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"Early Consequences of the Deregulation
of Bus Services in Scotland"

by

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(This paper is based upon a report to the Central Research Unit of
the Scottish Development Department (SDD) on monitoring work
undertaken by TORG over the period 1985-88.)

EARLY CONSEQUENCES OF THE DEREGULATION OF BUS SERVICES IN SCOTLAND

by

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1. INTRODUCTION

The 1985 Transport Act in the UK radically changed the framework for the supply of local bus services. Its provisions, commonly described as "deregulation", removed quantity control from local (formerly stage-carriage) bus services by abolishing Road Service Licences. Competitive tendering was also introduced for any service which a local authority wished to subsidise on the grounds of social need. In making these provisions, the Government foresaw that competition would result, which (it was argued) would lead to more efficient provision of services, thereby reducing the financial cost of services both to passengers and to taxpayers, whilst improving the quality of service.

In England and Wales, the privatisation of the National Bus Company was proposed and have been accomplished but, in Scotland, the Scottish Bus Group (SBG) was not to be privatised under the 1985 Act. Subsequently, however, the Secretary of State for Scotland has announced the Government's intention to privatise SBG as well.

Considerable interest has arisen, of course, in the effects which deregulation might have and a number of studies have been or are being carried out. This paper is based upon a report of the results of eight area studies in Scotland, undertaken by the Transport Operations Research Group (TORG) of the University of Newcastle upon Tyne on behalf of the Central Research Unit of the Scottish Development Department (SDD).

The aim of these area studies was:

"to identify and evaluate changes in public transport arising from the 1985 Transport Act, focussing particularly on the impact on the travelling public. The primary objective is therefore to establish and compare the levels of bus service provision, fares and patronage, before and after bus stage-carriage deregulation."

Accordingly, three primary topics were defined as the central issues for the monitoring programme. These were: (a) supply; (b) fares; and (c) demand. The process of monitoring was based on a six-monthly cycle of data-collection, as follows:

November 1985	the baseline measurements and surveys;
May 1986	before deregulation, preliminary changes;
November 1986	immediately after deregulation, the "interim period";
May/June 1987	after full deregulation; and
November 1987	12 months after baseline measurements.

Study areas were selected by the SDD prior to the start of the monitoring programme. The aim was to cover a range of the most common social and public transport circumstances in Scotland. Both rural and urban areas are included amongst the 8 areas selected for monitoring.

- (1) Highland Region - Inverness, Badenoch and Strathspey Districts and parts of Lochaber District;

- (2) Fife Region - North East Fife District;
- (3) Dumfries and Galloway Region;
- (4) Lothian Region - the corridor from Penicuik to Edinburgh City Centre;
- (5) Lothian Region - the corridor from Dalkeith to Edinburgh City Centre;
- (6) Strathclyde Region - the town of Paisley;
- (7) Strathclyde Region - the suburb of Bearsden and its connections to Glasgow; and
- (8) Strathclyde Region - the Easterhouse housing scheme and its connections to Glasgow.

This paper reports on the results of the monitoring programme in the eight study areas up to November 1987, covering the first complete year post-deregulation.

2. MAIN FINDINGS

So far, the effects of deregulation in these 8 areas have been far from uniform and, because we have sought to generalise, countervailing examples can no doubt be found with respect to each conclusion. Our findings must also be viewed in the wider context of deregulation elsewhere in the UK and the results of these case-studies are just one contribution to the overall pattern which is emerging.

In monitoring three main indicators of change namely, supply, fares and demand, we concentrated on the passengers' viewpoint, as required by our brief. Operators' views may differ and, crucially, we were not in a position to report on the financial viability of the industry in the aftermath of deregulation.

2.1 Overall Rate of Change

In general, a high rate of change has prevailed. When our monitoring work ceased, in November 1987, the situation was still far from stable. This was in sharp contrast to the trend towards a stable, integrated and coordinated public transport system which was evident prior to deregulation. Change came about most quickly and to the greatest extent in the conurbations. However, the rate of change appeared to be accelerating in the rural study areas, too, towards the end of the monitoring period.

Because of this increasing instability, it is too early to say whether the aims of the legislation will be fulfilled in the long term. However, the evidence so far from the study areas is that many of the more adverse predictions which were made prior to deregulation have not yet come to pass and that, in the short term, some aims of the Government seem to have been achieved. For example, competition has arisen in places, unit costs of

operation have fallen and most authorities have achieved an initial reduction in their expenditure on subsidy.

2.2 Changes in Supply

In all study areas, there were more bus-kms being operated in November 1987 than at the baseline in November 1985. The greatest increases were in the urban areas, with commercially registered services generally exceeding, in aggregate, the baseline levels. In the rural study-areas, commercial bus-kms are less than the baseline, although in some cases higher levels of service are now being offered in the free-standing towns. Although many rural services were not registered commercially, in all three rural study-areas commercially registered bus-kms had increased by November 1987. The Regional Councils have generally succeeded in their aim of "buying back" the missing pre-deregulation services through the tendering process.

Although supply has increased overall, with more bus-kms in total, these are not necessarily provided in the same places and at the same times as before deregulation. However, the widespread reductions that were feared - on Sundays and in early morning services - have not occurred due to the success of SPTE and Regional Council tendering activities. So far, Regional Councils have not had to make any particularly difficult resource-allocation choices within their transport budgets.

'On the road' competition has been extensive in the urban study-areas and, in the latter part of the monitoring period, was growing in the rural study-areas. Where more than one large, public operator existed within or adjacent to an area, competition between them was aggressive and widespread. In such cases, new independent operators have been few in number and, in the one case where they had been long-established, they appear to have been squeezed in the battle between their bigger rivals. Where there was only one large (SBG) operator in a locality, the level of activity from independents has been greater and competitive challenges have grown steadily.

Competition for tenders has taken place, even in the more rural areas where, pre-deregulation, some Regional Councils feared that there were too few operating companies to generate competitive bids.

Overall, therefore, there are now more providers of local bus services in the study-areas than there were prior to deregulation. With very few exceptions, however, all operators previously held operator licences, if only providing schools contracts, express services and other forms of transport services. Precious few entirely new entrants to the market have been recorded.

2.3 Changes in Fares

Growth in the number and range of multi-journey tickets available has been marked. The operators' marketing efforts have sought to generate brand loyalty by introducing tickets exclusive to their services, in contrast to the 'multi-modal' and 'through' ticketing arrangements prior to deregulation. A number of limited journey tickets have been withdrawn. Especially in the conurbations, where there is competition between large companies, travellers now have a wider range of tickets on offer.

In terms of single journey fares, which remain the most common method of purchasing bus travel, there is no consistent pattern of increase or decrease in fares. In some areas, competition appears to have reduced single fares, even in actual money terms. In other areas, despite competition, they have increased in both money and real terms. However, because of the widespread use of multi-journey tickets, offering substantial discounts to frequent travellers, it is well-nigh impossible to generalise about changes in average bus fares as a consequence of deregulation.

Only occasional examples of price competition with single fares are evident. More widespread is the use of multi-journey and discounted return fares aimed at capturing passengers to a particular operator. What can be said, however, is that there is no evidence of substantial general fares increases in the study-areas. One group of travellers is facing higher fares, namely children and teenagers - especially those not entitled to free school transport. Many children now have to pay for lunch-time journeys home, many 14- and 15-year olds must now pay full fares and in some areas the replacement of scholars tickets with zonal, multi-ride tickets has imposed higher fares on 16 to 18-year olds in higher education.

Lastly, concessionary fares schemes do not seem to have suffered from deregulation. In some cases the eligibility categories have been expanded.

2.4 Changes in Demand

No clear pattern of changes in demand has emerged. Despite the general increases in bus-kms and in competition, which have occurred, there have been few cases of any increase in the number of passengers observed in our surveys. In most cases, there is little evidence of change. Paradoxically, more buses appear to be carrying fewer passengers, suggesting that the long-run secular decline in demand for bus travel has not been halted by deregulation.

Competition has not necessarily generated more travel. Further, whilst recognising that observations at the roadside cannot describe conditions along a whole route, our observations suggest that passengers per bus have declined. Even where additional demand has been generated, in general neither incumbent operators nor newly arrived competitors are carrying as many passengers per bus as in the baseline of November 1985.

Our surveys of passengers' perceptions of the quality of bus services offered have generally focussed on areas where competition is greatest. Favourable impressions were reported in more areas than not, although there were places and certain aspects of services which were reported on unfavourably. This is particularly marked in the areas where demand appears to have declined most.

