

Matching supply and demand

8.1. An important feature of the provision of stage carriage services is the adjustment of the level of the services to match demand. That is the feature which we consider in this chapter, but we consider it only to the extent which our terms of reference require. The question posed by the terms of reference is whether each of the four undertakings, in supplying stage carriage services, could improve its efficiency and thereby reduce its costs without significantly affecting the level of service provided. We have thus to consider whether the services at their existing level are being provided efficiently, and as one aspect of this we examine in this chapter the procedures employed by the undertakings for determining changes of demand and responding to them. We are not required to consider the further question whether the existing level of service needs to be significantly affected, ie whether that level is either excessive or inadequate.

8.2. One of the most pronounced features of the pattern of demand in the undertakings has been the long-term decline resulting mainly from the growth in car ownership. This has affected all public transport. Between 1960 and 1980 Department of Transport statistics show that journeys by stage carriage bus services declined by 53 per cent, and rail journeys declined by 27 per cent. There have been other influences causing changes in the level and pattern of demand for bus services, for example there have been changes in land use as industry and commerce moved from city centres, and associated with this there have been population movements, as well as from the substantial rehousing which has been a feature of post-war development. The undertakings have responded to these influences by providing new services. Finally, in recent years economic recession has had a major impact on the level of demand, in particular on the peak services provided for journeys to and from work.

8.3. The terms of reference do not require us to consider generally the problem of fares policy, which is the subject of so much contemporary debate. Certain features of fares policy do, however, affect the matters referred to us, and those features we consider in this chapter.

WMPTE

Procedures for matching supply and demand

8.4. Since 1977 it has been one objective of West Midlands County Council (WMCC) to maintain the size of the bus network as far as possible, redeploying resources as the opportunity to do so is indicated by the results of area studies. Expansion in newly developed areas comes from resources released by reductions in other areas.

8.5. Regular reviews of routes and timetables are undertaken in two forms consisting of area studies of the network, and 'good housekeeping' reviews of individual services. There has also recently been a special review which led to a 10 per cent service cut in December 1980.

Good housekeeping reviews

8.6. Good housekeeping reviews are carried out at a local level by operating divisions and garages. These are in response to comments received by local managers from passengers, local businesses, elected representatives, or on the media, and also from consideration of the management information on load factors and costs and revenues with which they are supplied.

8.7. Load factor, in terms of passenger mile per bus mile, and operating ratio (total revenue divided by total cost) for each route are produced in the route financial statement every four weeks. Trends in load factor and operating ratio are monitored, and any routes whose indicators show a trend 10 per cent above or below the Executive average are inspected more closely. Under- or over-provided sections of route may be located using the Continuous On-Bus Survey (COBS). COBS is the responsibility of the Market Research Unit, and is carried out by a team of data collectors gathering passenger information on a sample basis. The basic information collected from each passenger is where he gets on and off the bus and what type of ticket he holds. The data are computerised and a number of print-outs are available. It is possible to produce loadings between each stage for the journeys sampled on a particular route. Ticket type analysis by time of day and journey length distribution is also produced regularly. As well as for use in good housekeeping reviews the COBS data are also used as the basis for allocating off-bus revenue and passenger mile figures for each service in the four-weekly route costing statement.

8.8. These reviews can result in changes principally in the timing and frequency of services. The net effect of additions and reductions due to good housekeeping measures in 1980 was a saving of five buses and 14,229 bus miles per week in the North Division, and four buses and 5,861 bus miles per week in South Division.

Area studies programme

8.9. Area studies are the means by which WMPTE makes major changes in service provision. Their objective is 'to formulate and market the most commercially cost effective, integrated passenger transport network . . . consistent with the development of the long-term infrastructure and corporate objectives, taking account of customer needs and financial and manpower resources'. Area studies are undertaken at a rate of about four per year in areas of about 100,000 population. The programme began in 1975 and since then thirteen schemes have been introduced. A total of 207 service changes over this period are due to area studies or reviews of area study changes.

8.10. The programme has developed in four stages. It began by dealing with areas where boundary problems existed between the former bus undertakings that constituted the PTE in 1969 and 1973. The next areas studied were

those affected by rail integration proposals, and thirdly were areas where there were special problems or benefits to be obtained quickly from this type of exercise. Finally, having covered the more difficult areas, WMPTE approached the Passenger Transport Committee of the County Council in July 1981, and the Committee indicated the next priorities.

8.11. At the present rate of four studies per year the whole area will have been surveyed in about three years' time, and the programme implemented by 1986, giving a 12 year cycle. WMPTE considered this to be too long a cycle time, and told us that the programme would be repeated after 1986, but it hoped that by using computer-aided techniques the cycle time could be cut down to six or seven years (see paragraphs 8.22-8.24).

8.12. Responsibility for carrying out area studies lies in the Business Development Group. Within the Group the Market Research Unit collects and processes the survey data and the Service Development Unit devises tests and develops new networks in consultation with operating divisions. Data are collected from two sources. One is a household survey which includes questions on journeys (destination, purpose, mode and time), profile information (age, sex, car ownership etc), rating of existing services, and the priorities for improvement. The second source of information (for later studies) is the Continuous On-Bus Survey, or a special on-bus survey where the COBS sample data are insufficient.

8.13. To assist in the development of new networks the Service Development Unit has devised a set of load factor targets which have been approved as interim standards by the Business Development Committee in January 1982, and are as follows:

Peaks—90 per cent seat occupation during the maximum half hour in the maximum flow direction at the maximum loading point.

Shopping period—50 per cent seat occupation in the maximum hour at the maximum loading point in the maximum flow direction.

Evening and Sundays—20 per cent average seat occupation but subject to social considerations. In the built-up urban area the minimum standard frequency is 30 minutes on Mondays-Saturdays between 07.00 and 19.00 hours, and if a service is operated during the evenings and on Sundays the minimum standard is hourly. On the fringes of the conurbation the minimum standard frequency is hourly.

8.14. The 90 per cent target allows some reserve capacity for fluctuations in demand. This need for reserve capacity stems from two policy decisions which WMPTE inherited from Birmingham City Transport. The first relates to passenger waiting time where the standard was that all passengers should be able to board the first vehicle to arrive when they were waiting at the bus stop in peak periods. The present Executive accepted this standard in respect of all services except those with a high frequency, for example a bus more often than every seven minutes. The policy for high frequency services is that passengers should always be able to board the second, if not the first, bus that arrives. The second policy decision relates to standing passengers.

Birmingham City Transport's policy was to provide large capacity double-deck buses, explicitly bought so that people would not have to stand. WMPTE has continued the policy on the grounds that it was unlikely to be able to attract car drivers on to public transport if there were not enough seats on the bus. The 50 per cent off-peak target is designed to take account of the belief that a reduction in frequency brings about a greater decline in patronage in the off-peak than in the peak, and the 20 per cent evening and Sunday target is designed to cover the marginal costs of operation at those times.

8.15. WMPTE has emphasised that these load factor targets are a planning tool to establish the frequencies which should be provided on new services at particular times of the day. It also hopes to develop targets to monitor the efficiency of existing services. In this case it would look for improvements in load factor over the whole week, taking into account what was achievable on particular services. By providing route load factors measured as passenger miles per bus mile in conjunction with route costings it believed it was moving in the direction of producing appropriate measures of efficiency. In some recent good housekeeping reviews the targets were applied to determine service levels.

8.16. The design of a new network covers three time periods—the peaks, the shopping period, and evenings and Sundays. It is assumed that the basis of the new network will be the peak requirement, so work and school journeys are dealt with first. The study area is divided into zones, and the household survey data are used to identify the most important zone to zone movements. For the purpose of initial network design it is assumed that a direct bus service would run between zones where movements exceed 100 journeys per day.

8.17. When the network has been fully identified, maps of the network are examined to see which links may be merged to form routes. These are developed into proposals for individual services. At this point possibilities for new roads for bus operation or traffic management schemes are explored.

8.18. The next stage is the determination of frequencies. For the peak it is assumed that half the total load between 06.30 and 09.29 occurs in the peak hour, and the frequency is determined according to WMPTE's peak period target capacity figure of 90 per cent. The network is examined to ensure that it meets the DTp accessibility standard of a maximum walk of 400 metres to a bus stop.¹ WMPTE has decided, however, that a 700 metre standard of accessibility is reasonable for evenings and Sundays.

8.19. At this stage routes are abandoned if they do not meet the minimum frequency standards of half hourly services for urban routes and hourly for others unless the accessibility standards would be impaired. When frequencies for time periods have been determined they are co-ordinated along common sections of route since each route's frequency has been decided independently from its own loadings. This may mean deviating from the target capacities in order to retain an acceptable frequency on trunk routes.

¹ Circular 82/73 (Department of the Environment) *Bus operation in residential and industrial areas.*

8.20. The proposed network is then costed. Revenue changes are forecast and the network, together with any alternatives which have been generated, subjected to an economic evaluation. In the case of the Yardley and Chelmsley Wood study the evaluation identified that 2-6 buses could be saved from the existing schedule of 100 buses and early experiments with computer techniques suggested that further savings in buses might be possible.

8.21. Before implementation of the proposed network the area study proposals go to consultation with the County Council, the trade unions and the public. Amendments may follow these consultations, or some proposals may be regarded as experimental for a limited period. WMPTE has told us that it regards the consultation process as extremely important but that the period for consultation is tending to increase and this is lengthening overall timescales for implementation. After implementation the PTE also monitors reaction to the new services and makes readjustments where the monitoring results show this to be appropriate.

The Coventry area study

8.22. WMPTE has commissioned Martin and Vorhees Associates and Volvo Transportation Systems to carry out a study of the City of Coventry services in order to test and evaluate the computer-aided techniques developed by Volvo. The study is the first in Britain to use these techniques, and it is WMPTE's hope that their successful application will substantially reduce the time taken to complete a comprehensive review of the West Midlands. Their objectives in Coventry are twofold: to gain experience of the planning techniques with a view to their general adoption as part of the programme of area studies; and to develop a more cost effective public transport network for Coventry.

8.23. The first phase of the Coventry study was to represent and evaluate the existing network. The second stage was the development of network options, and the production and optimisation of a preferred plan. A computer-designed preferred plan has already been generated and presented to WMPTE for discussion.

8.24. The work has taken 15 months but WMPTE is confident that it could reduce the study time to six to nine months for similar sized projects. The total cost to it so far has been about £100,000, but the preferred plan indicates that it could be possible to cater for the current level of demand with from 5 to 15 fewer buses out of a present peak vehicle requirement of 211, so if the plan were to be implemented even at the lower end of the range of saving the investment in the computer-aided technique would have been more than well justified. The study has also covered a wider area than usual (Coventry has a population of 320,000), and allowed a larger number of service options to be generated and evaluated. In the longer term WMPTE hopes that it can use the technique to explore the consequences of, for example, different patterns of cross-subsidisation, levels of investment, and standards of accessibility.

