THE LONGER TERM EFFECTS OF THE TYNE AND WEAR METRO

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Preface

The Tyne and Wear Metro is a light rapid transit system which serves the Tyneside conurbation in North East England. The Metro was opened in stages between 1980 and 1984 and has a route length of 55 km (34.8 miles) with 44 stations.

From its inception there has been considerable interest in the impacts of Metro. The system was innovative, representing a new approach to public transport provision in a provincial city in the UK. It involved major investment, with construction costs totalling £248m (actual prices). Among other factors it was originally justified on the basis that it would have significant impacts on travel behaviour and on the functioning of the sub-regional economy.

To examine the impacts of the Metro, the Department of Transport commissioned a large-scale study, commenced in 1978, which evaluated the effects of the Metro and also Public Transport Integration in Tyne and Wear. That research covered the period up to 1984 and analysed the situation before Metro and then examined its effects as it subsequently became operational. The findings were given in The Metro Report, published in 1985 by the Tyne & Wear PTE. Briefly, that study indicated that Metro had helped maintain public transport patronage and improved accessibility within the conurbation. It had helped to improve traffic conditions in the central area and on cross-river routes, especially by reducing congestion previously caused by buses. Metro also served to strengthen the attractiveness of main shopping centres, particularly Newcastle city centre, but appeared not to have had much impact on the development of new housing, offices or industry. Overall, the economic benefits of the Metro were estimated to justify its cost.

Much has changed since that first study was completed in the mid-1980s. The area's economy is now more buoyant and a new wave of property development is underway. The Metropolitan County Council, which had promoted the Metro and was responsible for county-wide strategic planning, has been abolished. An Urban Development Corporation has been set up, directing substantial resources at the regeneration of riverside areas. And major changes have affected the operation of public transport, notably the implementation of deregulation.

These changes to the environment within which Metro operates are sufficiently substantial to warrant a fresh look at the impacts of Metro. In addition, when the previous study was undertaken it was recognised that some impacts might only become manifest in the longer-term. Now that Metro has been operational for several years it is appropriate to investigate longer-term impacts and discover whether they have materialised. A further justification arises from the fact that many cities in the UK are now seeking to introduce rapid transit systems and are claiming that such investment will produce significant and widespread benefits, especially non-user benefits. These claims can now be considered
in the light of experience in Tyne and Wear.

The present study has been commissioned by the Transport and Road Research Laboratory and explores some of the longer-term effects of the Metro. It is a smaller scale and much shorter study than its predecessor but builds on, and updates, much of the earlier work, using available secondary data supplemented by interviews with key informants, such as developers. It focuses on two major aspects of the Metro: first, its operation and effects on travel patterns; and, secondly, the impacts of Metro on land use and development.

The study has been carried out by the University of Newcastle upon Tyne, drawing on the expertise of three University departments: the Centre for Urban and Regional Development Studies (CURDS); the Transport Operations Research Group (TORG); and Town and Country Planning. Both CURDS and TORG have the benefit of having participated in the previous Metro study.

We gratefully acknowledge the following for their help and advice and for providing access to data: Tyne and Wear Passenger Transport Executive; Newcastle City Council; Gateshead MBC; North Tyneside MBC; South Tyneside MBC; Sunderland MBC; the Halifax Building Society; the Tyne and Wear County-wide Traffic and Accident Data Unit; and Tyne and Wear County-wide Research and Intelligence Unit. We are grateful to those involved in the property development industry for patiently answering our questions, to the members of the public who took part in surveys and to the survey staff of the PTE. Finally, we wish to acknowledge the friendly support and encouragement shown to us by officers of the Transport and Road Research Laboratory.

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MAIN FINDINGS OF THE STUDY

The Tyne and Wear Metro is a light rail rapid transit system serving the County of Tyne and Wear (population 1.13 million) in North East England. The first phase of the system opened in 1980 and Metro was finally completed in 1984.

A major study of the impacts of this substantial new investment in public transport was started in 1978 - first examining the situation before Metro - and was completed in 1984 when the whole system, including public transport integration, was operational.

The present study updates this earlier work and looks at the longer-term impacts of the Metro. The operational environment of Metro has altered significantly since the mid-1980s and the study shows how these changes - notably deregulation - have affected the system. The study also looks at the evidence for longer-term impacts of the Metro on land use and property development within the changed context of a more buoyant local economy and a more active property market.

The Metro System in Operation

There have been few physical changes to the Metro system since 1984. An extension to Newcastle airport is, however, shortly to be built and a new extension to Sunderland airport is now actively proposed.

 Patronage

Average trip lengths on Metro have been increasing, and total passenger mileage in 1989/90 was 319 million km, exceeding the maximum of 310 million in 1984. Annual Metro passenger boardings peaked at 61.1 million in 1984/85, the first full year of complete Metro operation. Since then boardings have fallen, to 45.1 million in 1989/90. This decline is partly attributable to the loss of integration following deregulation, with fewer buses feeding into the Metro system. But it also reflects an overall reduction in public transport patronage in Tyne and Wear.
Service levels, fares and ticketing

There has been little change in the level of service offered by Metro since 1984. Fares remained unchanged from 1982 to 1986 but the advent of deregulation and County Council abolition in 1986 led to significant fares increases. Deregulation also reduced opportunities for through-ticketing involving transfer from bus to Metro with the result that an increasing proportion of Metro passengers now use single Metro-only tickets for their journeys.

Metro passenger profile

More women than men use Metro - 59.2% of weekday passengers in 1988 were women. Children's use of the Metro declined, probably owing to fare increases and problems with service reliability, but appears now to have recovered. The proportion of Metro passengers aged 60 and over has continued to increase since 1984.

Purposes of journeys

People making journeys to and from work continue to account for the largest share (42.2% in 1988) of Metro weekday passengers and this proportion has been growing, possibly reflecting improving job opportunities. The proportion of Metro journeys for shopping purposes has fallen and this may be related to the growth of out-of-town retail centres.

Arrivals and departures

The majority of passengers arrive at, and depart from, Metro stations on foot. Arrivals and departures by bus have decreased, largely because of the loss of integration and opportunities to transfer from one mode to the other.

Private Transport and Metro

To evaluate the impact of Metro on private transport, a new survey of Metro passengers was undertaken. Respondents were asked how they would travel in the absence of Metro. Results from this, combined with road traffic data, suggest that without Metro the car flow into central areas of Newcastle would increase by, at most, 5.1%. This projected increase does, however, represent only about two years current growth in car traffic. Public transport integration did succeed in reducing bus journeys into the central area, thus freeing road capacity for private transport; since deregulation, however, this reduction has been reversed and bus traffic over the central bridges is now almost back to pre-integration levels.
Operating costs and revenues

PTE estimates indicate that, despite falling boardings, Metro's operating deficit has remained fairly stable. In addition, total revenue is estimated to have increased owing to fare rises, increasing trip lengths and clampdowns on fare avoidance.

Land Use and Development

The previous study found that, in general, land use, property development and property prices had not been greatly affected by Metro. But it may be argued that such impacts only become manifest in the longer-term. In addition, the local economy and property markets are now more buoyant than in the early 1980s and thus possible development opportunities enhanced by Metro availability might now be more likely to be exploited.

The study examined these issues, using secondary data on land use change, development completions, house prices and employment, supplemented by a new survey of developers and agents in the property market.

Development context

Much of the Metro route runs through existing built-up areas; while this may constrain new development it is not an insurmountable obstacle. And there are some Metro-served areas which have relatively little existing development.

The County Structure Plan favours new development accessible to public transport but this has not been stressed very strongly, nor are there major links between land use planning policies and the Metro. The Structure Plan does, however, emphasise the need for redevelopment in the inner areas of the conurbation, which includes many of the areas served by Metro.

In recent years economic development and urban regeneration policies have come to play a major role in structuring development opportunities. The Tyneside Enterprise Zone (designated in 1981) has proved a very important attraction for developers. In addition, inner area development has been strongly encouraged through the provision of grants and through the activities of the Tyne and Wear Development Corporation (established in 1987) and other urban regeneration initiatives.

Housing

In contrast with the early 1980s, the private sector accounted for the majority (75%) of housing completions in 1984-89. The curtailment of local
authority house building has contributed to an overall reduction in completions. Private sector completions rose in the late 1980s, demand has recently been strong and prices have risen markedly.

All the evidence suggests that the Metro has had little or no effect on the pattern of housing development; this is in line with findings from the previous impact study. The proximity of some new development to Metro appears to be fortuitous, frequently a consequence of building in the inner areas which are served by Metro. Land availability, coupled with public policies encouraging inner area development, are key factors. Where there has been new housing development near Metro stations it can be attributed to factors other than Metro - such as land availability, public policy incentives and market demand.

Interviews with private and public sector developers and estate agents confirmed that Metro was not a significant consideration in their choice of locations for housing development, though it may be used as a 'selling point'. In no case was Metro said to have directly stimulated a housing development.

Statistical analysis of housing land use changes in areas around Metro stations indicated no 'clustering' of housing development around stations; the number of land use changes associated with housing in the areas surrounding stations was not statistically different from a randomly-selected distribution.

Property values

Data on Tyne and Wear house prices (achieved market values) for the period 1984-87 was analysed. A 'surface' of percentage changes in house prices was produced and the resulting pattern found to give little or no suggestion of a relationship with Metro. Statistical analysis revealed no significant association between house price changes and proximity to Metro Stations. The previous study found that on average there was a 1.7% increase in house prices within 200 metres of a Metro station, relative to other areas, during a four month period spanning the opening of a station. It is concluded that these increases in value have been maintained.

Shops

A considerable amount of new retail development has recently taken place in the County and the retail property market has been very buoyant. Most of the new development has occurred at major new out-of-town
locations, in the larger established centres and at sites on the conurbation periphery. The Enterprise Zone has attracted the largest developments - the MetroCentre at Dunston and 'Retail World' at Team Valley - and these locations are not served by Metro.

Statistical analysis indicates no significant relationship between the location of new retail development and the Metro. Some new development has taken place near some Metro stations - notably at South Shields, Kingston Park, Gateshead, Regent Centre, Monument (under construction) and at Haymarket (proposed). But, again, proximity to Metro appears to be largely fortuitous.

Key informants in the development industry felt that Metro reinforces retail development rather than leads it. It is helpful and may serve to ensure the continued viability of a retail centre; in particular, Metro has helped strengthen the dominance of Newcastle city centre for retailing, providing good access and overcoming some parking problems. But, in general, Metro is a bonus rather than a key attraction; much less of an attraction, for example, than the Enterprise Zone.

Offices

For much of the 1980s, the office market in Tyne and Wear has been sluggish, with relatively little new development or rental growth. However, since 1987 the market has revived, with substantial increases in rents and renewed interest in development.

The principal office location is Newcastle city centre and much of the new development since the mid-1980s has occurred there. But a new out-of-town office location, within the Enterprise Zone at Team Valley, has been established, attracting a considerable amount of new office construction. At present, another new office location, at Newcastle Business Park in the west end of the city - also with Enterprise Zone status - is being created. This will serve as the major non-city centre location for new office development over the next few years. Substantial office development is also planned for riverside areas covered by the Urban Development Corporation, notably at Newcastle East Quayside. None of these locations - Team Valley, Newcastle Business Park, and the East Quayside - are served by Metro.

Statistical analysis revealed no significant relationship between office development and the Metro, and no causal link was suggested by office developers and commercial estate agents. The Metro has helped to maintain the city centre's dominance as principal
office centre and, indeed, helps it to function efficiently. But accessibility to Metro tends to be taken for granted in the city centre and has apparently not affected developers' locational decisions.

Nevertheless, even though the newer major non-city centre office schemes are not near Metro, there is a growing awareness of the possibilities for linking office development to Metro. There has been some discussion of extending Metro to serve new Quayside development. In addition, the PTE is making renewed efforts to market sites at Metro stations (e.g. Jesmond, St. James) for office development.

Industry

Of all the sectors of the area's property market, industrial property development has been the least buoyant. Tyne and Wear has experienced considerable industrial decline, especially during the recession in the early 1980s. Since then, there has been some limited recovery. Several new branch factories have been established and private sector interest in industrial property development has increased - particularly in the Enterprise Zone - while public sector factory construction has been curtailed.

The spatial distribution of industrial property development is dominated by the Nissan car plant and associated developments in the Washington/Sunderland area and also by new development within the Team Valley section of the Enterprise Zone. Both are quite distant from Metro. A few Metro-served areas, having been zoned for industrial use, have received some industrial development, but statistical analysis again pointed to no significant relationship between Metro and development.

To developers of industrial property, the most important factors influencing locational choice within the County are road access, site availability and Enterprise Zone incentives. As in the previous study, it is concluded that industrial development is unaffected by accessibility to Metro.

Employment

Changes in the spatial distribution of employment were examined using available data for 1984 and 1987 from the Census of Employment. Increases in part-time employment were particular evident in the city centre and at new out-of-town retail centres. The pattern of changes in full-time employment indicates inner area decline and some growth on the conurbation periphery. There is no evident relationship with Metro and this
was confirmed by statistical analysis: employment in the conurbation has not 'gravitated' towards Metro.