3. THE LEGISLATIVE FRAMEWORK

3.1 What "Deregulation" Implies

The 1985 Transport Act is widely regarded as being the most radical piece of legislation concerning the bus industry since the 1930s. Over the 50 year

period 1930-1980, the general drift of legislation had been towards regulation and control. Competition had steadily reduced, initially as companies merged or were taken over and, by the latter part of the period, the vast majority of the suppliers of local bus services in the UK - as opposed to coach and contract hire services - had passed into public ownership. By 1980, 90% of bus and coach journeys in Great Britain and 80% of receipts accrued to publicly owned operators (DTp, 1987). In Scotland, the proportions were 89% and 83% respectively (SDD, 1988).

In addition to the increasing public ownership of the industry, there was a general steady decline of patronage and of revenue, resulting in increasing amounts of revenue-support from local authorities. The 'Buses' White Paper (DTp, Scottish Office and Welsh Office, 1984) identified a thirteen-fold increase in revenue-support, in real terms, over the period 1972-1982. It saw radical changes in the structure of the bus industry (and in its legislative framework) as the only way to halt this decline.

The 1980 Transport Act had already marked the beginning of the end of the period of regulation and public ownership of bus services in Great Britain. It had abolished the road service licence (RSL) for long-distance express coach services, which resulted in a substantial growth in patronage and, at least initially, considerable competition. The process of deregulation was largely completed with the 1985 Act, which abolished the remaining part of the RSL system, as it applied to local bus services (formerly termed stage-carriage services), except those in Greater London.

'Deregulation' is often used as a catch-all description of the provisions of the 1985 Transport Act and it is a convenient shorthand expression in this paper. It must be remembered, however, that the 1985 legislation was much wider in scope. The main components of the Act are, as follows:

- (1) abolition of road service licensing (except in Greater London);
- (2) tightening of quality controls and safety standards;
- (3) competitive tenders for subsidy;
- (4) concessionary fares schemes open to all;
- (5) new grants for rural public transport;
- (6) break-up and privatisation of NBC - but not SBG;
- (7) PTEs split into administrative units and independent 'arms-length' operating companies;
- (8) municipal operators also to become 'arms-length' companies;
- (9) removal of the bus industry's exemption from the Restrictive Trade Practices Act of 1976; and
- (10) changes in taxi licensing and provisions for shared use.

It was argued, in the White Paper which preceded the legislation, that these provisions could

"... set (the bus industry) free to give a better service to the passenger at less cost to the ratepayer and taxpayer."

It foresaw competition, leading to the more efficient provision of services, thereby reducing the financial cost of services to passengers and ratepayers, whilst improving the quality of service.

Road Service Licences were to be replaced with a system of registration. Holders of Operator 'O' Licences who do not seek subsidy for a particular service have simply to register it with the Traffic Commissioner. After the expiry of the transitional arrangements (26th January, 1987) 42 days' notice was all that was required to introduce, amend or withdraw a local bus service (with some exceptions), subject to local authority agreement. This process of registration, although perfunctory, does provide a valuable source of information to which we shall return.

Local authorities, having examined these 'commercial' registrations, are able to subsidise additional services, if they regard it as necessary to meet social needs, but only through a process of tendering (subject to certain de minimis exceptions). The authority must publish not only the lowest priced tender but also its reasons for accepting any tender other than the lowest priced one. Having been accepted as a tenderer, the potential operator then registers the service - as 'supported' rather than 'commercial'. It is usual for local authorities to impose a number of conditions when seeking tenders, for example regarding maximum fares to be charged. The successful tenderer is then bound by those conditions for the duration of the contract.

Rural bus grants were introduced, on a sliding scale, to provide additional financial support to services in rural areas, which were felt to be most at risk due to low and falling patronage. This is paid on a per km basis to all registered services in rural areas. It amounted to 6p per mile (4p/km) in 1986/87, but will decline to zero over the subsequent four years.

In addition, a new grant was created to encourage new transport schemes for communities in rural areas. These one-off grants were administered by the Development Commission, in England, and by the Scottish and Welsh Offices in their respective jurisdictions.

Broadly, these were the main provisions of the 1985 Act which apply in Great Britain as a whole and are of general relevance to bus deregulation. There are, however, some particular differences in Scotland.

3.2 Differences in Scottish Legislation

The most substantial difference in Scotland is that the Scottish Bus Group (SBG) was not to be privatised by the 1985 Act, in contrast to the National Bus Company (NBC) in England and Wales. In effect, this meant that the overwhelming majority of local services were to continue to be provided by publicly owned companies. However the Secretary of State for Scotland has now announced (early in 1988) that the SBG will be privatised in due course. The distinction must be made, however, between the nationally owned SBG and the local authority owned municipal operations. Only two of the latter are covered in this study: Lothian Regional Transport (LRT), owned by Lothian Regional Council, operating in and around Edinburgh; and Strathclyde Buses Limited (SBL), owned by Strathclyde Regional Council and formerly the direct bus operations of Strathclyde Passenger Transport Executive (SPTE).

Although financial issues are not covered in detail here, another important difference exists in Strathclyde. Metropolitan counties were never set up in Scotland, thus the abolition of the Greater London Council and the metropolitan counties in England and the introduction of direct control by the

Secretary of State for Transport of the precept levied to support the PTEs in England, did not apply in Strathclyde. Regional Council funding of SPTE activities is controlled in the normal way by the Council. Also, the Passenger Transport Area in Strathclyde does not cover the whole Region, although the PTE acts as agent for the Regional Council in those parts of the Region outwith the Area. In terms of the case-studies reported here, however, all those in Strathclyde lie within the Passenger Transport Area based on the City of Glasgow.

4. AIMS AND OBJECTIVES OF MONITORING

Understandably, there was considerable interest in the effects which this legislation would have upon the bus industry and a number of studies were established to monitor the effects of deregulation. These have been/are being undertaken directly by, and in some cases under contract to, central government agencies, local government groups (such as the AMA), individual local authorities, academic organisations and private bodies. The work reported here falls into the category of studies by central government.

The programme of research into deregulation which is being undertaken by central government is described by Balcombe et al (1987). It comprises: a national overview, being undertaken by TRRL and Scottish Office staff; a series of area studies, being carried out under contract to TRRL and the Scottish Office and by joint TRRL/PTE working groups in some PTE areas; and case studies being undertaken directly by TRRL staff and, in some cases, by consultants on their behalf. It is important that the eight area studies reported here are seen in this context of a wider programme of research in the UK in general and Scotland in particular.

In the autumn of 1985, the Scottish Development Department (SDD), through its Central Research Unit (CRU), invited a number of academic institutions and consulting firms to submit proposals for some or all of eight area studies in Scotland. Whilst broadly similar in scope to the area studies in England and Wales to be carried out under contract to TRRL, they differed in detail. The outcome of the proposals and subsequent negotiation was that a contract was awarded by the SDD to the Transport Operations Research Group (TORG) of the University of Newcastle upon Tyne to undertake all eight area studies. This contract initially covered the period November 1985 to November 1987, but was subsequently extended to March 1988 in order to incorporate a round of data collection in November 1987.

The aim of the area studies, as set out in the terms of reference, was:

"to identify and evaluate changes in public transport arising from the 1985 Transport Act, focussing particularly on the impact on the travelling public. The primary objective is therefore to establish and compare the levels of bus service provision, fares and patronage, before and after bus stage-carriage deregulation."

This general aim was developed in terms of monitoring the effects of deregulation on a number of inter-related aspects. Three primary topics were

specified and, as resources permitted, a number of secondary topics were also to be studied. These were the following:

PRIMARY TOPICS:

- (1) the supply of bus services;
- (2) fares on those services; and
- (3) the demand for those services at those fares.

SECONDARY TOPICS:

- (1) new types of services;
- (2) the effects of new grants;
- (3) quality of service;
- (4) through ticketing and travelcards;
- (5) concessionary fares schemes;
- (6) school bus services; and
- (7) viability.

In presenting the findings of this work, this paper only really covers the results of the three primary topics, although some mention is made of the secondary ones.

5. METHOD OF MONITORING

5.1 Data Sources

In broad terms, we carried out a 'before' and 'after' study, based on a six-monthly cycle of data-collection. The key dates were:

November 1985	baseline, before deregulation;
May 1986	before deregulation, preliminary changes;
November 1986	immediately after deregulation but in the 'interim period';
May and June 1987	after full deregulation; and
November 1987	12-months after deregulation.

