

White, Peter

**Working Paper**

## Equitable access: Remote and rural communities 'transport needs'

International Transport Forum Discussion Paper, No. 2011-19

**Provided in Cooperation with:**

International Transport Forum (ITF), OECD

Suggested Citation: White, Peter (2011) : Equitable access: Remote and rural communities 'transport needs', International Transport Forum Discussion Paper, No. 2011-19, International Transport Forum, Paris,  
<http://dx.doi.org/10.1787/5kg9mq4wzkk-en>

This Version is available at:

<http://hdl.handle.net/10419/68817>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# Equitable Access: Remote and Rural Communities 'Transport Needs'

19

**Discussion Paper 2011 • 19**

**Peter WHITE**

University of Westminster, London, UK

This document was produced as background for the 2011 International Transport Forum, on 25-27 May in Leipzig, Germany, on *Transport for Society*. The views expressed in this document do not necessarily reflect those of the member countries of the International Transport Forum.

Further information about the International Transport Forum is available at  
**[www.internationaltransportforum.org](http://www.internationaltransportforum.org)**

# **Equitable Access: Remote and Rural Communities “Transport Needs”**

**Discussion Paper No. 2011-19**

**Peter WHITE**

Professor of Public Transport Systems  
University of Westminster, London, U.K.

**May 2011**

## INTERNATIONAL TRANSPORT FORUM

The International Transport Forum at the OECD is an intergovernmental organisation with 52 member countries. It acts as a strategic think tank with the objective of helping shape the transport policy agenda on a global level and ensuring that it contributes to economic growth, environmental protection, social inclusion and the preservation of human life and well-being. The International Transport Forum organizes an annual summit of Ministers along with leading representatives from industry, civil society and academia.

The International Transport Forum was created under a Declaration issued by the Council of Ministers of the ECMT (European Conference of Ministers of Transport) at its Ministerial Session in May 2006 under the legal authority of the Protocol of the ECMT, signed in Brussels on 17 October 1953, and legal instruments of the OECD.

The Members of the Forum are: Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, FYROM, Georgia, Germany, Greece, Hungary, Iceland, India, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States.

The International Transport Forum's Research Centre gathers statistics and conducts co-operative research programmes addressing all modes of transport. Its findings are widely disseminated and support policymaking in Member countries as well as contributing to the annual summit.

## DISCUSSION PAPERS

The International Transport Forum's Discussion Paper Series makes economic research, commissioned or carried out at its Research Centre, available to researchers and practitioners. The aim is to contribute to the understanding of the transport sector and to provide inputs to transport policy design. The Discussion Papers are not edited by the International Transport Forum and they reflect the author's opinions alone.

The Discussion Papers can be downloaded from:

[www.internationaltransportforum.org/jtrc/DiscussionPapers/jtrcpapers.html](http://www.internationaltransportforum.org/jtrc/DiscussionPapers/jtrcpapers.html)

The International Transport Forum's website is at: [www.internationaltransportforum.org](http://www.internationaltransportforum.org) or further information on the Discussion Papers and other JTRC activities, please email: [itf.contact@oecd.org](mailto:itf.contact@oecd.org)

## TABLE OF CONTENTS

1. INTRODUCTION.....	4
2. DEFINING THE ISSUE .....	4
3. DEFINITIONS OF “RURAL” .....	5
4. PUBLIC TRANSPORT’S MARKET SHARE AND COMPOSITION.....	6
5. SERVICE PROVISION IN RURAL REGIONS.....	7
6. THE ROLE OF SERVICE QUALITY AND MARKETING .....	10
7. ALTERNATIVE FORMS OF SERVICE PROVISION.....	12
8. THE ROLE OF RAIL SERVICES.....	14
9. FARES AND PRICING.....	15
10. SCHOOL TRANSPORT ISSUES .....	17
11. CURRENT DEVELOPMENTS IN BRITAIN.....	17
12. SUMMARY AND CONCLUSIONS .....	18

## 1. INTRODUCTION

Transport in rural and remote regions receives considerable attention in research, but this is often focussed on specific means of resolving problems in those regions – for example, the role of demand-responsive bus services, or scope for attracting users to rail services. The aim of this paper is to take a broader view, firstly in defining what constitute “rural and remote regions”, and secondly in considering a wide range of public transport options available. Experience in Britain will be taken as a starting point, since extensive research has been conducted here, and rural issues are also a focus of much public debate at present. Findings from other European countries will also be examined.

## 2. DEFINING THE ISSUE

“Rural” transport may be viewed primarily as the links between small settlements, traditionally based on agricultural activity, and the nearest urban centre, usually a market town. The catchment areas of such towns typically extend over a radius of about 15-20 kilometres, but may be greater in areas of particularly low population density. Trip purposes served include adult journeys to work, school travel, further education, shopping & personal business, health and leisure. As car ownership has risen, the adult journey to work is often a small proportion of public transport use, whose peak in demand is often dominated by education travel. For purposes of this paper, provision of school transport both on services open to the general public, and specialist contract services, will be considered together, since it is often sensible to combine budgets for such activities in order to get best value for public spending.

Administrative authorities with responsibilities for transport and education typically cover a wide mix of population centre sizes and densities. Factors affecting rural accessibility by public transport include, obviously, service timetables and frequencies offered at the “home” origin of a trip, but also whether appropriate destinations are served (for example, new centres of employment). Affordability is also a factor, since distance-based fares may result in high cost per trip to the user, and hence a “package” of appropriate service levels and fares may give an optimal mix to ensure value for money in public spending.

A review of developments in Britain is provided by the author,<sup>1</sup> and wider concepts in rural transport by Gray et al<sup>2</sup>. The Commission for Integrated Transport<sup>3</sup> provided an earlier overview of the issues. A review of issues in France has been provided by Transdev<sup>4</sup>.

---

1. White, P. Public Transport: its Planning, Management and Operation. Chapter 9. Fifth edition, 2008, Taylor & Francis, London.

2. Gray, D., Farrington, J., and Kagermeier, A. Chapter 7 ‘Geographies of Rural Transport’ in Knowles, R., Shaw, J. and Docherty, I. (eds) Transport Geographies. Blackwell, Oxford, 2007.