The 1980 service cut

8.25. A substantial response to the longer term reduction in demand was initiated by WMPTE in July 1980 when it obtained approval from WMCC to cut services by 10 per cent. By then the number of passengers carried had declined by over 50 million from the peak figure of 577 million in 1976-77, so a once-for-all adjustment of this nature was considered to be justified. Additionally, some increase in fares was necessary to help balance the budget for 1980-81.

8.26. WMPTE put forward proposals which it said were 'designed to match the pattern of travel derived from the PTE's monitoring of passengers' requirements'. No formal load factor or financial criteria were used, but in practice lightly loaded services with poor operating ratios were most affected, and amendments to 30 services in East Division, 96 in North Division and 122 in South Division were put forward. They related mostly to reductions in services in early morning, late evening, on the shoulders of the peak, and on Sundays. In addition some lightly used services or sections of routes were proposed for withdrawal. Some other changes had been planned for some time for good housekeeping purposes and were introduced with the general package.

8.27. WMPTE has quantified for us the savings which resulted from the 10 per cent cut, but the picture is to some extent complicated by the good housekeeping changes, and completion of the conversion to OMO. Nevertheless, it has concluded that as a consequence of all the changes, of which the 1980 cuts were the major part, by December 1980 there had been, compared with the beginning of the year, a reduction in scheduled mileage of 10.3 per cent, a reduction of 9.3 per cent in the number of buses required, and a reduction in rota lines of 10.5 per cent. There were 482 fewer drivers, and 194 fewer conductors. It has also estimated that the cut in scheduled mileage caused a fall in passenger journeys of only 3.6 per cent and an improvement in load factor of 7.4 per cent.

8.28. The 10 per cent cut resulted in considerable public concern, and after the change in political control in May 1981 the PTE was instructed by WMCC to draw up a plan which while not reinstating any particular reduction would, nevertheless, meet the view that socially desirable services had been cut. The main criterion for restoration was accessibility, and social considerations predominated. The new package involved the operation of about an extra 350,000 bus miles, over the earlier reduced figure, and at an annual cost of £330,000. Effectively, three-quarters of one percentage point of the 10 per cent cut was restored. WMCC had provided for this restoration in its revised budget, to be funded by the supplementary precept which was later quashed by the High Court.

Present performance: load factors

8.29. A measure of the success which is achieved in matching supply and demand is given by load factor data. By load factor we mean the extent

to which seating capacity is occupied. We would stress that load factors are not the only measure of this aspect of efficiency, since undertakings are required by local authorities to run some services which are not commercially viable, but which the authorities judge necessary to satisfy the transport needs of the area. On such services the undertakings are not free to determine their own operational criteria. Nevertheless, load factors are a useful measure of performance especially on those routes which are profitable or nearly so, and which the undertakings would probably run if they operated in a commercial environment. They can also be useful to the local authorities in indicating to what extent revenue support is achieving its purposes.

8.30. Load factors are measured in two ways in this chapter. First, the figure of passengers per bus in relation to seating capacity is an indicator of loadings at a particular point on the route. Second, passenger miles per bus mile gives an idea of the average load on the bus during the time it is in operation.

8.31. Table 8.1 shows load factors in terms of passenger miles per bus mile for WMPTE and the divisions separately for the last four years.

TABLE 8.1 WMPTE and divisional load factors

	<i>East Division</i>	<i>South Division</i>	<i>North Division</i>	<i>WMPTE</i>
1978-79	17.0	20.3	18.4	19.3
1979-80	17.3	21.0	18.6	19.8
1980-81	17.6	20.2	17.3	18.9
1981-82	18.5	20.9	18.5	20.3

Source: WMPTE.

The load factor for the PTE as a whole has fluctuated considerably; the overall load factor of 18.9 for 1980-81 is the lowest the PTE has recorded since it started producing this indicator in 1974-75. From its highest level of 20.9 in 1976-77 it has shown a 9.6 per cent fall. The service economies made at the end of 1980 combined with the 1981-82 demand levels, brought about by the reduced fares policy from September 1981 to March 1982, produced a load factor of 20.3 for 1981-82.

8.32. To obtain a measure of loadings in relation to seating capacity we asked WMPTE to provide us with recent Continuous On-Bus Survey data for a selection of routes in each division. It gave us a sample of 23 of the best routes with operating ratios between 71 and 116, and 9 of the worst with operating ratios between 21 and 55 (in July 1981). The COBS data for each route give loadings between stages for a selection of bus journeys throughout the day. We have identified the loadings at the maximum loading point, and these figures are in Table 8.2 together with the load factor in terms of passenger miles/bus mile for the whole route.

TABLE 8.2 WMPTE: loading by time of day 1980-81

	00.00 to 06.59	07.00 to 09.29	09.30 to 15.29	15.30 to 17.59	18.00 to 24.00	All day
<i>Best routes</i>						
Passenger miles/ bus mile	14.8	24.2	27.8	27.5	18.5	23.9
Occupancy at max loading point on best journey on best route %	103	133	141	113	104	
<i>Worst routes</i>						
Passenger miles/ bus mile	5.9	10.5	14.6	13.0	6.6	11.4
Occupancy at max loading point on best journey on best route %	26	62	66	95	34	

Source: WMPTE.

Note:

The occupancy percentage is based on a 76-seater bus.

8.33. The points which emerge from the table are:

- (a) There is a broad correlation between both measures of load factor, with high loadings corresponding with higher passenger miles per bus mile.
- (b) The worst routes have an all-day average load factor of about 11 passenger miles per bus mile, and do not reach a load factor of 20 in any period of the day. Occupancy is also lower.
- (c) The best routes have an all-day average load factor of about 24 passenger miles per bus mile. Their load factors are over 20 for the three busy periods of the day, and they achieve high loadings at the peak loading points.

The commercial and strategic network

8.34. WMPTE has told us that it is increasingly aware of the worsening economic situation in the West Midlands, and the effect of growing unemployment on patronage. It also considers that it operates in a climate of uncertainty, particularly with regard to the amount of revenue support it receives. It has seen a period of rapidly decreasing revenue support followed by one of greater commitment by the County Council elected in 1981 but now faces much changed circumstances because of the recent abandonment of the cheap fares policy (see paragraphs 8.103-8.106). It is developing its ideas of a commercial and a strategic network as a response to this uncertainty. This concept has two purposes. First, it is a contingency plan if the day should come when revenue support were drastically cut, and services had to be reduced. Second, it is a means of more closely identifying the needs to be met by revenue support, and the resources required to meet them.

8.35. WMPTE services have been divided into five categories based on revenue per bus mile or load factor. The first two categories contain services which are or could be self-supporting, and are the commercial network. They

contain two-thirds of the buses. The next two groups comprise the strategic network and would be required to provide differing standards of access to the commercial network. They would require revenue support. The final group comprises services with a mainly social justification.

8.36. WMPTE has told us that the work on the commercial and strategic network is still being discussed internally because it wishes to be sure of the implications before putting it to WMCC. While it would prefer to redesign all its services using the Volvo technique, it is conscious that in a period of rapid changes in policy, some of which conflict with pressures on it to reduce costs, time may not allow it to make changes by its preferred way through area studies. Nevertheless, in developing the concepts and identifying the purposes for which revenue support might be given it hopes to make a contribution to a more stable and long-term transport policy for its area.

The scope for economies in matching supply and demand

8.37. WMPTE has told us a proportion of services are only provided because they are traditional, or because of political pressures, and that judged on a commercial basis they would be withdrawn. Also, its work on the commercial and strategic network suggests that other services provide a higher standard of service than the community might be prepared to pay for. In its view the scope for economies in bus mileage lies in the categories 4 and 5 of the strategic and commercial network (see paragraph 8.35) and an additional reduction equivalent to 1 per cent per annum in the peak vehicle requirement to adjust to the long-term recession in demand. It estimated the potential for reduction in mileage to be about 25 per cent, and a period of 6 to 9 years would be required for its implementation. This estimate would include good housekeeping and area studies adjustments. It pointed out, however, that reductions on this scale and over this time period would need the agreement of the County Council.

8.38. We asked WMPTE whether, given the reduction of 10 per cent in load factors between 1976-77 and 1980-81 (see paragraph 8.31), it would not be a reasonable aim to restore the loss. It agreed it would be a reasonable aim, but added that because of changes in policy on revenue support, substantially higher fares, and the loss of traffic because of recession it would be extremely difficult to achieve.

CCT

Procedures for matching supply and demand

8.39. It can be seen from Table 1.2 that the peak vehicle requirement of CCT has changed little over the period 1976-81. This constancy is perceived by CCT as the outcome of two factors. First, as a condition of the binding agreement (see paragraph 10.29) with South Glamorgan CC, the level of service operated in 1976 has to be maintained in broad terms. Second, adjustments have taken place through the replacement of peak services to the inner suburbs by those to the newly developing outer areas. These have tended to balance each other. The service levels of both the old and new services have been defined in South Glamorgan CC's Public Transport Plan.

8.40. The actual level of service operated, in terms of the routes and their frequencies, correspond with those laid down by South Glamorgan although the City Council considers that ultimately its prerogative to determine which routes should be operated, and the frequencies and fares.

8.41. CCT has explained that this correspondence between the conditions and actual levels results from close co-operation between the City Council and County Council over a period of eight years. When local government reorganisation took place, many elected members became dual members for both the city and the county, and hence desires in respect of bus services were often similar. The officers of the county work closely with the General Manager of CCT and are involved in regular meetings of the Public Transport Operators Group (PTOG). This group contains representatives of CCT, National Welsh (the NBC subsidiary) and British Rail. The PTOG provides a forum in which proposals for service changes can be discussed.

8.42. South Glamorgan CC has told us that the routes and their frequencies as specified in the PTP were accepted on an historical basis within the broad policy on level of service and not specifically determined. South Glamorgan CC accepted the service changes which had taken place since 1972 in its first PTP. Subsequent changes to this have to be agreed (as a condition of the binding agreement) with the County Council, and justified even if only at officer level, but then reported to the Environment and Planning Committee. CCT in general has tended to put suggestions to the county council in recent years, but in turn there have been small parts of the CCT network, ie some minibus services, which the County Council has not accepted for support.

Service revisions up to 1979

8.43. Between 1972 and 1975 revisions to the services took place as follows:

- June, Sept 1972 Interim revisions to facilitate extension to OMO
- June 1973 Major revision to network
- August 1974 5 per cent reduction in service frequencies
- Nov, Dec 1974 Revision of minibus services
- June 1975 Further restructuring to complete revision of 1973.

8.44. Between 1976 and 1979 revisions were made to individual routes/areas when specific developments required adjustments to be made, eg Pentwyn. In January 1979 revisions were proposed, and although approved by the Transport Committee they were not confirmed by the City Council.