Table 1 shows the main sources of data covering the primary topics. In addition, information has been gained from interviews with operators and local authorities, the media and personal contacts.

The supply of bus services within the study areas was monitored by investigation of both the size and spatial extent of the registered networks, changes in the equivalent annual bus-kms operated during the respective legislative phases and alterations to the level of service frequencies offered at different times of day.

Viewing this combination of aspects would, it was felt, overcome weaknesses of relying upon one particular indicator of supply. Monitoring annual bus-kms in isolation, for example, can obscure the fact that the geographic extent of the network may have changed or that the level of service frequencies could have

altered substantially within the same overall total of annual bus-kms. Of particular interest was the extent to which the competition envisaged by the legislation has arisen in practice.

Table 1 : Sources of data for monitoring changes in primary topics

Topic	Sources of data
Supply	timetables registration forms local authority re tenders BRI/MVBus software
Fares	faretables surveys
Demand	operators records six-monthly cycle of surveys: (a) at the roadside (b) on board buses/household questionnaires

A number of data-sources were used. The primary source was the registration system and basic data were drawn from the National Bus Registration Index (BRI) maintained by TRRL. These were supplemented by SDD, SPTE and TORG to incorporate geographic information and to correct any errors and omissions.

A regular series of interviews with both local authorities and bus companies helped to assess both the operating climate and atmosphere within the respective areas, together with more definite information on overall supply changes, especially to individual service registrations, timetable frequencies and mileages, and any route changes which may have taken place. In some areas, regular 'on-bus' surveys conducted once every six-months by TORG gave a further understanding of the study area, and the operating services within it.

5.2 Supply of Bus Services

The BRI provides a comprehensive database of registered bus services, although there are no directly comparable "before" records. Accordingly, a set of 'dummy' registrations were prepared for stage-carriage bus services in the study-areas. These were coded and entered into the database to provide a basis for comparison. Coding was carried out by Strathclyde PTE for the Strathclyde areas, CRU for Lothian Region and TORG for all other areas.

Whilst BRI provides basic information on registrations, frequencies, route- and bus-kms, it contains only summary plain language descriptions of the geographic cover of services. A suite of computer programmes (MVBus) has been developed to redress this. (MVBus was developed by Systematica, on behalf of TRRL, SPTE, Scottish Office and a number of other organisations who

contributed to its funding.) MVBUS makes use of BRI coded data to which are attached a digitised representation of the routes. It thus becomes possible, using MVBUS, to plot the extent of geographic cover of bus services at various times of day and day of the week, with respect to specified date. Comparisons can thus readily be made.

In principle, this provides an accurate and systematic way of monitoring the supply of bus services in an area. Problems did arise, however, of two kinds. First, a complete and rapid flow of registration forms is required, which can then be coded into the format needed for the database. In practice, not all forms were received in time and coding is a time-consuming process, hence omissions have occurred. If there are many and frequent changes (now that the 42-day rule is in force), the veracity of the database may be questioned. Secondly, it is assumed that the supply on the ground is the same as that registered. We know this not to have been the case in a few places, in the interim period, but hopefully they will have become few and far between as service-patterns became established.

5.3 Fares

Three aspects of bus fares have been monitored:

- (i) the level of fares;
- (ii) the range and usage of fare payment methods; and
- (iii) people's perception of fares.

(1) Fare levels

In the absence of any known formal fare-structure, a simple linear regression analysis has been used to explain the actual level of standard single journey fares charged in the different areas with respect to trip length. This model reflects the conventional British 'stage-fare' basis of charging.

It is assumed that the fare charged to a passenger is made up of a fixed boarding charge plus a sum dependent on the distance travelled of the form:

$$\text{fare} = \text{boarding charge} + (\text{price per mile} \times \text{distance travelled})$$

(A) (B)

Regression exercises have been carried out on price/distance data from faretables applicable in the baseline (November 1985) and from subsequent faretables. Particular attention is paid to the 'goodness of fit' of the regression equation to the data and of the relationship between the coefficients A and B.

Many operators offer a wide range of ticket types. Some tickets are aimed specifically at regular bus users, e.g. in the form of a discounted price for frequent journeys, and some are aimed at encouraging travel, for instance, travelcards allowing unlimited use of much of a bus network. The availability of different fare-payment methods and the price of each, in respect of discounts offered on the cost of single tickets, has been monitored. The extent of through ticketing arrangements has also been observed. The usage of the various tickets is more problematic to monitor. Some data have been provided by operators but many companies regard this as confidential

information and some do not have ticket machines capable of recording the necessary information. The survey forms used in the demand analysis contain a section requiring passengers to state the ticket type used for that particular journey, hence a sample of ticket usage data have been collected by this means.

Not only is the perception of fare levels difficult to quantify but resources were limited in finding out just what people think of fare levels and whether they react to changes in them. The survey forms used give an indication of reaction to fares by way of passengers' responses in the "quality of service" sections of the questionnaires. Respondents were asked to rate various aspects of the bus service they travel on most often, including did they think fares are expensive cheap on a scale of 1 to 7. Chi-squared tests were used to check statistical consistency of responses over time-periods where there had been no fare change.

5.4 Demand for Bus Services

Sadly, patronage and revenue data is clearly regarded by operators as in the "commercial in confidence" classification in today's competitive environment. The response which we have received from operating companies has been mixed - covering all extremes, from open books to nothing at all. Most have provided a reasonable level of information and access to their vehicles for survey purposes. Where available, operators' data are presented in the form of an index, to preserve commercial confidentiality.

Our survey strategy has been to carry out roadside screenline and cordon counts, particularly in the urban areas, to try and establish overall levels of bus use and market shares between operators where competition has arisen.

There are a number of statistical problems here. Daily passenger volumes vary markedly in systematic ways (by season and day of week) and in random ways. Our surveys, particularly roadside estimates of the number of passengers on board a bus, are subject to error. Any two counts, therefore, would not be expected to be the same. We are seeking to establish the extent of any changes and therefore need to have some means of estimating the probability of any observed differences being unlikely to have occurred by chance.

On several hundred separate occasions we have had on-bus surveyors passing screenline/cordon points. Assuming that the surveyor on-board has made an accurate count, the validity of the roadside estimate can be tested. Broadly, low and high bus occupancies appear to be estimated well, mid-range figures less well. Several bus operators have provided us with daily patronage on particular bus routes (even single bus journeys within a daily timetable) for periods as long as a year. It has thus been possible to examine the likely variability between single days' counts. This has shown that the coefficient of variation (standard deviation expressed as a percentage of the mean) can be as high as 100% on low volume routes, but for heavily trafficked urban routes (say in excess of 1,000 passengers per day) 10% is a reasonable rule of thumb. It is not possible, however, to place conventional confidence limits on these estimates, due to the wide differences between types of route.

The roadside surveys also included counts of taxis and their occupancies, as it was suspected that changes in bus services may have had some impact upon

taxi use. Unfortunately resources have not been available to analyse all of this data as yet, and changes in taxi usage are not fully reported here.

The main aim of the on-bus and household surveys was to establish passengers' responses to changes in service and to establish their perceptions of quality of service. Depending upon bus frequency and the nature of the residential areas concerned, a combination of on-bus, bus stop and household surveys were carried out. In each case, the self-completion questionnaires used were similar and reply-paid envelopes were provided for their return.

Counts were also carried out during on-board surveys, to establish age/sex splits amongst passengers for control purposes, with respect to questionnaire returns, and to gain a broad impression of the nature of the market being served. These counts also recorded information about boarding and alighting points, so that journey-lengths could be estimated, but these data are not reported here as operators regard them as commercially sensitive.

6. CHARACTERISTICS OF THE STUDY-AREAS

The eight areas covered by TORG's research programme were defined in the late Summer of 1985 by CRU. They are shown on the attached Figure 1, being:

- (1) Highland Region: Inverness, Badenoch and Strathspey Districts and parts of Lochaber District;
- (2) Fife Region: N E Fife District;
- (3) Dumfries and Galloway Region;
- (4) Lothian Region: the corridor from Penicuik to Edinburgh City Centre;
- (5) Lothian Region: the corridor from Dalkeith to Edinburgh City Centre;
- (6) Strathclyde Region: the town of Paisley;
- (7) Strathclyde Region: the suburb of Bearsden and its connections to Glasgow; and
- (8) Strathclyde Region: the Easterhouse housing scheme and its connections to Glasgow.

