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THE IMPLEMENTATION OF WORKPLACE TRANSPORT DEMAND  
MANAGEMENT IN LARGE ORGANISATIONS

TOM RYE

A thesis submitted in partial fulfilment of the requirements of The  
Nottingham Trent University for the degree of **Doctor of Philosophy**

This research was carried out in collaboration with Nottinghamshire  
County Council, Department of Construction and Design

June 1997

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**ABSTRACT**

Workplace transport demand management (TDM) is a means of reducing the number of employees who travel to work on their own by car. TDM programmes aim to do this by offering a package of incentives and disincentives to employees to get them to consider changes in their travel behaviour.

This thesis examines attempts to develop workplace TDM at five public sector employers, one in southern California, three in Nottingham and one in Hertfordshire. The degree to which plans for workplace TDM were implemented at each site is examined: only one of the case study workplaces had a fully developed TDM programme up and running, whilst the others were in various stages of planning. Employee attitudes to TDM and related issues are also considered.

The degree to which TDM was implemented at each site is then explained with reference to organisational theory. Factors such as organisational culture, power, organisational structure and communication are found to be critical to the successful development of TDM at the workplace. The theory of corporate social responsibility is also found to be helpful in explaining the degree to which each workplace adopted TDM. Finally, a model of implementation is postulated.

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## **CHAPTER ONE: INTRODUCTION**

Employees generate commuter trips, usually at peak hours, and transport planners are now searching for ways to manage these trips as part of the general drive to reduce demand for road space so as to reduce congestion and pollution. To do this, some are looking to large employers (those with more than 100 employees) to, firstly, spread the message that demand for transport can no longer be catered for fully but that instead the demand must be managed; and, secondly, to reduce that demand themselves by using targeted incentives and disincentives to change their employees' travel behaviour, especially for trips to work.

Former British Transport Minister Steven Norris has highlighted the role of employers in encouraging employees to cycle and to carshare to work; and the recent UK Government Green Paper on Transport (HMSO 1996) explicitly mentions employee transport plans as a means of reducing urban traffic levels. Furthermore, targeting employers is an integral part of local government travel awareness campaigns such as Hampshire's *Headstart* and Hertfordshire's *Travelwise* (Department of Transport 14/06/95; Local Transport Today 1995a; Hertfordshire County Council 1994). Often, wishing to lead by example, the local authority departments that are promoting travel awareness are looking at their own workplaces as test sites for their ideas. Furthermore, as the importance of private non-residential parking<sup>1</sup> rises up the transport agenda (see for example Department of the Environment 1994), so the control that employers can exert over the way that their

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<sup>1</sup> .Private non-residential parking is that which businesses provide on their land for employees and visitors and which is out of the control of the local highway authority. (Unlike for example on-street parking.) (See also glossary of terms.)

---

employees use that parking is seen as increasingly crucial. In short, the idea is growing that employers could manage the impact of both commuting and business travel, and that this could be done by developing employee transport plans, which should provide a coherent package of targeted incentives and disincentives to influence an employee's choice of mode both for commuting and for travel on works business.

## **1.1 Development of this research**

This research is entitled "Implementing Workplace Transport Demand Management (TDM) in Large Organisations"<sup>2</sup>. It is concerned with implementation because, at the time of writing (May 1996), only a very few organisations in the UK had managed to implement any measures aimed deliberately at influencing their employees' choice of mode for the trip to work (see Chapter 2). This high failure/low implementation rate is a notable aspect of these programmes and this makes them doubly worthy of investigation in the UK context. It appears that while there is much interest in the concept of managing demand for transport at the workplace, in practice this has proven to date quite difficult to achieve, and so this research will explore some of the reasons for this "implementation deficit" by considering the experience of trying to implement elements of workplace TDM at four workplaces in two British towns.

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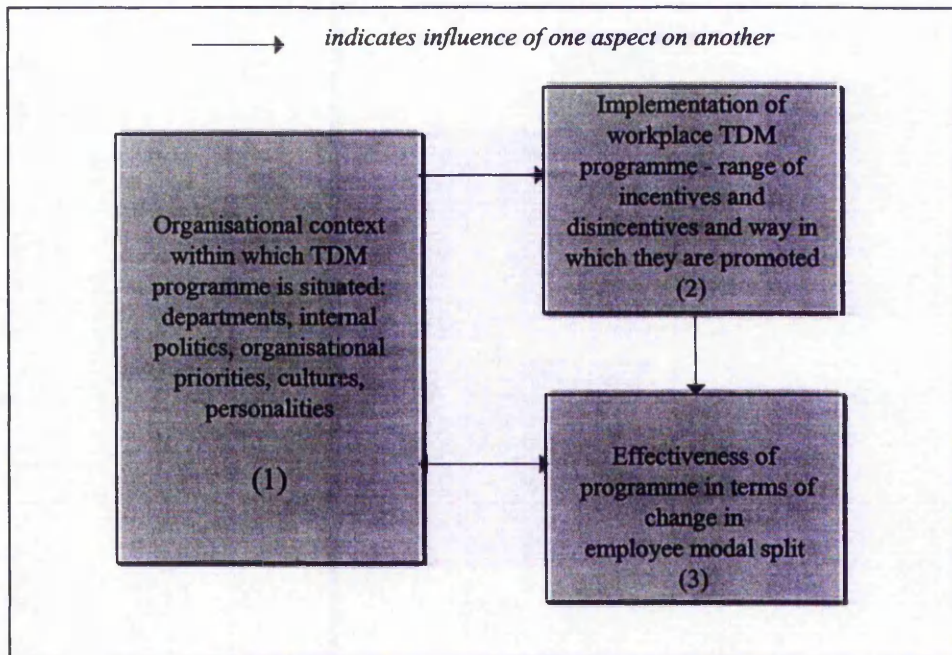
2. Throughout this thesis the phrases "employee transport plan", "commuter plan", "rideshare programme" and "workplace TDM programme" are synonymous, meaning an integrated package of incentives and disincentives aimed at influencing employees' choice of mode to work. These differences arise because of different terms in use in the UK and US which are themselves the product of the relative novelty of the subject.

---

Workplace TDM has its origins in the USA, where some employers have had programmes in place for as long as fifteen years. Some of these employers can now as a result of their TDM programmes point to significant changes in modal split for employee trips to work. Much of the literature on TDM in the USA focuses on such employers and the content of their programmes, while the (many more) workplaces where the change in modal split was less than had been hoped have not been examined in as much detail. This thesis helps to restore the balance by drawing on the experiences of an employer which fell into the latter category. The research considers a case study employer in the USA where a workplace TDM programme had some influence on employee modal split, but did not meet its targets. The case study is considered valuable both because it examines the reasons why this particular programme was less successful than had been hoped, and also because it allows comparisons to be drawn between the experience of implementing workplace TDM in the US and UK.

## **1.2 Objectives**

This research takes the view that a workplace TDM programme must be seen within the context of the organisation at whose employees it is aimed. To focus only on the incentives and disincentives which make up the programme is to miss the point that the programme must be implemented within an organisational context and that this context inevitably affects if and how the programme is implemented. This is shown conceptually in Figure 1.1, below:



**Figure 1.1: The organisational context of workplace TDM**

As Orski (1993, pp 337 and 338) comments on workplace TDM:

“...large expenditures do not always ensure program success, and lesser expenditures can sometimes be as effective”...“the program depends on intangible, difficult-to-quantify factors: the commitment of senior management, the aggressiveness with which the program is promoted, and the status and visibility of the employee transportation co-ordinator [employee in charge of the program].”

Chapter 2 of this thesis argues that many studies have focused only on boxes 2 and 3 in Figure 1.1 above; it is the complexity of the relationship with elements in box 1 which is explored in the following chapters of the thesis. In order to direct the exploration, and in the light of the literature review, some hypotheses have been developed, and these are outlined in Section 1.4 below. It should be noted that these are guiding hypotheses; because of the qualitative nature of the work they were not regarded as necessarily fixed - as Marshall and Rossman (1989) argue, in qualitative case study research hypotheses

must remain open to alteration as newly-gathered data gradually casts new light on the research questions. Qualitative research is explored at greater length in Chapter 3.