Overview and Conclusions

Metro has successfully adapted to falling passenger numbers and a changed operational environment. There is a general feeling that the presence of Metro has helped sustain the dominance of Newcastle city centre as a retail and office centre. Apart from this, land use and property markets have been little affected by Metro. This is consistent with the experience of rapid transit elsewhere; other supporting factors - such as land assembly and strong complementary planning policies - are usually needed to promote development in areas served by rapid transit. In Tyne and Wear, these other supporting factors have been absent and other policies, notably Enterprise Zone designation, have attracted developers away from Metro-served locations.
1. INTRODUCTION

1.1 The Metro system

The Tyne and Wear Metro system represents a major investment in public transport. It is a modern and efficient system, now carrying about 45 million passengers a year. Initiated in the early 1970s and completed in the mid-1980s, Metro was the culmination of long-term and comprehensive planning for public transport in Tyne and Wear; and it continues to evolve to respond to new challenges and meet new needs.

The proposals for light rail rapid transit in Tyne and Wear were first formulated in the early 1970s, stemming from a land use and transportation study begun in 1969. In 1972, central government agreed to provide a grant covering 75% of the capital cost of Metro and Parliamentary approval for the project was given in 1973. The first construction contracts were awarded in the following year, and the whole system subsequently took ten years to complete. The first section of the Metro (Haymarket to Tynemouth) opened in August 1980 and the last section (from Heworth to South Shields) was completed in March 1984.

A large part of the Metro system - 42 km (26 miles) of the 55 km (34.8 miles) route length - runs on converted rail lines, most of which had been used for British Rail suburban services. These lines, the North Tyne Loop and the Newcastle to South Shields line, previously operating relatively underused and infrequent services, were taken over and converted for use by Metro. A former freight-only branch line to Kenton Bank Foot was also incorporated and converted. At the heart of the system, new tunnels to bring Metro into the central areas of Newcastle and Gateshead were built and a new bridge was constructed to carry Metro across the River Tyne. Initially, 41 stations were opened (which included 24 reconstructed BR stations), and a further 3 new stations were added in 1985-86 (see Figure 1.1). Tyne & Wear Passenger Transport Executive (PTE) implemented the project and continues to be responsible for its management and operation.

The Metro was designed to be a high frequency and high capacity facility to serve as the key element of the first fully integrated public transport system in Britain. Integration involved the re-routeing of bus services run by the PTE and other operators to Metro stations, encouraging the use of Metro particularly for trunk journeys and cross-river movements. Mode changes were facilitated not only by re-routeing of buses to stations enabling easy access to Metro but also by through-ticketing and co-ordination of timetables. Car users were also encouraged to change.
onto Metro by the provision of car parks at Metro stations. British Rail and Tyne ferry services were also linked into the integrated system. The basic philosophy underlying Metro and integration has been the development of an attractive system which would maintain overall public transport patronage and also help to reduce problems of road congestion caused both by cars and buses, especially on busy cross-Tyne routes and in Newcastle city centre.

Since 1986 there has been a fundamental change in the framework within which Metro operates as a result of the deregulation of public transport services. Broadly, bus operators were accorded much greater freedom to provide services in response to market demand and the influence of the PTE in controlling service provision was curtailed. Commercial registrations by the bus companies did not include many of the former links to Metro Stations, thus reducing the opportunity for bus/metro transfers. The PTE, which formerly operated about 40% of Tyne and Wear's bus services was required, under the 1985 Transport Act, to reorganise its bus operations into an 'arms-length' company; this company has subsequently been transferred into private ownership (now called 'Busways Travel'). The PTE does, however, continue to own and operate Metro and the Shields Ferry; it also financially supports the Newcastle to Sunderland BR line and is responsible for securing the procurement of socially necessary bus services. But, overall, deregulation has meant a decisive change in the operational environment and a reduction in key elements of public transport integration in Tyne and Wear. One obvious consequence has been a considerable increase in bus services crossing the Tyne, adding to congestion on these routes and in the main centres. Another consequence, stemming in large part from reduced integration, has been reduced patronage on the Metro itself.

1.2 Tyne and Wear: economic and social context

Not only has Metro's operational framework been changing, but so, too, has the economic and social context of the Tyne and Wear area.

Tyne and Wear is the smallest and one of the most compact of the English Metropolitan Counties, with an area of 541 sq. kms (209 sq miles) and a population of 1.13 million (1988). It includes settlements along both banks of the River Tyne within the four districts of Newcastle, Gateshead, North and South Tyneside. The Metro runs through these four Tyneside districts though does not penetrate western parts of Gateshead or Newcastle. Sunderland, the fifth district of Tyne and Wear County, is not served by Metro although it
has benefited indirectly from public transport integration and there are long-term proposals to extend the Metro system in future to Sunderland, possibly via Washington New Town.

Like North East England as a whole, Tyne and Wear has experienced considerable economic decline over a long period. The area's traditional industries - coal-mining, shipbuilding and heavy engineering - have declined and unemployment has remained well above the national average. The area has received regional policy assistance from central government for much of the last sixty years and these policies have, to an extent, helped to bring new industry to the area. The urban areas of Tyne and Wear are recognised by central government as having particular problems of inner city decline and disadvantage and therefore are subject to inner city policy aid.

The economic problems of Tyne and Wear confer both advantages and disadvantages to public transport operation. Low car ownership means that reliance on public transport is high and this has served to justify the investment in Metro and helps to ensure its viability. On the other hand, job losses and high unemployment reduce work journeys; and population decline, associated with economic problems, acts to reduce the total number of potential passengers.

When the Metro opened in the early 1980s, Tyne and Wear was suffering from the effects of national economic recession. Unemployment was rising. Property markets were relatively stagnant with little new industrial or office development although there was some significant activity in retail development and, to a lesser extent, in house building. In short, Metro became operational at a time when Tyne and Wear was suffering its worst economic recession since the 1930s.

Since then, there has been some upturn in the local economy. Registered unemployment has been falling steadily since 1985 when it peaked at nearly 21% (Figure 1.2). A limited amount of new industrial development has taken place, particularly in the area designated as the Tyneside Enterprise Zone. The commercial property market has revived, with especially strong activity in retail development and renewed interest in office development, notably in Newcastle city centre. In addition, the Tyne and Wear Urban Development Corporation, established in 1987, has been actively promoting property development in the inner areas of the conurbation, both by preparing sites and using grant aid to encourage development.
Figure 1.2: UNEMPLOYMENT RATES GB, NORTHERN REGION, TYNE & WEAR: 1981–1990

Figure 1.3: TOTAL POPULATION - TYNE & WEAR 1981–1988

Source: OPCS
This more buoyant economic context gives Metro a more supportive operating environment. However, other significant factors are not so favourable. Metro's total potential market has continued to fall as the population of Tyne and Wear has maintained a long-term trend of decline (Figure 1.3). Migration, both to adjacent areas and to other parts of the country, has continued. And, despite the recession, car ownership has continued to rise, thus reducing reliance on public transport (Figure 1.4).

1.3 The longer-term effects of the Metro

The previous study of the impacts of Metro and public transport integration in Tyne and Wear covered the period immediately before the introduction of Metro and up to its final completion in 1984.

Findings from that large scale impact study were given in The Metro Report, published in 1985 (the main findings are reproduced in Appendix 1). That report showed that, in many respects, Metro and the integrated system had been successful, bringing substantial benefits to Tyne and Wear. The Metro and associated policies had helped to maintain public transport patronage at a time of rising unemployment, increasing car ownership and population decline, and at a time when PTEs in other conurbations were losing patronage. Metro and integration had led to significant improvements to accessibility within the conurbation, with considerable reductions in travel times for public transport users in some areas. It had also helped to strengthen the attractiveness of main shopping centres, especially Newcastle city centre. In addition, there were also important non-user benefits, such as reduced congestion on cross-Tyne routes and in main centres, both because buses were re-routed to feed into the trunk Metro network and because some car users switched to Metro. Finally, the overall economic appraisal of the Metro integrated system indicated that total benefits substantially exceeded revenue costs.

The present study brings some of the previous work up to date and looks at the possible longer-term impacts of Metro. It focuses firstly on the operation of the Metro system itself and its effects on travel patterns within the changed context of deregulation. Secondly, the study examines the impacts of Metro on land use, development, property markets and employment patterns. These are elements which were found to have been little affected when Metro first became operational but which might have been affected over the longer term and within the context of a more buoyant economy.
Figure 1.4: Car Ownership: Tyne & Wear and Great Britain

Sources:
1. 1971, 1981 Census data
2. Transport Statistics Great Britain HMSO

Figure provided by City Engineer's Department, Newcastle City Council.
This study uses a variety of data sources. The research on the Metro system in operation (Section 2 of the report) draws on the following:

- PTE data on system operation and from passenger surveys, supplemented by earlier data from the previous Metro study.

- Information from a new survey of park-and-ride Metro users, conducted by TORG with the help of PTE survey staff in November 1989.

- Information on traffic flows into central Newcastle from cordon count data held by the County-wide Traffic and Accident Data Unit.

The work on land use, development, property markets and employment patterns (Section 3 of the report) uses data from:

- Records of development completions held by the local authorities in Tyne and Wear and also data from the local authorities' Joint Information System on land use change.

- Interviews with 26 key informants involved in the local property market, including private and public sector developers, estate agents and economic development agencies (see Appendix 2).

- Data from the Halifax Building Society on property prices.

- Data from the Department of Employment's Census of Employment.

Exact dates for these sources vary, but in this study we have sought to cover the period from 1984 (the end point of the previous study) to 1988/89. And, as far as possible, data sources have been used in combination to provide a comprehensive and reliable picture of Metro's operation and its impacts.
2. THE METRO SYSTEM IN OPERATION

2.1 Introduction

Since the completion of the final phase of Metro in March 1984, there have been few physical changes to the Metro system itself. Three new stations were subsequently added, at Kingston Park (1985), Pelaw (1985) and Palmersville (1986). There have been no new lines, but construction of an extension from Bank Foot to Newcastle Airport commenced in 1990 and there are proposals for an eventual extension of the system to Sunderland, possibly via Washington (a feasibility study for this line is due to start in 1990). However, there have been substantial changes to the environment within which Metro operates. The consequences of these changes and the patterns of use of the system are discussed in this section.

2.2 Patronage

The number of Metro passenger boardings rose quickly in the early 1980s reflecting the sequential opening of the system. Passenger boardings peaked at 61.1 million during 1984/85, the first full year of operation. In the following year, 1985/86, patronage fell due to industrial action and rolling stock shortages which led to reliability problems.

Subsequently, patronage declined in 1986/7 and this has been attributed mainly to the loss of integration - a reduction in bus services feeding into Metro - as a result of deregulation. Most recently, patronage appears to have stabilised at 45.1 million boardings a year in 1987/88 and in 1988/89 (see Figure 2.1).

The impact of the loss of integration on Metro patronage is evident from the decreasing use of the four main interchange stations at Four Lane Ends, Regent Centre, Gateshead and Heworth. These stations are located on main highway corridors into the conurbation and include major purpose-built facilities for interchange between Metro and bus services, as well as parking areas for motorists transferring to the Metro. As is to be expected, the absolute numbers of week-day boardings at these four stations fell between 1984 and 1988. But the number of boardings at these interchanges as a percentage of boardings on the system as a whole has also declined. Gateshead, for example, accounted for only 8.6% of system-wide boardings in 1988, compared with 11.9% in 1984 (see Table 2.1). The proportionate fall in the use of interchange statistics reflects the reduction in opportunities for transfer between modes. In other words, with deregulation fewer buses de-cant passengers at Metro stations, with a consequent reduction in total Metro patronage.
Figure 2.1 Passenger Boardings on Metro.

Source: Tyne & Wear PTE

Note: These figures are for passengers boarding on Metro and thus over-represent actual journeys, since some—probably relatively few journeys—involves more than one boarding when a passenger changes from one Metro to another. Accurate figures not available to quantify the relationship between boarding and journeys.
Table 2.1
Week-day Boardings at Metro Interchange Stations

<table>
<thead>
<tr>
<th>Station</th>
<th>1984</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent of total boardings</td>
</tr>
<tr>
<td>Four Lane Ends</td>
<td>5343</td>
<td>3.5</td>
</tr>
<tr>
<td>Regent Centre</td>
<td>2818</td>
<td>1.9</td>
</tr>
<tr>
<td>Gateshead</td>
<td>17998</td>
<td>11.9</td>
</tr>
<tr>
<td>Heworth</td>
<td>10520</td>
<td>6.9</td>
</tr>
<tr>
<td>Systemwide</td>
<td>151348</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Transport & Road Research Laboratory and Tyne & Wear PTE.

The fall in Metro patronage must, however, be viewed within the overall context of a fall in demand for public transport in Tyne and Wear. The TRRL monitoring programme of the effects of the 1985 Transport Act found that bus patronage in the County had fallen from 312.9 million journeys in 1985/86 to 259.8 million journeys in 1987/88. This represents a fall of 17.0%, while boardings on Metro fell by 17.4% over the same period. Clearly, patronage is being lost from public transport in general, and not simply from Metro to bus.

In marked contrast to this loss in passenger numbers, the average Metro trip has been increasing in length, to the extent that the total of 319 million passenger km recorded in 1989/90 exceed the previous maximum of 310 million passenger km in 1984.
2.3 Service levels, fares and ticketing

Service levels. The level of service provided has changed little since Metro first became operational.

There are four Metro lines, three of which share a central section of route which runs from Pelaw through Gateshead and Newcastle to South Gosforth. The fourth line runs west-east, from St. James to North Shields. Each line commenced operation on a ten minute frequency and this gives a combined three minute frequency on the central section of the system.