It is important to note that these areas were selected well before deregulation to include a range of the most common social and public transport circumstances in Scotland. They were not selected after the event to cover interesting or contentious cases, although as will be seen later, they do cover a wide range of the conditions which seem to have emerged in Scotland following deregulation.

6.1 Rural Areas

(a) Highland

Geographically, the Scottish Highlands are vast and isolated, being situated at the northern extreme of the British Isles, and are well-known for their rocky terrain and adverse weather. TORG's study area extends across three districts: Inverness, Lochaber and Badenoch and Strathspey. Within these, farming, forestry and fishing are the main industries, together with a few more specialist enterprises, such as whisky distilling, and a thriving tourist industry which centres around Inverness and Aviemore.

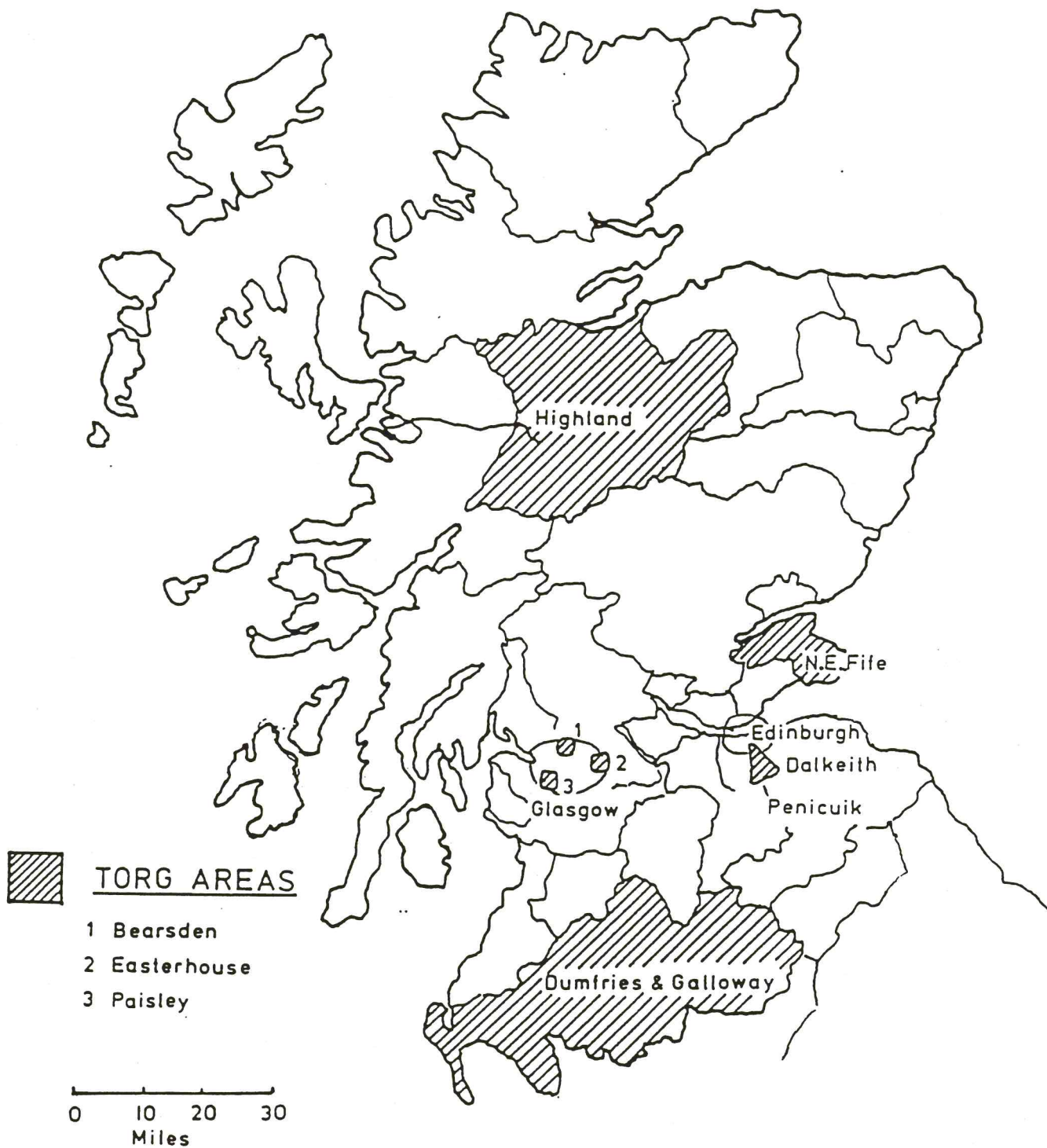


Figure 1: The study areas

Communications are difficult within the Region and the main population centres are separated by considerable distances: Inverness (pop 40,612) is often referred to as being the 'Capital of the Highlands'; 66 miles away is Fort William (pop 11,533), the other main town in the study area (figures taken from the 1981 Census of Population).

A network of poorly-aligned, narrow roads is slowly being updated. The A9 Trunk road has been completely rebuilt, allowing good access to, from and through the area. Significantly, the opening of the Kessock Bridge, north of Inverness, has both eased the flow of traffic through the town and increased the mobility of the communities on either side of the Moray Firth. A new bridge was opened in Inverness town in December 1986: this was designed to ease the vehicular flow problems within the town and is not currently used by local bus services. The remainder of the road network contrasts sharply with the improvements made to the A9, highlighting the problems of access to more remote parts of the area.

The major bus operator in the area prior to deregulation was Highland Scottish, the territorial SBG operating subsidiary. A number of small, private operators provided schools and some stage-carriage services in the Region as a whole, but few of these were in the study area. The Region also supported a number of Post buses, some within the study area.

(b) North East Fife

Fife Region lies on the east coast of Scotland with the Firth of Tay to the north and the Firth of Forth to the south. It is a rural, undulating area and the District of N E Fife has no heavy industry. Agriculture, fishing and tourism are the main components of its economy. Figure 1 shows the study area.

At the 1981 Census the population of N E Fife was 62,100, about one fifth of the Regional total. The main towns within the area are St Andrews (11,400) and Cupar (6,600). St Andrews is a University town and the renowned golf courses attract visitors to the area. The population, particularly in the coastal villages, tends to be elderly. The Tay Bridge links the District to the City of Dundee (outside the study area) but there are few other major highways in the District. Railways play little part in local transport in the District.

Prior to deregulation, local bus services were dominated by Fife Scottish, the territorial SBG operating company in the area. Public transport was seen as an important public service by the Regional Council who had held fares at 1982 levels by way of network support to Fife Scottish. Fife Regional Council were strongly opposed to the 1985 Transport Act.

(c) Dumfries and Galloway

The study area covers the whole of Dumfries and Galloway Region (Figure 1). The Region is situated in the south western corner of Scotland and is approximately 100 miles wide by 60 miles from north to south. Its population is around 145,000, comprising many small villages as well as the main population centres of Dumfries (31,000) - the Regional administration centre -

Stranraer (10,500), with its ferry link to Northern Ireland, and Annan (8,000).

The Region is served by several main roads, such as the A75 from Gretna to Stranraer, A76 Dumfries to Kilmarnock link and the A701 Dumfries to Edinburgh road. In addition, numerous minor and unclassified roads form an intricate network of highways. The Region is noted particularly for farming, light industry, forestry and thousands of tourists are attracted to the beautiful inland scenery and coastline. The Nithsdale area has a high concentration of manufacturing works and opencast mining is carried out around Kirkconnel.

Dumfries and Galloway has the highest car ownership level of any Region in Scotland, 64.1% of households owning a car compared with 51.3% as the Scotland average (1981 Census). There has been a substantial growth in car ownership since 1971, when 55% of households in the Region had one or more cars available. Local rail services form a minor part of the transport scene, although there is a rail link from Glasgow to the Stranraer ferry terminal.

Prior to deregulation, the SBG subsidiary Western Scottish was the major operator in the Region, running routes over an extensive network both geographically and in terms of journey frequencies. However, nearly 20 independent operators also provided local services. Although widely spread over the Region, their combined frequencies fell far short of those run by Western, many being school routes open to the public following recommendations in SCOTMAP.

The Post Office and the Regional Council 'Yellow Buses' (operated under Section 46 of the 1981 Public Passenger Vehicle Act without PSV 'O' Licence) provided services, mainly in the more rural areas.