8.45. The 1973 restructuring had as its basis the proposals put forward during 1972 for a review of the whole network. Before 1972 the pattern of routes strongly reflected the previous trolley bus services. In 1972 questionnaires were distributed to households and to relevant organisations and groups and the General Manager was instructed to consult with ward members on their particular requirements. The response to the questionnaires was 16 per cent. Detailed origin and destination data did not emerge in a useful form

from the survey and in the event the network revisions proposed in February 1973 were primarily the outcome of the work done within CCT coupled with informal discussions with ward members and interested groups.

8.46. Since 1976 such informal discussions have been an important part of the data on demand which are considered in route revisions. Since the formation of South Glamorgan County Council subsequent discussions included relevant members of this council (where different from those of the City Council. At the same time that proposals are raised with elected members, discussions take place at officer level, and then in the Public Transport Operators Group.

8.47. The form in which proposals are presented to the Transport Committee of the city council has remained largely unchanged. This committee is normally the body which approves revisions. Particular services, as they affect relevant members, are discussed in terms of frequency changes, and overall service revisions are summarised in terms of mileage savings. The general practice has not involved discussions of loading at particular times of day on particular routes or, until recently, the financial consequences for particular routes or the network as a whole. CCT has told us that the overall financial consequences would have been apparent to the committee from previous discussions; for example the proposals of January 1979 were a response to a request from the committee to achieve specified savings.

Revisions since 1979

8.48. The January 1979 proposal contained revisions to the routes of 17 services, and frequency alterations on 13 services (these were to an extent overlapping). A further seven services were to be dropped. These proposals would have resulted in an overall mileage reduction of 1.5 per cent. Consultations on the revisions began in the summer of 1978, they were approved by the Transport Committee in January 1979, but vetoed by the City Council. The current City Council has told us it believed there were two reasons for this. Approval of such a revision would have been unpopular shortly before the May elections, particularly as a fares increase was part of the package. Also, given the high level of lost mileage at that time, 9.7 per cent, it would have been equally difficult to carry through a programme of service reductions.

8.49. Subsequently fares increased by 14 per cent in September 1979. CCT has told us it is unable to estimate the extent by which this increase in fares was exacerbated by the failure to introduce the service economies proposed in January 1979.

8.50. The next proposal for service revisions came in July 1980. The consultation process had been taking place informally since December 1979. The revisions proposed were for changes in the routes of 8 services and frequency alterations in 9 services, only 3 services having changes in both. A further 7 routes were to be dropped and 1 new service added with 38 services remaining unchanged. The proposals were implemented in January 1981 with estimated savings of £258,000 per annum and 5 per cent reduction in bus mileage. This 5 per cent contained 1 per cent due to reductions in service made during the summer holiday period.

8.51. In the autumn of 1981 the Transport Committee began again to examine the matter of service revisions as part of a wider programme for reducing the existing deficit, and that forecast for 1982-83. By then passengers were 2 per cent lower compared with the equivalent period in the previous year. After allowing for a proposed fares increase in January 1982 the 1981-82 residual deficit (ie the deficit after allowing for revenue support from South Glamorgan CC) was estimated, in November 1981, to be £754,965, and the deficit for 1982-83 to be £784,200. In November the General Manager, as previously requested, put forward proposals on revisions, together with an analysis of route costings which classified routes or route groups as follows:

- (a) 2 which were profitable;
- (b) 11 which were 'marginal', ie over a period of years fluctuated between slight profit and slight loss, with operating ratios between 90 and 110 per cent;
- (c) 20 which were loss-making and with operating ratios between 50 and 90 per cent;
- (d) 19 which were heavily loss-making, and had operating ratios of between 12 and 49 per cent.

The services in (c) and (d) between April and October 1981 had produced a cumulative operating deficit of £1,237,991. In his report the General Manager pointed out 'that in an extreme situation the whole of the residual deficits [for 1981-82 and 1982-83] can be recouped, albeit at the expense of a "Beeching" style cutback of the bus route network'.

8.52. Specific proposals were made in respect of the routes in competition with CK Coaches. The economies from these proposals were not quantified although competition from CK Coaches was estimated at that time to have cost £90,000 revenue. The proposals for reductions on the routes experiencing competition were not accepted by the Transport Committee but the Finance Committee and the City Council overturned this decision and the economies are to be implemented. By January 1982 the estimated residual deficit was £811,000 implying an operating deficit of £1.20 million. The Transport Committee agreed to consider more general proposals for dealing with the deficit, and in April 1982 they accepted the principle of a 5 per cent reduction in mileage from September 1982 coupled with a fares increase in October 1982, the remaining balance of the residual deficit being met from the general rate fund.

Data for service revisions and load factors

8.53. The passenger survey of 1972 did not produce usable information in detail of passenger origins and destinations (O & D), and since then CCT has not sought to undertake any general on-bus surveys to identify origins and destinations across the whole network. We asked CCT if it had carried out subsequent O & D studies either of its passengers or on a wider group of travellers, and if any such study had been used for service revisions. CCT replied that limited O & D surveys had been carried out but were restricted to ascertaining the extent to which existing passengers would be affected by

alterations to the routing and/or timings of individual services or journeys. For larger surveys involving O & D, CCT relied on the work of South Glamorgan CC's Transportation Division.

8.54. CCT does undertake, in co-operation with South Glamorgan CC, regular autumn passenger counts. These involve monitoring passenger loadings on virtually all routes. The counts are designed to take place at the peak loading point on each route although it is recognised that loadings will vary along the route, and that at certain times of day the survey point may not represent the peak loading point. The autumn passenger counts commenced in 1975 and until 1981 covered the Monday-Friday peak periods only, ie 07.30-09.00 and 15.30-18.00. The 1981 count covered all periods for every day of the week. The annual loading data are summarised in Table 8.3.

TABLE 8.3 CCT: per cent of seats occupied at peak loading point, autumn passenger counts

Average all routes Mon-Fri	1976	1978	1980	1981	1981	
					Lowest route	Highest route
Inbound morning peak 07.30-09.00	51.4	63.2	54.8	47.7	19.8	62.9
Outbound evening peak 15.30-18.00	63.1	66.0	69.4	53.1	17.3	74.7

Source: CCT.

Note: The data are for routes covering 90 per cent of CCT's stage carriage mileage. Schools services are excluded.

Table 8.4 shows the results of the 1981 survey for inbound and outbound journeys by time of day, and day of the week.

TABLE 8.4 CCT: per cent of seats occupied at peak loading point by time of day 1981, autumn count

Monday-Friday	Per cent	Saturday	Per cent
Inbound morning peak 07.30-09.00	47.7	all day	31.1
Inbound morning off-peak 10.00-13.00	37.0	Sunday	18.7
Outbound afternoon off-peak 12.00-15.30	32.4	all day	
Outbound evening peak 15.30-18.00	53.1		

Source: CCT.

Note: See Table 8.3.

8.55. South Glamorgan CC does not specify any target load factors for CCT, and the County Council has told us that passenger count data are not utilised to judge the performance of individual routes. The information is used to judge the annual variation in weekday travel into and out of the Cardiff central area by all modes.

8.56. CCT itself makes use of this information for planning services. However, it has told us that load factors were seen as not being of particular significance since neither the central government nor South Glamorgan CC appear to place any emphasis on them. CCT argues that its first concern

is to meet the minimum level of service laid down by the County Council rather than to achieve any particular loading. CCT has said that strict adherence to a load factor target may well be counter-productive in that the reductions in frequency that this would entail would induce passenger resistance, and recession in traffic would follow.

8.57. The Traffic Superintendent of CCT does in practice adopt a target load factor when planning service frequencies, the target being that during the high peak period in the direction of maximal flow, spare capacity of 30 per cent should be provided. This target, however, is affected by numerous factors including the minimum service level specified in the PTP, the attitude and policies of the City Council, and what the public will accept in terms of minimum service levels.

The scope for economies

8.58. We asked CCT if it had considered obtaining the services of the NBC (or other body offering such service) to carry out a MAP type exercise (see paragraph 8.60) in Cardiff. CCT replied that it had officers who had knowledge of MAP and CCT had in fact participated in a MAP exercise with the local NBC subsidiary. CCT's view was that MAP exercises were most likely to be beneficial in situations where the bus service network had been static for long periods and where other information, eg details relating to traffic delays etc, was not readily available. In Cardiff the bus service network had been the subject of a major revision in 1972 and 1975 with lesser revisions subsequently and major revisions again in 1981. Additionally, working groups such as the South Glamorgan CC Bus Working Group, Swissperfo studies and City Council advance planning working parties already provided, on an on-going basis, much of the information obtained by a MAP exercise. These factors, coupled with the relatively small and compact area it served and the developed process of consultation with passengers and elected members of both CCT and South Glamorgan CC suggested to CCT that a MAP exercise was unlikely to produce new information commensurate with the cost of undertaking such an exercise. CCT further justified its position by drawing attention to the rate of passenger loss between 1974 (the year following the introduction of its first major revision) and 1981, which had been one of the lowest in the country.

8.59. It appears that certain limited surveys have been carried out by or for CCT. These surveys, however, have not been comparable either in scope or in depth with the MAP exercise of BOC and TMT, or the area studies of WMPTE. Paragraphs 8.20, 8.24, 8.70 and 8.93 record the considerable economies resulting from such exercises. We believe that in the case of CCT they would also bring economies worth many times the cost of the work involved.

BOC

Procedures for matching supply and demand

8.60. BOC has no specifically designed timetable for service revisions. Action in the past has been stimulated by three main factors. First, BOC seeks to serve any new residential or other land use development at the earliest

opportunity. This objective is laid down in the relevant PTPs of the counties from which BOC receives revenue support. Second, management action is also stimulated by public requests either directly or through local councils and groups to the company for new services. Finally, management action is also stimulated by the continual review of individual service performance. A close review is made of the deficits which are being incurred in relation to the level of revenue support which is being received from county councils. Further to these, and in common with other NBC subsidiaries, BOC has carried out a company-wide review of all its services. This review, the Market Analysis Project (MAP), involved a full survey of existing bus passengers and a sample household survey. Given the results of these MAP studies BOC was able to submit to the relevant county councils proposals for service revisions. The MAP studies commenced in September 1979 with the first major service revisions being introduced in October 1980. The last group of service revisions, relating to country services in the Swindon area, was introduced in January 1982.

8.61. In the period 1976-81 the financial situation of BOC deteriorated. BOC has told us that during these years it was progressively introducing service revisions with a view to reducing the operating deficit, taking into account the levels of revenue support which the company was able to obtain from the county councils. Notwithstanding the action taken, the deficit generated in the three main counties, Avon, Wiltshire and Gloucestershire, rose from 8.5 per cent of total stage carriage revenue in 1977-78 to 25.8 per cent in 1980-81 whilst the proportion of deficit covered by revenue support in these three counties fell from 73 per cent to 29 per cent. Thus, a general imbalance between supply and demand persisted, and it was clear to BOC that a large scale revision of services was overdue. It was against this background that the Market Analysis Project was introduced.

