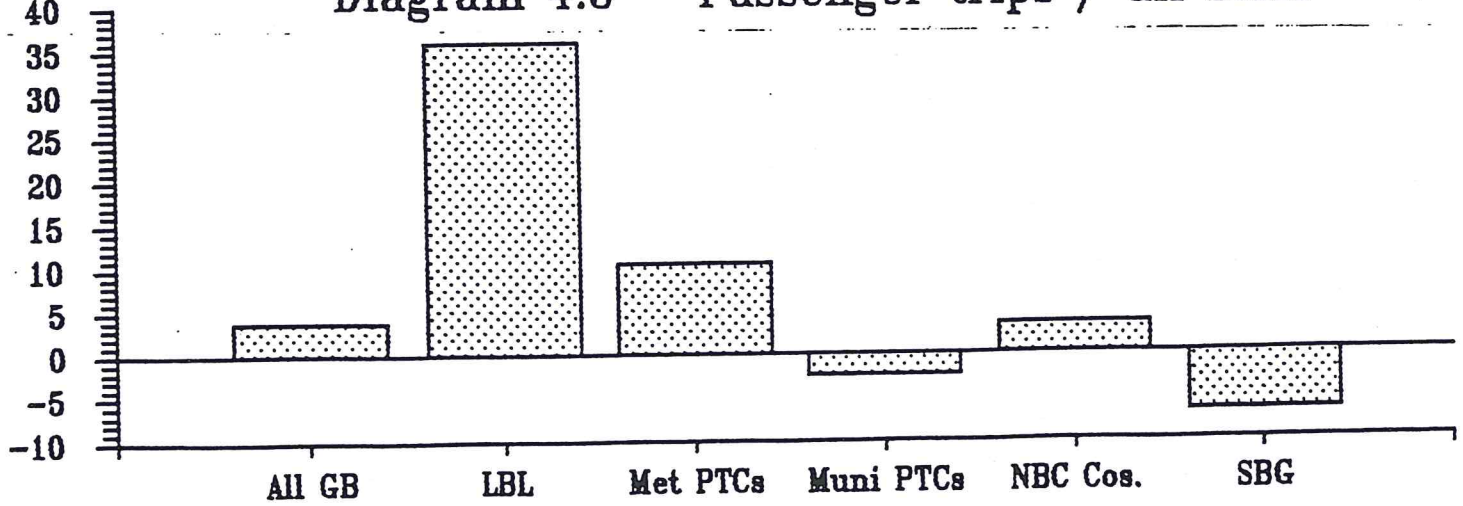


Diagram 4.3 Passenger trips / all staff



The vertical scale represents percentage changes between 1985/6 and 1987/8 in all cases