6.2 Urban Areas

(a) The Penicuik and Dalkeith Corridors

Penicuik (population 17,600 at the 1981 Census) is an expanding commuter town, situated 11 miles to the south of Edinburgh at the foot of the Pentland Hills. Originally founded on paper-making, Penicuik is now the largest town in Midlothian and during the last two decades a number of new industries have been established.

Dalkeith (population 11,250) also is a commuter town for Edinburgh, being eight miles from the city centre. Whilst founded on grain and cattle markets, it is now the administrative centre of Midlothian and has an expanding industrial base.

Both towns have a number of satellite housing schemes which influence their bus networks. Neither town is now served by rail services, but good road connections, A7, A68 and A701 link the two towns to Edinburgh.

Prior to deregulation the SBG had a monopoly of bus services along the corridors to Penicuik and Dalkeith; predominantly Eastern Scottish, but with some longer distance Lowland Scottish routes also passing through the towns en route to Edinburgh. Lothian Region Transport, historically the Edinburgh

municipal operator, did not provide services outwith the city boundary but was the major operator within it. The predominant pattern of bus services in the towns was to provide links into the City of Edinburgh.

(b) Bearsden

Bearsden is a high status suburb on the north western edge of the Glasgow conurbation, its population is around 27,000 and it has a high level of car ownership. With the neighbouring suburb of Milngavie, it makes up the District of Bearsden and Milngavie which is regarded as an up-market, commuters' residential area for the City of Glasgow.

There are good rail links to the city, with the line through Bearsden terminating at Milngavie offering fast and frequent (electrified) services to the city centre. The predominant bus operator in the area in November 1985 was Kelvin Scottish, an SBG subsidiary, who maintained a depot on the northern edge of the study-area on the boundary between Bearsden and Milngavie. Most bus services in Bearsden did not originate or end in the suburb, but passed through en route between Glasgow and other areas to the west or north.

(c) Easterhouse

In direct contrast to Bearsden, the Easterhouse scheme is almost entirely public sector housing with low car-ownership. On the eastern edge of the City of Glasgow, adjacent to the M8, it has excellent road connections to the city. There is also a railway station to the south of the estate but this is beyond convenient walking distance for the majority of residents.

Traditionally, there has been a great dependence on buses in the area, with both SBL, who were the major operator prior to deregulation, and Kelvin Scottish providing a high frequency service within the context of the PTE's duty to develop an integrated public transport system. There are few facilities within the estate and this, combined with many social linkages to other parts of the city following redevelopment of the inner areas, lead to high levels of bus use.

(d) Paisley

Comprising about half the population of Renfrew District, the town of Paisley (population 84,000) is a manufacturing town in its own right. Situated seven miles to the south west of Glasgow, near to Abbotsinch Airport, it has excellent road connections to the city via the M8 and a fast (electrified) railway connection to Glasgow Central Station.

Car-ownership in the town is relatively low and it has a tradition of being good bus territory. The SBG operating company in the area, Clydeside Scottish, is based in Paisley. Two substantial independent operators also are based in the area, McGills and Grahams. prior to deregulation, both companies had provided stage-carriage services in the town for many years. For McGills, the stage-carriage operations was, and remains, their entire business; Grahams undertake a limited amount of coach and contract-hire work. The area study of Paisley concentrates on local services within the town, rather than its connections elsewhere, although as will be seen links and express services to Glasgow have become an important area of competition in Paisley.

7. RESULTS OF MONITORING CHANGES

7.1 Extent of Commercial Registrations

In both rural and urban areas, MVBUS proved a useful tool in coping with the constant updates and amendments to registrations which took place, especially after January 1987.

Some general trends emerged within the respective rural and urban areas following initial commercial registrations (as at 28th February 1986) and amendments prior to deregulation day (26th October 1986). These are compared against subsequent registrations which generally took place after 26th January 1987 and included withdrawals, amendments and extensions to commercial services, as well as some formerly supported services which were subsequently registered as commercial.

(a) Rural Study-Areas

Within the study areas of Highland, North East Fife and Dumfries and Galloway, Table 2 compares the Baseline (November 1985) annual bus mileage with the initial annual bus mileage total from commercial registrations and those that subsequently followed up to the end of November 1987. Initial registrations of commercial mileage (November 1986) ranged from 60% to 80% of baseline in the three rural study areas. However, as Table 2 reveals, this increased in all cases over the first year of deregulation. It must be noted that, although total bus miles gives a general impression of supply, the bus miles registered by November 1986 were not necessarily the same bus miles that were operated in November 1985.

Many pre-deregulation newspaper reports and statements by local councillors suggested that rural areas were likely to suffer badly in terms of reduced services. Indeed, the provision for 'Rural Bus' and 'Innovation' grants was a recognition by the Government of the need for special provisions to ensure the maintenance of services in rural areas.

It was thus necessary for us to investigate not only the actual level of annual bus miles, but also the times of day which were covered by commercial registrations.

Looking collectively at initial registrations (November 1986), in the rural parts of the study areas, early morning (05-0700 hrs) and evening services (20-2200 hrs) on both weekday and Saturday seemed to be those time periods which suffered general service reductions. In addition, most Sunday services - across the day - were also reduced.

Alternatively, within the areas' main population centres, notably different trends emerged. In St Andrews, for example, weekday and Saturday early morning services were registered at approximately the baseline level, whilst evening and Sunday services had only slight reductions.

In Inverness, commercial services were registered to cover the whole day, weekday and weekend, at almost the same service level as November 1985. This was done intentionally by the local SBG company to demonstrate its commitment

Table 2 : Commercially registered bus miles in the rural study areas

Area	Annual Bus Miles (millions) within study areas				
	Nov 85 Baseline	30th November 1986		30th November 1987	
		Commercial Registrations	% of baseline	Commercial Registrations	% of baseline
Highland	2.79	2.25	81	2.47	89
N. E. Fife	1.90	1.15	61	1.65	87
Dumfries & Galloway	2.98	1.75	59	2.43	82

Table 3 : Commercially registered bus miles in the urban study areas

Area	Annual Bus Miles (millions) by study area				
	Nov 85 Baseline	30th November 1986		30th November 1987	
		Commercial Registrations	% of baseline	Commercial Registrations	% of baseline
Penicuik (1)	1.84	2.04	111	2.34	127
Dalkeith (1)	2.14	2.75	129	3.29	154
Easterhouse (2)	2.51	5.00	199	5.54	221
Bearsden (3)	2.28	2.76	121	2.32	102
Paisley (4)	6.73	6.96	103	7.53	119

- (1) Services along the corridor only
(2) Total miles on all services entering Easterhouse
(3) Total miles on all services passing through Bearsden
(4) Excluding long distance services passing through Paisley

Table 4 : Changes in bus miles in the Study Areas

Study Area	Equivalent annual bus miles (millions)						
	Nov 85 Baseline	30th November 1986			30th November 1987		
		Commercial	Supported	Total	Commercial	Supported	Tot
Dalkeith	2.14	2.75	0.07	2.82	3.29	0.17	3.4
Penicuik	1.84	2.04	0.03	2.07	2.34	0.03	2.3
Easterhouse	2.51	5.00	0.12	5.12	5.54	0.12	5.6
Bearsden	2.28	2.77	0.26	3.02	2.32	0.27	2.5
Paisley	6.73	6.96	0.01	6.97	7.49	0.04	7.5
N. E. Fife	1.90	1.15	0.85	2.00	1.65	0.25	1.9
Highland	2.79	2.25	0.50	2.75	2.47	0.50	2.9
Dumfries & Galloway	2.98	1.75	1.51	3.26	2.43	1.56	3.9

Sources: BRI, bus company and Regional Council records, TORG records

and, presumably, to protect its territory. We understand, however, that changes have occurred in Inverness after the end of the monitoring period in November 1987. These include registrations by independent operators and deregistrations by Highland Scottish.

In Dumfries town there were substantial shortfalls in weekday interpeak (10-1500 hrs), early morning (05-0700 hrs) and evening services (20-2200 hrs), in Saturday early morning (05-0700 hrs) and morning peak (08-0900 hrs) as well as in all Sunday services.

(b) Urban Study-Areas

The pattern of commercial registration differs substantially when we turn to the urban study-areas.

In the two Lothian corridors, and the three Strathclyde study-areas, annual bus mileage from initial commercial registrations exceeded the November 1985 baseline, as shown in Table 3. This trend has continued with subsequent commercial registrations, with further service increases in all areas except Bearsden.

These increases in bus miles are reflected in the increased service frequencies offered at many times of the day. In Easterhouse there have been increases in all time periods, including Sundays, and Paisley has substantially higher frequencies during most weekday time periods.