MAP reviews

8.62. The aim of MAP was to improve the financial viability of the services, given the existing pattern of demand, and, as a corollary, it also provided a firm data base from which to begin negotiations with local authorities on the level of revenue support.

8.63. The basic MAP methodology is set out in the MAP operating manuals prepared by the NBC. MAP is designed to produce information related to bus passenger demand and the costs incurred in meeting that demand 'to enable rational judgements to be made to ensure some stability in the level of service provision and in passenger usage of the services provided. This requires the consideration of three main elements of bus service provision, namely network coverage (ie the route pattern), service design (frequencies etc) and revenue. Within this design cross-subsidisation is taken to be the norm'. The area of BOC's operation was divided into 13 study bus systems and a MAP report was produced for each one.

8.64. The original aim of MAP was to provide services without 'undue cross-subsidisation'. In practice networks are designed to achieve break-even financial results, and the size of the network is maximised subject to this

constraint. The network which emerges is not in any strict sense a group of routes which is defined by complementary supply and demand conditions. NBC policy has been to achieve the largest break-even network.

8.65. An important element of MAP is the on-bus survey of passengers. Passenger journeys by time of day are allocated to origin and destination zones. At the most detailed level of consideration flows are allocated to 'fine' zones, ie Bristol City has some 81 'fine' zones. The demand pattern is then built up on the basis of flows between these fine zones. The fine zone demands are aggregated to provide information on the main 'corridors' of travel.

8.66. The day is divided into 14 or 15 periods, and separate weekend periods are identified. These divisions represent a basic segmentation of the market. Services are then built up using the survey information; first, the service between peaks is defined, then the peak and other off-peak services. NBC has told us that the between-peak service, being the profitable segment, would be defined, and then the other services would be provided within the break-even constraint for the overall network. The rationale for this approach is that it takes account of the make-up of operating costs. The eight off-peak hours in the middle of the day, plus two hours of peak before and after, give a basic 12 hour day, which can be met more economically in certain circumstances, particularly in less densely populated areas than the previous approach of maximising vehicle usage by operating two full eight hour shifts. Route revisions can take place in the light of the density of demand or in response to the characteristics of varying classes of passenger who have differing accessibility requirements. No formal accessibility standards are applied.

8.67. System design generally takes place by consideration of each corridor on an incremental basis, but frequencies are not planned by preparing detailed schedules. Instead rough and ready rules are applied, and services are built up on an incremental basis. A load factor of 65 for a 78-seat double-deck bus at the maximum demand period (the morning peak inward or evening peak outward flows) is the minimum target. The period looked at might be as little as one-quarter or as much as a whole hour. Where there are more than 65 passengers in the maximum period requiring a service it is impractical to do other than ensure that their demands are met even if this results in buses having a load of less than 65. For example, when 160 passengers require a service in the period, three buses are run. Generally the maximum target load factor planned for is 90 per cent (70 seats) to allow for fluctuations in demand and errors in the analysis. No formal target load factors for off-peak services are specified in the MAP manuals. The team responsible for the MAP studies in BOC told us that in planning off-peak services on rural and inter-urban routes, it sought to achieve loadings of 15-20 passengers per hour.

8.68. The MAP break-even network provides a basis from which subsequent discussions with county councils can be carried out. However, not all the initial MAP networks were drawn up on a break-even basis, eg the study bus system for North Avon included a provision for revenue support at the outset.

8.69. The county councils, by virtue of their revenue support payments, influence the extent of the network in two ways. First, a different break-even network from the initial MAP network can be defined which would result in a different pattern of cross-subsidisation. Second, further routes can be added to either of these break-even networks. These additions can take the form of the specific 'buy backs' of individual routes, or an overall subsidy to support the group of additional routes. The former case, where counties support specific routes, is known as 'route support' although the description is misleading in that support for individual routes presupposes the existence of an initial cross-subsidising network designed to meet 'basic' needs. The latter case is called network support.

8.70. The service revisions following from the MAP exercises and discussions with the local authorities, were introduced throughout BOC's operating area between October 1980 and January 1982. Table 8.5 sets out the changes in peak vehicle requirement and mileage resulting from the MAP proposals, and the requirements of the county councils.

TABLE 8.5 BOC: reductions in supply resulting from MAP

<i>Bristol City study bus system</i>	<i>Peak vehicle requirement</i>	<i>Mileage per week</i>
Pre-MAP level	303	214,449
MAP proposals	188	152,577
Changes by BOC	—	+ 350
Changes by county councils	+ 36	+ 22,744
Post-MAP level	224	175,671
<i>Total all areas</i>		
Pre-MAP level	762.9	596,148
MAP proposals	479.0	409,253
Changes by BOC	+ 2.0	+ 4,038
Changes by county councils	+ 50.0	+ 37,547
Post-MAP level	531	450,838
<i>Total all areas per cent</i>	<i>%</i>	<i>%</i>
Pre-MAP level	100.0	100.0
MAP proposals	62.8	68.6
Changes by BOC	+ 0.3	+ 0.7
Changes by county councils	+ 6.6	+ 6.3
Post-MAP level	69.6	75.6

Source: BOC.

8.71. The reductions in peak vehicle requirement, 30.4 per cent, and in mileage, 24.4 per cent, are somewhat greater than those achieved on average in other NBC subsidiaries, where the reductions have been 26 per cent and 19 per cent respectively.

8.72. To obtain an insight into the financial consequences of MAP we have considered the operating ratios before and after the MAP revisions introduced between October 1981 and January 1982. The timetable for these was:

4 October 1981	Bristol City
11 October/22 November 1981	East Avon and West Wiltshire
1 November 1981	Cheltenham Town
3 January 1982	Gloucester City
24 January 1982	Swindon rural

The pre- and post-MAP operating ratios are shown in Table 8.6.

TABLE 8.6 BOC: operating ratio by type of service and area pre- and post-MAP

Area	Type of service and operating ratio %					Total
	Urban	Rural	Inter-urban	Schools	Works	
<i>Bristol City</i>						
Pre-MAP	75.3	—	—	41.4	33.6	74.1
Post-MAP	89.9	—	—	63.7	47.9	88.9
<i>Cheltenham Town</i>						
Pre-MAP	80.8	—	—	57.1	33.6	80.4
Post-MAP	93.6	—	—	46.2	46.6	90.7
<i>Gloucester City</i>						
Pre-MAP	80.4	—	—	—	21.7	79.8
Post-MAP	91.4	—	—	—	23.8	90.8
<i>East Avon</i>						
Pre-MAP	44.2	66.2	79.8	—	15.5	72.4
Post-MAP	50.5	71.7	77.5	—	16.1	74.3
<i>West Wiltshire and Swindon</i>						
Pre-MAP	66.4	64.7	74.4	—	—	68.8
Post-MAP	72.3	69.8	84.9	33.1	14.9	77.4

Source: BOC.

All pre-MAP data relate to January-October 1981, post-MAP data for Bristol City are for November 1981. Allowance for the strike in Bristol City in February 1981 raises operating ratio for city urban services, and all services, to 78.3, and 77.2 per cent respectively. Post-MAP data for other areas relate to February 1982.

8.73. All the areas have shown an improved operating ratio, but it is not possible unambiguously to ascribe all of this to the MAP exercise. Other factors may also have had favourable and unfavourable effects on BOC's financial results. Nevertheless, MAP must be given credit for a major part of the improvement, particularly as the service revisions in Bristol City led to a 26 per cent fall in peak vehicle requirement, and an 18 per cent fall in mileage. In the City of Gloucester the peak vehicle requirement fell by 32 per cent, and mileage fell by 26 per cent.

8.74. Following the changes introduced by the application of the MAP proposals, BOC undertook loading surveys on the Bristol City services in November 1981 and February 1982. It was not possible to consider all services within Bristol, but the routes shown in Table 8.7 cover approximately 60 per cent of the total route mileage of the city services. These loading surveys were taken at the peak loading point, and apart from the outbound flow from 09.00 to 13.00 hours they refer to the direction of maximum flow. The loadings are averaged over the periods shown and the route aggregations correspond to broad corridors of demand.

8.75. As a follow-up to MAP NBC is developing two further projects. The first, MISARS (Management Information System for the Age of the Relaxed Licensing System), is a monitoring system which will enable the depot superintendents to assess the financial viability of particular journeys rather than the route as a whole. The second project is described as a total marketing system, the aim of which is to conduct an in-depth off-bus market survey to assess the needs of the passengers. The areas to which this total marketing will be applied are envisaged to be smaller than existing MAP study bus systems.

TABLE 8.7 BOC: capacity utilised at peak loading point (Bristol City services Monday to Friday)

Route	Passengers/seat %			
	Morning peak	Afternoon peak	Between peaks	
	Inbound 07.00-09.00	Outbound 15.00-18.00	Inbound 09.00-13.00	Outbound 09.00-13.00
20-25	57.4	62.6	44.3	26.9
72, 74, 75, 77, 78	74.5	67.9	38.9	18.2
27-29	60.4	78.5	49.2	15.3
51-55	60.9	67.4	52.9	18.5
10, 11	52.6	73.1	65.5	27.8
87, 88	78.9	63.7	39.9	25.8
56-59	57.2	71.3	36.8	25.5
Average capacity utilised	66.3	68.2	44.4	21.4

Source: BOC surveys taken in November 1981 and February 1982.

TMT

Procedures for matching supply and demand

8.76. TMT's financial position has been causing concern since 1976, and for this reason its service reviews have taken the form of substantial remedial schemes rather than 'good housekeeping' reviews. The first such scheme was the Action Plan in 1976, then MAP was introduced in 1978, and August 1980 saw implementation of the Nottingham Action Plan.

The 1976 Action Plan

8.77. The immediate background to this Action Plan was that the 1975 operating results for the company showed a loss, after provision for replacement of assets, of more than £1.25 million, and the following year showed some improvement, but still a substantial deficit. Before this TMT had been amalgamated with the Midland General Company at the beginning of 1972, but, partly because of a Government request to NBC to continue the operation of loss-making services while the newly constituted local authorities decided their revenue support levels, the routes of the previous Trent and Midland General companies had not been rationalised. The management of TMT believed that for this reason alone the Action Plan did not need to take a very sophisticated approach to cost cutting; drastic remedial action was necessary.

8.78. At the time of the Action Plan TMT believed that appreciable increases in stage carriage fares would be counter-productive, so the proposals concentrated on administrative and operational economies. Under the first heading came projects such as bringing wage rates and bonuses on to a common basis throughout the company, and the introduction of standard bus running boards and waybills. The operational economies were based on loading checks carried out on most services. In arriving at the proposals, TMT's policy was to maintain the existing network of services as far as possible so that every community which was then served would continue to have a service, even though this might have to be at a reduced level. The changes provided the opportunity to join up and rationalise some Trent and Midland General routes. The plan envisaged the withdrawal of 3 million bus miles

annually and reduction of the peak vehicle requirement from 452 vehicles to 408 (not including spares) and allowed a considerable number of older types of vehicle to be disposed of, thus reducing the average age of the fleet. Action Plan also contained proposals to increase the level of one-man operation initially from 36 per cent to 57 per cent.