The ten minute day-time frequency has been maintained on all four Metro lines. But since 1987 there has been a slight reduction in level of service in terms of frequencies and hours of operation. The two Metro lines which enhance the service, from Benton to Pelaw and St. James to North Shields, are not operated in the evenings and on Sundays and this has been the case since Metro's inception. The two remaining lines which do run at these times - serving the whole system - originally had a ten minute frequency in the evenings and on Sundays but this was reduced in 1987 to a twelve minute frequency. In addition, when this reduced frequency was introduced, many of the first morning departures were rescheduled to commence slightly later and some of the final departures were rescheduled to operate a little earlier. However, the late running of some trains has been reinstated from September 1989.

Fares. In 1979 a zonal fare system was introduced in Tyne and Wear and this was intended to encourage the use of a range of travel opportunities throughout the integrated system, facilitating changes from one mode to another. The zonal system incorporates bus, Metro, local trains and ferry services and has remained unchanged since 1979.

This fare system is based on 32 hexagonal zones covering the County. Each zone is approximately 5 km across, and a fare is paid according to the number of zones that are crossed. The fare scale thus consists of 1, 2, 3, 4 and 5 zone fares. For shorter journeys there are fares based on traditional 1 km stages. This allows passengers to travel short distances across zone boundaries without being penalised. Passengers therefore pay in stages for journeys up to 5 km, and in zones for journeys over 5 km.
The PTE and the former Tyne and Wear County Council maintained a policy of minimising fare increases through subsidies so only modest increases were introduced between 1979 and 1986. Indeed, fares did not increase at all between November 1982 and April 1986. In 1986, the advent of deregulation and County Council abolition led to significant fares increases: single adult fares rose by 20%, child flat fares doubled from 5p to 10p and travel ticket prices increased by an average of 23%.

Table 2.2

Single fares on Tyne and Wear Local Public Transport (pence)

(1 stage = 1km, 1 zone = 5km)

<table>
<thead>
<tr>
<th>Date</th>
<th>1 Stage</th>
<th>2 Stage</th>
<th>3 Stage</th>
<th>4 Stage</th>
<th>5 Stage</th>
<th>1 Zone</th>
<th>2 Zone</th>
<th>3 Zone</th>
<th>4 Zone</th>
<th>5 Zone+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov '79</td>
<td>8</td>
<td>14</td>
<td>15</td>
<td>19</td>
<td>22</td>
<td>25</td>
<td>30</td>
<td>38</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Jan '82</td>
<td>10</td>
<td>14</td>
<td>18</td>
<td>23</td>
<td>28</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Nov '82</td>
<td>14</td>
<td>14</td>
<td>20</td>
<td>26</td>
<td>32</td>
<td>37</td>
<td>45</td>
<td>58</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Apr '86</td>
<td>17</td>
<td>17</td>
<td>24</td>
<td>30</td>
<td>38</td>
<td>45</td>
<td>55</td>
<td>70</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Apr '87</td>
<td>17</td>
<td>20</td>
<td>26</td>
<td>30</td>
<td>42</td>
<td>50</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Apr '87</td>
<td>20</td>
<td>20</td>
<td>25</td>
<td>34</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Apr '88</td>
<td>18</td>
<td>21</td>
<td>28</td>
<td>35</td>
<td>44</td>
<td>53</td>
<td>64</td>
<td>80</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Apr '88</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>35</td>
<td>45</td>
<td>55</td>
<td>65</td>
<td>80</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Nov '88</td>
<td>18</td>
<td>22</td>
<td>30</td>
<td>35</td>
<td>45</td>
<td>55</td>
<td>65</td>
<td>80</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Nov '88</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>38</td>
<td>45</td>
<td>55</td>
<td>65</td>
<td>80</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Apr '89</td>
<td>20</td>
<td>24</td>
<td>30</td>
<td>40</td>
<td>48</td>
<td>58</td>
<td>70</td>
<td>85</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Apr '89</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>85</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Nov '89</td>
<td>20</td>
<td>25</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>88</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Nov '89</td>
<td>20</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>85</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Tyne and Wear PTE
Since deregulation, the PTE has lost control over the fares policies of bus operators. However, in practice there is little variation between fares charged by bus operators in the region. Single fares for bus and Metro have tended to differ a little, although both still operate within the zonal fare system.

Changes to single fares for both bus and Metro since 1979 are shown in Table 2.2; differences here between bus and Metro fares are the result of rounding, with Metro operating a system using multiples of 5p and 10p units to simplify collection.

Tickets. A travelcard (season ticket) scheme was introduced in Tyne and Wear in 1979 with weekly and four weekly travel-tickets which were valid on all local public transport services. In 1981 a new system of travelcards was introduced, based on the zonal system. Off-peak travelcards were also introduced in 1981. In 1982 an annual, all-day travelcard was introduced.

Initially, the travelcard scheme was organised and administered by the PTE. Prior to deregulation, the PTE joined with a consortium of bus operators to establish an Operators' Panel to organise, administer and control pricing of the county-wide travel-ticket in the new environment. Subsequently, an independent company was formed to do this, owned by all operators in the area, trading as Network Ticketing Limited. The travelcard is accepted on virtually all local transport services in Tyne and Wear; however, some bus companies also operate their own season tickets and travelcards, exclusive to their own services.

Through ticketing (between bus and rail), an important component of integration, has been retained in Tyne and Wear. But the system of 'transfare', single journey through ticketing, was revised at the instigation of bus operators. Bus-to-bus transfares became somewhat restricted, with the exception of services secured under contract by the PTE. Transfares were, therefore, initially limited, mainly to dual mode bus/rail and bus/Metro journeys. Transfares had previously been available throughout the integrated network but were reduced in availability to only 14, mainly suburban, Metro stations following deregulation.
The transfare system is gradually being extended after the initial restrictions on use brought about by deregulation. Since 1988 transfares have been available at 18 Metro stations served by commercial bus operators. In addition, Busways Travel, the former direct bus operation of the PTE, now also accept transfares from Metro stations in central Newcastle.

Since the deregulation of bus services it has become more difficult for passengers to transfer from bus to Metro. This is because it is now commercially less attractive for bus operators to feed into Metro and provide transfare facilities. As a result, an increasing proportion of passengers are using single tickets for Metro journeys (Table 2.3). Conversely, through-ticketing, both travelcards and transfares, appears to be declining in use as a proportion of all ticket types. Interestingly, Scholar Passes, Child Singles and Child 5 Riders all show a decline as a proportion of all ticket use (see also Section 2.4 below).
Table 2.3
Type of Ticket Being Used at Time of Survey: Metro Passengers

<table>
<thead>
<tr>
<th>Ticket Type</th>
<th>Percentage of passengers</th>
<th>Weekday 1984</th>
<th>Weekday 1986</th>
<th>Weekday 1987</th>
<th>Weekday 1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>)</td>
<td>27.0</td>
<td>33.5</td>
<td>34.3</td>
<td></td>
</tr>
<tr>
<td>Adult Transfare</td>
<td>&gt; 34.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>)</td>
<td>7.4</td>
<td>2.8</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Adult Return</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Adult 5 Rider</td>
<td>N/A</td>
<td>2.3</td>
<td>2.8</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Day Rover</td>
<td>N/A</td>
<td>N/A</td>
<td>0.1</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>All Day Travelcard</td>
<td></td>
<td>32.4</td>
<td>30.6</td>
<td>30.7</td>
<td>27.5</td>
</tr>
<tr>
<td>Off-peak Travelcard</td>
<td></td>
<td>7.0</td>
<td>10.0</td>
<td>7.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Concessionary Pass</td>
<td></td>
<td>12.4</td>
<td>11.8</td>
<td>11.7</td>
<td>14.7</td>
</tr>
<tr>
<td>Teen Travel</td>
<td>N/A</td>
<td>N/A</td>
<td>0.6</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Scholar Pass</td>
<td></td>
<td>2.6</td>
<td>1.9</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Child Single</td>
<td></td>
<td>8.8</td>
<td>5.2</td>
<td>4.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Child 5 Rider</td>
<td>N/A</td>
<td>3.0</td>
<td>2.7</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>2.1</td>
<td>0.8</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.1</td>
<td>100.1</td>
<td>100.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Tyne & Wear PTE.
2.4 Metro passenger profile

Only limited information is available on the characteristics of Metro passengers.

Figures for the gender composition of passengers indicate that females make up a larger proportion of Metro passengers than males (Table 2.4). This is, of course, a general feature of public transport usage, deriving, in part, from differential access to private transport.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Percentage of Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekday 1984</td>
</tr>
<tr>
<td>Female</td>
<td>57.7%</td>
</tr>
<tr>
<td>Male</td>
<td>42.3%</td>
</tr>
</tbody>
</table>

Source: Tyne & Wear PTE.

Between 1984 and 1987 the proportion of passengers in the 5-16 years age group declined, as was indicated by the fall in the proportion of passengers using child tickets which was noted above. Indeed, in their Three Year Public Transport Plan for 1988/89 to 1990/91, the PTE indicated that an initial reduction of the order of 25% had occurred in public transport journeys by children. This was attributed to the rise in child flat fares and difficulties with scholars' services due to unreliability. However, the 1988 figures indicate a recovery in child patronage on Metro. Since 1984 the proportion of passengers aged 60 and over has continued to steadily increase.

Nearly two-thirds of weekday Metro passengers are aged 17-44 (Table 2.5), almost all of whom will have been travelling on non-concessionary tickets, thus accounting for the major share of Metro's revenue.
Table 2.5

Age of Metro Passengers

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage of Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>5-16 years</td>
<td>11.0</td>
</tr>
<tr>
<td>17-24 years</td>
<td>31.8</td>
</tr>
<tr>
<td>25-44 years</td>
<td>31.7</td>
</tr>
<tr>
<td>45-59 years</td>
<td>13.6</td>
</tr>
<tr>
<td>60-64 years</td>
<td>4.6</td>
</tr>
<tr>
<td>65+ years</td>
<td>7.4</td>
</tr>
<tr>
<td>All Ages</td>
<td>100.1</td>
</tr>
</tbody>
</table>

Source: Transport & Road Research Laboratory and Tyne & Wear PTE.

2.5 Purposes of journeys

Journeys to and from work have continued to account for the largest share of Metro weekday passengers - 42.2% of total journeys in 1988. The next largest group comprises those travelling for shopping purposes, followed by social, educational and 'other' journeys (Figure 2.2). It is noticeable that the proportion of work journeys has grown since 1984 and this probably reflects improving job opportunities in the area. The pattern for shopping journeys may reflect changes in the locational activity of the retail sector (subsequently discussed in Section 3.5). The increase in shopping journeys between 1984 and 1986 may be related to a more buoyant central area. The subsequent decrease for 1988 may, on the other hand, reflect the growth in out-of-town shopping, most notably the MetroCentre in Gateshead - which is not served by Metro but does have extensive free car parking provision.
Figure 2.2 Journey Purpose of Metro Passengers.

% Passengers - Weekday

Journey Purpose

- Work
- Shopping
- Education
- Social
- Other

Source: Transport & Road Research Laboratory and Tyne & Wear PTE.

Note: Journey purpose excludes 'to/from home' category in order to define more clearly the purpose of journey.
The substantial contribution of non-work trips certainly does suggest the validity of initial claims that Metro and the wider integrated system would prove useful and versatile in serving a wide variety of travel needs. This pattern of diverse journey purposes stands in contrast to the usage of the former British Rail local services which were predominantly used for journeys to and from work.

2.6 Arrivals and departures

In 1988 the majority of passengers - two-thirds - arrived at Metro stations on foot and a slightly larger proportion - nearly three-quarters - walked from stations to their final destination. Just over 22% of passengers came to Metro stations by bus and the same proportion left stations by bus. While the overall pattern of modes of arrival and departures has not changed since 1984, there have been small but noticeable changes in the proportions using the different modes to get to and from Metro (Figures 2.3 and 2.4).

The use of bus, for both arrival and departure from stations, is declining as a proportion of all modes. This is likely to be partly due to reshaped bus networks since deregulation. Interestingly, the difference between percentages using bus for arrival and departure has narrowed. It had been noted previously that more passengers were prepared to interchange from bus to Metro than vice-versa. There is evidence of an increase in car use for mode of arrival, but not mode of departure. This may suggest that 'park-and-ride' has not increased but 'kiss-and-ride' may be increasing.

The converse of these trends is an increase in proportions walking to and from stations. Together with evidence of the increase in the use of single tickets, these trends suggest interchange is becoming less common. It must also be borne in mind that these proportional increases are set against a backdrop of a falling total patronage. Thus, although the proportion of people arriving on foot is increasing the absolute numbers have declined.
Figure 2.3 Mode of Arrival at Metro Stations.

% Passengers - Weekday

Mode of Arrival

Source: Transport & Road Research Laboratory and Tyne & Wear PTE.

Figure 2.4 Mode of Departure from Metro Stations.

% Passengers - Weekday

Mode of Departure

Source: Transport & Road Research Laboratory and Tyne & Wear PTE.
2.7 Private transport and Metro

An important objective of the Metro is to encourage people to use public transport instead of cars, especially for journeys into the city centre. Through integration, it was also intended to reduce bus traffic on roads in the central areas. Both factors were expected to help improve road traffic conditions, particularly in the city centre - thus giving 'non user benefits' to private transport users in the centre.