In Dalkeith there were slight frequency reductions in weekday evening time periods (20-2200 hrs) and on Sundays. Otherwise, there were service increases. The Penicuik corridor saw increases over all time periods, including Sunday.

Although the majority of cases illustrate increased service levels, some time periods show reductions. For example, in Bearsden reductions occurred in weekday and Saturday morning peaks and in the evenings, as well as slight reductions across the whole of Sunday. However, a new, but limited, Saturday late night service (between 0200 and 0400 hrs) was also commercially registered.

In Paisley there were reductions in the Saturday morning and evening peaks, as well as in weekday and Saturday evening services (20-2200 hrs). Some minor reductions also occurred across all the Sunday time periods. However, a Saturday late night service (0200 to 0400 hrs) was registered commercially.

The extent of spatial cover also generally increased in the urban study-areas, in some cases even at off-peak times.

7.2 The Tendering Process

Following the initial registration of commercial services by operators, local authorities reviewed the public transport network, assessing gaps both in the spatial extent and daily timetable coverage where they believed social needs justified subsidy to restore a service. Whilst all the local authorities in the study-areas aimed to restore their network to its pre-deregulation level, it was recognised that financial considerations might inhibit this.

Especially in the rural areas, there was widespread apprehension about whether the sum total of bids for supported services would exceed the budgetary limits. Dumfries and Galloway Region consequently decided to introduce tendered services in phases, concentrating on financing what were considered to be the most important 'links' within the network/timetables and then 'topping up' the remainder with whatever money was left within the budget.

Highland Regional Council adopted an alternative approach. Within the Region as a whole they invited tenders for 73 services which would return the network to its prederegulation level. These included 14 contracts which were sought to "top up" the commercially registered network and excluded the services separately put out to tender by the Education Department. At the same time, 44 alternative services were also offered for tender: these were for lower frequencies on essentially the same routes. These tenders were invited as a precaution in case the cost of providing the prederegulation level of services exceeded the limits of the budget. In the event, the prederegulation network was "bought back" at a cost which was estimated by the Region to be 11% less than the previous year's budget out-turn.

By contrast, in the urban areas most or, in some cases, all of the original links had already been commercially registered. Subsequently, it was more a case of replacing missing journeys, for example a service to take workers to the early morning hospital shift, filling late night/early morning omissions in the timetable, or restoring end sections of routes that had not been commercially registered.

Invitations to bid were widely distributed and responses as bids for individual routes were the most common within the initial tender process. In N E Fife, however, Fife Scottish offered reduced prices for 'packages' of routes, which in this case proved to be the most favourable financial option for the Regional Council.

Contracts were issued for varying lengths of time. In Lothian for example, they were awarded on 2, 3 and 4 year bases, in order to stagger both the future administrative burden of re-tendering, to allow a close financial monitoring of costs and to provide greater flexibility within the continually changing registration of commercial services.

Within the rural areas the average number of competitive bids varied, being very low in N E Fife. Within the more urban areas there was evidence of strong competition. It also appears that competition was higher for subsequent tenders, for example, across the Strathclyde Region there was an average of 2.5 bids per route in the first round of tendering in Summer 1986, which increased to 3.3 bids in the second round in Summer 1987.

In most of the study-areas contracts were issued on a 'net subsidy' basis (where operators retain all revenues, grants and such like, in effect seeking a top-up subsidy to cover the estimated shortfall between costs and income), and usually stipulated detailed timetables, a listing of main bus stops and a maximum fare-scale based on the previous operator's fares. The exception occurred in the Highland study area where a maximum fare scale was not specified, as it was felt that placing a limit on fares might lead to higher tendered prices.

Following the initial round of tendering, most regions had restored the original network provision with an equal or reduced subsidy cost, although complications surround the calculation of the costs of revenue support. In Highland the Council report that, for the Region as a whole, there was an approximate 11% saving. The exception seems to be Fife where the Council estimate that deregulation initially cost the Region approximately an additional £450,000. Harrison and Pullen (1988) discuss revenue support in more detail.

Table 4 illustrates the ratio of commercial to supported annual bus miles for each of the study-areas during the respective phases of the legislation up to November 1987. Table 5 illustrates the rate of change of registrations, since deregulation.

7.3 Competition

Within the context of supply, we sought to identify both 'on the road' competition, where two or more companies operate the same or similar routes within the same passenger market, and more 'qualitative' forms, so that the individual company's presentation to the general public - through timetables, special types of bus, or the reintroduction of crewed operation - could be incorporated into an overall assessment. In addition, of course, there is price competition.

From the outset of the monitoring programme there seemed a greater likelihood of the development of competition within the more densely populated urban study-areas between the large, public sector operators. Initial interviews with some of the smaller, private operators who perhaps had the potential to compete in the local market revealed, even before deregulation took place, that most had adopted an attitude of 'wait and see'. Some, however, did take the opportunity to compete; e.g. Leith in Dumfries and Galloway, Gaelicbus in Highland and Magicbus in the Glasgow area.

Many of the established companies had, by running local services over the years, formed close working relationships with the area's Regional Council, and had intimate knowledge of 'their' territory. Alternatively, the potential competitor - envisaged by the Transport Act as being likely to be the smaller independent - had already diversified and established themselves in a variety of different types of work including private hire and coach services, and would, therefore, perhaps be reluctant not only in challenging the large incumbent operator, but also in venturing into a new type of service provision.

In both the Edinburgh and Glasgow conurbations the historic monopoly boundaries had constrained competition for many years. Lothian Region Transport, who had traditionally operated within Edinburgh City, saw deregulation as an opportunity to expand their services out to both Penicuik and Dalkeith, encroaching upon Eastern Scottish's traditional operating area. Eastern, at the same time, were introducing high frequency minibuses with new 'every on some routes across the city, staffed by drivers specially trained in 'customer care'.

Table 5 : Numbers of changes to registrations: November 1986 - November 1987

Study Area	No of registrations Nov 86	During period November 1986 - November 1987							
		No. of Nov 86 registrations subject to				No. of additional registrations after 26 Jan 87			
		No Change	Minor Change	Major Change	with-drawal	No Change	Minor Change	Major Change	with-drawal
Highland	94	46	7	44	20	7	-	4	-
N. E. Fife	57	19	19	5	14	13	1	-	-
Dumfries & Galloway	146	56	13	67	20	9	2	4	4
Dalkeith	36	19	24	17	5	6	-	-	-
Penicuik	17	8	16	10	-	1	1	-	-
Bearsden	43	16	7	12	15	5	1	-	1
Easterhouse	25	14	9	9	4	1	-	-	-
Paisley	106	60	9	18	22	17	-	-	-

Table 7 : Passenger Journeys by Bus and Coach (Millions)

Type of operator	1977	1979	1981	1982	1983	1984	1985/86
Local Authority	434	420	382	366	349	340	334
Scottish Bus Group	358	350	322	314	319	311	320
Private	108	82	73	68	76	75	72
Type of service							
Stage	824	786	716	693	680	669	671
Express	4	4	2	2	2	3	(
Other	72	62	59	53	62	55	(55
Total	900	852	777	748	744	727	726

Source: SDD (1988), Table 2.1.

Table 8 : Passengers per bus crossing Bearsden Screenlines

Operator	Pax/bus				
	Nov 85	May 86	Nov 86	May 87	Nov 87
Kelvin Scottish	20.8	20.7	11.6	12.3	16.1
SBL	12.1	10.9	10.1	10.7	13.2
Other	11.9	8.7	8.2	10.2	11.0
Total	18.8	18.3	10.8	11.5	14.3

In Glasgow, competition has been particularly intense between SBL and the Scottish Bus Group. SBG companies took the opportunity provided by deregulation to re-route their services through the centre of Glasgow, providing expanded cross-city links. SBL, at the same time, expanded services outwith their traditional territory within the city.

A number of new local service operators have appeared in all the urban study-areas. Despite generally being smaller independents, each has tried to find a corner of the market which suits their own operating capacity. William Stewart Motors for example, running along the Dalkeith study corridor, are essentially filling timetable and route gaps omitted by LRT and Eastern.

Some small, independent operators, as in the case of Jay Coaches in Easterhouse, have simply converted their pre-deregulation 'works' services into journeys open to both workers and the general public. Others, like Magicbus in Easterhouse, have initiated completely new services, not only by running a regular Easterhouse to Glasgow City service, but also by developing a Company image, running Routemasters with crews, together with marketing techniques which included a periodic distribution of free pens and mugs to customers.