3. Commission for Integrated Transport ‘Rural Transport: An Overview of Key Issues’ 2001.

4. Transdev ‘*Transports publics et avenir des zones rurales*’. La Documentation Francaise, Paris, 1998.

### 3. DEFINITIONS OF “RURAL”

There is a danger, in examining rural transport needs, of concentrating solely on more extreme cases, or very low density and remote regions, such as northern Sweden or the west of Ireland. Likewise, discussions of urban transport often focus on the larger cities, and of long-distance transport on trunk inter-city routes. However, in reality, there is a continuum of densities and settlement patterns, in which a sharp distinction between “rural” and “urban” is not always feasible. This is particularly noticeable in rural areas around larger towns, in which commuting into those towns has become increasingly important - even where the housing stock is largely unchanged, urban commuters may have displaced the traditional population based on local employment patterns. A parallel may also be drawn with areas in which many houses are “second homes” used mainly for recreation.

In the British case, an explicit definition of “rural” is drawn for purposes of the National Travel Survey (NTS)<sup>5</sup> – a continuous survey, sampling households over the whole of Britain in which a seven-day travel diary is completed – namely settlements of under 3,000 population (comprising 16% of the total population in 2008). This encompasses villages and also some smaller market towns. Data quoted subsequently in this paper from the NTS is based on this definition. However, for some purposes in Britain, a wider definition has been used, notably in allocating funds for “rural” bus services, including settlements of up to 10,000 or 25,000 population. The NTS also defines “small towns” as those of 3,000 to 25,000 population.

A size of 3,000 clearly covers those rural settlements which will require links to the nearest town for activities such as employment, education, etc. However, an important function of transport services in rural areas is to connect smaller urban settlements with larger ones occupying a higher level in the urban hierarchy. Thus, an inhabitant of a smaller town will require periodic access to higher-order centres for a wider range of shopping, medical facilities, entertainment, etc. Such demand may have increased as facilities have become more centralised (for example, in health) or some activities have grown (for example, further education). Visiting friends and relatives also comprises a substantial part of interurban travel. In general, such trips are made at lower frequency (apart from some regular commuting for work or education), but nonetheless form a necessary part of travel over the year as a whole (a curious feature of enquiries into rural rail closures in Britain in the 1960s was that only “hardship” experienced by individual users was considered a criterion in making the case against closure, or for provision of rail-replacement bus services. In consequence, many short-distance bus services were provided, often short-lived, while the interurban demands were very poorly met).

Where railways continue to play a significant role in rural regions, they often function as interurban links rather than primarily as village-to-town services: some local intermediate stations may provide such links, but often used at a very low frequency (recent data for stations in the Lincolnshire and Humberside region in the east of England shows the 20 least frequently-used stations serving between 220 and 4,200 passengers per year<sup>6</sup> - even the latter figure corresponds to only about 14 per day, excluding Sundays).

---

5. The National Travel Survey (NTS) output is published annually, with an accompanying technical report. For further information see [www.dft.gov.uk/pgr/statistics/](http://www.dft.gov.uk/pgr/statistics/).

6. Data issued by the Office of Rail Regulation, February 2011.



The great majority of public transport provision in rural areas is by bus and coach services, ranging from minibuses of about 8 seats up to high-capacity vehicles (double-deckers, or articulated single-deckers), holding up to 80 or more (required primarily to meet the education peak). Although one might expect taxis to be significant, since their size would be suited to rural needs, in practice their provision is limited, and in many cases associated with education contract transport rather than general public service. A distinction may be drawn in law between “taxis” (vehicles available for hire on demand, with a metered fare scale), and “private hire vehicles” (PHVs), pre-booked for specific journeys at an agreed fare), although in practice they are used in much the same fashion in many areas (and classified as a single mode in the NTS). Under British legislation, shared taxi and “taxibus” operation (i.e. using a taxi as a small bus, on a registered service at separate fares) has been permitted since 1986, but with very little impact to date, although similar schemes are found in other countries.

#### 4. PUBLIC TRANSPORT'S MARKET SHARE AND COMPOSITION

Data from the NTS in Britain is used here to illustrate patterns observed<sup>7</sup>. As might be expected, much higher levels of car ownership are found in rural areas - in 2008, only 10% of households had no car, and 47% two or more, compared with national averages of 26% and 32% respectively. Cars represented 79% of all trips compared with 65% nationally. As might be expected, inhabitants of rural areas lived at greater distances from facilities such as shops and schools – 74% lived within 15 minutes' travel (on foot or by public transport) of a “grocers” [food shop] compared with 93% in small urban areas and 92% nationally. While trips per person per annum (by all modes) were only 1.4% above the national average, total distance travelled was 35% higher, resulting in an average trip length of 15.0 km. Rural inhabitants also spent 3% more time in travel per annum than the national average, but clearly did so at much higher speeds, about 33% above the national average.

Given the high levels of car ownership and dispersed nature of activities, the number of trips per person by public transport was somewhat lower in rural areas, at 44 per year, compared with 106 (including taxis and PHVs) nationally, and 59 in small urban areas. However, due to the greater average distance travelled as a whole in rural areas, distance travelled per rural inhabitant per annum by public transport was about 1310 km per annum, and 1 440 km in small urban areas, less markedly below the national average of 1720 km in that year (including taxis and PHVs), although representing only 9% of total distance travelled by rural inhabitants, due to dominance of the car. Of the 47 public transport trips by inhabitants of rural areas over the period 2002 –2005, 11 were for commuting and business, 12 for education and escort education, 12 shopping and other personal business, and 11 leisure/other<sup>8</sup>.

The most striking feature of public transport in rural areas is its major role for school travel, given the much greater average distance between home and school, averaging 7.2 km in 2002-2005 compared with urban averages of 2.9 to 3.9 km<sup>8</sup>. Hence, many pupils live above the distance at which free travel is a statutory entitlement (see below), resulting in an obligation on local education authorities to provide such services as well as freedom from payment. Some 22%

---

7. Except where otherwise cited in this section, data are as shown in 'Travel in Urban and Rural areas: Personal Travel Factsheet – March 2010' (which in turn is derived from NTS data), Department for Transport, London.