### **1.3 Guiding hypotheses**

As noted above, these hypotheses were developed in the light of the literature review in Chapter 2. In addition, they were shaped by the researcher's own experience of attempting to implement workplace TDM at the Nottingham Trent University, and also as a result of discussions with other people who have worked on TDM projects both in the UK and the USA. These experiences and discussions highlighted the "organisational peripherality" of workplace TDM, and so the hypotheses reflect this research interest. The hypotheses are as follows:

1. TDM at the workplace is effective in reducing the number of employees commuting by car on their own only if there is organisational commitment to it. Organisational commitment is often cited as an important factor in the successful implementation of workplace TDM (see for example MTRU 1995, Orski 1993, Giuliano 1992, and Ferguson 1990). It is however an ill-defined concept - none of the authors offers a definition of organisational commitment. This thesis recognises the difficulty of defining organisational commitment but attempts to do so by assuming that "proxy" factors such as finances, staffing, the length of time taken to implement programmes, levels of management participation in any TDM programme, public statements of support for TDM, and employee perceptions are all manifestations of organisational commitment. It is also recognised that it is not possible to definitively measure organisational commitment but, by comparing these "proxy" factors across several organisations, it is possible to come to conclusions about

relative levels of organisational commitment and its relationship to the success of the TDM programme at the various workplaces.

2. The factors which affect organisational commitment are:
  - a) The personal interests of the actors involved in the implementation of any programme. These actors include department heads, Chief Executives and other senior managers. Levels of organisational commitment are affected by these people's relationship with the individual or department responsible for implementing the TDM programme, and by their response to any external pressures such as regulations requiring workplace TDM, community lobbying, or external publicity. This follows from statements in the literature stressing the importance of senior management commitment to workplace TDM. Again, management commitment does not lend itself to absolute measurement but it is possible to draw relative comparisons between organisations.
  - b) The degree to which the organisation is able and willing to enable its employees to adapt its work patterns to the demands of TDM (e.g. flexitime, tele-commuting).
  - c) The abilities and personality of the person responsible for co-ordinating TDM activities at that workplace (the employee transportation co-ordinator (ETC)).
  - d) The attitude of the workforce to TDM. This is an iterative relationship: employee attitudes to TDM both produce and are produced by organisational commitment.
  - e) The organisational characteristics of the employer that is trying to implement the TDM programme. These include its structure and culture, the role of leaders in the



organisation, and the way in which the employer manages pressure for internal organisational change.

3. To achieve a significant reduction in the number of commuters driving alone, workplace TDM also needs:
  - a) A local traffic congestion and/or air quality problem to be perceived by the employer and its employees.
  - b) To be required by regulation: voluntary compliance will not work.
4. The scope and effectiveness of workplace TDM measures will be influenced by factors such as the availability of transport infrastructure and alternatives (particularly public transport); and the location of the workplace in relation to other local land uses.

These hypotheses will be explored with reference to four case studies from the UK and one from the US. The hypotheses concern the operational details of TDM within the organisation; however, the reader should not lose sight of the different reasons why attempts may be made to implement TDM. At the regional level, these may include air quality and congestion problems; at the local level, congestion and the impact of commuter traffic on residents may become important issues; and at the level of the firm, TDM may attempt to address problems of parking, recruitment or equality.

The research will assess the guiding hypotheses in relation to relevant theories of organisational structure and behaviour, and use the findings to build on these theories in the way first advocated by Glaser and Strauss (1967) in their seminal work on grounded

theory building in qualitative research (see Chapter 3, Methodology, for a fuller discussion of this issue).

#### **1.4 Structure of the thesis**

The thesis has seven chapters, including the introduction. Chapter 2 reviews the relevant literature and explores in more detail some of the shortcomings of existing research which were mentioned in section 1.2, above. Chapter 3 details and defends the methodology used in this thesis, considering first of all the case study approach overall before setting out the methodological approaches used at each of the five case study sites. Chapter 4 sets out the findings from the first case study, the City of Irvine, California, reviewing the development of the City's workplace TDM programme and staff reaction to it. Chapter 5 sets out in some detail the results from case study research at three sites in the English city of Nottingham and at one in the town of Hertford. Chapter 6 compares and analyses the data from the case studies in the light of current policy and organisational theory. Finally, Chapter 7 draws together the strands of the study and considers the extent to which the hypotheses set out in Section 1.4 above were confirmed or rejected, or how the data has suggested that new conclusions should be drawn.

This introduction has briefly explained the context, scope and aims of the research. Chapter 2 now goes on to consider relevant literature in more detail and to show how this thesis can contribute to our understanding of workplace TDM.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction.**

This chapter aims to review the literature relating to workplace transport demand management (TDM) in order to set the following research in context and to highlight where it is thought a "research void" exists which this thesis could help to fill. The majority of the literature reviewed is applied and evaluative (of outcomes in terms of modal split) with little theoretical content and, it is argued, little reference to the sociological and organisational aspects of TDM despite the fact that the essence of TDM is to encourage people to change their travel behaviour within the organisational context of their employer. Furthermore, there appear to have been very few analytical case studies of the evolution and implementation of workplace TDM policies within specific workplaces.

Instead, case studies have largely focused on those employers whose programmes have been judged to be successful (in terms of change in employee modal split) and have examined only the obvious elements of each programme (for example, the scope of the carpool matching services offered) rather than considering the *process* whereby the whole programme was implemented.

### **2.2 Origins of TDM**

TDM began in the USA in 1972 when the 3M Company in St Paul Minnesota started a van-pooling scheme (see glossary) for its employees as an employee recruitment and retention tool, rather than because of concern about traffic congestion or air pollution.

Other large employers, especially in high-technology industries such as aerospace, which also had employee recruitment problems, followed suit in the next year or so. Examples include the Aerospace Corporation and Hughes Aircraft in Southern California.

Interest in TDM as a traffic management tool really took off with the first oil crisis of 1973-4 when the US Government sponsored a number of car-pooling programmes to attempt to reduce the energy consumed in personal transport. There were high hopes for these programmes which consisted in the main of area-wide computerised matching of potential car-pool partners; but these did not achieve the hoped-for results and two-thirds of the programmes ceased to operate as the energy crisis abated. (Brunso and Hartgen, 1983.) Although the 1973-4 pooling programmes aimed to cut vehicle miles travelled (VMT) by 20%, in fact they achieved a reduction of only 1.2% (Greening and Jackson 1984:111). A similar pattern of high hopes for TDM and lower than expected results emerged from the second energy crisis in 1979, although those car-pool matching programmes which had survived were better-placed to respond to the demands put upon them second time around.

However, during the late 1970s the concept of Transportation Systems Management (TSM) was developed. This aimed to integrate car-pooling and van-pooling schemes with specific low-cost infrastructure improvements (urban traffic control, and High Occupancy Vehicle (HOV) lanes on freeways to give car and van-pools a faster journey) as a means of getting the maximum capacity out of the existing road system, rather than building new roads. An example of this was the San Francisco Joint Institutional TSM Programme

which started in 1979 and which involved 14 large employers in central San Francisco. (Fink and Twitchell 1982.) Such TSM efforts were a notable development for a number of reasons: they were more than just car-pooling schemes; they involved private employers as well as the public sector; and some such as the San Francisco programme included staff within the participating workplaces whose job it was to co-ordinate the TSM effort.

During the 1980s more employers set up their own TDM programmes in order to serve the transport needs of their employees. These concentrated largely on providing van-pools and car-pool matching but also dispensed information on cycling and public transport for those employees who were interested. In a situation of high economic growth in which many firms found themselves (especially in California, Florida, around Washington D.C., in New England and the Pacific Northwest) employers had to have such programmes to offer as an employee benefit; they could also save on car-parking space thus freeing land for more buildings; and they portrayed a better corporate image to the local community if they could show that they were doing something to minimise the number of trips they generated. This last point was particularly important for employers, located in areas experiencing high growth, where local residents were often hostile to new development.

To cater to demands from employers, regional agencies set up to provide car-pool matching services (such as Commuter Transportation Services (CTS) in Los Angeles) diversified their range of services and expanded. Particularly in New England and around

Washington D.C., new public/private partnerships called Transportation Management Associations (TMAs) were founded to provide TDM services for a group of employers and to lobby for things such as better public transport serving the employers in their area. It must be emphasised that employers did not found or join these associations purely from altruistic concerns about traffic congestion, but also because they found themselves facing public opposition, in the form of local moratoria on growth, and trip reduction ordinances<sup>1</sup>, to the traffic congestion which their expansion might cause. (Orski, 1991.)

Finally, TDM has been adopted as a major tool to combat air pollution from traffic and it is to this end that the world's first mandatory regionwide TDM legislation was passed in Southern California in December 1988 (Siwek, undated). Other regions went on to develop their own legislation in response to Federal clean air laws and/or more local concerns. Thus the impetus for TDM in the USA over the last 20 years has come from, variously, a need to save energy; a need to attract and retain employees; a desire to reduce congestion (in a buoyant economy); and a requirement to reduce air pollution. These will be discussed in greater detail below.