Whilst different types of competition have appeared in each of the rural study-areas it has not generally been on such a wide or extensive scale as in the urban areas.

Some of the more notable examples of rural competition have occurred within Dumfries and Galloway, where new operators and routes have appeared. Whilst in November 1985 there were 19 independent operators of local services, by November 1987, these had increased to 26, although some had previously operated buses, but not on local services. Not only are they servicing the area's main population centre - Dumfries town - they are also extending their provision in the countryside.

7.4 Other Operators

In the more remote rural areas, the supply of Post Office services was also monitored, in case local authorities asked them to bridge any minor gaps in the supported network that other commercial operators may be unwilling to fill.

Comparing pre- and post-deregulation Post Office provision, very little change has taken place within any of the study-areas. Most services simply continued running through the different phases of deregulation. The Post Office believe the provision of minor local postbus services to be a peripheral activity to their main purpose of delivering mail. So far, they appear content to continue with this role.

TORG also monitored the provision of taxi services. Within the main population centres - rural and urban - these play an important role, and it was felt that any reductions in the level of bus services could be to their advantage. Generally, it would seem as though this has not been the case. Substantial increases in patronage levels have not been detected, nor have there been noticeable increases in taxi movements.

7.5 Overall Changes in Supply

Viewed overall, the supply of bus services in the study-areas, in terms of bus miles, has increased following deregulation. In the urban areas this increase ranges from 11% to 130%. Perhaps most surprising is the change in the rural areas, ranging from no overall increase in North East Fife to a 34% increase in Dumfries and Galloway.

When looking more closely at the days of the week and times of day when service provision has changed, there are examples of reductions on Sundays, and early and late weekday services, but these are not universal.

For the public in general, competition has meant that in some areas they now have a choice of two or more bus companies who together are often providing enhanced frequencies throughout the day. It must be acknowledged however, that schedule matching is still common and that competition in some areas is still aggressive in nature. Because of this, services are continuing to change.

Not everyone has benefitted. In some areas there have been service reductions. Alterations to routes have occurred as operators shifted resources into more profitable areas and timetables have changed as they rescheduled their vehicles.

The overall supply of buses is far from being stable. In Strathclyde Region, for example, between January and November 1987, there were more than 2,000 amendments to service registrations. In the more rural areas change is also evident through both the re-tendering of services and further examples of 'direct' competition. Of the study areas, only in Paisley, Dalkeith and Easterhouse had more than half of the November 1986 registrations remained unchanged by November 1987. In all cases more than 40% had changed and in some cases, registrations have been modified several times.

7.6 Structure and Level of Fares

The requirement to monitor fares has been met in terms of the structure and level of fares, on the one hand, and the public's perception of these, on the other. The analysis of fare levels concentrates on single fares because these remain the most common form of purchase of bus travel. Data for analysis are drawn from bus company faretables, output from electronic ticket machines provided by operators and specific TORG surveys.

Single fares are taken here as the indicator of fares levels, in part because they generally remain the most commonly used fare, but also because there are many practical difficulties in attempting to estimate average fares when faced with a wide variety of multi-ride tickets of indeterminate usage. It is recognised that this concentration on single fares excludes the discounts often available from multi-ride tickets.

A number of features can be seen from Table 6. The first is the obvious difference between urban and rural services: urban services have higher boarding charges, but lower prices per mile than do rural. This reflects, to some extent, the costs of provision. On urban journeys the provision of a bus at all, irrespective of its (relatively short) journey length, accounts for a

Table 6 : Results of the Regression Model using Faretables applicable in the Study Areas

Bus Company	November 1985			November 1986			November 1987		
	Boarding Charge (p)	Price/Mile Factor (p)	R ²	Boarding Charge (p)	Price/Mile Factor (p)	R ²	Boarding Charge (p)	Price/Mile Factor (p)	R ²
URBAN AREAS									
CS-Paisley	18.24	6.03	0.84	30.03	3.54	0.52	20.18	7.60	0.88
KS-Bearsden	24.27	5.00	0.75	27.84	5.39	0.74	28.69	6.19	0.73
KS-Easterhouse	-	-	-	23.31	7.33	0.66	24.94	7.37	0.65
ES-Dalkeith	13.68	7.66	0.89	- (1)	- (1)	- (1)	21.16	5.23	0.94
ES-Penicuik	15.82	7.39	0.95	- (1)	- (1)	- (1)	19.75	4.22	0.93
LRT-Lothian	17.22	3.68	0.95	19.30	4.33	0.98	19.30	4.33	0.98
FS-St. Andrews	12.68	3.40	0.61	12.68	3.40	0.61	12.68	3.40	0.61
HS-Inverness	17.78	7.10	0.88	18.31	7.14	0.85	19.59	7.31	0.85
HS-Fort William	10.09	7.87	0.92	9.56	8.44	0.92	11.42	5.89	0.87
WS-Dumfries	12.70	9.20	0.87	- (1)	- (1)	- (1)	15.00(2)	8.7(2)	0.72
RURAL AREAS									
FS-N.E. Fife	27.63	4.17	0.83	27.63	4.17	0.83	27.63	4.17	0.83
HS-Speyside	21.44	8.77	0.94	22.74	9.17	0.93	32.72	8.10	0.90
HS-Service 44(3)	17.98	9.02	0.96	17.29	5.77	0.93	18.35	6.12	0.93
Gaelicbus (3)	-	-	-	18.56	6.50	0.76	24.71	4.36	0.80
Shiel Buses	30.43	6.07	0.97	30.85	8.22	0.96	30.85	8.22	0.96
WS-Dumfries-Gretna	29.60	6.40	0.96	29.60	6.40	0.96	30.50	6.80	0.96
Gallacher-Dumfries - Gretna	-	-	-	20.96	6.33	0.96	- (1)	- (1)	-
WS-Kirkconnel - Dumfries	34.90	6.40	0.97	34.90	6.40	0.97	37.70	6.60	0.97
Leith-Kirkconnel - Dumfries	-	-	-	32.90	5.65	0.97	- (1)	- (1)	-

Notes:

- (1) Faretables not available or service not yet introduced
- (2) Fares applicable in April 1987
- (3) Kinlochleven - Fort William

high proportion of cost. In contrast, on longer rural journeys, the distance-based component of cost assumes a greater importance.

Whilst there clearly are local variations, there has been a tendency in the urban areas to increase fares on short journeys by a greater proportion than on long journeys. This can be seen from the general increases in boarding charges in Table 6, with, in many cases, a reduction in the mileage-based component. This would, of course, follow from flat fares increases which have practical attractions to operators, for example in terms of coinage.

Generally, encouragingly high values of R^2 have been achieved, suggesting that the fares model of a boarding charge plus a price per mile continues to prevail. Had substantial price competition broken out, or had prices varied markedly between routes, we would have expected the values of R^2 to fall. This appears not to have been the case, with the exception of the Strathclyde areas, especially Paisley in November 1986.

Clydeside Scottish fares in Paisley in November 1986 did not conform well to the model used, as seen from the low value of R^2 , mainly due to the sharp increase in fares-scale over the period November 1985 to November 1987, with an increase of approximately 20% compared with that of 7% in the RPI over the same period.

7.7 Overall Changes in Fares

Overall, no consistent pattern emerges from these figures. In some cases, competition appears to have kept fares in line with inflation or even to have reduced them in real terms, for example in the Dalkeith and Penicuik areas and around Fort William. By contrast, in Bearsden and Paisley single fares have risen by amounts well in excess of inflation. It should be noted, however, that the Strathclyde study-areas probably have the most extensive range of, and greatest market penetration by, multi-journey tickets offering discounts to frequent travellers.

In the rural study-areas, fares have generally increased in line with inflation (7% increase in RPI November 1985 - November 1987) but competition appears to have held increases down in some areas. In Fort William there have been reductions of approximately 17%, in money terms, due to competition between HS and Gaelicbus. Independents generally charge slightly lower fares than the SBG. Whereas, in N E Fife, the Regional Council's low fares policy (no changes since 1982) was continued by Fife Scottish as a commercial policy, following deregulation.

Much more mixed results prevail in the urban study-areas. Single fares from Dalkeith and Penicuik have declined between 20 and 30% in money terms following competition between ES and LRT. In contrast, in Paisley and Bearsden, single fares have increased by some 20%, despite competition. In these cases, however, a wide range of multi-journey tickets offer substantial savings to frequent travellers. Multi-ride tickets allow benefits to be realised on both the operator and passenger alike. In many areas, passengers' perceptions of the level of fares changed slightly over the survey period to being more favourable.