8. From 'Travel in Urban and Rural areas: Personal Travel Factsheet – July 2007', Department for Transport, London.

of children resident in rural areas travelled to school by local bus services in 2008, and a further 15% used "private bus" services<sup>7</sup> (typically services contracted-in by the local education authorities), compared with a national average of 21% for these two modes together.

In terms of adult journeys to work, it is noteworthy that the proportion of the population who always work from home, at 6% in 2002-5, was twice as high as the then national average of 3%<sup>8</sup> – while this may include some traditional rural occupations, it may also indicate a growing role for teleworking.

Another characteristic of the rural public transport market is the large proportion of passengers who are children, young adults or pensioners (the latter encouraged by universal free concessionary travel), with very few working age users. Over the period 2002-2005, those aged 21 to 69 made only 1% or 2% of their trips by stage bus, compared with 6% by those under 17, 9% by those aged 27-20 and 4% by those aged 70 upward. For surface rail, a different pattern applied, with a share of 1 % or 2% over the age range 17 to 59, but under 1% above this age<sup>8</sup>. There is in general limited prospect of attracting car drivers to rural public transport, although some improved services have succeeded in doing so, especially on interurban routes. However, many public transport users do come from car-owning households, especially for school and shopping trips when not everyone in the household has a car available for their personal use.

## 5. SERVICE PROVISION IN RURAL REGIONS

By definition, rural regions are provided with much lower frequencies of service than elsewhere. Traditionally, this has taken the form of irregular service patterns, including services operated only on certain days of the week, such as market days or Saturdays. Recent years, however, have seen (at least in the British case) a greater focus on the main trunk routes, often provided with much higher service levels than previously, usually on a regular-headway pattern (such as every hour).

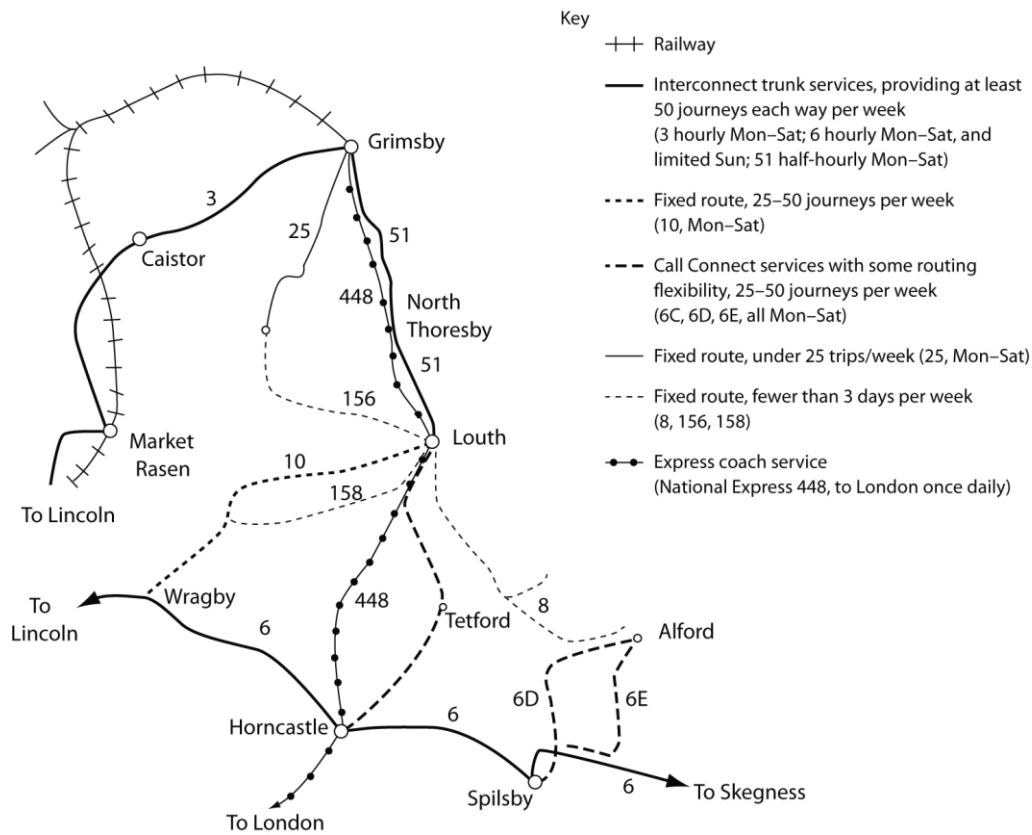
In many cases, peak service capacity provision is clearly dominated by the needs of education travel. Many more schoolchildren live at distances from their school above safe walking or cycling distances, and require some form of motorised transport. There is often a statutory requirement that free transport be provided above specified distances (in the British case, over 2 miles, or about 3.2 km, up to the age of eight, or three miles, or about 4.8 km, for older pupils). A strong rural peak for school travel may also be found in other European countries, such as France.

This school provision is generally funded from education budgets rather than transport budgets per se, and may in some cases result in service provision being entirely separate from that for the general public. However, scope exists for more efficient utilisation of resources, either by joint planning of school and public services (for example, a contract specifying both the education provision and other journeys) or through operators using such assets commercially - for example, where a bus is owned to meet the peak school demand, using it at a marginal cost to provide shopping and other off-peak services). This aspect is considered in more detail later in this paper.

A third element of public service provision is the growing use of demand-responsive services. These provide flexible services covering larger areas that would be appropriate to serve using larger vehicles on fixed routes.

Figures 1 and 2 show a part of Lincolnshire region in the east of England. To the north is the industrial town of Grimsby (about 100,000 population) and to the south west (off the map) the city of Lincoln (about 80,000), which serve as the main centres for further education, administration and other activities). Within the area shown, the largest market town is Louth (about 15,000 people), together with smaller centres such as Market Rasen, Horncastle and Spilsby (around 2,000 to 4,000 people). School-only services are omitted.