Nottingham Action Plan

8.79. The Nottingham Action Plan has been described by TMT as 'the largest ever company package'. It was implemented on 31 August 1980 and saved 40 vehicles and 610,000 bus miles per annum and eliminated 100 jobs. TMT told us that service reductions became urgently necessary when difficulties arose over the timing and amount of revenue support to be received from Nottinghamshire County Council. There was a shortfall of about £500,000 and TMT had to take action promptly to prevent its deficit from rising beyond that planned.

MAP

8.80. While TMT was responding to its own need to reduce services, the MAP exercises were begun in NBC. TMT then adopted the procedures and MAP surveys began in Trent in 1978. Subsequently schemes for Matlock (1980), Buxton (1981), North East Derbyshire (1981) and Nottingham (1982) have been implemented. Data for the Erewash Valley services are being analysed, and a scheme is planned for implementation in 1982. TMT services in Derby have not been studied as Derby City Transport does not wish to participate in a MAP exercise and TMT services in Derby are already the subject of a co-ordinating agreement (see paragraph 10.35). The Mansfield area also remains to be surveyed. TMT has estimated that MAP had covered 80 per cent of its geographical area, and 60 per cent of its traffic.

8.81. TMT has told us that in planning the Nottingham MAP exercise the first option would have been a completely commercial network, but this would have conflicted with the policy of the present Nottinghamshire County Council not to cut services. In view of the revisions carried out as in the Nottingham Action Plan and the importance of revenue support from Nottinghamshire, they made only good housekeeping changes.

8.82. The surveys on which the MAP proposals were based were carried out in 1978-79 for the whole TMT area except Ilkeston Town, Mansfield and Derby. The delay between survey and implementation was largely due to a backlog of computing in NBC. However, Trent assured us that no major decisions had been taken without a recheck of the demand characteristics.

8.83. On-bus surveys were the main source of demand data. Household surveys were tried and early MAPs incorporated street interviews together with a census-type approach to households, but as the response rate was low TMT decided not to use the results. The response rate to the on-bus survey was about 90 per cent. Although on-bus surveys do not specifically identify desired new service links, the MAP data do occasionally show obvious gaps which indicate that the service provision could be radically changed.

8.84. The MAP manual of procedures recommends that the degree of cross-subsidisation be examined; although the overall financial performance of each service is documented cross-subsidisation is not explicitly considered. The manual also recommends that consideration be given to fares experiments, but TMT told us that revenue support had been insufficient to allow it to embark on any major fare experiments associated with MAP.

8.85. A special allocation of £250,000 was put aside to cover all the expenses of data collection. Derbyshire County Council contributed to the cost although other counties did not do so.

The Buxton MAP

8.86. The procedures followed by TMT in redesigning services through MAP are shown by the Buxton exercise which was implemented in 1981. Although it is a small network the exercise also usefully illustrates the involvement of the Derbyshire County Council because in the course of planning it became clear, to TMT that the Buxton services could not be redesigned to operate without revenue support. As Derbyshire County Council was willing to provide support of £75,000 per annum, TMT designed a network which took this into account. The provision of school services was an important consideration of Derbyshire County Council.

8.87. In this exercise the provision of off-peak services was determined first, and then the peak provision was added to it. The two main movement corridors are served by the 198 and 199 routes operating via Buxton and Whaley Bridge, Chapel-en-le-Frith and Stockport, and the 185 Fairfield-Buxton-Harpur Hill-BurLOW. TMT has told us that without revenue support it would probably have not provided the other services on the rest of the network.

8.88. Consultations on the proposals took place with the unions most involved in the Buxton depot where employment had been declining for some time before the MAP exercise. The staff made suggestions for route alterations and timings, some of which were accepted by TMT.

8.89. The proposals were presented to Derbyshire County Council in September 1980. TMT planned to reduce the peak vehicle requirement from 24 buses to 15 through a considerable flattening of the peak. Although the proposals involved a more efficient use of resources, some school journeys would have been adversely affected by the service reductions. The County Council's Planning and Transportation Committee suggested that the possibility of tendering be explored, but it was decided that this would not result in a lower cost than that of TMT. The solution to the difficulty was found by altering the starting and finishing time at one school. County Council planning officers used the TASC computer model to assess the network, but concluded that manual scheduling could be as efficient for a network of this size.

8.90. TMT has provided us with the Buxton services operating ratios for eight accounting periods before the implementation of the scheme, and for nine accounting periods immediately afterwards. These show an average improvement from 76 per cent to 86 per cent. A post-MAP loading survey on

the 198/199 route showed a peak load factor of 90 per cent of seats occupied in the morning peak at the maximum loading point, and 124 per cent in the evening peak. On the 185/6 service the post-MAP survey showed morning peak occupancy at the maximum loading point to be 100 per cent, and 71 per cent in the evening peak. Thus, while it is not possible to attribute all of the improvement in results unambiguously to MAP, it does appear to have been successful.

Monitoring of MAP schemes

8.91. MAP schemes are not all monitored to the same extent; the more radical the change the more thorough the monitoring. When a MAP scheme is implemented both the county and TMT check for late, empty and full buses. Waybills are examined and figures on takings compared with expected revenue. Revenues are compared with costs as soon as both are available.

The benefits from MAP and the future

8.92. TMT told us that it thought that its MAP programme as a whole had paid for itself. The existence of information about the characteristics of passenger demand, and the better-informed management decisions had justified its considerable investment in the exercise. It also said that when the MAP programme was complete it would establish a continuing review. The traffic development section, with three full-time staff, had been especially set up to deal with future MAP type service revisions, and would be looking ahead to the future of the network, and working out how to retain existing passengers and attract new ones. TMT will also adopt the procedures being developed in NBC and which are described in paragraph 8.75.

8.93. Table 8.8 shows the operational economies made by TMT since 1978 as a result of all the measures it has taken to improve the demand/supply balance. The early years reflect the implementation of mileage savings and OMO conversion proposed in the 1976 Action Plan. The Nottingham Action Plan provided a large part of the company savings in 1980 and a sizeable OMO conversion programme took place in 1981.

TABLE 8.8 TMT: savings through operational economies 1978-81

	<i>Stage carriage mileage (Thousand miles)</i>	<i>Resources savings</i>		<i>Money savings (1981 prices) £'000</i>
		<i>Buses (PVR)</i>	<i>Drivers & conductors</i>	
1978	730	37	52	587
1979	300	18	57	429
1980 company	1,105	51	154	1,342
1980 MAP	100	7	11	311
1981 company	35	2	135	835
1981 MAP	230	10	22	247

Source: TMT.

Present performance on load factors

8.94. To assess present performance in terms of seat occupancy TMT carried out a loading survey from November 1981 to March 1982 on its most important 33 routes measured in terms of revenue. These routes accounted for 80 per cent of TMT revenue. The survey collected data at the maximum loading points on the routes during the Monday to Friday morning and evening peaks, the morning and afternoon off-peak, and on Sunday. The results are shown in Table 8.9.

TABLE 8.9 TMT: load factors (per cent of seats occupied) surveyed during January, February and March 1982

<i>Time</i>	<i>Average</i>	<i>Minimum</i>	<i>Maximum</i>
<i>Mon-Fri</i>			
Peak am	90	33	125
Peak pm	91	48	124
Off-peak am	59	15	120
Off-peak pm	62	22	151
Sunday	20	7	43

Source: TMT.

8.95. These data suggest that TMT has been able to achieve a reasonably balanced provision of service between the morning and evening peaks, and between the off-peak periods. During the morning peak 12 of the 33 routes had load factors in excess of 100 per cent, and 20 had load factors between 50 and 100 per cent. Loadings on Sundays are considerably below those achieved in the weekday off-peak.

8.96. TMT told us that some of the more lightly loaded off-peak services would be those retained at the request and expense of the relevant county councils, and at an hourly frequency which is the minimum acceptable. They also pointed out that some of the apparently lightly loaded services were making a contribution towards fixed costs.

Planning for service revisions in the future

8.97. The financial position of TMT is still a matter of concern, and its management has given thought to what actions it may take in the future should the recent improved performance not be consolidated. Its planning has been incorporated in the current Corporate Plan to 1986.

8.98. Before the upturn in late 1981 it had appeared to TMT that it would not be able to achieve its target of breaking even on a CCA basis by 1985 without 'withdrawal from appreciable areas which are currently served by the company'. The 1981 Options Review, which was undertaken by all the NBC companies in August 1980, had looked at this situation, and concluded that if it was likely that there would be shortfalls in revenue support TMT would have to retreat to its geographical heartland: the area bounded by Derby, Nottingham, Mansfield and Alfreton. The free-standing outlying areas in West Derbyshire and High Peak and in East Staffordshire would cease to be served, thereby saving about 1.2 million vehicle miles/year. Such a decision would be taken on financial grounds; cutting out whole areas of the service would allow substantial amounts of fixed cost to be saved.

8.99. Another item in the Corporate Plan anticipates that stage carriage mileage will fall by 10 per cent over the Plan period. Again this will be modified in the light of the better 1981 figures, but if needed it is to be achieved by cutting services at times when it is unprofitable to provide them, primarily on Sundays and evenings rather than by cutting out routes or areas. There will also be some adjustments to peak services resulting in a fall in peak vehicle requirement of up to 14 per cent over the Plan period.

Fares and fare structure

WMPTE

8.100. In the West Midlands County there is a distance-related and tapered fare scale for bus services based on stages of approximately one kilometre. For cross-boundary services there are separate but similarly structured scales. There is no return fare. Child fares are half adult fare up to 14 stages when a maximum of 35p then applies. Season tickets, at a discount, in the form of Travelcards are available for county-wide travel, or travel limited to one area (in Coventry, Walsall and Wolverhampton only). There are also student and child Travelcards having differing periods of validity and use. WMCC provides passes for free off-peak travel to old age pensioners, and district councils provide blind and disabled persons with travel passes. On night services in the City of Birmingham a flat fare of 80p is payable or 40p for Travelcard holders.

The level of fares

8.101. Table 8.10 shows the increases in fares between 1974 and 1982. Between 1976 and 1981 fares rose about 48 per cent in real terms. As a result of the average increase in actual fares of 67 per cent in March 1982 the real increase between 1976-77 and 1982 is 60 per cent. The general policy has been to put up the price of the Travelcard less than that of the fares paid on the bus.