In the present study we have explored two aspects of this. Firstly, surveys have been undertaken of those Metro passengers using cars to travel to stations, focusing especially on whether they would otherwise have travelled to the city centre by car had Metro not been available. Secondly, we have examined data from cordon traffic counts to consider the scale of the contribution Metro may make to improving road traffic conditions.

Car travellers to Metro stations A survey was undertaken, on a weekday and a Saturday in November 1989, of Metro passengers who arrived at stations by car. A sample of passengers was interviewed on platforms at 18 stations while waiting for in-bound trains into central Newcastle. Altogether some 17,562 passengers were asked their mode of arrival, of which 2,239 were found to have come by car; the latter were then asked a number of further questions in the survey. At the stations surveyed, 11.0% of in-bound passengers arrived by car on the week day and 14.7% on the Saturday. These percentages are, incidentally, slightly higher than those recorded from on-board surveys (see Section 2.6 above) because of the focus here only on in-bound trips and because return trips are not included where mode to the station and to final destination is more often on foot.

The surveys suggested that most of those arriving at Metro stations by modes other than car - virtually all using public transport or arriving on foot - are 'captive' public transport users. When asked how they would make their journey if Metro did not exist, over 80% said they would travel by bus. Only 7.8% of these non-car arrivals on a weekday and 7.0% on a Saturday would otherwise travel by car. These potential car users are a small group proportionately but may be large enough in absolute terms to have an impact on car use in central Newcastle if Metro were not available; this is examined later in relation to information on traffic flows into central Newcastle.

But the prime concern of the surveys was to interview in more detail those arriving at Metro stations by car. This included both 'park and ride' and 'kiss and ride' Metro passengers. It was felt that it would be from this group that the greatest potential existed for switches
from Metro to car; and by asking these passengers what their travel patterns might be in the absence of Metro it might be possible to extrapolate what impact Metro has in reducing car use in central Newcastle.

As the survey was primarily concerned with trips into central Newcastle, the analysis was undertaken for those respondents who reported a Metro station in the central areas as their destination. Between 81.8% (weekday) and 94.1% (Saturday) of the in-bound car users were travelling to central area stations, the most important destination being Monument, followed by Haymarket. 69.6% of passengers arriving by car and destined for the central area on the weekday, and 69.2% on the Saturday, were drivers of cars; the rest were passengers. Under one-third of car arrivals had been 'dropped off' at the station ('kiss and ride') and the rest had come by cars parked at or near the station (Table 2.6).

<table>
<thead>
<tr>
<th>Location</th>
<th>Weekday</th>
<th></th>
<th>Number</th>
<th>%</th>
<th>Saturday</th>
<th></th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro Car Park</td>
<td>257</td>
<td>32.1</td>
<td>381</td>
<td>34.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Car Park</td>
<td>107</td>
<td>13.3</td>
<td>166</td>
<td>15.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Street</td>
<td>203</td>
<td>25.3</td>
<td>260</td>
<td>23.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car Not Parked</td>
<td>234</td>
<td>29.2</td>
<td>296</td>
<td>26.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>801</td>
<td>99.9</td>
<td>1103</td>
<td>99.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


As expected, fewer of these car users are 'captive' public transport users. When asked how they would make their journey if Metro did not exist, 47.0% reported they would travel by car on the weekday, and 46.2% opted for car on the Saturday (Table 2.7); in these circumstances a reduction in journey frequency was also anticipated.
### Table 2.7
Passengers Arriving by Car – Mode Without Metro

<table>
<thead>
<tr>
<th>Mode</th>
<th>Weekday</th>
<th></th>
<th>Saturday</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Walk</td>
<td>2</td>
<td>0.3</td>
<td>9</td>
<td>1.0</td>
</tr>
<tr>
<td>Car</td>
<td>285</td>
<td>47.0</td>
<td>417</td>
<td>46.2</td>
</tr>
<tr>
<td>Bus</td>
<td>268</td>
<td>44.2</td>
<td>393</td>
<td>43.5</td>
</tr>
<tr>
<td>BR Train</td>
<td>25</td>
<td>4.1</td>
<td>39</td>
<td>4.3</td>
</tr>
<tr>
<td>Combination</td>
<td>11</td>
<td>1.8</td>
<td>26</td>
<td>2.9</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>0.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>No Journey</td>
<td>13</td>
<td>2.1</td>
<td>19</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>607</strong></td>
<td><strong>100.0</strong></td>
<td><strong>903</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>


Impacts on private transport. Information on traffic flows collected by the Tyne and Wear County-wide Traffic and Accident Data Unit shows that, in general, car traffic into central Newcastle has increased steadily throughout the 1980s. For example, car traffic on the central Tyne bridges increased by 44.1% between 1978 and 1989.

Traffic counts also show that a reduction in the number of Public Service Vehicles (buses) entering the central area was achieved when local public transport services were integrated. For example, the number of PSVs crossing the central bridges towards Newcastle city centre between 7.00 a.m. and 4.00 p.m. fell from 1,404 in September 1981 to 542 in September 1982. But deregulation reversed this. In September 1986, just before deregulation and with the Metro fully operational, 533 PSVs crossed the bridges into Newcastle. In October 1987, a year after deregulation was introduced, the number had risen to 1,107, a figure not far short of pre-integration levels, and has since climbed to 1,236 in October 1989 (see Figure 2.5).

The reduction in bus traffic following integration is thus evident, though temporary. Much more difficult to establish is the impact of Metro on car traffic, particularly in view of the background growth of car ownership and, therefore, car journeys. It may be that road space has been freed due to the introduction of Metro but has subsequently been filled by latent demand but it is evidently not possible to assess how much car traffic entering the central area does so because of such
Figure 2.5 Central Bridges Counts. Inbound PSVs 0700-1600.

Note: 1984 counts affected by roadworks.
opportunities created by Metro. However, it may be possible to use those individuals who travel into central Newcastle by Metro, but who would otherwise use a car if Metro was not available, as a proxy for those who are able to use central area streets because space has been freed.

This approach can be attempted using the passenger survey results combined with PTE patronage data. From this, two possible scenarios for the weekday and Saturday can be established (Table 2.8). Firstly, if all those reporting that they would switch to cars did so, this would add some 1,560 extra car trips to in-bound traffic for the weekday and 2,334 for the Saturday. However, only 69.6% of respondents on the weekday were actually car drivers, and 69.2% on the Saturday. If only those respondents who were car drivers took vehicles into the central area then 1,086 cars would be added to the in-bound network on the weekday and 1,615 on the Saturday.

In order to assess the implications of these figures on traffic entering the central area, an assumption must be made that the projected traffic would cross either the central bridges or inner cordon. The counts for 1988 give the weekday in-bound car flow between 0700 and 1600 as 65,201. The weekday projections would add 2.4% to this flow if all those car arrivals who reported they would travel by car to the central area if Metro was not available each took a single vehicle into the central area. This is reduced to 1.7% if only those respondents who were actually car drivers are considered. These small percentages are likely to be no more than the daily variations expected in traffic flows, and it is unlikely that they would produce major impacts on the road network. Indeed, the average annual increase for the central bridges and inner cordon together is 2.2%, therefore the projected additional car traffic is only of the order of a single year's increase.
Table 2.8
Estimated Additional Car Flows to City Centre in the Absence of Metro

<table>
<thead>
<tr>
<th>Metro Boardings Systemwide:</th>
<th>Weekday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>In bound 0700 to 1600</td>
<td>36,904</td>
<td>36,524</td>
</tr>
<tr>
<td>Arrivals by car</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In bound 0700 to 1600</td>
<td>11.0%=4,059</td>
<td>14.7%=5,369</td>
</tr>
<tr>
<td>% to Central Area</td>
<td>81.8%=3,320</td>
<td>94.1%=5,052</td>
</tr>
<tr>
<td>(a) % Switch to Car</td>
<td>47.0%=1,560</td>
<td>46.2%=2,334</td>
</tr>
<tr>
<td>(b) % Switch to Drivers</td>
<td>69.6%=1,086</td>
<td>69.2%=1,615</td>
</tr>
</tbody>
</table>

Source: Based on Tyne & Wear PTE patronage data and TORG Surveys.

If all 17,562 passengers who were initially approached are considered together, then in total 11.0% reported they would switch to car on the weekday and 11.6% on the Saturday. The patronage figures in Table 2.8 suggest this would lead to a total of some 4,059 extra in-bound trips by car on the weekday and 4,283 on the Saturday.

As only those passengers who had arrived by car were interviewed in detail, information on destination stations, and the proportion of car drivers, is not readily available. The figure of 81.8% of car arrivals who reported they were travelling to central area stations can be applied to all in-bound passengers in the absence of better information. However this is likely to be an overestimate as Park and Ride journeys are often undertaken with the express purpose of avoiding city centre congestion and parking difficulties.

Under these circumstances the projected increase for a weekday is 3,320 extra in-bound car trips to the central area. This represents a 5.1% increase on traffic passing the central bridges and inner cordon in 1988. This projected increase is therefore of the order of two years current growth in traffic for the central bridges and inner cordon. However, it is likely that information on the proportion of respondents that are car drivers, and intended journey frequencies, would act further to reduce this estimate. We are, therefore, led to the conclusion that the impact of Metro on reducing road traffic congestion in the central areas is fairly limited.
2.8 Operating costs and revenues

Metro's estimated operating costs and revenues for the period 1983/4 to 1988/9 are given in Table 2.9 below. The drop in total patronage in 1985/86 outlined earlier was accompanied by a fall in passenger receipts. Subsequent increases in receipts are mainly due to fare increases and increasing trip length, and also clampdowns on fare avoidance. Cost savings achieved in 1985/86 are attributed to productivity gains, which appear mainly under 'administration'. The scope for further cost savings on Metro are said to be limited due to the high level of fixed costs. Any reduction in the operating deficit would therefore have to be achieved through increased revenues.

Table 2.9
Estimated Operating Costs and Revenues (£ millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Receipts: Concessionary</td>
<td>0.4</td>
<td>-</td>
<td>0.2</td>
<td>0.5</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Passenger Receipts: Non-Concessionary</td>
<td>7.7</td>
<td>7.4</td>
<td>9.6</td>
<td>9.7</td>
<td>10.1</td>
<td></td>
</tr>
<tr>
<td>Passenger Receipts: Total</td>
<td>8.1</td>
<td>7.4</td>
<td>9.8</td>
<td>10.2</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Other Revenue/Scholars Permits</td>
<td>1.8</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Concessionary Fare Contributions</td>
<td>2.9</td>
<td>2.9</td>
<td>3.0</td>
<td>2.7</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Total Revenue</td>
<td>9.5</td>
<td>12.8</td>
<td>10.6</td>
<td>13.1</td>
<td>13.1</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train Operation and Maintenance</td>
<td>5.9</td>
<td>5.8</td>
<td>6.8</td>
<td>7.0</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td>Station Operation and Maintenance</td>
<td>1.1</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Track Signalling and Power</td>
<td>6.8</td>
<td>6.4</td>
<td>7.1</td>
<td>7.2</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>1.2</td>
<td>0.6</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Costs Excluding Asset Utilisation</td>
<td>15.0</td>
<td>14.3</td>
<td>16.7</td>
<td>17.0</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>Gross Asset Utilisation</td>
<td>-</td>
<td>-</td>
<td>3.1</td>
<td>3.5</td>
<td>3.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Capital Grants Released</td>
<td>-</td>
<td>-</td>
<td>3.1</td>
<td>3.4</td>
<td>3.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Total Costs</td>
<td>13.7</td>
<td>15.0</td>
<td>14.3</td>
<td>16.8</td>
<td>17.3</td>
<td>17.9</td>
</tr>
<tr>
<td>Operating Deficit</td>
<td>4.2</td>
<td>2.2</td>
<td>3.7</td>
<td>3.7</td>
<td>4.2</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: Tyne & Wear PTE estimates.
2.9 Conclusions

The most important change in the operation of Metro since the mid-1980s has been the fall in patronage, down from 61.1 million a year in 1984/5 to 45.1 million in 1988/89. Patronage may now have stabilised at around the 45 million mark and passenger km have recovered to 1984 levels. And the most important single influence affecting Metro's operation - and contributing to a fall in patronage - has been bus deregulation which has curtailed public transport integration.

Evidence on the use of interchange stations, ticket types and modes used to travel to and from stations points to reductions in mode changes, especially from bus to Metro and vice versa stemming from the curtailment of integration. Other factors such as population decline and rising car ownership may also have served to reduce Metro (and also bus) patronage, though this may have been partly offset by the effects of more work journeys consequent on some economic recovery in Tyne and Wear.

But aside from this major fall in patronage, down by a quarter, many aspects of the Metro indicate a picture of relative continuity - in levels of service and characteristics of usage of the system. Metro has moved from a period of co-ordination and integration and into an environment of competition. It has largely adapted to these changes; in particular, the PTE appears to have succeeded in controlling the operating deficit through a difficult period of adjustment.
3. **LAND USE AND DEVELOPMENT**

3.1 **Introduction**

The Metro has had a considerable impact on patterns of accessibility within Tyne and Wear. The 1985 study showed that Metro, together with integration of bus services, had resulted in considerable enhancement in accessibility by public transport throughout most of the conurbation which makes differential effects on land use more difficult to find. However, areas directly served by Metro derived particular benefit in terms of time savings; access to Newcastle city centre, for example, was much improved for people travelling from many parts of North and South Tyneside.