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<sup>1</sup> A trip reduction ordinance (TRO) is a local law designed to limit trip generation. In the past they were usually limited to completely new developments, but increasingly they are applied to expansions of existing developments as well. The intent of these ordinances is to reduce the traffic impact of the development, and they usually require that developers take action to reduce the number of SOV trips generated to a proportion of that which is predicted to happen in a "do-nothing" situation. (ITE, 1989)

### **2.3 The U.K.**

In the U.K., TDM was promoted to a small extent by the Department of Transport in the 1980 booklet *Travel to Work - Opportunities for Employers in the 1980 Transport Act* in which the then Minister of Transport, Norman Fowler, said:

“This leaflet sets out the ways in which I believe the Transport Act 1980 can help you as an employer. Its theme is ridesharing, a term which covers a wide range of transport innovations from works buses to minibuses to car sharing by private individuals”.

“I believe it must make sense to encourage people to travel together whenever practicable. From my point of view as Minister of Transport this is one way of conserving energy supplies as well as reducing congestion on the roads. (Department of Transport 1980 page 1.)”

The legal changes in the Act allowed financial arrangements between car-sharers which up to then had been legal only for trips to and from church. A number of trial car-sharing schemes were set up at, amongst other places, West Midlands County Council, Heathrow Airport and at four sites in West Yorkshire (Bonsall, Spencer and Tang (1981); Parsons and Wood (1981)). In addition, a minibus-pooling experiment was conducted in Ilford (Greening and Jackson, 1983). The aim of these projects was to assess the potential of car and minibus-pooling for reducing peak hour traffic congestion. The experiments showed that this was an unlikely outcome as their main result was to divert bus passengers into car-sharing arrangements with existing lone-drivers, so that total vehicle miles travelled was unaffected but bus revenue fell. The pilot projects did not result in any long-term TDM services such as area-wide car-pool matching services being set up, unlike in the USA.

Car-sharing schemes in the UK in the early 1990s started up as an attempt to alleviate traffic congestion and to appeal to the environmental consciousness of the contemporary driver have been similarly unsuccessful - see for example Morris *et al* (1992) on an employer scheme at the A.A.'s Head Office in Basingstoke; and Bowers (1992) on his experience of organising an area-wide scheme in Lothian. None of these schemes, however, offered anything more than car-sharing in the first instance. They were not part of an attempt to provide a wide-ranging but integrated programme of alternative modes at workplaces in the areas in which they operated. The next section goes on to set out in detail the several components of such a workplace-based TDM programme.

## **2.4 Elements of a workplace TDM programme**

There are many elements which go to make up a workplace TDM programme. It is helpful to view them in sub-categories which relate to the type of behaviour change which they are trying to bring about. In the first group are measures which aim to increase vehicle occupancy for the trip to work, such as facilitating van-pooling (minibus pooling); car- and van-pool matching services; and parking management which gives the best workplace parking spaces to those who car- or van-pool to work.

A second group includes those measures which try to promote a change of mode. These include initiatives to increase the use of public transport such as special promotions, free or cheap tickets and advice on routes and timetables. Better facilities for cyclists and walkers also fall into this category, as does limiting the supply of or charging for workplace parking to give a disincentive to driving alone.



Into a third group fall measures which aim to reduce the peakiness of trips to and from the workplace - these include flexitime and staggered start and finishing hours. A related fourth group includes measures which aim to reduce the overall number of trips made to the workplace, such as telecommuting (working full or part-time from home or from a satellite work centre to reduce the need to travel) and compressed work weeks when the same number of hours is worked in a shorter number of longer working days.

Finally, there is a group of general measures which aim to increase employees' willingness to change their behaviour in some of the ways set out above. Principal among these are incentives (including money) to encourage people to take alternative modes; and provision of information for, and marketing of, alternative modes through various media. In addition, a workplace may have an employee whose role it is to devote all or part of his/her time to running the TDM or, as it is more often known in the US, rideshare programme. This person is known as the Employee Transportation Co-ordinator (ETC), and they can be critical to the success of the programme. What all the elements listed in section 2.4 have in common is that they are aimed at changing employees' commuting *behaviour* in order to reduce travel demand. (For a summary of these terms and their US or UK equivalents, see the glossary in Appendix 5.)

#### **2.4.1 Van-pools**

A van-pool is the US term for a minibus which carries a group of employees to and from work along a fixed route each day. It is driven by one of the employees who is usually

able to keep the vehicle at weekends for personal use. The van may operate from a park and ride site or offer a door-to-door service. Riders pay a monthly fare. The employer is usually involved in facilitating the van-pool by leasing the van, owning it (in some cases subsidising fares) or, at the very least, bringing a group of people together to form the van-pool. The largest van-pool operator in the USA is the Municipality of Metropolitan Seattle which has about 700 vans of various sizes which it loans to commuters. It also provides maintenance, fuel and insurance but, nonetheless, the programme makes an operating surplus (Municipality of Metropolitan Seattle 1992). Employers with large van-pool fleets include 3M in Minnesota (105 vans, 791 riders in 1985 (FHWA, 1990) and the Aerospace Corporation in El Segundo, California with 64 vans in 1992 (personal communication).

Torluemke and Roseman (1987:83) argue that van-pooling should be considered as "the first truly "new" commute transportation mode of modern times" and that "it overcomes the driver labor cost barrier of transit. It has more flexibility than transit, yet more stability than a car-pool". It does also have the advantage from the point of view of public transport providers that it is (usually) the responsibility of the employer and/or the individual employees to organise the van-pool and it puts the risk on them for providing a new service. In recent years the liability risks of van-pooling have become of greater and greater concern to employers such that some are now attempting to disengage from the operation of the van-pools, leaving them solely to the employees involved.

Because of the time penalties involved in picking up a large group of people, but more importantly because of the cost of van-pooling, it is usually considered to become cost-competitive with the private car for journeys of more than about 25 miles one way (Bailey 1983). The fare charged has to include a portion to pay off the capital cost of the van and since they are usually leased, the sum has to be paid back within the lease period. Torluemke and Roseman argue, however, that if the working life of vans is extended, fares can be kept much lower and so van-pooling becomes competitive at much shorter distances. Alternatively, employers can subsidise fares.

The behavioural aspects of van-pools should not be overlooked. Discussions with Californian ETCs (personal communication, 1992) suggest that the internal politics of a van-pool can be very delicate and that in the early stages, at least, a group in a new van-pool may require considerable "nurturing"; but, if it survives the difficult first few months, the group will probably achieve stability (as long as people are not laid off by the employer as is currently happening in Southern California) - indeed people become very attached to the group and to the van.

#### **2.4.2 Employer-based Car-pools.**

In a typical U.S. suburban employment centre environment, many employees travel long distances to work (the 1980 average trip length to work in the US was 8.1 miles (Mowlan and Stewart, 1991), and there is usually a lack of bicycle, public transport and, often, pedestrian facilities (e.g. pavements). These factors combine to make the most practical

and easily set-up alternatives to driving alone to work car-pooling (where people in the car-pool alternate vehicles and driving responsibilities) or car-sharing (lift-giving).

Obviously car-pooling offers monetary savings in vehicle-running costs and (in the U.S.A.) insurance, plus savings in stress and gains in terms of a social experience for those who prefer to socialise on their way to and from work. To quote the US Department of Transportation (USDOT) car-pooling "is by definition a social experience. It implies giving up some control to others in exchange for certain benefits" (FHWA, 1990, chapter II page 13). A car-pooler incurs the cost of the time taken to divert to pick up her car-pool partner(s) and, additionally, the cost of the flexibility sacrificed by driving with someone else. (Fricker, 1986.) There are reduced opportunities for varying arrival and departure times, for doing unexpected overtime, and for making side trips on the way to and from work. All other things being equal, the benefits of car-pooling tend to begin to exceed the costs as journey-to-work length increases, which helps to explain why Giuliano et al (1990) found that, on the 55 Freeway in Southern California, drive-alone commuters travelled a median distance of 18 miles to work compared with 25 miles for car-poolers. Car-pooling is not limited solely, however, to those who live further from work, since economic rationality is not the only factor which influences a person's decision to car-pool. (See Chapter 4.)