Figure 1. The rural bus network in the north eastern part of Lincolnshire in 1985

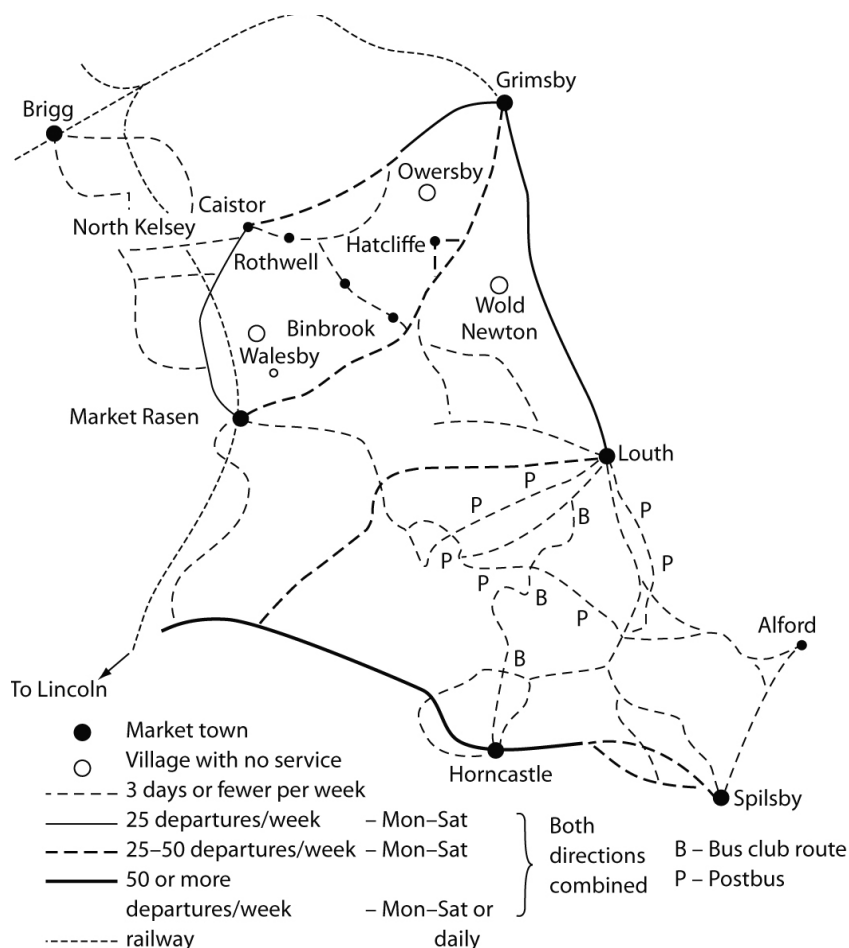


In 1985, prior to the deregulation of local bus services the following year, a fairly extensive network of services was provided, but often at low frequency, in some cases three days per week or fewer. A “postbus” (P) served some villages south of Louth, but provided a very indirect route. A “bus club” (B) linked Louth and Horncastle on Saturdays, a service supported with subscriptions from members but also open to the general public.

Figure 2 shows the area in 2007. While the network appears to have contracted considerably, frequencies of the main routes have been improved, as part of the “Interconnect” network supported by Lincolnshire County Council, now hourly Lincoln – Horncastle - Skegness, and with a new Grimsby – Caistor - Market Rasen – Lincoln service (also hourly), vastly improving links from these small market towns. In addition, almost the whole area shown is also covered by “Call Connect” demand-responsive minibus services. These operate for most of the day Monday to Saturday, providing flexible links between villages to market towns, where

connections are also provided for the interurban services (at Louth, Spilsby, Horncastle, Caistor, etc.). The postbus service has disappeared but the same area is served by the much more comprehensive demand-responsive service. Since this figure was compiled, some service cuts are occurring in 2011, but mainly affecting hours of operation, and the broad network pattern remains. The "Interconnect" services, starting with the Lincoln - Skegness route, and their connecting demand-responsive services were developed with funding from the Rural Bus Challenge. A fuller description is given by Le Masurier *et al*<sup>9</sup>.

Figure 2. The rural bus network in the north eastern part of Lincolnshire in 2007



The national picture confirms this change is not untypical: in addition to the seven-day travel diary, the NTS also gathers information on access distances to the nearest bus stop, and level of service provided. In "rural" areas (as defined above) the proportion of the population within a 13 minute walk of a bus stop and an hourly service rose from 45% in 1998/2000 to 52% in 2005, and 55% in 2009 (within "small urban areas" the increase was from 74% to 88%).

In addition to general funding available to local authorities, additional grants to assist rural bus services were introduced in 1998, the "Rural Bus Subsidy Grant" (RBSG), and "Rural Bus Challenge" (RBC). The form provided an annual sum per head of population in areas of a specified density, most of the grant being paid to counties with substantial rural populations (such

9. Le Masurier, P., Barker, A.M., Housely, A. and Cross, T. 'Short and long-term impacts of the Rural Bus Challenge Project 'Interconnect' on social inclusion and quality of life'. Paper at UK Transport Practitioners' Meeting, Birmingham, July 2005.

as Norfolk and Lincolnshire), enabling on-going service support. For example, in 2010/11 RBSG in England totalled £60m, to support 2,000 services and an estimated 38m passenger trips<sup>10</sup>, from which an average support of about £1.60 per trip may be inferred. The RBC was a grant for a specified period (usually three years) in which new services could be developed. While encouraging more radical innovation than RBSG, this had the limitation that if a new service were developed, but incurred high cost per passenger trip at the end of the three-year period, problems could arise in enabling its continuation. In the "Interconnect" example above, the innovation has been largely successful, much of the improved interurban services continuing commercially. However, a number of higher-cost schemes in Britain (notably some demand-responsive services) have experienced some difficulty in sustaining support at the end of the three-year period.

Following expenditure constraints, RBC ceased in 2004. RBSG continued until 2010/11, but has now been subsumed in general grants to local authorities, which have themselves been cut substantially.