This change in the transport geography of the conurbation has thus made some areas – notably places close to stations – much more accessible to other parts of Tyneside. Has the property market responded to these changes and new opportunities? Have house prices risen relatively more in areas near Metro stations as a result of increased demand from people wishing to take advantage of this enhanced accessibility? Have developers sought to build new houses, shops, offices or factories close to Metro?

The previous study tackled these questions and found that, in general, land use, property development and property prices had not been greatly affected by Metro. As Metro opened, prices for houses near Metro did increase more than similar houses in other areas further from Metro, but the difference was quite small: a differential increase of less than 2% in house prices close to the new system. In the early 1980s, Tyne and Wear was in the throes of economic recession and property development was at a low ebb. Although Metro contributed significantly to the strengthening of the city centre as a retail location it did not in itself foster new development. There was little new office construction and developers were not looking to establish new office developments in suburban locations served by Metro. In industry, employers were found to be much more concerned about road access than public transport and, likewise, were not seeking new locations near Metro.

The situation in the late 1980s was, however somewhat different as the area experienced some economic recovery and new property development. It might, therefore, be the case that the changes in accessibility brought about by Metro could now become manifest in the property market. This section of the report looks at the evidence for this, examining trends and patterns in land use and development since
1984. We look, too, at the spatial pattern of employment change to see if economic activity has responded to the new transport geography of Tyne and Wear. Perhaps the most important point to bear in mind is that Metro is just one factor which might affect development. Many other factors are involved: land availability, planning regimes and financial incentives can all influence development or property prices and employment patterns. And these other factors can act as far more powerful influences than Metro.

3.2 Development context

Before discussing patterns of development it is helpful to review the main influences affecting the distribution of land uses and the location of development. Developers do not make locational decisions in a vacuum but, rather, must respond to a wide range of factors.

Many sites which developers might favour are already built on and change of land use might be difficult or even well-nigh impossible; this is therefore a constraint on development. On the other hand, planning and economic policies may be used to attract development to certain locations; Enterprise Zones, for example, offer substantial tax concessions, which can strongly influence developers' decisions. The impact of Metro in particular on development is difficult to assess both because it is one among several factors influencing development and also because these various factors have themselves been subject to considerable change.

Opportunities for development

In considering the relationship between Metro and development, the first point to bear in mind is that most of the Metro system runs through existing and well-established built-up areas. This is, of course, inevitable given that most of the Metro system runs on former British Rail lines originally built to serve the Victorian riverside towns and the coastal suburbs. It is also intentional, since Metro was planned to enhance accessibility for existing communities. This necessarily sets physical limitations on land use change and new development.

However, there are Metro served areas - such as those along the northern part of the old North-Tyne loop line - which are less developed and there are other areas where development could be intensified. For example, town centres can be redeveloped to provide a greater density of shopping, or suburbs redeveloped from houses to higher-density flats. In other words,
changes of land use and development are not ruled out but, in many places, may be made more difficult than would be the case if Metro served to open up undeveloped or perhaps derelict sites. Even so, if development pressures were sufficiently strong, many areas close to Metro stations could be developed or redeveloped and there are a number of sites which are not already built up and could be available for new development.

Policies

Planning and economic development policies are important in restraining development in some areas of the conurbation and channelling development into others. In general, planning policies have sought to contain the expansion of the built-up area of Tyne and Wear by resisting incursions into the Green Belt. Nevertheless, some new development has been allowed on the edge of the conurbation in the 1980s, notably to the north. In recent years, there has been increasing emphasis on promoting development in the inner areas of Tyne and Wear, following both local and national urban regeneration policies.

The Planning System Overall, land use planning has been guided at the strategic level by the Tyne and Wear Structure Plan, formally approved in 1981. This is supported by a number of local and subject plans covering various parts of the County.

The Structure Plan generally favours development accessible to public transport but development is not strongly tied to the availability of public transport in general nor to Metro in particular. The Plan also favours inner area redevelopment and stresses protection of the Green Belt. A few of the local plans make reference to connections between Metro stations and development but, again, the relationship is not strongly articulated.

The Structure Plan framework was weakened by the abolition of the County Council in 1986 which had been responsible for its implementation. A new planning system is now being introduced; new Unitary Development Plans for each of the five Tyne and Wear Districts are currently in various stages of preparation and are expected also to make some links between land use and public transport following guidelines set out in the DOE's Strategic Guidance on Unitary Development Plans for Tyne and Wear. But the new system is only now beginning to emerge; up to now, the planning framework for the area has continued to be the Structure Plan and related local plans. At a general level, this planning regime — and, quite
probably, the new regime - has not sought specifically to plan land use and development in conjunction with Metro.

Economic development and urban regeneration policies. In the 1980s, various policies have been implemented in an effort to stimulate economic development and regeneration at particular locations. These spatially-focused policies use subsidies and other inducements to attract development and undoubtedly have had an influence on developers at least as strong as that provided through the land use planning system.

The most important of these policies is the Enterprise Zone, designated in 1981 and operational until 1991 (see Figure 3.1). Within the Zone - which covers 454 ha. of land on the banks of the Tyne and parts of Team Valley industrial estate - businesses are exempted from local authority rates, can obtain 100% tax allowances on investment and enjoy various other benefits such as relaxed planning controls. With these benefits, the Zone has attracted considerable development, including the massive (about 190,000 sq. metres) MetroCentre retail scheme in Gateshead and substantial new developments at Team Valley. It has proved a powerful magnet for development and, in this way, has distorted the operation of commercial property markets in the conurbation throughout the 1980s.

A second 'distorting' factor, also involving subsidies to developers, has been the use of financial assistance to developers through Urban Development Grants, recently revised to become City Grants. Such grants are awarded to developers undertaking development - housing, commercial or industrial - in the inner areas of Tyne and Wear; the grants help ensure a reasonable rate of return for developers undertaking schemes in commercially risky or difficult locations.

A third, and more recent element, is the creation of Tyne and Wear Urban Development Corporation, established in 1987. Here again, the emphasis is on subsidising and encouraging development in the inner areas along the banks of the Tyne and the Wear (the UDC's area is shown in Figure 3.1). It is expected that the Corporation's activities will have a major influence on the location of development in the next few years, much as the Enterprise Zone, now approaching the end of its life, has influenced development in the 1980s.
All three policy initiatives are aimed at promoting development in the inner areas of Tyneside - though not particularly those parts of the inner areas close to Metro. They represent an important part of the environment within which developers act. And they are reinforced by various other initiatives: private business interests are also encouraging regeneration and new development in Newcastle City Centre under the CBI's 'Newcastle Initiative'; the local authorities are encouraging inner area/town centre regeneration; and, in Gateshead, a large area of derelict land near the Tyne is being restored for the 1990 National Garden Festival and subsequent redevelopment.

A final important part of the local context is the construction of the new Western Bypass, a major new road through the western parts of Gateshead and Newcastle which will also have an effect on the perception developers have of opportunities in Tyne and Wear.

This, then, is the context within which developers operate - a context which highlights, above all, the fact that Metro is one amongst several factors; and some of the other factors are powerful influences on development.

3.3 Housing

Overview. In spite of population decline, the number of households - and the number of housing units - has continued to increase in Tyne and Wear. Population is falling through net migration out of the conurbation, but household sizes are still becoming smaller as a result of such factors as growing numbers of elderly people and one-parent families. Average household size in Tyne and Wear thus fell from 2.66 persons per household in 1981 to 2.54 in 1986 and is forecast to fall further, to 2.46 persons per household by 1991.

Probably the most striking feature of housing development in the 1980s has been the continued decline in house building by the public sector. Up until the late 1970s, the public sector - local authorities and also housing associations - had been major providers of new housing; since then, the activities of local authorities have been curtailed by central government expenditure restraints and they have concentrated primarily on rehabilitation of existing stock. The private sector, therefore, now plays the dominant role in house building, accounting for almost 75% of houses completed in Tyne and Wear in 1984-89, a considerable increase on the previous five year period, 1978-83, when the private sector share was just 45%. By 1988 the local authority contribution had become almost negligible; the five
Tyne and Wear local authorities built only 64 dwellings in total in 1988, compared with a total of 356 completions by housing associations and 2215 by the private sector.

Overall, the total number of completions has fallen, from 21,681 dwellings in 1978-83 to 17,239 in the subsequent six year period 1984-89. The public sector component has steadily declined. Private sector completions fell in the mid-1980s and later recovered (see Figure 3.2) in line with a strengthening housing market and rising prices, as house price inflation 'rippled out' from the South, reaching the North East by the end of 1987. During the 1980s private housebuilders have tended to move up-market, shifting away from low-cost and starter home schemes which they favoured in the early 1980s, towards more expensive housing at the upper end of the market - probably largely reflecting new demand as the area recovered from recession. In the 1980s, builders have also discovered 'niche markets', building housing for the elderly, 'solo' housing, waterfront developments and conversions of historic buildings, rather than standardised mass produced estates.

Spatial distribution. In relation to the possible effects of the Metro on housing development, the key issue is evidently the location of new housing and proximity to the Metro system. Are developers seeking to develop new housing near Metro? The mean proximity of new housing completions to Metro stations changed little over the period 1984-88; indeed, there is a possible trend in public sector housing away from Metro (Figure 3.3). The map of all housing completions for the period 1984-88 (Figure 3.4), plotting data from local authority planning departments, presents a complex pattern with no obvious relationship between development and Metro although there are some concentrations of building activity along certain sections of the line. The maps which show, separately, public and private building (Figures 3.5 and 3.6) are possibly a little more illuminating, but do they indicate any particular clustering around Metro?

In the case of public sector (local authority and housing association) completions there is a fairly clear concentration of activity in the inner areas of the conurbation along the banks of the River Tyne (Figure 3.5). But this is to be expected since the public sector is mainly concerned with redeveloping sites cleared of old housing or other outworn development, providing housing to rent (or for low cost purchase) for lower income households within existing communities in the inner urban areas. This is the underlying factor and proximity to Metro - which serves the inner areas - is largely fortuitous.
Figure 3.2
Dwellings Completed in Tyne & Wear 1978–1989

Key:  
- Private
- Public (Local Authorities and Housing Associations)

Note: 1978–83 & 1989 figures from Local Housing Statistics
1984–88 figures from Local Authority records
1989 figures based on half-year estimate
Figure 3.3
Annual Housing Completions: Mean Distance to Nearest Metro

Key:  ■ Private  □ Public (Local Authorities and Housing Associations)
Figure 3.4

TYNE & WEAR

Total Residential Units Completed 1984-1988

Source: Local Authority Planning Department Records
Figure 3.6

TYNE & WEAR

LA & HA Developed Residential Units Completed 1984-1988

Source: Local Authority Planning Department Records
Figure 3.6

TYNE & WEAR

Privately Developed Residential Units Completed 1984-1988

Number of Units

- 101 - 999
- 51 - 101
- 21 - 51
- 6 - 21
- 1 - 6

- Metro Stations

Source: Local Authority Planning Department Records
The spatial distribution of private sector housing development (Figure 3.6) is more dispersed and more complex. The private sector has traditionally favoured development of greenfield sites on the periphery of the built-up area and continues to do so. However, in the 1980s, private developers have had much more involvement in inner area development - usually redevelopment - than in the 1970s. There are several reasons for this, including: market demand; planning policies and availability - including sites released by local authorities unable to build themselves; changes in the attitudes of builders to developing 'brownfield' sites; the setting up of public/private partnerships and the availability of grants helping to ensure profitability. Public policies promoting property-led urban regeneration have become very influential in stimulating inner area development. Since the establishment of Tyne and Wear Development Corporation in 1987 there has been increasing encouragement to develop riverside sites (e.g. Hebburn Village, St. Peter's Basin) which have been reclaimed and grant-aided by the Corporation. In Gateshead, the reclaimed Garden Festival site is subsequently to be developed for housing.

In 1987-8 about 22% of private house completions in Tyne and Wear were located in the inner areas, similar to the comparable figure for 1983 of just under 20%. This proportion, though little changed during the 1980s, is significant and means some areas of new development are near Metro; but nearly four-fifths of new private housing has been built outside these inner areas, much of it on the periphery and well away from Metro. Private developers continue to favour, predominantly, peripheral and greenfield sites although planning policies, protecting the Green Belt and stimulating regeneration by enforcing restrictions on the availability of land with planning permission, have necessarily tempered this preference.