Levels of car-pooling and lift-giving for work trips are falling both in the U.K. and the USA. (Hu and Young, 1992; DoT, 1995.) The only exception to this was in Southern California where regional vehicle-occupancy for commuting rose between 1989 and 1992:

the percentage of commuters car- or van-pooling rose from 17% to 23% over that period (CTS, 1992). The general decline can be attributed to increased car-ownership and increasingly dispersed travel patterns, and may also show that car-pooling is regarded as a "second best" commute option which is abandoned when resources allow. Nonetheless, there is still a considerable level of *informal* car-pooling and carsharing which is *not* facilitated by a third party such as an ETC. For example, at Nottinghamshire County Council's main worksites, some 15% of workers participate in a lift-giving arrangement, either with colleagues or family members, having had no encouragement from their employer to form these arrangements (Nottinghamshire County Council, 1991). In US locations, especially those with limited parking, there is usually a base level of car-pooling regardless of any programme to encourage it (FHWA, 1990).

If an employer wants to encourage car-pooling, the methods used in the USA usually include a matching service so that employees can be matched up with people who live near them (or on their route to work) and who work the same hours; preferential parking so that those who car-pool can park nearest to the building (or at no charge if the employer charges its employees to park); and sometimes a monetary or other incentive to encourage car-pooling. The matching assistance provided may range from providing "matchlists" of potential car-pool partners to interested employees and leaving them to make contact with each other, through "zipcode parties" where potential car-pool partners from a geographical area can meet, to personalised assistance where an ETC introduces people to one another by phone or in person. In Britain, the 1980 Transport Act and ministerial

exhortations to share cars to work resulted in at most a noticeboard on which employees could advertise lifts (e.g. at Boots the Chemist's main manufacturing site in Beeston, Nottingham).

Programmes to encourage car-pooling at a single employer or in a small area can have quite impressive results. For example, Bellevue (Washington State) City Centre sees 18.5% (1988) of its commuters arriving by car-pool compared with 11% in similar city centres around the region. Bishop Ranch, a suburban office park near San Francisco, achieved a car-pool rate of 16.3% of all commute trips compared with more usual figures in the area of less than 7%. State Farm Insurance in Orange County, California persuaded 31% of its workers to car-pool with the introduction of a direct monetary subsidy to those who chose to do so. (All cases from FHWA, 1990.) On a region-wide basis the results are less clear-cut, according to the conclusions of the (1979) National Ridesharing Demonstration Program (cited in Ferguson, 1990 page 181).

Although intuitively the encouragement of car-pooling may seem a simple way to reduce energy consumption, pollution and traffic congestion, the promotion of this mode may have the unintended effect of shifting passengers from public transport, rather than from driving alone, to car-pooling. This has already been noted in the U.K. YORKSHARE schemes (see above p 5). In the USA, a similar phenomenon is often observed; for example, some 30% of the users of a scheme in Minneapolis, which provided cheap downtown parking for car-poolers, were previously bus users. The ARCO company in downtown Los Angeles provides a subsidy system which makes car-pooling more

financially attractive than public transport, and so the proportion of employees using public transport fell from 30% in 1983 to 20% in 1989 (FHWA, *op cit*). This effect is modelled theoretically by Beaton *et al* (1994), who concluded that incentives for employees to use public transport must be 19% greater than for van-pooling if public transport's mode share is not to be eroded. On the other hand, some real-world operators (e.g. BC Transit, Vancouver, Canada, personal communication, 1992) see car/van-pooling and conventional public transport as complementary, and although some (20-40%) of new car or van-poolers may previously have taken the bus, this can save costs, especially in low density suburban areas where car- and van-pooling could replace high cost, low frequency bus services on certain routes.

Car-pooling is a highly flexible mode insofar as it requires little resources to set up and it offers door-to-door service, but because of its flexibility it is as easy to abandon as it is to set up; and it does inevitably impose some inflexibility on the lives of those who use it, because they have to fit in with the schedules of their car-pool partners. It would appear from the literature that the promotion of car-pooling is not as straightforward as it might first seem, and that in particular there is a danger that it may simply divert passengers from public transport rather than from driving alone. The strategy is most suited to more suburban locations with poor public transport services; and to a workforce that works regular and predictable hours with little need for use of a vehicle for work purposes or off-site travel.

### **2.4.3 Public transport promotion**

An important part of many workplace TDM programmes is the promotion of public transport, although the contribution which this can make to overall modal shift of course depends on the level of public transport service which is provided in the area around the workplace in question. Many mandatory trip reduction programmes in the US include(d) a full or partial subsidy for the use of public transport to work. In addition, information would be available at the workplace and in many cases route itineraries could be generated for individual employees. The promotion of public transport figures perhaps even more strongly in TDM programmes in the Netherlands and the UK, due to the generally better existing services in these countries compared to the situation in much of the USA. Later sections of the research give details of free bus promotions in Nottingham where employees who normally drove to work were able to try the bus for a week at no cost; and the British Airports Authority has been active in sponsoring new or enhanced bus services to Heathrow Airport, and in negotiating discount fares for its staff on most bus routes into the airport.

### **2.4.4 Promotion of walking and cycling to work**

Since these modes of transport are relatively benign, not resource intensive, and demand relatively little space at the workplace, their promotion is a favoured feature of most workplace TDM programmes. Typical incentives to use these modes include new or improved shower and locker-room facilities, better cycle parking, one off special events such as breakfasts for cyclists and walkers, discount vouchers from local sports shops, and mutual support groups for cyclists in particular - such "bicycle user groups (BUGS) have



been set up at Southampton City Hospital and Queen's Medical Centre in Nottingham, to take two examples.

#### **2.4.5 Parking management**

This rather euphemistic term refers to the restriction, rationing or charging of workplace parking. This strategy has been shown to be highly effective in its impact on modal split to work, Willson, Shoup and Wachs (1989) present data from four US and one Canadian sites where parking charges of about \$30 per month were levied. The result was to decrease the numbers of employees driving alone by between 18% and 83%. The differences can be accounted for mainly by the availability of other cheap or free parking in the vicinity of each workplace. In spite of these impressive results, parking management remains, however, an extremely controversial measure, as workplace parking is often looked upon by employees and managers as a perk, and not as something for which a charge should be levied. For this reason parking management is either not included in many workplace TDM programmes, or is a measure whose implementation is planned for its later stages.

#### **2.4.6 Alternative working hours and telecommuting.**

There are a number of different variations to working hours which can have transportation implications. These are:

- ♦ **Staggered work hours.** Different departments within a large employer start and finish at slightly different times (perhaps 15 minutes apart) so that the peaking of traffic to and from the worksite is spread slightly.
- ♦ **Flexitime.** People work core hours and otherwise can work whenever they want, provided that they put in the requisite number of total hours. Again, this can result in some peak spreading. This is much more common in the U.K. than in the USA.
- ♦ **Compressed work week.** People work the same number of hours but in a shorter number of days, thus reducing the total amount of commuting that they have to do. In the USA, nine days per fortnight instead of ten is the most usual variation (a 10% reduction in commuting) although a minority work four days instead of five in a week.
- ♦ **Telecommuting.** People work at home, or at satellite work centres nearer to home, thus either eliminating the commute or making it shorter. It can be either a full-time or (more usually) a part-time arrangement.

In 1992, 42% of the 6.8 million commuters in Southern California could take advantage of a compressed work week or other alternative work schedule arrangement, and 75% of these did so (CTS *op cit*). Anecdotal evidence (e.g. SCAQMD, personal communication, May 1992) suggests that the compressed work week can have a significant impact on peak freeway congestion on certain days of the week. However, evidence to suggest that the compressed work week can bring about a reduction in vehicle miles travelled is less clear cut, since people do not stop driving for 24 hours simply because they have the extra day off per fortnight. The results of some research into this question are summarised below.

Work by Atherton *et al* (1982) on an experimental compressed work week schedule for Federal Government employees in Denver in 1974 found that, compared with a control group of workers on a regular work-week, those on the compressed schedule travelled fewer miles each week, and so did their families. Hung (1996) cites a number of employers who have successfully implemented compressed work weeks but is able only to hypothesise about their transport impacts. However, research conducted by Ho and Stewart (1992) on a sample of 300 people (at a site employing 1,600 staff ) in Southern California found that those who had moved onto a 4 day week with ten hour days had reduced their weekly miles travelled by 46 and that on days off they made fewer, mostly shorter trips and they linked trips more frequently, reducing the number of highly-polluting cold starts which they made.