## 6. THE ROLE OF SERVICE QUALITY AND MARKETING

Increased emphasis has been placed in recent years on improving public transport systems not just in terms of service frequencies or fare levels, but on the overall quality of service provided, and its effective marketing. Much of this effort has been concentrated in urban areas, but in principle the same concepts are also applicable in rural areas. Examples of such measures include:

- Provision of buses with greater accessibility, usually low-floor. This enables wheelchair users to gain access, but also greatly improves accessibility for a much wider range of users, notably those with children in buggies (strollers) or with shopping trolleys. Older users also find this beneficial, and entirely new categories of users may be attracted, rather than simply increasing use by existing passengers. Ridership gains in the order of 5% may be experienced. In many cases in Britain operators have taken the opportunity of introduction of such vehicles to promote their accessibility and heighten user awareness. The provision of such accessibility is in any case a statutory obligation in many countries, so buses have to be provided to this specification. The additional users attracted are often at off-peak times, improving load factors.
- Provision of higher-quality interiors. Measures include higher quality seating (such as leather), wider seat pitch, improved lighting, air circulation systems, and more luggage space. In some cases, full air conditioning may be provided.
- Use of "branding" of routes with distinctive marking on the exterior of the buses, in some cases with entirely different colour schemes. User awareness is thus increased.
- Provision of much better quality information. This may include displays at stops, maps, printed timetable, distribution of material direct to individual households, etc. This responsibility may be undertaken by the local authority rather than the operators, especially where several operators serve the same area, so that a comprehensive set of

---

10. Answer to a question in the House of Lords [upper chamber of the UK Parliament], as reported in *Coach and Bus Week* 20 January 2010, page 4.

information can be provided. In some cases, real time information may be provided at stops, although this is obviously impracticable in some low-density rural areas. Increasing provision via mobile phones obviates this problem.

- Staff training to improve awareness of passenger needs.

Such provision might be considered “extravagant” in the sense that extra costs are incurred (although in the case of low-floor access they are unavoidable). However, in many cases the marginal revenue gain may exceed the marginal cost, and hence even on a loss-making service supported by public funds this may be worthwhile, especially where existing load factors are low, and the marginal cost of carrying extra passengers is likewise small. For example, if provision of much better information increases costs by 1% but revenue by 2% it is clearly worthwhile both in a commercial sense, and in reducing the net public expenditure required to run a supported service, not to mention benefits derived by the users themselves.

One can also extend this approach to a broader change in “management culture”. The public transport industry has often been supply-led, rather than market-focussed. A greater emphasis on seeking out new markets, improving reliability, and reshaping networks to match changing demand, may come about through a change of ownership or company structure, but can also be attained through changes in management approach within an existing business.

Examples in Britain of this approach can be seen in a number of the regional bus companies operated under new management. For example, in the north of England the Blaze field group (now part of Transdev) improved the quality of a number of long-established bus services in rural areas through measures of the types described above. Particularly strong growth was found on route 36 (Leeds - Harrogate - Ripon), which, in addition to a commuting market between Harrogate and Leeds serves a somewhat a more rural hinterland in the area between Ripon and Harrogate. The Stagecoach group has developed improved quality in rural and interurban services. For example routes from villages and small towns north of Oxford have been served by improved frequencies, using high-specification low-floor vehicles, resulting in substantial passenger growth. The “Goldline” concept (high specification vehicles, separately branded) has also been applied to such routes.

New small and medium-sized companies have also emerged in some rural areas, in some cases taking over services no longer attractive to larger groups. Closer attention to local market conditions has resulted in substantial ridership growth. A notable feature is the development of regular-headway services, even in areas of fairly low density, which are more convenient to the user. Examples of such companies include Western Greyhound (in Cornwall), Norfolk Green (in west Norfolk) and Thames Travel (in the area between Oxford and Reading).

Parallels may also be drawn in other countries. For example in Sweden, increased attention has been paid to changing the operating cultures of established companies and public authorities which contract-in services. The underlying concepts are described by Rönnbäck, Witell and Enquist<sup>11</sup> [text to insert].

A further example, where local authority rather than operator initiative was found, occurred in north Cambridgeshire in Britain. An existing network serving a number of small market towns was revamped to provide regular headway services, typically every hour or every two hours (in some cases, with alternate two-hourly services providing a combined hourly headway over common sections). Guaranteed connections were provided between services at selected hubs, with

---

11. Rönnbäck, Å., Witell, L., and Enquist, B 'Value creation in outsourced service provision in public transportation' The TQM Journal, 2009 (Vol 21, no 5), pp 517-529.

through ticketing. Low-floor vehicles were introduced, along with better marketing. The revised network also served new destinations, notably a major hospital which is a substantial employment centre in its own right. In consequence, ridership rose by about 12%. While some financial support was still required, net support per passenger trip was relatively low, at around 50 pence<sup>12</sup>

## 7. ALTERNATIVE FORMS OF SERVICE PROVISION

It is clear that substantial improvements can often be made in the potential of conventional (fixed route) public transport services. However, in areas of particularly low density population, or in which destinations are scattered (for example, some medical facilities) it may be very difficult to provide a service at an acceptable cost per passenger trip.

A number of options exist:

- Demand-responsive (DR) services, whose routeing is varied according to passenger demand within a specified area. A typical form is the “many to one” operation in which a focal point such as a small market town, is served, with flexible routeing within a catchment area around it. This could consist of wholly flexible patterns, in which the vehicular journey varies according to passenger demand, or a semi-flexible pattern, in which a loop route might be followed with variations, or a route between two fixed points with variations between them. The fixed point may also act as a transfer point to fixed-route interurban services providing links to larger centres (as in the Lincolnshire examples above). Such services may be operated on a regular headway pattern (for example, to connect with an interurban service). In principle, “many to many” operation is also possible, although less common (although within its catchment area a many to one service might also provide this facility, for example between two villages)
- Greater use of taxi services. By definition these are provided by much smaller vehicles (under British legislation of up to 8 seats), and in most cases are operated by owner-drivers or small businesses. They may thus have greater flexibility in meeting user needs, and the lower cost per vehicle-km associated with such size of vehicle. A conventional taxi (i.e. one hired by single user who pays a full commercial fare) could be seen as the ultimate “demand responsive” service. However, in rural areas, this type of operation is relatively rare, as the low density of demand will itself reduce potential viability of taxi services, in that the probability of securing a series of successive bookings during a driver shift may be low. For this reason, taxi operation is often more strongly focussed on urban areas. In many cases, taxi provision in rural areas is associated with meeting specific demands (for example, where small numbers of schoolchildren are carried from one village to a school in the next, or special needs pupils are carried separately from the majority).
- The use of services driven by volunteers. Since driver costs are the largest single element in conventional bus operation, this reduces total costs substantially. A minibus can be used (of up to 16 seats, for example), operated either in a conventional mode (fixed routes and timetable) or demand responsive form. In addition to regular public

---

12. Dodson, P., Hames, A. and White, P. 'The case for 'conventional' rural bus services: the North Huntingdon Key Network in Cambridgeshire' Coach and Bus Week.

services, income may be augmented by private hire and contract work. Such services have existed in Britain since the 1970s, although still relatively small in number, as a pool of willing volunteers is needed.