Land availability and public policy, both affecting the broad inner area/outer area distribution of development, seem to be the major factors shaping the spatial distributions shown in the maps. But, this said, there certainly are some areas near Metro stations which seem to have attracted considerable amounts of new housing development. The top ten stations with most new housing within a radius of 0.5 km are listed in Table 3.1 below.
Table 3.1
'Top Ten' Metro Stations having most new housing development in a radius of 0.5 km, 1985-88

<table>
<thead>
<tr>
<th>Area (0.5 km radius of station)</th>
<th>No. of new dwelling units in area completed 1985-88</th>
<th>Private %</th>
<th>Public %</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. James</td>
<td>267</td>
<td>33.3</td>
<td>66.6</td>
</tr>
<tr>
<td>Haymarket</td>
<td>214</td>
<td>16.8</td>
<td>83.2</td>
</tr>
<tr>
<td>Regents Centre</td>
<td>150</td>
<td>73.3</td>
<td>26.7</td>
</tr>
<tr>
<td>Jesmond</td>
<td>129</td>
<td>41.1</td>
<td>58.9</td>
</tr>
<tr>
<td>Monument</td>
<td>124</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>Central Station</td>
<td>115</td>
<td>93.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Monkseaton</td>
<td>101</td>
<td>100.0</td>
<td>0</td>
</tr>
<tr>
<td>North Shields</td>
<td>87</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>Wallsend</td>
<td>85</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>Felling</td>
<td>84</td>
<td>16.7</td>
<td>83.3</td>
</tr>
</tbody>
</table>

These ten stations fall broadly into three categories. First, the city centre stations (St. James, Haymarket, Monument, Central Station); second, suburbs with very strong private housing demand (Regent Centre in Gosforth, Jesmond, Monkseaton); and, third, inner areas of local authority housing (North Shields, Wallsend, Felling). In each case, proximity to Metro appears to be largely fortuitous. City centre housing development, in areas like Stowell Street (close to St. James') and Northumberland Road (near Haymarket) reflects the two processes of public sector provision at inner area redevelopment sites and private sector response to grants and expanding markets within a developing but small scale back-to-the-city trend. Developments by the private sector or housing associations in the more desirable suburbs represent a response to a strong market by developers, while the third category again involves traditional public sector inner area redevelopment.

Interviews with private and public sector developers and estate agents confirmed this interpretation and seemed to indicate little change in views about the effects of the Metro since the previous study in the early 1980s. Such factors as land availability,
planning permission and public policies, notably grants, were pre-eminent in location decisions. In no case was Metro said to have directly stimulated a housing development. But, on a more positive note, Metro is seen by developers and estate agents as a 'selling point' to be mentioned in sales literature and likely to help generate interest and enhance the attractiveness of a site. Public sector developers, housing people who are less likely to have cars, regarded public transport as an important asset but made little or no distinction between bus and Metro; in any case, in the inner areas, well-served by public transport, it tends to be assumed that public transport is available. Private developers, especially those concerned with up-market housing, tended to assume, by contrast, that buyers would have cars so public transport was of less concern - school catchment areas were adjudged more important.

Looking to the future, these perceptions - placing relatively little emphasis on Metro as an influence on housing development - seem likely to remain. Some large-scale inner area housing schemes are planned, some of which (such as the Royal Quays site at North Shields) have the benefit of Metro while others (like Newcastle Quayside and the Gateshead Garden Festival site) are not near Metro. Public policies for urban regeneration are stimulating such developments but they are not being planned in relation to Metro.

Finally, this conclusion that housing development is not clustering around Metro stations was statistically tested through an analysis of land use change data using the local authorities Joint Information System (JIS). The JIS contains data on all land use changes in Tyne and Wear covering the period 1985-89. This is at a fine level of detail, with data on both new building and conversions involving land use change, for each individual hereditament. Firstly, the number of land use changes in the housing sector within postulated 'areas of effect' around the 44 Metro stations was derived from the JIS data. Secondly, a group of 44 areas in Tyne and Wear, each the same size as the station 'areas of effect', was randomly selected and the number of housing land use changes was derived. 99 such groups of 44 randomly chosen areas were generated to create a frequency distribution of 'control' areas. It was found that there was no statistically significant difference between the number of land use changes around Metro stations and the number given by this randomly selected distribution. The process was repeated using different sizes and shapes of 'areas of effect' (up to a radius of 750 metres around stations) and different time periods; in each case, no statistical difference was found between station areas and the random...
distribution. The statistical analysis thus supports the assertion that Metro has not 'attracted' housing development (and nor, incidentally, has it acted as a focus for a 'blighting' effect).

We thus conclude from all this evidence that in the longer term, as in the shorter term, Metro has not been an important factor promoting housing development; other factors are very much more influential.

3.4 Property values

In view of the fact that much of the Metro route passes through areas which are already developed, it may be that the impact of Metro is more evident through changes in house prices rather than through new development.

In the previous study, residential property values were monitored using Inland Revenue valuations of paired representative properties close to Metro (within 200 metres of a Metro station) and away from Metro (between 1.5km and 3km from a station). It was found that prices of properties close to Metro rose a little more than those further from Metro; houses near Metro increased in value by 1.7% over and above the increase in value of those further away over a 12 month period after Metro opened. These effects were small and somewhat uneven, with a lift in house prices in some areas while in other areas it appeared that the effect was to arrest a decline in values.

In the present study, data on actual sales (market values) rather than valuations has been used to plot changes in house prices. The Halifax Building Society supplied data on sales over the period 1984 to 1987 referenced by postcode sector (there are approximately 145 postcode sectors in Tyne and Wear). Values then attributed to the central points of postcode sectors were used to interpolate values for intervening points so as to build up a smooth 'surface' of house prices (this method is both feasible and reliable because house prices are strongly spatially autocorrelated).

This surface of percentage increases in house prices is shown in Figure 3.7. The data have been standardised to show the distribution of areas where percentage changes in house prices have been above or below the average for the County as a whole.

Metro does run through areas which are mostly showing above-average price rises but the pattern gives little or no suggestion of a relationship with Metro. There are indications of a very generalised axis of well above average price rises extending from the centre of
Figure 3.7 Percentage Change in Standardised House Prices in Tyne and Wear, 1984-87.

Source: Halifax Building Society
the conurbation out towards the north west, and also strong growth in the upgraded or upgrading inner suburbs of Jesmond and Heaton and in the semi-rural areas north of the Kenton Bank Foot line (e.g. Dinnington). There are no areas of price growth apparently centred on a Metro station, with the exception of Shiremoor which has some above average growth though not as great as in some areas in the north-west 'axis' or various other areas such as parts of west Newcastle and suburban South Tyneside.

Extensive statistical analysis was undertaken on this data. Standardised house price changes were calculated for 'areas of effect' centred on Metro stations and the mean change in values compared with the mean change derived for secondary concentric zones, of the same size and shape, surrounding the station 'areas of effect'. Difference of means tests revealed no statistically significant difference between values in the two groups of areas. This holds even when the analysis is carried out using different sizes and shapes of areas and different subsets of housing types. Thus the statistical analysis indicated no relationship between house price inflation and Metro stations.

The previous study showed that as accessibility changed due to Metro opening, relative house values also changed though by a small amount. These changes in value were concentrated in a period of a few months partly anticipating the Metro, and were sustained over the rest of the study period. Broadly, the data reported here shows no subsequent systematic effects. This indicates that the once-off changes in accessibility produced a once-off shift in house values, which is small for an average house.
3.5 Shops

Overview The major trend in retailing in the 1980s in Tyne and Wear has been concentration - into larger units, fewer retail companies and into the biggest centres.

In spite of recession, the area has witnessed booming retail demand and major investment in new shopping facilities: over 250,000 sq. metres of new retail space was completed in the County between 1984 and 1988. Much of this investment has taken place at new 'out-of-town' or 'off centre' locations or in the well-established larger centres, to the detriment of smaller secondary and local shopping centres. The Structure Plan favours the maintenance of smaller centres and contains policies resisting over-expansion of large centres or out-of-town development; nevertheless, the planning system has largely been unable to control trends towards concentration and new peripheral development. Partly this is because of the demise of the County Council as strategic planning authority, but probably the single most important factor has been the designation of the Enterprise Zone allowing massive and uncontrolled retail growth at new out-of-town locations.

Spatial distribution. By far the most significant changes to the retail system in Tyne and Wear in the 1980s have been the construction of the massive MetroCentre complex at Dunston, on the western side of Gateshead, and the smaller Retail World development at Team Valley in south-west Gateshead. Both are within the Tyneside Enterprise Zone, and the tax concessions available within the Zone played a large part in stimulating development there, as did the relaxed planning regime. The MetroCentre, built since 1984 on a formerly derelict site next to the Tyne where no shopping existed before, is said to be the largest shopping and leisure complex in Europe and provides over 200,000 sq. metres (gross) of retail space. While the MetroCentre mainly comprises department and specialist stores, the new Retail World development at Team Valley largely consists of bulky goods warehouse stores. Both developments are far from the Metro system (though the MetroCentre borrowed the name and is served by a new BR station on the Newcastle - Carlisle line). Both predominantly attract the car-borne shopper attracted, not least, by the availability of large free car parks (the MetroCentre provides 11,000 free car parking spaces).

The MetroCentre and Retail World (both almost fully let) together account for over four-fifths of new floorspace for durables shopping built in Tyne and Wear over the past decade. 56% of all new retail
space completed in Tyne and Wear in the 1984-89 period was built in the Gateshead district, nearly all of it within these two developments (see Figure 3.8).

A number of other out-of-town developments have also been added since the mid-1980s, notably Texas and Tesco Stores at Kingston Park; new retailing development, including an Asda store, at Boldon in South Tyneside; a DIY development at Palmersville in North Tyneside; and, in Washington, Asda and Dickens stores outside the town centre. In addition, large new stores have been built in Byker, Cowgate and Benton in the Newcastle area and at Killingworth in North Tyneside. Near Regent Centre, Asda is due to open a new store in Spring 1990.

Some of the larger existing centres have had significant new investment. The Denmark Centre, a covered shopping development in South Shields, was completed in 1985 and Gateshead's Interchange Centre, primarily a supermarket development which links into the Metro Station, was opened in 1987. Newcastle's major city centre shopping mall complex, Eldon Square, was refurbished in 1987 and an extension (Eldon Gardens with 4,600 sq. metres of retail space) was completed in 1989. There continues to be strong pressure for further retail developments in the city centre, with a new scheme (Northumberland Court) currently under construction next to Monument Station and several proposals under consideration, notably next to Haymarket Metro Station. Sunderland's shopping centre has undergone a major £14m refurbishment to provide 'The Bridges' enclosed shopping malls and, on a smaller scale, refurbishment is planned for Jarrow town centre in the future.

This situation - of peripheral development together with some new development in some of the existing centres - is illustrated in Figure 3.9. The MetroCentre is the dominant cluster, though there is a scattering of other new developments and this includes some development close to Metro Stations. But statistical analysis of retail land use change (using JIS data and conducted in the same way as for the housing analysis) revealed no significant association between Metro and retail change. Statistically, there are no more retail developments close to stations than would be expected in the absence of Metro.
Figure 3.8
Retail Floorspace Completed in Tyne & Wear 1984-1989

Key:  
- MetroCentre
- Retail World
- Other

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<td>60000</td>
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</table>
Figure 3.9

TYNE & WEAR
Retail Floorspace Completed 1984-1989

Source: Local Authority Planning Department Records
More than half the Metro Stations - 26 out of the 44 - acquired no new retail development, even within a radius of 1 km, over the period 1984-89. Of those which have witnessed development, many have received retail development which is probably not sufficiently near Metro to suggest a causal link is likely (e.g. at Palmersville - where, incidentally, development occurred before the new station was provided). But three stations do stand out as having substantial new retail development nearby - within 0.5 km. These are South Shields, Kingston Park and Gateshead. The South Shields station is in the town centre and has the new Denmark Centre malls and other redevelopments close by; Kingston Park (and also Bank Foot station) is near to a new Texas DIY store, Tesco Supermarket and the Belvedere Park store completed in 1989; while Gateshead's Interchange shopping centre is adjacent to the Metro station.

In addition, a number of very recent developments and proposals can be cited, including the Asda hypermarket near Regent Centre station, due for completion in 1990, some shopping provision at Tynemouth station, and some major city centre schemes at Northumberland Court in Blackett Street (under construction) and proposed redevelopment at Haymarket. The Northumberland Court development will have direct pedestrian access to Monument station while the Haymarket scheme will link into Haymarket Metro station. But how important is Metro in the location of retail development? Are there causal links between Metro and shopping development, or is their proximity merely fortuitous?

Interviews with developers and agents underlined two points. First, Metro has helped to strengthen the dominance of Newcastle city centre as the pre-eminent shopping location in Tyne and Wear. The city centre is the hub of the Metro system and the Metro overcomes, to a large extent, parking problems which deter shoppers in many other city centres. Secondly, notwithstanding this, there has also been a powerful trend towards out-of-town shopping development and developers have been drawn to the Enterprise Zones (MetroCentre and Retail World) or to other locations where land and planning permission has been available.

The consensus from key informants in the development industry appears to be that Metro reinforces retail development-rather than-leads it. It is helpful and may serve to help ensure the continued viability of a retail centre, but it is seen as a bonus rather than a key attraction.

At South Shields, Metro has helped to increase the overall strength of retailing as part of a wider
scheme of redevelopment, renewal and growth. This may well have been at the expense of smaller centres such as Jarrow. At Kingston Park, the Metro has helped establish a focus for development, as seen by both developers and planners, but has not directly caused it. At Gateshead, the Interchange centre represents a development opportunity available once the Metro station had been completed and was, in fact, earmarked and marketed for such retail development by the local authority; even so, access to Metro is seen as a secondary, though useful, supporting factor. In the city centre, developers do regard Metro as a bonus and will link developments directly into it but in a sense the city centre is so small that virtually all retail sites within it are accessible to Metro. But perhaps the most revealing evidence is simply that the conurbation's big new retailing development, the MetroCentre, is far from Metro - revealing that other factors, in this case the attractions of the Enterprise Zone, are much more powerful influences than Metro. And the indications are that this will continue to be the case as developers are attracted to the riverside areas where subsidies for development are available as part of the regeneration efforts of the Urban Development Corporation.