The range of tickets offered by SBG subsidiaries continues to be comprehensive but there has been a movement away from limited journey tickets to those based on multi-ride in urban areas such as Strathclyde and Lothian. There has been a general increase in the range and availability of company specific ticket types, most notably in areas facing competition with other operators in an attempt to encourage 'brand loyalty'.

Concessionary fares schemes are operated by all of the Regional Councils. Operators are typically reimbursed by the Councils for permitting the elderly, disabled and certain age-groups of children to travel for reduced or free fares. The categories of eligibility have been extended in most regions, although 14 and 15 year old children's concessions are no longer included in the formal schemes in Strathclyde or Highland Regions, when travelling on commercial services.

7.8 Changes in Demand for Bus Services

Discussion of changes in demand following deregulation must be seen in the context of any background changes which have been taking place in recent years. Whilst the general public impression, reinforced by statistics quoted in the 'Buses' White Paper (DTp, 1984), has been one of continuous decline in the bus industry, taking all operators as a whole, there is evidence that this downward trend may have flattened out from 1982 on. Table 7 reproduces figures given in Scottish Transport Statistics 1986 (SDD, 1988). For the period 1977-82, decline is apparent in all sectors. However, from 1982 up to deregulation, total annual patronage in each year fell only slightly (at approximately 1% p.a.) and for SBG and private operators patronage increased over this period. However, there are fears that the decline since deregulation has accelerated again.

The most dramatic change in market size appears to have occurred in Bearsden. Quite clearly Kelvin's decline is due to the expansion of SBL into this area. Even so, total demand in this market has declined, such that Kelvin now appear to have a smaller share of a smaller cake. Nevertheless, their loadings per bus (Table 8) remain above those of SBL, at least as observed crossing the screenlines.

As if to underline how difficult it is to quantify changes in demand in periods of change, there appears to be conflicting evidence from the study-areas regarding the effects of competition.

In rural areas, where competition and service changes generally have been limited, we have not identified any changes in demand. Two of the larger towns in the rural study-areas, Dumfries and Fort William, have seen competition and this, combined with increased frequencies, has generated extra journeys.

All urban areas which have seen increased services and competition, exhibit far from consistent effects upon demand - well up in Easterhouse, probably up on the corridors into Edinburgh, no change in Paisley and down in Bearsden. The socio-economic contrast between Easterhouse and Bearsden may explain those differences and increases in fares will have had a countervailing effect to increases in supply in Paisley.

Whether the additional traffic can be sustained will depend upon whether the additional buses remain. Our survey results consistently suggest that lower loadings for the incumbent operator have resulted from competition, with those for the newcomer lower still. Without analysis of costs we cannot reach conclusions about viability. On the face of it, however, with only limited fares increases having occurred in most cases, revenues may also be down. In the long-run, it is hard to see how extra bus-kms can be sustained if patronage continues to fall. The dilemma over financing ever-increasing revenue support is likely to return.

8. PASSENGERS' PERCEPTIONS OF QUALITY OF SERVICE

8.1 Introduction

The results of the surveys to investigate passengers' perceptions of quality of service in the TORG study-areas are complementary to work on the three primary topics of supply, fares and demand. Measures of passengers' perceptions have complex relationships to physical 'on the ground' measures of bus service provision. For this reason, it is important to establish how services are perceived, as reactions to them may be unexpected and at variance with the physical evidence.

Surveys were undertaken of bus users on board buses, at bus stops and via household questionnaires, depending upon circumstances. The reply-paid questionnaires used were similar in each case and employed a semantic scale, whereby respondents were asked to rate performance of their bus services with respect to a number of attributes of the service - reliability, staff helpfulness, cleanliness and so on. A seven-point scale was used, the higher the score achieved, the better being that aspect of service in the view of the respondent.

The perception scores were examined in order to establish trends, the reliability of which is dependent on the number of surveys undertaken over time. Where trends are identified over a limited number of surveys then the conclusions can only be tentative.

8.2 Summary of Results

Across the six study-areas that yielded suitable time-series scores, there were apparent reactions to service frequency in all six cases. Dumfries and Galloway, Highland, North East Fife, Paisley and Dalkeith all exhibited positive trends, while the scores for frequency in Bearsden showed a negative trend. This is broadly in keeping with the findings for changes in bus-miles in the relevant areas.

From contacts with local authorities it is clear that the provision of information for passengers has become a problem in an environment of rapid change. This is reflected in downward trends in scores for information provision in Dumfries and Galloway, Highland, Bearsden and Dalkeith. Dumfries and Galloway Regional Council claim to have maintained a consistent standard of information issued by them since deregulation, but only as reflected in the

level of complaints. In any case, our survey results relate to information in general, rather than just that provided by the Regional Council.

General conclusions, however, are of limited value because each study-area is affected by its own local political, economic, social and geographical circumstances. A combination of these factors can help shape the individual nature of bus service provision in each area. As these factors clearly differ as between the study-areas, it is more satisfactory to consider each study-area on its own merit and examine changes occurring within each.

(a) Highland

Responses to overall quality of service in the Highland Study area are mostly in the 'same' category, although with an important exception. The household survey in Fort William elicited a negative response, despite actual frequency increases, perhaps related to route and timetable changes, the sparsity of evening services and some loyalty to the established operator. Notwithstanding the Fort William results, a more positive trend emerges for the frequency attribute from on-board surveys in the Inverness area, perhaps in response to minor changes to routes and timetables. There was an apparently associated downward trend in information provision.

(b) North East Fife

With little change in services expected in North East Fife, surveys focussed on changes in Tayport. The responses fell mainly into the 'better' categories, related to the limited expansion of services across the Tay Bridge from Dundee. The frequency and service network attributes reflect these changes with upward trends in their scores.

(c) Dumfries and Galloway

In Dumfries and Galloway overall quality of service responses are mostly in the 'same' categories. A major exception was the strongly positive response from the household survey in parts of Dumfries Town influenced by a newly introduced minibus service. Scores for the frequency attribute show it is regarded positively, probably in response to increased provision in Dumfries town and small frequency increases in some other areas. Information provision exhibits a downward trend, as does crew helpfulness, despite the reported efforts of local operators towards "customer-care".

(d) Dalkeith and Penicuik

The responses to overall quality of service for Dalkeith showed a large proportion in the 'better' category, falling slightly in the last survey in November 1987. This may be related to the initial large increase in service frequency and reduction in fares with 'on the road' competition, followed by subsequent revisions to routes and timetables. Related to this are large increases in the scores for fares, frequency and cleanliness, which also drop back slightly in November 1987. However, with these changes there is also a negative trend for information provision.

A similar pattern to that in Dalkeith is evident for Penicuik. However, in the Penicuik case it is not possible to gauge reactions to individual attributes with only two rounds of survey results available for comparison.

(e) Bearsden

In Bearsden, overall quality of service responses are mainly in the 'worse' categories. Although there was an initial increase in bus miles, this has since been reduced, accompanied by frequent changes in services and the closure of a local bus depot. Associated with this are downward trends for the frequency, reliability, information provision, service network and crew helpfulness attributes. These negative responses from passengers parallel the apparent decline in demand observed in this area.

(f) Paisley

The passenger surveys in the Paisley study-area concentrated on the Foxbar area. The results reflect a considerable increase in service frequency, 'on the road' competition, and the introduction of a minibus service by Clydeside. Overall, quality of service responses are, therefore, mostly in the 'better' categories, with clear positive trends for the frequency, fares, seating capacity, service network, cleanliness and comfort attributes.

9. REFERENCES

- BALCOMBE, R J et al (1987) Bus Deregulation in Great Britain: A review of the opening stages. TRRL Research Report 107. TRRL, Crowthorne.
- DTP, Scottish Office and Welsh Office (1984) 'Buses' Cmnd 9300, HMSO, London.
- DTP (1987) Statistics Bulletin (88) 29: Bus and Coach Statistics Great Britain 1986/87. HMSO, London.
- HARRISON, R J and PULLEN, W T (1988) Bus Deregulation in Scotland. A study of the early effects of the 1985 Transport Act on local bus services. CRU, Scottish Office, Edinburgh.
- Scottish Development Department (1987 and 1988) Scottish Transport Statistics No. 7 (1985) and No. 8 (1986). HMSO, London.