Some 5.5 million Americans telecommuted full or part-time in 1991, 43% of whom were in professional and managerial occupations. (Telecommuting is defined here as working at home within normal business hours.) (Link Resources, 1991.) The comparable 1981 estimate for the U.K. was 1.7 million (Kinsman, 1987:26). From a transport point of view, there is a problem in definition since homeworkers include those people who work at home but who would not, or could not, do a comparable job outside (because of childcare responsibilities, disability, or because the work itself is only offered to homeworkers to keep down costs) and therefore their working at home does not eliminate a commute trip.

Telecommuting, although a term which implies a need for communications technology, is not limited to those workers who use computers and/or work in "information services"; any work that does not require specialist equipment, face-to-face contact with people, or direct supervision is in principle suitable for telecommuting. It is also often seen by employees as a desirable way to work for at least some of the time (see for example SMS Research (1991)). From a transport point of view, Mokhtarian (1991) cites evidence to show that telecommuters do not increase their off-peak travel, and this view is supported by Nilles (1988). A study by Pendlaya (1991) of a group of State of California employees who were telecommuting found that the average daily distance travelled on telecommute days was less than a quarter of that on regular commute days. As significantly, even on commuting days, the sample chose destinations closer to home for their non-work trips. It concluded that telecommuting produced a reduction in the "action space" of the sample group, with a consequent impact on their VMT.

As well as relieving pressure on transportation infrastructure, telecommuting would appear to have many advantages both for employers and employees. These include (for employers) a reduced demand for and therefore cost of providing office space, and (for employees) reduced commuting time and cost (DoE, 1995). The major barrier facing its wider implementation is management reluctance to allow employees to work "out of sight".

#### **2.4.7 Marketing, promotion and incentives.**

The marketing of alternative modes of transport to the workforce is seen as a very important part of workplace-based TDM. (See e.g. FHWA 1990; Lopez-Aqueres, 1991, TMS, 1992.) Marketing can be carried out in a variety of ways, ranging from memos and Email messages, through to "Rideshare Fayres" which bring together many providers of alternative modes and information about them in one place for a day. These Fayres may often be organised in conjunction with other local employers. (See for example Southern California ACT, 1991, page 24.) Many employers will stock a range of public transport information which, in the regulated U.S. public transport climate, is widely available, accurate and usually very attractively presented. Los Angeles Rapid Transit District, the main public transport operator in the County, also offers a service to employers whereby it can provide public transport commute itineraries, personalised for each employee, at a nominal charge (LARTD, 1992).

General promotional activities at individual employers often extended to making positive examples of employees who make the greatest effort to use alternative modes. They were often given prizes at special events as a means of positively reinforcing their behaviour, or featured in the company newsletter as "Ridesharer of the Month". Positive reinforcement was also provided with events, such as lunches, coffee meetings, and prize giving ceremonies, for all users of alternative modes. Fleetwood Enterprises in Riverside County California, for example, held regular "ra-ra" events (such as breakfasts laid on by the firm)

for cycle commuters, to reinforce to them the message that their participation in the programme was valued. (Clarke, 1993.)

Prize draws for employees who use alternative modes may be all that an employer offers in terms of material incentives to use other modes; however, some have been known to go much further than this and pay their non-solo-driving commuters an allowance for each day that they use their alternative mode. This allowance may be in cash, or as points which can be accrued and exchanged for a variety of products, or it may be in extra vacation. For example, under the firm's 1992 Rideshare Plan, an employee who used an alternative mode for 6 months to Western Digital Corporation's Plant in Irvine, California, was eligible for an additional day off work. (Western Digital, 1992.)

The most impressive reductions in rates of driving alone to work have been achieved by those employers who pay a transportation allowance in addition to charging solo drivers to park at work. The transportation allowance is paid to all employees and is usually set roughly equivalent to the cost of parking for solo drivers. They can choose to spend their allowance on the parking, or they can instead use it as extra income if they use a cheaper mode to get to work (e.g. car-pool, cycling, walking, employer-subsidised public transport). This has the effect of changing the perceived relative costs of the different modes of transport. Good examples of firms which have done this include CH2M Hill, a firm of architects in Bellevue, Washington, and the ARCO Company in downtown Los Angeles (FHWA 1990). At the former, a \$40 per month transportation allowance was followed by a fall (from 89% to 54%) in the proportion of employees driving alone to

work - most of them transferred either to the bus or to cycling. At the latter company, the proportion of people driving alone to work fell to only 40%. Obviously, transportation allowances and monetary incentives can be expensive, but if they obviate the need to provide or build employee parking, then (especially in city centre locations) they can be very good value for money.

A final "incentive", which has been found to be important in overcoming employees' reluctance to use alternative modes, is an Emergency Ride Home scheme which guarantees that, in an emergency (e.g. a child falling ill), an employee will be able to get home at the employer's expense. Kadesh and Elder (1986) argued that, in the case they examined in Seattle, such a scheme was crucial in persuading previous drive-alone commuters to switch to another mode. However, they also point out that although this "insurance" scheme was open to abuse, in fact it underspent its projected first year budget because it was used only as a last resort.

#### **2.4.8 The Employee Transportation Co-ordinator**

The Employee Transportation Co-ordinator (ETC) is an employee responsible for the development and implementation of TDM at a workplace. The majority of the 182 Californian ETCs surveyed by Wachs and Giuliano (1992) were the sole employee in their organisation responsible for the implementation of their employee transport plan, and the job had been assigned to them rather than their having selected it. Most were female and in a relatively junior position, and while organisationally the majority (51%) were located

in personnel sections, the rest were scattered over a wide range of other departments. Over 40% of those surveyed were unable to devote more than 10% of their time to ETC-related work. This implies that in many cases management had taken a fairly casual approach to the creation of the position and not given much thought to the time required to do the job properly. The survey was conducted in an area where workplace TDM was mandatory; had a similar survey been conducted in an area where it was voluntary, a different picture may have emerged, since only those employers who valued workplace TDM would have created the post of ETC in their organisation.

Anecdotal evidence from the USA suggests that the ETC can often be crucial to the effectiveness of the TDM programme. As well as administering the workplace TDM programme, the ETC's job is to educate, encourage and to an extent manipulate people with the aim of getting them to change their travel behaviour. This is a delicate task, since there is a high risk of alienating employees if the ETC's exhortations are heavy-handed, and since there may be a perception that mode of transport to work is a personal choice in which the employer (and ETC) have no right to interfere.



## **2.5 The state of development of TDM today.**

### **2.5.1 The U.K.**

As discussed above, there were a number of somewhat abortive car-sharing experiments in the U.K. in the late 1970s and early 1980s whose impetus stemmed from a desire to try to save energy, reduce congestion and to see whether American concepts and experience could work in this country. With U.K. traffic levels forecast to grow by up to 141% by the year 2010 (DoT 1989), interest in TDM has again risen, this time mainly as a possible way of reducing traffic congestion. For example, the "Headstart" Travel Awareness Campaign, introduced by Hampshire County Council, envisages large employers - including the Council itself - implementing workplace commuter (TDM) plans (Ciaburro, Jones and Haigh, 1994); and the Department of Transport has expressed interest in seeing a local highway authority experiment with a High Occupancy Vehicle lane on an urban arterial (DoT 1992). This expression of interest was followed up with a visit by the Secretary of State for Transport to view HOV lanes in the US; and HOV lanes have been suggested as a partial alternative to the plans for parallel link roads on the M25 (Runnymede Borough Council 1994).

In practice in the UK, workplace-based promotion of alternative commute modes has centred largely on attempting to organise car-sharing schemes and these have, once again, largely foundered. For example, the scheme promoted by the AA at its Basingstoke Headquarters succeeded in setting up one long-term two person car-pool (Morris *et al*

1992) out of a total workforce of 1,680; and a scheme at Avon County Council had a similarly minimal impact. Though initial interest is quite high in such schemes, this interest is typically not translated into many car-pooling arrangements, indicating a high degree of inertia in people's current mode choice.

At the end of 1995, though several public sector employers in Britain were considering the implementation of workplace TDM, none had gone beyond car-sharing schemes to a full-scale integrated workplace programme to encourage the use of alternative modes. The British Airports Authority (BAA) has increased its support for public transport services and cycling to Heathrow airport, and has promoted car-sharing and the use of public transport to airport employees (Oliver, 1995). No employer has however fully put into effect what Chatfield (1992) argues are the key elements of such a programme. These are:

- ♦ A varied and adaptable plan which staff enjoy participating in and which complements their lifestyle.
- ♦ Support from senior management who lead by example.
- ♦ A strong marketing plan to ensure that staff are reminded about the benefits of joining in with the programme.
- ♦ A Guaranteed Ride Home programme which is an "insurance" for participants who need to get home in an emergency.
- ♦ Close monitoring and adaptation of the programme so that elements which work are strengthened and those which do not are dropped.
- ♦ A permanent ETC to monitor and implement the programme.