3.6 Offices

Overview. Office employment in Tyne and Wear witnessed substantial growth until the late 1970s, particularly in public sector administration and services. This growth was accompanied by an increase in the development of new office floorspace, primarily within Newcastle city centre but also at Regent Centre, a new out-of-town office complex built in the 1960s and 1970s.

Throughout much of the 1980s, growth in office employment, development and office rentals was curtailed by recession. New developments, completed in the early 1980s but conceived in the more buoyant conditions of the 1970s, were slow to let; it took time for the sluggish market to catch up even with this small increase in demand and poor market conditions discouraged further significant development.
However, a degree of economic recovery - felt most strongly in the service sector - revived the office market in the area in the late 1980s. City centre office rentals, virtually stagnant in the early part of the decade, have doubled over the last two or three years, up from £5 - £6/sq. ft. for prime space to around £10/sq. ft. by 1989. Available space was quickly let and a shortfall began to develop. Even so, floorspace completions in 1987-89 were at the same level as at the start of the decade and had not recovered to the levels achieved in 1978 and 1980 (see Figure 3.10). Office supply is, at present, out of phase with demand but this is set to change as new developments - some now under construction, others still at the proposal stage - are completed and come onto the market in the next few years.

Spatial distribution As with retailing, Newcastle city centre is the pre-eminent office location within Tyne and Wear, serving as the regional capital with regional branches of major concerns of both the private and public sectors as well as offices where city centre face-to-face transactions are important. But there are also significant office developments around the periphery of the city centre and at a number of key secondary centres and out-of-town locations.

The map of commercial floorspace completions over the period 1984 to 1989 (Figure 3.11) points to the importance of two main locations: Newcastle city centre and Team Valley, Gateshead. The city centre has continued to strengthen its role as the prime office location, attracting investment both in refurbishment (often smaller office suites in the heart of the commercial area or on the Quayside) and in new building (usually larger developments, mainly on the periphery of the city centre). In the case of Team Valley, once again Enterprise Zone designation has been the key inducement, attracting speculative office development to this long-established industrial estate for the first time. Team Valley became an important out-of-town office location in the 1980s, accommodating especially those companies requiring smaller office suites. In addition to the city centre and Team Valley, the map also shows a build up of offices at South Shields (Denmark Centre, Cookson House and other town centre redevelopments), Sunderland (the conurbation's second largest office centre) and in Washington new town.
Figure 3.10
Office Floorspace Completed in Tyne & Wear 1978–1989

Key:
- New Developments
- Conversions and Refurbishments
Figure 3.11

TYNE & WEAR

Office Floorspace Completed 1984–1989

Floorspace (sq. m.)

- 1001 - 9999
- 501 - 1001
- 201 - 501
- 101 - 201
- 1 - 101

- Metro Stations

Source: Local Authority Planning Department Records
There appears to be no clear relationship between the pattern of development and Metro. Statistical analysis of office land use change - again using JIS data - on all changes to and from office uses indicated no statistically significant relationship between Metro and the location of changes in office provision. And no causal link was suggested by developers and agents. As far as the city centre is concerned, all centrally-located offices are well within walking distance of a Metro station and it is now largely taken for granted. As in retailing, Metro has helped to maintain the city centre's dominance and, indeed, helps it to function efficiently. But those developing offices in the city centre - and those businesses seeking premises there - do so basically because they want to be at the prime location. Metro is not a particular consideration - the availability of car parking for senior staff is more often regarded as an important issue.

Outside the city centre the attractions provided through public policy incentives are, once again, evident. The southern part of Team Valley designated as an Enterprise Zone is not well-served by public transport and is quite far from the Metro but this has not discouraged development. It is, therefore, interesting to note that the only significant new out-of-town office location created in the 1980s has not been at a suburban Metro station - some of which do have capacity for office development - but well away from the Metro system.

The pull of competing attractions - competing with Metro - continues to be important in relation to current and also proposed office developments. The main office scheme now under construction is the Newcastle Business Park, at an off-centre riverside location at Elswick, west of the city centre. This private sector speculative development, undertaken with the support of the Development Corporation, is again on a site designated as an Enterprise Zone, thus benefiting from tax concessions. The first units will be available in May 1990 and this will be the new office-centre/out-of-town office location for the early 1990s. It is not particularly well-served by public transport and is at least two miles from the nearest Metro station.

Looking further ahead, there are several major office projects at the proposals stage or seeking planning permission. Many are highly speculative and are unlikely to be built or may otherwise be scaled down: if all current proposals were to materialise, office space in the conurbation would be increased more than 50%, an expansion far in excess of demand. Some of these schemes are in, or close to, the city centre and
the most substantial project at East Quayside, involves the construction of over 20,000 sq. metres of office space; this is currently awaiting the outcome of a public inquiry. The East Quayside scheme, and several other riverside schemes at earlier stages of formulation, is supported by the Development Corporation; the Corporation's activities over the next few years will act as a major encouragement for such developments acting, like the Enterprise Zone, to 'distort' property markets and structure development opportunities. But while these various proposals have not been formulated in relation to Metro or, more generally, to public transport, the issue of public transport accessibility is coming to be seen as more and more important. In the case of the East Quayside, there are worries about poor access to the city centre and fears that the transport infrastructure will be unable to cope with the resulting additional demands placed upon it. Consequently, as well as highway and parking schemes, there has been discussion of the possibility of extending Metro to serve the Quayside - a recognition of its potential in making the East Quayside development successful. However, it needs to be stressed that the choice of this location came first; public transport considerations have followed with a realisation of the accessibility problems.

Finally, a much more direct connection between office development and the Metro arises from the PTE's new efforts to market development sites at Metro stations, particularly at Jesmond and St. James stations. At Jesmond, office and retail development is proposed on top of the station while at St. James a large site next to the station (currently a surface car park) is being marketed again for office development, having failed to attract developer interest in the past (see Figure 3.12).

3.7 Industry

Overview. Tyne and Wear has witnessed the long-term decline of its traditional industrial base, coupled with the creation of a newer 'branch plant' sector (comprising branch factories of companies based elsewhere) which itself has been undergoing restructuring. In the 1980s, there have been further closures and job losses within traditional industries such as engineering and shipbuilding, but also losses within the branch plant sector of the economy, especially during the recession at the start of the decade. Manufacturing output and employment have continued to FALL. Yet some new industrial developments have taken place in the area, including the establishment of a few major new branch plants. And, in the late 1980s, there has been some revival in private sector investment in industrial property.
• In Newcastle upon Tyne – the regional office centre.

• On the modern Metro Rapid Transit System

• 9,142 m² (2.25 acres) of land, adjacent to St James Metro Station and St James Park football ground. The site is shown in white outline.

• Site ideal for a major high quality office development – possible 2 storey over the Metro Station box, 6 storey elsewhere – together with ancillary uses (e.g., retail, eating, leisure and recreational facilities).

• Well served by the Metro (5 minute service), cross-city buses and long distance coaches. Convenient for British Rail’s Central Station (by Metro or 10 minute walk) and Newcastle International Airport (7 miles).

• Access to all main services

• 125 year ground lease offered

• Viewing – the site may be viewed at any time.

Please note: These particulars are given without any warranty as to their accuracy and no reliance is invited on any price or measurement.
Overall, though, annual floorspace completions in the industrial property sector have fallen during the 1980s. As in housing, this is attributable to the considerable decline in public sector construction. Formerly, the public sector dominated the picture; the winding up of Washington new town and cutbacks in expenditure by English Estates and the local authorities severely reduced the public sector contribution while, at the same time, private sector interest was stimulated by the designation of the Enterprise Zone.

Between 1984 and 1989, nearly 304,000 sq. metres of new industrial floorspace was completed in the County. A substantial proportion of this (40%) was accounted for by the new Nissan car plant (two phases) and the associated Ikeda car component plant, both within the Washington/Sunderland area. The Enterprise Zone has attracted some significant new development as well, notably smaller speculatively-built factory units; excluding Nissan, about 40% of new floorspace in Tyne and Wear built in the first five years of the Zone's designation, 1981-86, is located within the Zone, primarily at Team 91% of new industrial Valley. Altogether, floorspace in the 1984-89 period was developed by the private sector.

As Figure 3.13 shows, industrial property development is dominated by the major projects, especially Nissan, and investment in the Enterprise Zone. Leaving aside the major projects there is evidence of a modest recovery in private investment in the late 1980s from a low point in 1986, with rising rents and land values, but industrial property still remains less buoyant than the retail, commercial or housing sectors.

Spatial distribution. In the previous study, it was concluded that, of all the property sectors, industrial development was least affected - indeed it was unaffected - by Metro. The present study confirms the longer term validity of this view.

The map of floorspace completions over the 1984-89 period (Figure 3.14) reiterates again the importance of Nissan and the Enterprise Zone at Team Valley. Nissan's impact is further reinforced by the addition of some new component supplying factories and the associated development of Boldon Business Park. These developments are clearly distant from Metro and unrelated to it. Nissan sought a flat greenfield site located close to the A19 - a site which was, in fact, very poorly served by public transport; and the Team Valley developments underline the attraction of Enterprise Zone incentives.
Figure 3.13
Industrial Floorspace/Units Completed in Tyne & Wear 1984–1989

Key: □ Public  ■ Private
(Nissan/Ikeda shown separately)

Floorspace

No. of Units

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Figure 3.14

TYNE & WEAR

Industrial Floorspace Completed 1984–1989

Source: Local Authority Planning Department Records
There are, in addition, industrial developments at a number of sites along the Tyne and also at peripheral locations in northern Tyneside. But only 5 out of 44 Metro stations received new industrial floorspace within a radius of 0.5km of a station: Kingston Park, Palmersville, Bede, Jarrow, and Pelaw. In these cases, it would be difficult to argue any relationship with Metro. These areas were zoned for industrial use; the Airport Industrial Estate near Kingston Park and Palmersville are earmarked as strategic industrial sites, while Bede and Jarrow are long-standing industrial sites and the little new floorspace added at Pelaw represents industrial redevelopment within an Industrial Improvement Area. Moreover, at Palmersville and Bede new stations have been added to serve developments; development came first while stations - in response to demand - followed.

Statistical analysis once again revealed no statistically significant relationship between Metro and industrial land use change. Interviews with developers and agents also confirmed the findings from the earlier study, that industry was far more concerned with trunk road access than with public transport. Ease of development - clearly greatest on greenfield sites rather than in redevelopment areas - was deemed important as was the availability of incentives, notably through Enterprise Zone designation.

Looking ahead, the pattern of future industrial development seems likely to be set by public policy coupled with land availability and road transport infrastructure. A new industrial development axis is emerging along the A19 corridor incorporating the Boldon Business Park and Sunderland's Enterprise Zone sites, designated in April 1990 in response to shipyard closures. The eastern side of the Tyneside area may also see further industrial development on industrial estates at Tyne Tunnel and New York, again attractive because of good trunk road access and sites for industrial development may be made available on the western side of the conurbation close to the new Western bypass. None of these areas are served by Metro. But two locations served by Metro are planned for some industrial development supported by Tyne and Wear Development Corporation. The Royal Quays site near North Shields and a site earmarked for a Science Park at Manors in Newcastle are served by Metro but in neither case is there evidence that Metro has had a significant effect on planning or development decisions.
Finally, changes in the spatial distribution of employment have been examined in order to consider whether employment in the conurbation has 'gravitated' towards the Metro. Spatial patterns of employment change will partly reflect changes in land use and development but may also reflect any additional intensification of employment opportunities and economic activity in particular areas.

Employment data is available for 1984 and 1987 from the Department of Employment's Census. As with the house price data, it is available at the post-code sector level, and, again, a smooth 'surface' of employment change has been derived (Figures 3.15 and 3.16): this interpolated surface gives a conceptual 'access to new jobs' measure rather than measuring employment change at particular points. The map of changes in part-time employment strongly reflects retail development as is to be expected, with strong growth in Newcastle city centre, the MetroCentre and new out-of-town retailing at Kingston Park (north west of Newcastle) and Boldon (to the south of South Shields). As outlined in the discussion on retail development, there appears to be no clear link with Metro apart, perhaps, from the strengthening of the city centre as a dominant retail centre.

The distribution of change in full-time employment is more complex. Here, the city centre is not an area of growth. There are general areas characterised by substantial decline, notably in Sunderland (shipyard closures), Houghton-le-Spring (coke works and related closures), east Newcastle and South Shields. Much of the Metro runs through inner areas of the conurbation where employment has been declining. Areas of growth include Washington, especially Nissan; north west Newcastle, particularly around the airport; and the northern suburbs of North Tyneside, including Killingworth new town.

Statistical analysis was undertaken on the spatial distribution of changes in both full- and part-time employment. The method used was the same as for the house price data, comparing data on change for various shapes and sizes of possible 'areas of effect' centred on Metro stations with data for comparable randomly-selected 'control' areas. There was no statistically significant difference between employment change around stations and the randomly-selected control distribution. There appears, therefore, to be little, or no, spatial relationship between employment change and the Metro.
Figure 3.15 Change in Part-time Employment in Tyne and Wear. 1984-87.

Source: Employment Census, Department of Employment.

Note: Derived surface, to be interpreted as 'access to new jobs' measure.
Figure 3.16 Change in Full-time Employment in Tyne and Wear 1984-87.