8.102. In explanation of these movements WMPTE has told us that at the beginning of the period inflation was rapid and fares were frozen, so real fares fell and traffic grew. However, this policy could not be sustained and by 1976-77 fares were back at the real level of two years before. In 1977-78 the new County Council announced a policy of reducing revenue support by £2 million per year. This was achieved principally by increasing fares, rather than by a major cost cutting exercise.

TABLE 8.10 WMPTE: fares indices (November 1974=100)

	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82
<i>Actual prices</i>								
Fares on bus	100	114	147	202	239	282	375	340
Travelcard	100	110	135	175	205	232	294	281
Average	100	114	146	199	234	273	360	327
<i>Real prices</i>								
Fares on bus	100	90	101	121	133	134	154	129
Travelcard	100	87	93	105	114	110	121	106
Average	100	90	101	119	130	130	148	124

Source: WMPTE.

Note: Each figure represents the 12 month average of fare levels for the year in question.

The 1981 fare reduction and 1982 fare increase

8.103. Following the severe reaction to the two fares increases in 1980, and in the light of the earlier increases in real terms, the new County Council decided in 1981 that it was essential to reduce the level of fares. The Executive was asked to prepare proposals to meet the objectives of reducing fares by an average of 25 per cent, and of introducing a 2p flat fare for children.

8.104. The main changes made on 6 September 1981 were that adult fares were reduced by an average of 24 per cent, Travelcards reduced by an average of 21 per cent, and children's fares reduced to 2p flat fare. WMPTE forecast that the loss of revenue would be £10.4 million in 1981-82 and £17.9 million in a full year, and that there would be an increase of around 10 per cent in passenger journeys made by fare-paying passengers. A supplementary rate was levied to finance the reduced fares.

8.105. WMPTE has told us that comparison of the figures for October/November 1981 with those for the corresponding period in 1980 shows there was an increase of 10.2 per cent in passenger journeys. The increases in travel were largely due to children. The data show an increase of 1.3 per cent in adult travel (on-bus payment and Travelcard), a 57.5 per cent increase for children and an 8.6 per cent increase in old age pensioners' free travel journeys. An analysis by time of day showed that passenger journeys increased at all times except weekday early mornings (before 07.29) and during the morning peak period (07.30-09.29); however, at the height of the peak (08.00-08.29) there was an increase in passenger journeys principally due to a 33 per cent increase in children's travel during the half hour, equivalent to an additional 10,500 journeys. WMPTE thought it was difficult to predict accurately the effects of the policy, particularly in relation to children's fares; however the overall cost was less than anticipated.

8.106. On 25 January 1982, following proceedings in the High Court to challenge the supplementary rate, the County Council approved a 67 per cent fare increase to take effect from 7 March. This represented a 27 per cent increase over the August 1980 fare level. WMPTE expects to lose 20 per cent of its traffic as a consequence. A considerable proportion of this will be children. The full effect of the increase, however, will not be felt until about July 1982 because in the three weeks up to the fare increase 38,000 people bought 13 week Travelcards at the old price.

Travelcards

8.107. Travelcards confer benefits on bus users and other road users, but they also impose costs. WMPTE Travelcards are purchased because they offer a discount (on average about 27 per cent), the convenience of not having to find the exact fare at the time of travel, and a cheaper interchange facility. Users travel more and WMPTE may have to provide extra buses depending on whether there is spare capacity when the extra trips are made. On the other hand, use of Travelcards reduces boarding times thus speeding up running times and saving operating costs and reducing journey times for all passengers. There are costs to WMPTE of issuing Travelcard.

8.108. We have made an assessment of the costs and benefits of Travelcard looking at varying combinations of the existence of spare capacity in the peak and off-peak, and the method of cost allocation. We have concluded that, using WMPTE's own figures for the amount of travel generated, Travelcard shows a net benefit to the community.

The common fare

8.109. The PTE's development plan in 1972 aimed for a common fare on all routes, whether bus or train. This policy has been endorsed by WMCC, and has remained so notwithstanding changes in political control. Following the incorporation of Midland Red and City of Coventry services in 1973 and 1974 the opportunity was taken to harmonise the fares by stages, a common basis being achieved in 1975 for bus fares. The present WMCC has told us that following the House of Lords decision on London Transport fares it may be necessary for it to depart from the common fare policy.

8.110. Both WMCC and WMPTE have put forward arguments in favour of common fares. We understand that a predominant view has been that as revenue support was provided for the WMPTE network it was equitable to have a common fare. It was also believed that such a fare structure maximised the use of the network. WMPTE has no view on whether this is so, but has stressed that the policy is practical, and is generally regarded as being equitable.

8.111. WMPTE said that the only departure from the common fare which it thought justified would be to put a premium on special provisions such as fast services or night services. Apart from these it was more concerned to provide a uniform standard, to minimise the cost of providing that standard of service, and to endeavour to market the travel at a price which would give the optimum amount of revenue and traffic retention. Whilst it would be possible to charge different on-bus fares on different services it would not be easy to differentiate for the Travelcard which is a network ticket.

Experimental fares

8.112. A recent experiment has been the Monday Funday. In February 1981 WMCC decided to reduce bus fares within the metropolitan county to 10p for every journey for adults, and 5p for children on Mondays only for an experimental period. It lasted 15 weeks and WMPTE estimated its cost to be £1.5 million. Of this £566,000 was estimated to be lost Travelcard revenue, £675,000 on-bus revenue, and £280,000 was extra operating costs.

8.113. WMPTE recommended that the experiment be off-peak but WMCC did not act upon its advice. The effect of the experiment was, therefore, that a large number of peak travellers who would have travelled anyway enjoyed a sizeable fare reduction. Monitoring of the experiment showed that no peak travel was generated, but WMPTE had to operate an extra 77,000 bus miles to cope with the extra off-peak travel.

CCT

8.114. Within the City of Cardiff ordinary fares are based on five zones. The inner zone is 1 km in radius and centred on the Queen Street shopping centre. The succeeding zones are 3, 5, 7 and 9 kms in radius respectively. The basic fare is the ordinary adult single; no return fares are available. Additional to this basic fare structure are a lower priced off-peak fare scale, reductions for seasons ticket holders (Multiride) and family groups and various concessionary fares.

8.115. The increases in fares since November 1974 are shown in Table 8.11.

TABLE 8.11 CCT: fare increases

<i>Date</i>	<i>% increase</i>
27.10.74	7.7
6.4.75	50.0
4.1.76	9.2
3.10.76	9.6
14.8.77	14.2
13.8.78	7.4
2.9.79	14.4
6.4.80	14.6
4.1.81	18.6
4.1.82	11.7

Source: CCT.

Over this period fares rose on average by 312 per cent. This implies a rise in real terms of 53 per cent.

Multiride tickets

8.116. The Multiride ticket allows travel throughout the CCT network for a fixed sum and is available for weekly, monthly, three monthly and annual periods. Some 21 per cent of passenger journeys are undertaken by Multiride ticket holders and the discount for an adult ticket ranges from 30 per cent for the weekly ticket to 52 per cent for the annual ticket. Taking all factors into account, we have estimated that Multiride generates a net social benefit.

Fare experiments

Family tickets

8.117. Family tickets are available at weekends and after 18.15 hours Monday to Friday and allow, for a fixed price, unlimited travel within the city for up to two adults and four children on the day of issue. Originally, use on Saturday was limited to after 18.15 hours but the scheme was extended to cover all day Saturday in January 1981.

The off-peak fare

8.118. The off-peak fare scale applies between 09.15 and 15.45 hours on Mondays to Fridays, and offers a discount of 25 to 50 per cent on the peak fare depending on the number of zones travelled.

8.119. The reduced off-peak fare is of significance not only for its financial implications but also for its importance in assessing the response to competition from CK Coaches (see paragraph 11.9). The possibility of reduced off-peak fares was raised at the November 1980 meeting of the Transport Committee which resolved that the General Manager produce a report on the introduction of reduced fares for certain periods of the day. The Policy (Finance) and Transport Committees were advised by the General Manager in January 1981 that previous experiments of this kind in other parts of the country had succeeded in increasing patronage but only at the expense of a fall in revenue. The General Manager at this time recommended that the family ticket scheme be extended but did not recommend that a cheap off-peak fare be introduced. Nevertheless, the Transport Committee resolved that a reduced fares scheme should be introduced, and called for a further report.

8.120. At the May 1981 meetings of the Transport and Policy (Finance) Committees the General Manager gave details of the experience of extending the family ticket scheme. The scheme had resulted in an increase in patronage and was expected at worst to lead to increased losses of £10,000. Given this experience with the family tickets the General Manager recommended the adoption of the off-peak fare reduction. The expected losses from this scheme, to be introduced in June 1981, for an experimental period of six months, were not quantified. The recommendation was adopted by both the Transport and Policy (Finance) Committees.

8.121. For a further meeting of the Transport Committee in July 1981 the loss of revenue from the off-peak fare reduction was estimated to be £214,000 per annum. At this time the total residual deficit for 1981-82 was expected to be £1.025 million with an operating deficit of £1.465 million. The size of this deficit was not made explicit to either the Transport or Policy (Finance) Committees in July 1981. In September 1981 the revenue loss due to the off-peak scheme was re-estimated to be £240,000, and the General Manager suggested to the Transport Committee that a decision on future fares policy be deferred because of, among other things, uncertainty due to competition with CK Coaches, and the results of a sample survey on the public's attitude to various options on fares policy which he had commissioned.

8.122. In October 1981 a proposal for an average fares increase of 13.8 per cent, to be implemented in January 1982, was considered by the Transport Committee. These proposals were given further consideration by the Committee in November 1981 when they were approved in the anticipation that the residual deficit would be reduced to £755,000. The off-peak fares scheme was also made a permanent feature of the fare structure. At a subsequent meeting of the City Council in November 1981 the increase in fare for the first zone was reduced by 5p. This has been estimated to have decreased the expected revenue from the fares increase by £184,000. The financial implications of the alteration to the fare proposal were not requested or taken into consideration by the City Council.

8.123. It has been put to us by the City Council that the reduced off-peak fare scheme achieved two aims. First, it maintains overall patronage in an

adverse economic situation, and thus helps preserve the existing route structure. Second, it was the only means legally available to the council of giving particular help to the unemployed in respect of bus fares.

BOC

8.124. BOC has a distance-related scale for single adult and child fares for each of four areas; Bristol City, Swindon, all other urban areas, and country areas. In addition to the basic scale BOC offers discounted fares to particular segments of the market. These are as follows:

- (i) Off-peak day returns providing at least a 25 per cent discount on two single fares are available after 09.00 hours on Monday to Friday inclusive, and all day on Saturday, Sunday and Bank Holidays.
- (ii) Farecards are available for journeys between two specified points and offer discounts of 15–40 per cent depending on the period of the ticket.
- (iii) Rovercards are available for unlimited travel on the urban networks of Bristol, Bath, Cheltenham, Gloucester, Stroud, Swindon or Weston-super-Mare together with a Maxi Rovercard for the whole of the company's services. In April 1982 a Rovercard for the county of Avon was introduced.
- (iv) Weekend reductions for children; two children can travel free when accompanied by two adult fare-paying passengers on Saturdays, Sundays and Bank Holidays.
- (v) NBC Explorer tickets—these offer an unlimited day's travel on most participating NBC company services.