- The use of services provided primarily for other purposes, where passengers can be carried at a low marginal cost. One example is the postbus operation in Britain, where minibus replaced mail vans on runs between local sorting centres and collection points. However, such services are often very slow and indirect from the passengers' viewpoint, and may still incur a high cost per passenger trip when low volumes are taken into account. Most of these services in Britain have now ceased, and demand-responsive services may provide a far better option in terms of frequency and routeing. A distinction should be drawn between postbus operation of this type, and operation of additional fixed route buses by the national post offices, as in Switzerland, which in effect then becomes another form of conventional bus service.

Considerable attention has been paid by researchers to the development of demand responsive services in particular in recent years. Improvements in software for management of bookings have made such operations more attractive. Examples now exist in many parts of Britain, notably the "Call Connect" services in Lincolnshire which now cover most of the county, operating in "many to one" form with interchange at market towns for the fixed route network, as described above.

A review of the development of demand-responsive systems is provided by Nelson et al<sup>13</sup>. CfIT has examined in particular greater scope for the use of taxi services<sup>14</sup>, including removal of the current local authority-based licensing areas, which can limit operating flexibility and reduce productivity. Mulley<sup>15</sup> describes the scope for further development, drawing on a number of European case studies: however, relatively high costs per passenger trip are indicated in providing a good level of service, between £5 (the "best case") to £8 ("worst case"), broadly similar to levels for demand-responsive services currently found in Britain. Clearly, substantial improvement in accessibility might thus be provided, but under constrained public expenditure the extent to which substantial expansion at such unit costs can be afforded could be debatable.

Demand-responsive services provide a number of advantages, notably that demand is only served where it exists, and routeing of each trip can be varied accordingly. It may be possible to operate much closer to users' homes than with a fixed route service, of particular benefit to those of restricted personal mobility. However, there are also a number of limitations, notably the need to pre-book each trip compared with the flexibility of choice offered on traditional fixed-route services. In Britain this is aggravated by regulatory requirements to do this for both legs of the journey (for example, someone using such a service to travel into a market town would naturally wish to pre-book their outward journey, but a requirement to pre-book the return leg removes the flexibility of choice in how long to stay in the market town).

13. Nelson, J.D., Wright, S., Masson, B., Ambrosino, G., and Naniopoulos, A. 'Recent Developments in Flexible Transport Services' Research in Transportation Economics Vol 29 ('Reforming Public Transport throughout the World') 2010, pp 243-248.

14. Commission for Integrated Transport (CfIT). 'A New Approach to Rural Public Transport' November 2008. (available at [www.cfit.gov.uk](http://www.cfit.gov.uk))

15. C. Mulley 'Promoting social inclusion in a deregulated environment: Extending accessibility using collective taxi-based services' Research in Transportation Economics Vol 29 ('Reforming Public Transport throughout the World') 2010, pp 296-303.



The overall effect of such services is to enable a high level of accessibility to be attained, for example on an indicator such as the proportion of population within an hourly service coverage. However, when actual usage patterns are considered, the cost per passenger trip may be very high, and likewise the net public expenditure per trip where fares similar to those of conventional fixed-route services are charged. In some cases, reversion to fixed-route operation has occurred, for example in parts of Cornwall served by Western Greyhound. One role of demand-responsive services may be to “test” the market where the existing bus network structure has become ossified, but having done so, it may enable a more effective new fixed-route pattern to be set up.

## 8. THE ROLE OF RAIL SERVICES

As mentioned earlier, rail only forms a minority of public transport provision in rural areas. In the past, it formed a much greater proportion, but clearly represents a high- cost mode for low-density flows. Many rural rail services commenced in the 19th and early 20<sup>th</sup> centuries when road transport was less developed, and many may have displayed poor profitability even from the start. In most countries, substantial contraction of such routes has occurred - for example, in the 1960s in Britain – and continues today to a lesser degree (notably in Eastern Europe).

The routes that remain are often focussed more strongly on the interurban rather than village-to-town market, and in some cases the potential for development of longer-distance and more regular services has been taken. Even where a service is loss-making overall, the marginal costs of improvement may be less than the marginal revenue gained, especially given the high fixed cost element in rail operation. Examples in Britain include improved cross-country services over routes through rural regions, which potentially serve substantial demand between towns and cities (for example, on the Norwich – Peterborough – Leicester – Birmingham, and Portsmouth - Southampton - Salisbury – Bath - Bristol – Cardiff routes). Increased attention has been paid to marketing and service quality. In Britain, this process was assisted firstly by the development of the “regional railways” sector within the state-owned system under the “Organising for Quality” initiatives in the 1980s. Subsequently, private franchised operators have also sought to improve rural services within their networks (for example, the branch routes of Anglia Railways, in East Anglia, now subsumed within the National Express East Anglia franchise).

The development of the “community rail partnership” concept in Britain has aided this approach. In general, this has not involved radically different operating methods to date, but has consisted of assistance from local and voluntary organisations to aid in the marketing of services and enhance them by, for example, maintaining stations which would otherwise be totally unstaffed. Some additional gains in ridership may have occurred as a result.

A more radical option may be to operate such services separately from the main network, enabling more flexible operating methods to be adopted. These might include more flexible staff roles, for example, or use of part-time staff. To some extent this can be seen in cases where rail operations have been contracted by regional authorities to smaller locally-based organisations, rather than state-owned systems or private companies operating larger-scale franchises. This can be seen in parts of Germany, for example.