Source: Employment Census, Department of Employment.

Note: Derived surface, to be interpreted as 'access to new jobs' measure.
3.9 Conclusions

The previous study found that, in general, land use, property development and property prices had not been greatly affected by Metro. The present study has come to the same conclusions; even in the longer term, property markets (and the distribution of employment) have been little influenced by the Metro system.

The Metro has changed patterns of accessibility in the conurbation but this has had little impact on the spatial functioning of property markets. Land availability, the Enterprise Zone, and other urban regeneration initiatives have been much more important factors bearing on the location of development.

Where development has taken place near Metro stations, proximity to Metro appears to have been largely fortuitous. Developers have not given much consideration to Metro in making their locational decisions and see it as a factor of only minor significance.

Nevertheless, Metro has played a part in at least strengthening the city centre and some other centres as retail locations and helped to underpin the city centre as an office location. But it must also be said that competing attractions - notably the Enterprise Zone - have helped pull development away from areas served by the Metro.
4. OVERVIEW AND CONCLUSIONS

The first part of this report examined the operation of the Metro since 1984. In many respects, it is a picture of continuity, with no significant changes to the network or to the service Metro provides. Public transport deregulation has largely removed integration and, consequently, reduced passenger transfers from one mode to another. But the principal change since the mid-1980s has clearly been the substantial decrease in Metro patronage, caused partly by deregulation but also stemming from a reduction in the overall use of public transport in Tyne and Wear. Metro has, however, successfully adapted to falling patronage and a changed operating environment.

The earlier report on the impact of the Metro showed that it had had little effect on the property market and on the spatial distribution of development. The present study shows that this has continued to be the case even in the more buoyant economic climate of the late 1980s. Developers have not sought to build new houses, shops, offices or factories near Metro stations; after a modest reaction to Metro as it opened, house prices have not increased faster near stations, and neither has employment growth been concentrated near Metro stations. But Metro has, at least, helped to ensure the continued viability of some centres, notably the city centre.

This lack of an impact on land use and property development may appear to amount to a somewhat negative conclusion which offers little support to those who argue that rapid transit produces considerable non-user benefits through development (and even the non-user benefits for private transport users appear quite limited). But perhaps two key points should be borne in mind here. First, Metro may support local economic regeneration by improving the 'image' of the area and, indeed, helping the conurbation to function efficiently. Second, evidence from elsewhere does suggest that rapid transit alone will not have much impact on development.

Both of these points lead us into the realms of speculation. It is not known what effect the Metro may have on encouraging regeneration, though it undoubtedly helps to give the area a modern image which may make it more attractive to property developers and business. The second point, on impacts elsewhere, is based on firmer evidence - though it inevitably leads to speculation about how a different outcome might have been obtained in Tyne and Wear.

Evaluations of transit systems in North America and Germany suggest that the provision of such a system
may facilitate development but it is rarely enough to generate or attract development. Development generally takes place at or near stations only when other factors are favourable - in particular, when land is made available and sites are assembled and when this is undertaken in conjunction with strong planning policies promoting development at these locations. It is the combination of factors which is important in structuring development opportunities such that development is channelled to those areas served by the rapid transit system.

In Tyne and Wear there has been no such combination of factors working together to promote development near Metro stations. Relatively little attention has been given to assembling and marketing sites near stations (but even where this has been done, at Gateshead and St. James, development has been difficult to achieve). There have not been strong planning policies channelling development at Metro-served locations. Above all, however, very attractive competing opportunities have been created - at the Enterprise Zone and in the Development Corporation's areas - which have promoted development away from Metro.

A strong combination of policies and actions might have stimulated more development near Metro. In some cities, transit authorities have had some success with marketing sites and establishing joint ventures with developers. Had the Enterprise Zone been designated near a Metro station, development would probably have followed - though this would almost certainly have demonstrated the effect of the Zone rather than the Metro. The evidence from other cities and also from Tyne and Wear does suggest that the potential impact of rapid transit on development should not be overstated even when this combination of favourable factors is created. It is worth stressing that only a minority of journeys are undertaken by rapid transit; and other factors - such as road access for industry - may remain pre-eminent.

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Main Findings of The Study

Tyne and Wear is the first area in Britain to have integrated fully all its public transport operations. The process began in 1973 and was completed in March 1984, when the final section of the Metro came into service. The key steps in the process were the conversion of the former BR local rail lines to light rapid transit (Metro), the construction of a new cross-Tyne link by Metro, the restructuring of bus services including a substantial reduction in central area bus movements, and the introduction of through ticketing on every part of the public transport system. These measures provided a unique opportunity to study the social and economic impact of a major area-wide change in the supply of public transport. The Metro Monitoring and Development Study was set up in 1982 to undertake this task. The main findings of the study are summarised here.

Travel by Public Transport

- Since the introduction of the Metro Integrated System, the number of journeys made by public transport in Tyne and Wear has increased significantly, at a time when there has been a sharp decline at the national level.
- Public transport demand in Tyne and Wear has grown despite the adverse effects of population loss, unemployment, declining economic activity and growth in car ownership.
- The Metro Integrated System fulfils a broad diversity of travel needs, for social and leisure purposes as well as work.
- It has succeeded in the objective of improving the overall level of public transport service on cross-Tyne links and in the busiest corridors of travel to and from the Newcastle/Gateshead central area.

Metro

- The Metro carried an estimated 61 million passengers in 1984/5; Saturday is the peak day for Metro travel; large numbers of journeys are made between the morning and evening weekday peaks and in the evenings.
- As many Metro passengers are drawn from car-owning households as from households which do not have the use of a car; more than 30% of passengers interviewed in 1984 held a driving licence.
- The Metro is important in serving the needs of people generally dependent on public transport—such as children, unemployed, elderly and disabled persons.

Buses

- Bus-only journeys account for over 75% of all travel by public transport in Tyne and Wear; nearly half of weekday Metro passengers interviewed in 1984 also used a bus in the course of their journey.

Interchanging

- The amount of interchanging has increased since the Metro system came into operation; in 1984 about 18% of all public transport journeys were made by people using more than one mode; 54% of all bus/Metro journeys pass through the main purpose-built interchanges.
- The ease and convenience of interchanging has helped passengers to accept it as a feature of the system; most of the people questioned in attitude surveys and discussions said they preferred the integrated system to the pre-Metro system and thought that integration had made their journeys faster and easier, particularly into the Newcastle/Gateshead central area.
- Though the Metro Integrated System has made central work journeys by public transport faster and easier, there is no evidence of any change in the catchment areas of other employment centres.

Traffic Conditions

- The large-scale reduction of bus movements in the central area has helped the road network to absorb traffic growth while maintaining an improved level of performance: between 1980 and 1984 average car journey speeds in Newcastle city centre increased by about 20%.
- While releasing central area road space for private transport, the Metro has also attracted journeys that would otherwise have been made by car: since the introduction of the integrated system, the growth in car traffic in the central area has been 3%-4% less than in the outer area.
- Fewer bus movements in the central area have meant fewer road accidents, particularly for pedestrians.
- In a number of centres the pattern of pedestrian movement has changed in response to the Metro and related bus routeing. Pedestrian flows in the northern part of Newcastle city centre, particularly around Monument and Haymarket stations, have increased substantially.
- Over 1 million journeys a year are made by park-and-ride Metro passengers, especially trips to and from the central area; about 10% of Metro passengers interviewed in 1984 used a car at one end of their journey.
The number of cars parked at stations has approximately doubled since 1977 owing to a substantial increase in park-and-ride travel.

The scale of park-and-ride travel, however, has had no significant effect in reducing either parking demand in the central area or traffic flows on the major radial routes into the city centre.

Access to Opportunities

Accessibility throughout Tyne and Wear has generally improved, particularly in areas served by the Metro. Journey times by public transport have been reduced throughout the County by an average of about 2 minutes – a 7% improvement. The use of the Metro has produced an average saving of 6 minutes per journey, an improvement of 17%.

Newcastle city centre has made substantial gains in public transport accessibility. The numbers of people living within 30 minutes travel time by public transport have grown by over 35%. The whole of Tyneside is now within 40 minutes of the city centre, and travel times are shorter even from places not on the Metro route, such as Washington and Sunderland.

For some locations the Metro Integrated System has brought slight increase in travel times to Newcastle city centre, but their scale is very small compared to the overall time savings on the system.

Long distance journeys between other centres via the Metro cross-Tyne link take on average about 10 minutes less than previously.

Jobs

Total jobs accessible within 20 minutes travel time of Newcastle city centre have increased by 20%.

Public transport has held its share of the travel-to-work market, particularly for people employed in the central area.

In 1983 work journeys by Metro averaged 7.7km; bus-only work journeys had an average length of 5km, a 24% reduction on the pre-Metro average.

Shopping

In 1984 public transport was used by 65% of people shopping in Newcastle city centre; 25% of all central area shopping trips made use of the Metro.

There was a shift away from the use of cars for shopping trips toward the use of Metro.

People have been willing to travel further to do their shopping than previously, because of the Metro and other public transport improvements.

Many of the shop managers interviewed in Newcastle and other centres believed that the Metro had helped to increase their level of trade.

The role of Newcastle as the primary centre for durables shopping has been strengthened; overall, the larger centres served by the Metro appear to have captured trade.

The Metro Integrated System has not enabled main centres other than Newcastle to retain levels of durable shopping.

In several centres, the focus of trade has shifted toward the Metro route, while shopping activity has increased in areas close to Metro stations and bus routes.

Leisure

In 1984, leisure trips formed the majority of Metro travel in the evenings and on Sundays, particularly by young people; the Metro carried more than 10 times the leisure trips made on the former BR network.

There was evidence that the travel benefits of the Metro Integrated System had increased the number and frequency of trips to leisure attractions on its route and had widened their catchment areas.

Land Use and Development

Housing

Good access to the Metro appeared to have had only a very localised effect on the housing market in inner urban areas; prices had risen in areas such as Jesmond and housing redevelopment had taken place in the vicinity of stations at Chichester, Byker, Howdon and Percy Main; in a few localities, there was evidence that properties very close to the Metro line had lost some value.

Metro is helping to consolidate the attractiveness of outer residential developments at Kenton Bank Foot and West Monkseaton.

Property developers thought Metro access important only for lower priced development in the inner areas.

At a time of sharp reduction in the scale of public sector house-building, there was no evidence that the Metro system had affected the choice of site or type of housing developed by the public sector.

Properties near the Metro route had gained and maintained a slightly higher market value in response to Metro development.

Shops

Retail activity in Newcastle city centre has been strengthened by the savings in travel time, improved transport connections and freedom from parking difficulties enjoyed by Metro users.

Development interest has grown in shopping floorspace near Monument station; adjoining schemes have drawn on the attractions of both the Metro and Eldon Square.
Developers thought that the Metro Integrated System had also made other main centres such as Gateshead and South Shields more attractive for shopping.

Offices

The Metro system was considered to have had no discernible effect on the locational pattern of new office development, though improved access by public transport had encouraged some corporate tenants to retain central area floorspace.

Industry

With the low demand for industrial property in the area, the Metro system had exerted no significant impact on locational decisions.

Economic Performance

Overall savings in operating costs were estimated to amount to £6.8 million in 1984/85 against Metro operating costs of £14.9 million. The Metro Integrated System is estimated to have yielded a net benefit of £29.85 million in 1984/85. Its financial performance has been significantly better than would have been achieved by public transport if the pre-Metro system had remained in operation. Its benefits to public transport passengers, other road users and the community at large substantially exceed its operating costs.

<table>
<thead>
<tr>
<th>Benefit (+)/Cost (-)</th>
<th>£m p.a.</th>
<th>£m p.a.</th>
</tr>
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<tbody>
<tr>
<td>Public Transport Operation</td>
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<tr>
<td>Bus Operating costs</td>
<td>+ 12.50</td>
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<tr>
<td>Metro operating costs</td>
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</tr>
<tr>
<td>BR operating costs</td>
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</tr>
<tr>
<td>Revenues</td>
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<td>Passenger Time</td>
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<td>Existing users</td>
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</tr>
<tr>
<td>Generated traffic</td>
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<td>+ 14.36</td>
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<tr>
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<tr>
<td>Accident costs</td>
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<td>Highway user costs</td>
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<tr>
<td>Total</td>
<td></td>
<td>+ 29.85</td>
</tr>
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ESTIMATED ANNUALLY RECURRING COSTS AND BENEFITS OF METRO SYSTEM

Even on the least favourable set of assumptions about this 30-year period, the Metro benefits would cover 73% of the net capital costs of the system.

The first-year rate of return on the net capital cost of the Metro is estimated to be 8%.
APPENDIX 2

Developments organisations consulted

Local Authorities

Gateshead MBC
Newcastle CC
North Tyneside MBC
South Tyneside MBC
Sunderland MBC

Developers

Wimpey Homes Holidays
North Housing Association
Bowey Homes Ltd
English Estates North
Ron Norman Ltd
Stanley Miller (Homes)
Washington Developments Ltd

Other agencies and organisations

Tyne and Wear Development Company
Department of the Environment (Regional Office)
Price Waterhouse Ltd
Halifax Property Services
Hotspur Estates Ltd
Sanderson, Townend and Gilbert
Tyne and Wear PTE
Tyne and Wear Development Corporation
Northern Development Company
Bernard Thorpe & Partners