Lincolnshire County Council, for example, has drawn up proposals for such a programme "for consideration" (Lincolnshire County Council, 1995) but these have yet to be implemented. Southampton City Council is holding employee workshops with a view to introducing an employee transport plan "in the near future" (Anon, 1996.) But in summary, it would appear that TDM in the U.K. is still in its infancy and experience with experiments so far does raise serious questions as to its relevance to the U.K. situation. The cases considered later in this thesis will shed further light on this important question.

### **2.5.2 Other European Countries.**

As part of the European Community DRIVE Initiative, research was commissioned into car-pooling management systems and pilot schemes were implemented to a greater or lesser degree at 7 companies in Antwerp and in one rural town and its hinterland, Aerzen in Germany. In this latter case a Mobility Centre was set up as a brokerage for all kinds of alternative transport in the area including one-off organised hitch-hiking. (Gliewe *et al*, 1992.) The rate of new car-pool formation was about the same as in experiments in the UK in the late 1970s (i.e about 2% of those exposed to publicity ultimately formed car-pools. But the results of this research are interesting in other ways and the authors make some very valuable points. For example, the report:

- ♦ Points out the importance of the transportation co-ordinator (or Mobility Centre in the German case). The authors state, "Even under the present sub-optimal

conditions for car-pooling, an active co-ordinator could have increased car-pool formation considerably" (p 188).

- ♦ Argues that car-pooling does not compete with public transport as long as the public transport service is of good quality and that quality is maintained (which is not always the case in the U.K.). The report contends that car-pooling is only really suited for those situations where no suitable public transport exists. This is a contentious but interesting conclusion.
- ♦ Argues that those employers which are most likely to have a successful TDM scheme tend to have the following characteristics:
  - they experience real transportation problems and want to expend some resources on the problem;
  - employees work the same hours at the same place;
  - employees do not work much overtime or take frequent business trips;
  - they are located in the suburbs where public transport accessibility is poor;
  - and both management and staff are committed to the scheme. (p 186)

The Mobility Centre in Aarssen was so successful that the local government decided to continue its funding after the DRIVE initiative had ended. In addition, the report suggests various avenues for further research and some of these are currently being pursued in Belgium but they are at a formative stage (Langzaam Verkeer, personal communication, 1993).

In the Netherlands, as part of the Second National Transport Structure Plan, TDM was put into effect at eight large employment sites including Rotterdam Europort and Schiphol

Airport, with varying degrees of success. TDM here has usually taken the form of Transport Management Associations (TMAs) facilitated by consultants. In their first years, the TMAs received funding from central government's Ministry of Transport and Public Works (Rijkswaterstaat), but this was later phased out, as the TMAs are intended to be funded completely by employer contributions. For example, in the case of the Schiphol TMA, the members had to pay 5 Guilders (£2.22) per employee per year, which amounted to £54,000 for the 1992 membership. (VCC Schiphol, personal communication, 1992.) The Rijkswaterstaat is also strongly encouraging employers outside TMA areas to set up TDM schemes for their employees, but if this voluntary approach does not work, then there is a strong possibility of government regulation (Rijkswaterstaat, 1995).

Koolen, van der Gugten and Weggemans (1996) indicate that the development of TDM in the Netherlands has not been as fast as the Ministry of Transport had hoped, and this is confirmed by Bakker (1995), who goes on to give details of the Ministry's own employee transport plan. This was implemented at three of the Ministry's offices in the Hague, and aimed at a total of 2,000 employees, as an example of "best practice to indicate to other employers that workplace TDM could be effective". The plan was successful in reducing the proportion of employees driving alone to work from 31% in 1991 to 23% in 1993, and in boosting the use of public transport from 34% to 45% of employees over the same period. However, this was achieved at an average cost (mainly in subsidising public transport fares) of 500 guilders (£222) per employee per year.

It appears, then, that in the Netherlands, Belgium and Germany, TDM is at a limited but slightly more advanced stage than in the U.K. but that the work of which the author is aware is on a relatively ad hoc basis and in its early stages. It may be that more interventionist governments in continental Europe would be more inclined to introduce mandatory TDM legislation than would the present (1996) U.K. government, but the case for such legislation has yet to be made.

### **2.5.3 The U.S.A.**

In the USA, the situation has been considerably different to that in Europe. As described above (page 3), the Federal Government has decided to put a great deal of money into TDM, including that of workplace-based efforts. TDM in the USA received a large boost with the passage of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) which apportioned \$9 billion of a total \$151 billion of Federal transportation funding to TDM for 1991-97, and which allowed individual States considerable leeway so that other funds, nominally for road-building, could be put into TDM if so desired (Metro, 1992). Considerable store was therefore being set by TDM as a tool for managing both congestion and air pollution. For example, in 1992 Metro, the body responsible for transportation planning in Los Angeles County, was aiming to reduce the proportion of work trips made in the County by single driver cars from its then 74.6% to 40.7% by 2010, largely through the use of TDM measures (Metro, 1992). In addition, TDM legislation from all three levels of government affects and regulates the activities of developers and employers in several more urbanised states.

Southern California, as the area with the worst air quality in the nation, had a mandatory TDM law from 1988 until 1995, when the legislation was rescinded. This affected all employers with more than 100 employees in the urbanised Los Angeles area and was the world's largest-scale attempt to change commuter behaviour through TDM programmes at the workplace. The regulation in question was known as Regulation XV (later Rule 15-01) and it was enforced by the South Coast Air Quality Management District (SCAQMD); however, the legislation which empowered the SCAQMD was passed by the California State Congress and was itself a response to the requirements of the *Federal Clean Air Act* (SCAQMD, 1995). The 1990 Amendments to the Act meant that in 1993 seven other areas in the USA (San Diego, Philadelphia, New York City, Houston, Milwaukee, Chicago, and Baltimore) followed suit and enacted legislation similar to Regulation 15. (Wachs, personal communication, 1992.) However, this legislation was implemented only half-heartedly and has since been completely dropped, leaving Washington State in the north-west of the country as the only large area with mandatory TDM requirements.

California went into a deep recession in about 1990. Falling global demand was exacerbated by defence cuts which affected both the aerospace and computer industries. Mandatory ridesharing (and other air quality management) legislation was increasingly seen as an unsustainable burden on business. Seagriff (1995 p 160) notes how the Air Quality Management District (AQMD) responded to this changing political climate when she comments:

“The 1991 [Air Quality Management] Plan was very much one of “command and control”, while the 1994 plan [was] much more considerate of local needs.”

However, this new-found flexibility was “too little, too late”: in July 1995, firms of less than 200 employees were exempted from the requirements of Rule 1501, and in December that year, state legislation was passed making it illegal to require any employers to submit workplace TDM plans. In response to this, also in December 1995, the Air Quality Management District passed Rule 2202 which gives employers two options for meeting emission reduction requirements for vehicle trips. They may if they choose still implement a rideshare plan or, alternatively, they may undertake a number of “compliance strategies” to directly reduce emissions from vehicles rather than doing so indirectly by attempting to limit vehicle miles travelled to the workplace. Such “compliance strategies” include remote sensing and scrapping of old, highly polluting vehicles; and payment of fees for emission reduction work. But, as the Director of the AQMD’s Transportation Programs division notes, “Under Rule 2202, trip reduction [i.e. TDM] is a strictly voluntary option.” (Personal communication, 1997; see also Appendix 8.)

In addition to such air-quality-motivated legislation, there is State TDM legislation whose aim is a reduction in traffic congestion. An example of this is the law passed by Washington State in 1991 requiring employers to introduce TDM programmes, beginning in October 1993 (State of Washington, 1991); another was California's Congestion Management legislation which requires local governments to plan (and implement) TDM as part of a total congestion management package. If they did not, they risked being denied State transportation funds. (Metro, 1992.)



Finally, local government can and does pass trip reduction ordinances (regulations or laws which only apply locally) which are aimed at limiting the number of trips generated by new development using TDM techniques. Examples include the City of Irvine's (California) Trip Reduction Ordinance (implemented July 1992); another example was from the Bishop Ranch Business Park in California's Bay Area, where the major landowners were granted planning permission only on the condition that the peak hour trip generation from the park would be 40% less than that which would be expected in a "Zero-TDM" situation. Latterly, the park's employers were regulated by a TDM Ordinance in the City of San Ramon (FHWA, 1990). Another example is the University of California at Los Angeles (UCLA), which must keep the total number of trips it generates below 139,500 per day through to 2005 if it is to be allowed to further develop its campus. (Southern California ACT, 1991.)