The level of fares

8.125. Over the period from March 1975 to April 1982 the increase in the basic fare scale for country services was 253 per cent whilst that for the Bristol City services was 211 per cent. This implies an increase in real terms of 61 per cent for the country fare scale and 34 per cent in the City fare scale.

8.126. BOC has told us that it regards this as an inappropriate comparison for a labour-intensive operation such as it undertakes, and considers an earnings index to be more relevant. BOC explained that during the 1950s when demand was still growing fares rose less than the RPI, but this situation reversed in the 1970s and, additionally, BOC had to compete for scarce labour. Prior to 1974 it was generally only possible to obtain revenue support for rural services under section 34 of the 1968 Act; wider powers to shire county councils to make revenue support grants were only introduced with the re-organisation of local government from 1974. BOC explained that 'we allowed the growth of cross-subsidisation, which has definitely meant that fares were higher on average than they would otherwise have been, to maintain the networks without revenue support. We sought to maintain a service . . . by acting as a social agency, which we can no longer do. We have tried to maintain services that the county councils have wanted us to do without them necessarily paying the full cost of what is needed. [The rise in fares] is a combination of all these factors.'

Season tickets

8.127. Season tickets in the form of Farecards and Rovercards form a growing proportion of BOC revenue. In 1973 some 4.3 million passenger trips were taken by Farecard and Rovercard holders and by 1980 this had risen to 13.9 million trips. The bulk (70 per cent) of the revenue earned by these cards is accounted for by Rovercards. The importance of Farecards and Rovercards varies significantly between areas, for example, in Bristol City 16 per cent of adult journeys are made in this way, while in the City of Gloucester they are used on 30 per cent of adult journeys.

8.128. The discount for Rovercards and Farecards has been growing over time, with successive fare increases being proportionally greater for the ordinary fare scale. At our request BOC carried out a survey of Rovercard use in the City of Bristol. This revealed that the value of the average number of Rovercard journeys there was equivalent to £6.30 per week, for primary journey purposes, and an additional £1.67 per week for optional trips. The average payment for a Rovercard was £4.22 per week ie a discount of 33 per cent for the primary journey purpose. MAP survey data showed that 16 per cent of passenger journeys were undertaken by Rovercard holders and generated 10 per cent of the revenue.

8.129. BOC identified one advantage of Rovercards to be an interest saving due to cash in advance. A further effect was on the speeding up of boarding times but this was difficult to quantify and any savings could be swallowed up in congestion delays. BOC has reached the conclusion that the discount on Rovercards has been allowed to grow to an excessive degree. In January 1982 Rovercard prices, outside Avon, were increased by a greater percentage than that applied to the ordinary fare scale. The Gloucester Rovercard increased from £2.80 to £3.30 (17.9 per cent) compared to the ordinary fare increase of 10 per cent. Increases on a similar scale within Avon were introduced in April 1982.

Fare experiments

8.130. BOC has undertaken relatively few fare experiments. Two off-peak fare schemes are of particular interest, the Woodspring scheme and the Avon-fare scheme. Woodspring District Council (in South Avon) operated a reduced off-peak return fare scheme. In return for a pass (£2 pa for adults), all Woodspring residents could travel on BOC buses at a maximum flat rate return fare of 50p for adults, and 35p for OAPs (November 1981). Journeys could begin or end in Woodspring district but had to commence after 09.00 hours. The method of payment to BOC was based on what BOC would lose on the fares of those travelling at the flat rate maximum compared to the ordinary fare scale. Offsetting this Woodspring DC received 'credits' to be set against the BOC loss proportion for all the additional journeys created by the scheme. Journeys were estimated to have increased by an average of 6.6 per cent. Pass holders could return in the evening peak, and this led to BOC providing duplicate buses, the cost of which was borne by the District Council. Some routes gave rise to an increase in patronage of 20 per cent, and on these routes BOC increased the scheduled frequency at no cost to the District Council.

8.131. The Avonfare scheme was introduced in January 1982 and covers all journeys in Avon. The Woodspring scheme was dropped in March 1982 on the grounds that the schemes overlapped. No pass is required and the maximum flat rate return fare is 50p on urban services in Bath and Weston-super-Mare, 60p on Bristol City urban services, and 80p on country services. The scheme was introduced at the instigation of Avon CC which is providing financial support. Return journeys in the evening peak are permitted, the scheme being available on weekdays after 9.30 am, and all day Saturday and Sunday. BOC and Avon have carried out a joint monitoring study to assess this scheme. The results were not available to us at the time of completing our report. Nevertheless, we have made our own limited estimates based on the comparison of the financial results of the Bristol City and Bath services for November 1981 and February 1982. Our estimates suggest that the loss of revenue for these two areas alone may be almost equal to the extent of Avon's planned support for the Avonfare scheme, ie £84,600 per period. If this is so, then for the whole of the County of Avon it is possible that the support required will exceed the budget of £1.1 million pa, if the scheme is continued on the present scale. The effect on the Bristol City services is to reduce the operating ratio (before Avonfare support) to the pre-MAP level, thus it appears that BOC is not fully compensated for the revenue loss deriving from the scheme.

TMT

8.132. TMT has two basic distance-related and tapered scales for single adult fares, Scale A and Scale B, but the fares charged also reflect local variations where TMT has agreements with other operators (see also Chapter 11 for the fares where TMT has responded to competition). Generally, children travel at half the adult fare. On journeys originating in Nottinghamshire children aged five to sixteen pay half fare up to 21.30 hours. Nottinghamshire, Derbyshire, Leicestershire and Staffordshire issue child and scholars' passes giving half fare travel at specified times. Season tickets, at a minimum discount of 10 per cent, are available for unrestricted local travel between two points. Loughborough Rovercards allow unrestricted travel for seven days. National Wanderbus tickets are available, as are special day returns, and family tickets. Twenty-seven local authorities operate concessionary fare schemes for the elderly, the blind and the disabled. In Derby and Nottingham TMT charges the City Transport operators' fares.

The level of fares and the common fare

8.133. Table 8.12 shows movements in the A scale, inherited from the Trent company, and the B scale inherited from the Midland General company. The first two columns are indices of actual fares, while the last two show movements relative to the RPI. Scale A fares have increased by 55 per cent in real terms since 1974 and Scale B fares are now over two and a half times their real level in 1974.

8.134. The Midland General company services covered Alfreton, Ilkeston and Langley Mill. TMT has described them as 'good bus country', that is an urban area with relatively low car ownership. Although Midland General's operating costs were higher than Trent's when it was taken over (because rural services are cheaper to run), its net revenue position was better because it was carrying higher loads even though its fares were lower.

TABLE 8.12 TMT: fare increases since 1974

Date of increase	Nominal		Real	
	Trent	Midland Gen	Trent	Midland Gen
Jan 1974	100	100	100	100
March 1974	112	112	109	109
Sept 1974	125	120	113	108
March 1975	161	161	130	130
Aug 1975	162	162	117	117
Nov 1975	187	195	130	135
Feb 1976	207	236	138	158
Oct 1976	228	265	139	162
Feb 1977	244	297	140	171
Jan 1978	273	344	144	182
Jan 1979	273	380	132	183
July 1979	281	426	123	186
Jan 1980	318	527	130	215
June 1980	344	590	130	222
Jan 1981	388	705	140	254
Jan 1982	429	781	155	281

Source: MMC Study.

8.135. The policy of bringing together the two scales began in 1975, and the process was speeded up in November 1978. Then the Traffic Commissioners refused to let TMT raise fares on both scales on the grounds that putting up fares on Scale A was perpetuating anomalies in the charging system, and discouraging rural travel. TMT appealed and DTP's inspector decided in its favour, but his decision was overridden by the Minister.

8.136. TMT has told us that the policy of bringing together the fare scales developed over time, and was the result of a number of factors. First, when the process of integrating and interworking services began, and the need for interchange diminished, there was a strong case for a common structure. This was reinforced later as it became clear that there were common fixed costs for the two companies after integration had proceeded. Finally, they said that when under pressure to raise revenue it was easier to do this without much passenger loss in the former Midland General areas because of the nature of demand. TMT also noted the pressure from the Traffic Commissioners to bring the scales together. In reply to our question as to whether the former Midland General routes have made a disproportionate contribution to TMT revenues, the company agreed that it was so, but pointed out that the level and quality of the service had improved to a greater extent than on the former Trent routes.

8.137. Although TMT has two fare scales which are in part common there are divergences over a considerable length of its route mileage to take account of fares charged by other operators. In Derby and Nottingham TMT charges Derby City Transport and City of Nottingham Transport fares which are considerably lower than its own, and it has to phase in its own fare scale gradually outside these areas of operation. There are also agreements between operators that fares on a route will be set at the level required by the major operator. In some areas TMT fares are set below scale as a systematic response to competition.

8.138. TMT told us that it can foresee a time when the common fare policy will become less important. First, it is becoming more market-oriented, and is conducting fare experiments. Second, it is facing more competition. On the other hand, it did not think that charging different fare scales in different areas, or on different routes to reflect costs or profits, would always be possible because of problems with common sections of route and difficulties for the drivers and passengers in understanding the scales. Rather, it saw itself responding to market opportunity or competition by diverging from the common fare scale in particular instances.

Season tickets

8.139. Although TMT has offered season tickets to passengers on a monthly and three monthly basis, it has had, in contrast to the other undertakings, only a relatively small proportion of its revenue deriving from such sales. TMT told us that in its area there has been no tradition of favouring this method of purchasing tickets. In pricing its season tickets TMT is conscious that the majority of users are peak travellers which is where the highest costs are incurred. While recognising that season tickets can reduce costs, it believes it important not to set the discount at a point which underprices the peak services. The present discount assuming five return journeys per week is 10 per cent. Now TMT wishes to extend the use of season tickets, so it has introduced a weekly ticket, also at 10 per cent discount. It has no sales target in terms of percentage of revenue from such sales.

Fare experiments

8.140. The Derbyshire fare experiment was introduced in October 1981 initially for a period of six months. It was designed to test the effects on patronage and revenue of a variety of reductions from the standard fare applied in different areas of the county. A preliminary report suggests that the lower fares are encouraging more passengers to travel and that local circumstances are important in the determination of the relationship between fare and patronage. The experiment is continuing for the current financial year within the overall cash limits set for operators.

Cross-subsidisation

8.141. Cross-subsidisation in the bus industry consists of using the profits from profitable routes to keep in existence services which are loss-making and might otherwise be reduced or withdrawn. This policy has long been a feature of the provision of bus services. It has been accepted for many years by operators, by local authorities and by the Traffic Commissioners as a means of maintaining, for a fixed level of revenue support, a larger network than would be possible if each service had to be considered financially independent of all other services. Tables 8.13–8.16 show the extent to which cross-subsidisation prevails in the four undertakings.