Nonetheless, one must bear in mind that operation of any low-density services using conventional rail technology may be very costly, when all costs (including infrastructure) are taken into account. A current review of rail costs in Britain, for example, has highlighted the fact

that the “regional” franchises incur much higher costs (and thus require much greater public expenditure support) per passenger-km than do those in London and the South East (serving primarily the London commuter market) or long-distance operations<sup>16</sup>. The regional franchises incurred an average net cost in 2009-10 of about 19 pence per passenger-km, compared with 4.5 pence for long-distance franchises and 3 pence for London and South East franchises (the regional figure in turn comprised 61% of its total costs, compared with 25% for long-distance and 19% for London and South East franchises). Furthermore, such “regional” franchises include not only low-density rural routes, but operate substantial interurban and commuter lines – for example, the whole network within Scotland.

A case may exist for placing the funding of rural rail and bus services in the same budget, enabling the regional authority to select the most effective mode in each case, and also to integrate rail and bus provision. This can be seen in the case of some operations in the Netherlands, such as Friesland and Gelderland<sup>17</sup>, and the multimodal franchises in Limburg<sup>18</sup>. (which also incorporated regional taxi services).

In the long run, a shift of the same public expenditure from rail to bus may secure a wider range of services (and thus passenger benefits) than if such spending is retained purely within the rail sector. However, there is still a strong sentimental attachment to rail, which tends to be reflected in political priorities.

## 9. FARES AND PRICING

In terms of maintaining accessibility in rural areas, those on low incomes are affected not only by the level of service provided, but also by fares levels. As in urban areas, an optimal mix of support to both fares and services may be defined, to maximise benefits per unit expenditure. Merely supporting service levels while permitting fares to rise to very high levels may result in very poor load factors being found. There is also evidence that price elasticity for rural services may be higher than in urban areas – this is a reflection of the mix of trip purposes found (apart from school travel, little of the regular commuting found in urban areas, and a much greater proportion of discretionary trip purposes), and also other characteristics (longer-distance journeys may display higher price elasticity due to substitution of alternative centres). Travel within small urban areas is affected by walking and cycling as substitutes for short trips, and fewer constraints car use than in large cities).

In the British case, the general policy has been to focus expenditure on maintenance of service levels, with little explicit consideration of fare levels as such. Since the Transport Act of 1980 these have been generally unregulated, and hence on commercially-registered services have been set by operators. Local authorities have also tended to follow similar fare levels on tendered services. However, this may result in relatively high fares being charged. Price competition is often of limited effectiveness, given the low density of demand and hence scope for more than one operator providing a service.

16. Rail Value for Money Study (DfT, London) as quoted in Modern Railways February 2011, p25.

17. Coen Volp 'Sustainability: embedded at every level in the Province of Gelderland' Public Transport International (UITP) issue 2, 2010, pp 40-41.

18. Van de Velde, D., Eerdmans, E. and Westerlink, H. Public Transport Tendering in the Netherlands. Report by inno-V consultancy. Amsterdam, for Passenger Transport Executive Group (PTEG), Leeds, UK, July 2010.

Two marked exceptions exist to this:

1. The provision of statutory free education travel for schoolchildren living above certain distances (see above).
2. The provision of concessionary travel for certain categories in the population, such as the disabled and of pensionable age. In many countries, this takes the form of discounted fares (such as half the equivalent working age adult fare), but in Britain, somewhat exceptionally, entirely free travel (apart from the morning peak Mondays to Fridays) is provided as a statutory obligation on all local bus services for the disabled, and those aged 60 upward (even if still in employment).

The free travel provision in England was introduced in 2006 within the district of residence of the pass-holder, and extended to give national coverage in 2008 (in Wales and Scotland equivalent changes took place somewhat earlier). This has resulted in a substantial growth in travel, both from those who previously held a pass permitting half-fare travel, but also from those already in the eligible age group taking up the concessionary pass for the first time – this is clearly evident in a case study in the Salisbury area, for example<sup>19</sup>. The growth tended to be greater in lower-density rural areas, where the proportion of the population holding a pass was lower before free travel was introduced. There has also been growth in leisure-based travel on interurban services serving attractive destinations in some rural regions.

A substantial proportion of the population thus benefits from free use of services (even if still in employment), while those in other categories pay high fares. Coupled with the low use of rural bus services by working age adults, and high levels of education travel, this can easily result in cases where half or more of all bus passengers are travelling free of charge. While welcomed by those who benefit, this creates several distortions:

1. Revenue compensation to the operators is based on the adult fares that would otherwise have been payable (allowing for elasticity effects), and operator may be inclined to increase these substantially, since growth in compensation will exceed any revenue loss from the fare-paying group as such.
2. Demand patterns shift. While in general the concessionary travel is made at “off peak” times, new peaks may occur where high levels of shopping activity are found, for example. Hence, not all the demand is handled at low marginal cost.
3. The high cost of compensation (now about £1,000m per annum in Britain) has resulted in pressures to reduce this burden. However, since the free travel scheme remains as a statutory obligation, local authorities can only curtail discretionary elements (for example, where the concession has also been applied in the morning peak). Reductions in compensation to operators may affect their “bottom line” profitability by reducing income without offsetting cost savings. Given constraints in overall public expenditure, reductions may have to be made in other budgets (including those for tendered services in rural areas).

A number of these issues have been discussed in evidence to the enquiry into “Bus services after the Spending Review” now being held by the Parliamentary Select Committee for Transport<sup>20</sup>. Witnesses have pointed out the contradiction between continuing to offer entirely free travel to certain groups in the population, while services levels are cut. In some cases,

---

19. Baker, S., and White, P. 'Impacts of free concessionary travel: case study of an English rural region' Transport Policy January 2010 (Vol 17, issue 1) pp 20-26

20. Evidence from the enquiry (which is still in progress at the time of writing) may be found at [www.parliament.uk](http://www.parliament.uk)

severe cuts are being made in provision of tendered services in rural areas, and the loss of mobility from this cause is a major concern. Operators also face increased cost pressures as a result of curtailment of the Bus Service Operator Grant (BSOG) which is in effect a rebate of (currently) about 80% of the duty that would otherwise be payable on fuel they use.