Essentially, then, the USA has had a TDM situation characterised by far more regulation than in Europe. This reflects the much longer history of TDM in the USA and, obviously, a greater willingness on the part of governments to regulate such areas of employers' operations. Consequently, there has been much more evaluation of TDM in the USA than in Europe, and this evaluation will be reviewed briefly in the next section. However, as Wachs (1990:248) comments, "Only time will tell whether programs of these types will succeed in reducing traffic congestion", and the same must be said for their impact on air pollution.

## 2.6 Evaluation of TDM to date.

In Europe, aside from a few studies of car-pooling schemes (e.g. Bonsall, 1981; Morris, 1992), little evaluation of TDM has been carried out, in part because there have been very few schemes to evaluate. In contrast, in the USA there is a large body of TDM-related literature which has been published, and this literature is usually evaluative in nature. Perhaps the most comprehensive nation-wide evaluation of TDM so far is contained in Federal Highway Administration's 1990 report *Evaluation of TDM Measures to Relieve Congestion*. This study concludes that TDM "is capable of having a significant impact on controlling the demand for low-occupancy vehicle travel and therefore reducing or postponing the need to add additional capacity to the highway system." (p 27). But the study points out also:

- "1) That TDM can **significantly** reduce low-occupancy vehicle trip demand at a site, in a corridor, or within a *sub-area*; [and...]
- 3) To inspire the use of the key TDM actions, either some type of legal pressure is necessary, or the individual firm must have some readily apparent, economic *self-interest* in adopting these measures. (p 27, bold type in original, italics added.)

It is significant that there is no mention of TDM's effectiveness area-wide; and the emphasis on self-interest as a necessary motivation for a successful employer-based programme is also important to note. The case studies in the report all (bar three) relate to small areas or single employers. The three larger scale case-studies are of Bellevue, Washington; Hartford, Connecticut; and Southern California. In all three areas results were less dramatic than at individual employers either within those areas or elsewhere. Impacts on overall traffic congestion and air pollution are difficult to isolate when the case study site generates a very small proportion of the total traffic in an area. . The majority of

the rest of the literature is similar in its scope, examining small-scale schemes at individual employers or within a small area (Orski, 1991 p 15). There is little discussion of the processes whereby successful TDM programmes are implemented.

Evaluation of TDM legislation (Regulation XV) in Southern California has failed to show conclusively that the regulation, which covered at its height some 6,200 employers, has yet had its intended effect of raising average vehicle ridership (AVR - a measure of vehicle occupancy) for commuters to those firms to the target of 1.5. As Stewart (1994 p 166) says:

“[an] analysis of 5000 [Southern California] employers could not isolate the factors that explain the change in commute behaviour or assess the impact of any one incentive.”

The actual increase in AVR from 1988-1995 was from 1.13 to 1.28 (Grant, 1996, p 15). Certain employers more than reached their target, but many more failed to do so. An evaluation of Regulation XV (Ernst and Young, 1992) calculated that the average cost to the employers of Southern California of each vehicle trip removed from the roads by Regulation 15 was over \$11. AVR amongst this smaller sample of 300 large firms rose from 1.2 to 1.31 over the two years surveyed. The report was based on surveys completed by employers complying with Regulation XV and so it was bound to contain an element of over-reporting, but even allowing for this, the figure is a high one. (Wasikowski, 1995.) Stewart (1994) reviewed several reports which attempted to assess the cost-effectiveness of Regulation XV. Estimates ranged from a high of \$3,000 per year per commute trip eliminated to a low of - \$533. (The latter figure includes an assessment of

the social benefits of removing the trips from the road.) The quote from FHWA (1990), above, mentions the need for legal pressure if workplace TDM is to succeed; Regulation XV provided that pressure only to a certain extent, because employers were not penalised for not reaching the target, but rather only if they made no attempt to reach it. Overall it is impossible to say whether Regulation XV did have the intended effect of reducing congestion and pollution, as it is not possible to isolate its effects from other variations in traffic.

Further, much of the literature concentrates on examining the basic mechanics of individual TDM programmes and in measuring the outcome in terms of trips reduced or reductions in parking requirements. What is not examined in depth by many authors is the response of the employers to the regulation and of the employees to the programme at their workplace - it is obvious that some do respond because the programmes studied produce the required results, but the reasons *why* and the context within which people respond are, by and large, not discussed. Authors who have considered this subject include Ferguson (1990), and Levin (1979), but both use a mechanistic approach which, in this author's opinion, oversimplifies employee responses to ridesharing opportunities, in an attempt to model those responses. To gain a further understanding of employees' responses to workplace TDM it is necessary to consider those responses within the context of the organisation within which the employees work.

## **2.7 Conclusion**

This chapter has reviewed the literature relating to workplace TDM by, firstly, charting the history of TDM; secondly, considering the elements of which it consists; thirdly, reviewing more recent developments in Europe and the USA; and, finally, by trying to identify some of the drawbacks and omissions in the current literature.

Employer-based TDM is in the interesting position of being something which an organisation may attempt to implement but which, usually, is unrelated to the *raison d'etre* of that organisation. To use the classic economic example of the firm producing widgets, a TDM programme is entirely peripheral to the firm's main task of widget production and, yet, for the TDM programme to be successful, all parts of the firm must participate in it, sometimes to the point of changing existing working practices (e.g. work hours). This situation is bound to result in conflict between those who are trying to implement the TDM programme and those who see it as a distraction from the firm's main activities. The organisational peripherality of TDM is not addressed in the existing literature, yet in this author's view, it is a - perhaps *the* - crucial issue which affects the success of TDM at any workplace.

In conclusion, it appears from this review of the literature that "research voids" in the subject of workplace TDM occur in the following areas:

- The organisational peripherality of an employer-based TDM programme, and how to overcome this.

- The way in which a TDM policy and programme develops within an organisation.
- How and why people respond to the incentives and disincentives provided by a TDM programme at their workplace.
- The transferability of American TDM (as opposed to simply car-sharing) schemes to the European context.

It is these areas which the following chapters aim to address.

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Introduction**

This chapter introduces and briefly discusses and compares the methodological approaches used in this thesis. It firstly compares overall research strategies and explains why the case study approach has been used for this thesis. It then explains the case study approach in some detail. It goes on to review the advantages and disadvantages of various methodologies available for use within the overall case study approach. It finally describes the methods used in each case study. A number of different methods has been used both within and between the case studies and this chapter argues that this combined use of methodologies strengthens the validity of the research.

### **3.2 Approaches to research**

The aim of this research is to compare the organisational development of employer-based transport demand management (TDM) at five workplaces, one in North America, the other four in the UK. Where appropriate, research on employee attitudes to TDM has been incorporated into the overall study to inform the comparison of the development of the different programmes.

The table below compares the case study approach with other research strategies. This is not an exhaustive summary (based on Campbell, 1978, Platt, 1992, Hakim, 1992, and Yin, 1994, with author's additions), but helps to show why the case study approach was chosen for this thesis.

Table 3.1: Types of research methodology

Research strategy	Form of question	Need control over behavioural events?	Focuses on contemporary issues?	Disadvantages	Advantages
Experiment	how, why	yes	yes	limited focus; <i>a priori</i> theoretical commitment	generalisable to a statistical population
Survey	who, what, where, how many and much	no	yes	limited scope; may ask the wrong question	generalisable to a statistical population
Archival analysis	who, what, where, how many and much	no	yes/no	not generalisable to a statistical population; may be subjective	interpret past events in light of new information; find mistakes in previous interpretations
History	how, why	no	no	often lack access to subjects of research	
Case study	who, what, how, why, where, how many and much	no	yes	not generalisable to a statistical population; subjective; may use small sample sizes; validity of results from interviews with actors may be difficult to establish	ability to ask why and to narrate; uses range of methodologies



An experimental approach was not considered appropriate. As the table shows, this would have required control over the behaviour of the subjects of the research - a laboratory situation - and this was impossible given that the research was concerned with processes within existing organisations. Even if it had been possible to remove the activities under study to a laboratory situation, this would have rendered them out of context and therefore, for the purpose of this thesis, meaningless. The table also argues that an experimental approach implies that the investigator has an existing commitment to one theory which s/he is trying to prove or disprove. This may lead the investigator to ignore certain questions and lines of enquiry because they are of no relevance to his/her theoretical viewpoint. This was a pitfall which this thesis sought to avoid and so a different research approach was required.