8.142. To the extent that it provides support which might otherwise have to come out of public funds, cross-subsidisation works to the advantage of local authorities. Derbyshire, Nottinghamshire and South Glamorgan make cross-subsidisation a condition of revenue support. WMCC, Avon and Cardiff City Council also regard cross-subsidisation as an important element of transport policy.

TABLE 8.13 WMPTE: cross-subsidisation by division

<i>Division</i>	<i>Routes No</i>	<i>May 1978 £</i>	<i>Routes No</i>	<i>May 1979 £</i>	<i>Routes No</i>	<i>May 1980 £</i>	<i>Routes No</i>	<i>July 1981 £</i>
<i>South</i>								
Profitable	9	57,843	10	33,127	14	63,313	16	89,035
Loss	60	386,136	82	560,911	79	530,960	113	628,161
Profit/loss %		13.0		6.0		11.9		14.2
<i>North</i>								
Profitable	25	91,270	24	87,071	35	94,830	13	33,500
Loss	131	384,359	130	466,260	138	496,427	171	678,599
Profit/loss %		23.7		18.7		19.1		4.9
<i>East</i>								
Profitable	0	0	0	0	0	0	2	10,388
Loss	25	199,150	26	199,898	29	272,960	26	229,109
Profit/loss %		—		—		—		4.5
<i>Total</i>								
Profitable	34	149,113	34	120,198	49	158,143	31	132,923
Loss	216	969,645	238	1,227,069	246	1,300,347	310	1,535,869
Profit/loss %		15.4		9.8		12.2		8.7

Source: MMC study.

TABLE 8.14 CCT: cross-subsidisation

	<i>1981 (Apr-Oct est)</i>	<i>1980 (Apr-Dec)</i>	<i>1979-80</i>	<i>1978-79</i>
<i>Loss-making routes</i>				
Sum of losses £'000	1,295	1,004	1,300	725
Revenue £'000	5,449	3,168	3,452	3,438
Operating ratio %	80.8	75.9	72.7	82.6
Number of routes/route groups	44	45	46	48
<i>Profitable routes</i>				
Sum of profits £'000	206	350	327	286
Revenue £'000	2,383	2,426	2,749	2,139
Operating ratio %	109.5	116.9	113.5	115.4
Number of routes/route groups	8	12	11	10
Profits/losses, % all routes	15.9	34.9	25.1	39.4

Source: MMC study.

Note: Included in the data above for all years except 1981 are the contract services.

TABLE 8.15 BOC: cross-subsidisation by type of route

<i>Type of route</i>	<i>Jan-Oct 1981</i>			<i>Operating ratio %</i>
	<i>Sum of losses £</i>	<i>Sum of profits £</i>	<i>Profits/losses %</i>	
Urban	2,790,789	256	<1	76.6
Rural	616,732	19,232	3	64.9
Inter-urban	941,382	75,432	8	82.0
Works	220,942	0	0	52.0
Schools	37,146	71	<1	45.1
All routes	4,606,991	94,991	2	76.2

Source: MMC study a) location of routes based on MAP reports.

TABLE 8.16 TMT: cross-subsidisation by type of route and service (April to February 1981)

Type of service	No of services	Sum of profits £	No of profitable	Sum of losses £	Operating ratio (%)	Profits/losses (%)
Urban	34	32,665	4	628,059	75	5.2
Inter-urban	61	265,873	16	751,688	94	35.4
Rural/Urban	7	1,558	1	164,761	82	1.0
Rural	18	—	—	129,572	47	—
<i>Special</i>						
School services	33	52,237	8	85,594	86	61.0
Works services	32	25,096	—	130,854	58	19.2
Guaranteed services	7	—	—	30,970	51	—
Local express	2	—	—	54,252	62	—
<i>Total special</i>	74	77,333	14	301,670	67	25.6
<i>Total TMT</i>	194	377,429	35	1,975,750	87	19.1

Source: MMC study.

8.143. Cross-subsidisation is generally achieved by the application of a common fare policy. This fare policy is practicable, and is widely regarded as a fair method of charging for bus services. However, if regard is paid to the costs of individual routes rather than the costs of the whole network, the common fare policy together with substantial cost variation between routes means that some services are heavily subsidised by others. When cross-subsidisation is combined with payment of revenue support in the form of a general subsidy for a whole network, it may have the disadvantage of giving the undertaking no adequate incentive to minimise the costs of individual routes. This gives added importance to the regular production of operating ratios for individual services or groups of services. Such ratios should also enable those local authorities which use them to scrutinise the performance of individual routes and, if they so wish, to use the performance of individual routes as the basis for calculating their revenue support.

8.144. Cross-subsidisation also has a bearing upon fares experiments. A number of fares experiments have been tried out by the undertakings, notably WMPTE's Monday Funday and BOC's and CCT's off-peak fare schemes. CCT's off-peak experiment has become an integral part of the fare structure. The bus undertakings face the difficult task of attempting to attract passengers against the background of a long-term decline in the demand for bus services. We are sympathetic to the attempts which have been made to attract passengers particularly by charging lower fares at off-peak periods. However, CCT and BOC (at Avon CC's behest) introduced their off-peak fares experiments and, in CCT's case, made the new scheme an integral part of the fare structure, without paying sufficient attention to the relative costs of peak and off-peak services. Such developments could be avoided if all four undertakings carried out peak/off-peak costing exercises at appropriate intervals.

8.145. One difficulty about this suggestion is that two methods of allocating vehicle costs between peak and off-peak services have been suggested by CIPFA. The first is the full peak allocation basis and assumes that the objective of the undertaking is to provide a peak service, so these carry the whole of the vehicle costs and a substantial proportion of crew costs. Off-peak services are thus provided at marginal cost. The second is the excess peak allocation basis and assumes that the objective is to provide an all-day service,

so only the additional costs of vehicles brought in to meet the peak (above the all-day level) are charged to the peak. Cost allocations on both bases for each of the undertakings are set out in Appendix 8.1.

8.146. Neither of these methods provides more than a rough guide to the proper allocation of costs between peak and off-peak periods. However, if the undertakings carry out peak/off-peak costing exercises, say annually, the experience gained may result in a common and more precise method of cost allocation. This would afford a more reliable basis upon which to conduct fares experiments.

Conclusions

8.147. County councils have an important role to play in determining the needs of their areas for bus services and thus in determining the size and shape of the bus network. It is clearly desirable that in performing this role they are well informed about passenger performances in relation to bus services and the cost of providing these services.

8.148. Minor revisions in services are continually made on the basis of comments made by passengers, local businesses, elected representatives and other interested parties. However, we believe that it is also necessary from time to time to conduct major reviews of networks which may demonstrate the need for more radical changes in order to adjust to changes in needs and market conditions.

8.149. In WMPE these major reviews have taken the form of Area Studies which will have covered the whole of the operating area by 1986. WMPTE is hoping to improve and speed up its Area Studies by the application of computer-aided techniques. In BOC and TMT the MAP exercises, which include information on passenger demand, were a response to severe financial problems. Both companies intend to introduce new marketing techniques as a follow-up to MAP. CCT has not conducted a major network review since the 1972 review.

8.150. We approve of WMPTE's, BOC's and TMT's decision to extend and improve these major reviews.

8.151. *We Recommend* that CCT should, as a matter of urgency, develop and apply techniques along the lines of WMPTE's Area Studies or the NBC's MAP exercises. The data from such an exercise are an important aid to those whose task it is to adjust supply to demand, and the experience of the other three undertakings suggests that it may lead to significant savings.

8.152. It is also important that local authorities, as well as the bus undertakings, are well informed about the extent to which services are used and the cost of supplying these services. Such information is supplied by load factors and operating ratios.

8.153. WMPTE collects data on load factors and operating ratios on a monthly basis. It has set itself load factor targets so that management becomes aware of variations from those targets and has an incentive to examine the

reasons for the variations. BOC and TMT have no regular system of collecting load factor data for all their routes. CCT undertakes, at the request of South Glamorgan County Council, regular autumn passenger counts. BOC, TMT and CCT have all produced operating ratios for individual routes but CCT have produced this information on a less regular basis than the two NBC companies. *We recommend* that all four undertakings should produce data showing operating ratios and load factors of individual services or, if more meaningful, groups of services, and that these data should be made available on, at least, a quarterly basis.

8.154. We accept that decisions about bus services cannot, and should not, be made simply on the basis of load factors. Nevertheless target load factors are a useful management tool, and *actual* load factors should be known by county councils. The latter should also be aware of the cost involved in providing unremunerative, low load factor services, which are required to meet social needs. Operating ratio data for individual services would allow local authorities to see where their revenue support is going and how much it is costing to maintain specific routes. Such data would assist authorities in achieving value for money in the pursuit of social aims.

8.155. Average fares have increased in real terms in all four undertakings over the period since 1974. The operators told us that a major cause of this increase had been the growth in labour costs.

8.156. Counties generally have policies limiting the size and/or frequency of fare increases. Many of them make compliance with these policies a condition of revenue support. Fares are also affected by changes in this support. A reduction in revenue support, for instance, will result in an increase in fares unless it can be compensated by cost reductions associated with increased efficiency or service revisions.

8.157. Season tickets impose costs on bus undertakings as well as conferring benefits on them. An analysis of WMPTE's Travelcard and CCT's Multiride suggests that both these schemes have produced at least a net social benefit. BOC, however, recognises that the discount which it has given to season ticket holders has been excessive. The BOC experience demonstrates the danger of underpricing season tickets. Subject to this warning, however, we would want to encourage the undertakings in their efforts to increase the proportion of off-bus revenue.

8.158. A number of fare experiments have been tried out by the undertakings. The bus undertakings face the difficult task of attempting to attract passengers against the background of a long-term decline in the demand for bus services. We are sympathetic to the attempts which have been made to attract passengers by charging lower fares at off-peak periods. However, CCT and BOC can be criticised for introducing their off-peak fares experiments and, in CCT's case, for making it an integral part of the fare structure, without sufficient attention being paid to the relative costs of peak and off-peak services. *We recommend* that all four undertakings carry out peak/off-peak

costing exercises annually. Experience in carrying out these exercises may result in more accurate cost allocations and thus a more reliable basis on which to conduct fares experiments.

8.159. The common fare policy together with substantial cost variation across routes means that some bus services are heavily subsidised by others. Our earlier recommendation concerning the provision of route operating ratios should go some way towards dealing with this problem. It should enable authorities to scrutinise the performance of each route. *We recommend* that the level of cross-subsidy between services and between time periods should be clearly identified in order to provide local authorities with a rational basis for the decision on the levels of subsidy to be provided via revenue support and through cross-subsidy.