## 10. SCHOOL TRANSPORT ISSUES

As indicated above, provision of statutory free transport for school pupils forms a major part of rural public transport provision - indeed, in many areas it provides a large element of demand for bus and coach operators based in them. The extent to such entitlement varies – in Britain, currently up to age 16 inclusive. Discretionary aspects apply – local authorities may, for example, provide free travel for pupils over shorter distances than the statutory minimum, assist students older than 16 (for example in further education) or those travelling to schools other than the nearest appropriate one (for example, to a school serving a particular religious faith). Such discretionary provision is, however, being substantially reduced due to expenditure constraints.

As indicated earlier, it is generally sensible to plan provision of this statutory school transport together with services for the general public. The two demands may be directly combined at peak periods (enabling a journey-to-work provision to be given for which demand would otherwise be insufficient to justify a separate service). For this purpose, it is sensible to ensure that a comprehensive approach is taken to tendering by public authorities, rather than contract school and other services separately. Such combined contracts may then be used to provide for other journey purposes.

As in the case of free travel for older people, it is debatable whether entirely free travel for certain groups, while charging high fares for others, is necessarily optimal. For example, children living less than 3 miles from school neither receive free travel, nor may have any other bus service available. In consequence, a substantial peak may be seen in the percentage of pupils taken to school by car in the distance range 2 to 3 miles, aggravating traffic congestion. An option – initially explored in the Draft School Transport Bill of 2004 - was to set up some pilot schemes in which a fare might be charged to those now given free travel, and the resultant revenue used to enhance provision over shorter distances, aimed in particular at reducing school travel by car<sup>21</sup>. The net impact would of course depend on the reactions to prices charged to those now travelling free (and any stimulus to higher car use by such groups). However, no such pilot schemes have yet been set up, despite subsequent legislation permitting them.

## 11. CURRENT DEVELOPMENTS IN BRITAIN

As indicated in this paper, a relatively positive picture has been evident in Britain in recent years, with substantial expansion of rural bus service provision, retention and some improvement in rural rail services, and growth in demand associated with concessionary fares - notably to

---

21. House of Commons Education and Skills Committee. The Draft School Transport Bill: Third report of Session 2003-4, HC 509-1, London (see especially appendix A).

those aged 60 upward. However, the total costs of such provision is high, and under pressures to reduce the deficit, central government has imposed substantial cuts in grants to local authorities. Since the rural bus provision is a discretionary power (as distinct from the mandatory commitments to fund school transport and concessionary fares), this element is being "squeezed". A wide variation is evident, some rural counties retaining a broadly similar level of service to that funded recently, while others have imposed drastic cuts, in some cases planning to phase out tendered services entirely (such as Cambridgeshire and Northamptonshire).

Press coverage has often focussed on the high cost per passenger of some tendered services. One must bear in mind, however, that where each service is provided under a separate contract it is likely that some examples of very high cost per trip (in the order of £10 - £15 or even more) can be found, such as an evening-only, or Sunday-only service). A more representative picture may be drawn by looking at average costs, especially in comparing conventional services with demand-responsive operations (data for the latter is almost invariably averaged to a greater degree, e.g. over all days of the week on which services are provided). In response to threatened cuts, central government has provided an additional £10m to support community transport, mainly providing consultancy guidance<sup>22</sup>. However, it is uncertain whether this can necessarily provide a substitute for fixed-route services over very short timescales now applicable, or necessarily better value for money in terms of cost per trip.

## 12. SUMMARY AND CONCLUSIONS

Drawing primarily on experience in Britain, but probably also applicable to other similar countries, we may observe:

1. That in rural areas, car ownership is typically higher than elsewhere. However, a substantial proportion of the population do not have access to cars, either through living in non-car-owning households, or not having use of a car at certain times of day and week.
2. Rural public transport demand stems primarily from younger people (especially in travel to and from education), and travel by older people, with relatively little demand for the adult journey to work.
3. The majority of rural public transport provision is by conventional bus and coach services. Railways provide interurban links over a limited number of routes, rather than serving the short-distance rural market. Demand-responsive and voluntary-provided services also play an important role, but varying greatly from one area to another.
4. Despite concerns about service reductions, rural bus services have (until recently) in Britain shown a substantial improvement in overall accessibility provided, when both conventional (fixed route) and demand-responsive services are considered.

---

22. Department for Transport, London 'Community Transport: Guidance for Local Authorities' March 2011 (14pp).

5. Demand-responsive services provide a means of serving low density areas, or specific types of demand, but tend to incur relatively high costs per passenger trip made. They are not necessarily more cost-effective than conventional subsidised bus services where the latter are being reviewed for replacement.
6. Considerable scope may exist for applying changes in management cultures, better marketing, and improvements in service quality to rural bus services, as well those in denser areas. Even where still requiring public expenditure support, the net support may be reduced where marginal revenue of such initiatives (such as better passenger information) exceeds marginal cost.
7. Likewise, scope exists for improving marketing and service quality on remaining rail services in rural areas.
8. However, overall costs (including infrastructure) of rail service are very high. Better value might be obtained by spending available money on bus services or other forms of public transport.
9. School transport plays an important role in rural areas, often determining the peak capacity provision. It is sensible to fund it on a common basis with the wider public network, and maximise scope for efficient combination the two.
10. Likewise, specialised services provided by public authorities, such as social service transport, should be considered along with provision of scheduled public services to ensure best value for money.
11. In examining levels of mobility and accessibility for people in rural areas, especially of low income, fares levels should be considered as well as service levels provided. However, problems can arise where entirely free travel is provided to certain categories of the population (such as older people on Britain) while high fares are charged to others.
12. Further scope probably exists for expansion of services provided by voluntary groups, or for demand-responsive operations .However, it does not necessarily follow these are always a better option than supporting a well-run “conventional” public bus service.

**International Transport Forum**

2 rue André Pascal

75775 Paris Cedex 16

[itf.contact@oecd.org](mailto:itf.contact@oecd.org)

[www.internationaltransportforum.org](http://www.internationaltransportforum.org)

---