An approach based entirely on survey questionnaires was ruled out because of the need to explore processes in some detail. One of the principal research questions was "why are these workplace TDM programmes developing in this way" and it was concluded that a survey-based approach would not be capable of answering this question in sufficient detail. However, this did not rule out the use of questionnaire surveys within a broader overall approach. (See Section 3.4.2 for a fuller discussion of the use of questionnaires.) Finally, since the research concerned on-going processes in contemporary organisations, an archival or historical approach was also ruled out.

### 3.3 The Case Study Approach

The case study approach which has been adopted allows an in-depth study of the processes which may affect the development of a workplace TDM programme. The methodology allows the description and analysis of the narrative of each case study, after which each narrative is compared and analysed alongside the others so that theoretical insights can be drawn. Marshall and Rossman (1989) highlighted the power of case study research when they say that it can be used to render, depict or characterise; to instruct; and to chronicle events. Dunkerley (1988) argued that case study research may not *prove* anything in same sense as may experimental social research; but a case study will *reveal* things which were not obvious before, through its detailed analysis of the story of the case in question. Additionally it will produce evidence which, while perhaps not unequivocal, will tend to support or refute a set of hypotheses.

A crucial element of case study research is the use of a number of different methodologies to explore the issues under investigation. Section 3.4, below, looks at the individual methodologies in more detail; here, the discussion focuses on the reasons for using a combination of techniques. This combination approach is advocated strongly by Yin (1994) who defines the case study as (p 13)

"an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly evident... the case study as a research strategy [is] an all-encompassing method... incorporating specific approaches to data collection and analysis."

The different methodologies which can be used in and which are such a strength of case study research are considered in Section 3.4, below.

The case study can explore, illustrate, describe and explain phenomena, but not in the same way as in a tightly controlled hypothetico-deductive experiment where the emphasis is on proving or disproving hypotheses which can be statistically generalised to wider populations. However, a different kind of theorising is possible from case study research. Yin contends that the consideration of one or a number of comparative case studies can produce theory, an argument which builds on the work of Glaser and Strauss (1967) who developed the concept of grounded theory building. Rather than taking an *a priori* commitment to one theory, Glaser and Strauss considered theory building to be an evolutionary process, where theory is "derived from the data and then illustrated by characteristic examples of data" (p 5). These illustrations, they suggest, should include quotes from interviews, examples of the researcher's personal experience, descriptions of places, events and acts - in short the construction of a case study (p 229).

It can be argued that case study research may, by focusing on the relationships and processes within the entities under consideration, fail fully to take into account the socio-politico-economic structures which underlie the phenomena being studied. This criticism is put forward by (amongst others) Forester (1985) who draws a distinction between experimental social research, phenomenological social (case study) research and critical social research. Only the latter, he argues, looks to the wider structural context for explanations of the processes at work in social research. However, in this thesis, while the wider political context has a role to play in all the case studies, it is

argued that processes at the organisational level have been more important in determining the outcome of the various workplace TDM experiments and so the study remains at this level.

In this thesis, the case study approach firstly brings an understanding of the context of and the processes which affect the development of workplace transport demand management (TDM) in the five case study organisations. Secondly, it allows the comparison of the findings with the guiding hypotheses set out in Chapter 1. Thirdly, it contributes to the development of theory through grounded theory building.

### **3.4 Methodologies used within the case studies**

This section goes on to consider the different methodological techniques which have been used in different combinations at each of the four case study sites and within the overall framework of the case study approach, as outlined in the section above. The section reviews the various types of data gathering that are available for case study research, discusses their advantages and disadvantages, and shows how they can be used together to reinforce the conclusions of the work. Finally the individual case studies are themselves discussed with reference to the methodologies used within each.

The work of Taylor (1984) is typical of much of the methodological literature when he emphasises the importance of a flexible approach to data gathering so that, as the researcher discovers new factors which are relevant to the case study, these can be explored rather than discounted on the grounds that they are outside the bounds of the "experiment". Bell (1989 p 50) also does not advocate a dogmatic reliance on one

methodology but instead takes the pragmatic line that "methods are selected because they will provide the data that you require to produce a complete piece of research". These quotes typify the view in the literature that the case study researcher cannot know in advance what they will find and that therefore they should take a methodological pragmatic approach so that they can gather as much data as possible. The data may not at first appear to be of use but may later prove invaluable, yet without "methodological pragmatism" it may have remained uncollected.

### **3.4.1 Qualitative methods**

Qualitative methods are a means of exploring phenomena in depth and in context without breaking them up into artificial groups for ease of analysis. As the term suggests, qualitative research explores the qualities of the phenomena and between parts of those phenomena without necessarily resorting to statistical analysis.

Bryman (1988) draws the distinction that, in the social sciences, qualitative research is for discovery and quantitative research for hypothesis testing - although this is not a hard and fast rule. Since this thesis focuses on "an analysis of the processes whereby a program produces the results it does" (Patton, 1986, p 139), the emphasis was put on a qualitative approach. Processes do not easily lend themselves to quantitative analysis. Because this piece of research aims to discover how those people involved in the programme perceive it to be progressing (or regressing), it demands a qualitative approach.

In contrast, "survey and experimental research is more appropriate for unambiguous concepts and finely-tuned indicators with high levels of reliability" (Marshall and Rossman, 1989 p 42). This author contends that the complexity of the processes which have shaped the TDM programmes in the case study cities could not have been adequately understood if they were analysed solely by quantitative methods. This is why a qualitative approach has predominated. As Hakim (1992 p 28) says, "if one is looking at the way people respond to... social realities at the micro level, accommodating themselves to the inevitable, redefining the situation until it is acceptable or comfortable... then qualitative research is necessary". It is with people's responses to "social realities at the micro level" that this thesis is concerned.

The tools of qualitative research that were used for this thesis are document analysis, participant observation, note-taking, and in-depth interviewing. Interviews were conducted both with "ordinary" staff members at the case study sites and with "key actors". The latter are considered to be more informed about the issues under consideration by virtue of their greater involvement in those issues and/or because of their higher status in the organisations.

A list of different qualitative research techniques is set out in Table 3.2, on the next page. As the table shows, the drawbacks to the research techniques fall into three main categories: reflexivity, bias, and access. The first two pitfalls can be guarded against by very careful

**Table 3.2: Strengths and Weaknesses of Qualitative Research Techniques**  
(from Yin 1994)

Source of Evidence	Strengths	Weaknesses
<b>Documentation</b>	<ul style="list-style-type: none"> <li>• Stable - can be reviewed repeatedly</li> <li>• Unobtrusive - not created as a result of the case study</li> <li>• Exact - contains exact details</li> <li>• Broad coverage of events in time and space</li> </ul>	<ul style="list-style-type: none"> <li>• Can be difficult to retrieve</li> <li>• Biased selectivity if collection is incomplete</li> <li>• Reporting bias - reflects (unknown) bias of author</li> <li>• Access - may be deliberately blocked</li> </ul>
<b>Archival records</b>	<ul style="list-style-type: none"> <li>• Same as above, plus</li> <li>• Precise, and often partly quantitative</li> </ul>	<ul style="list-style-type: none"> <li>• Same as above, plus</li> <li>• Accessibility can be poor for privacy reasons</li> </ul>
<b>Interviews</b>	<ul style="list-style-type: none"> <li>• Targeted - focuses directly on case study topic</li> <li>• Insightful - provides perceived causal references</li> </ul>	<ul style="list-style-type: none"> <li>• Danger of bias if questions poorly constructed</li> <li>• Response bias - may not be a random sample</li> <li>• Risk of inaccuracies if interviewer's recall poor</li> <li>• Reflexivity - interviewee tells interviewer what s/he wants to hear</li> </ul>
<b>Direct observations</b>	<ul style="list-style-type: none"> <li>• Reality - covers events in real time</li> <li>• Contextual - covers context of event</li> </ul>	<ul style="list-style-type: none"> <li>• Time-consuming</li> <li>• Selectivity - unless broad coverage</li> <li>• Reflexivity - process may unfold differently because it is being observed</li> <li>• Resource cost - hours needed by human observers to be present to observe phenomena</li> </ul>
<b>Participant observations</b>	<ul style="list-style-type: none"> <li>• Same as above, plus</li> <li>• Insightful into interpersonal behaviour and motives</li> </ul>	<ul style="list-style-type: none"> <li>• Same as above, plus</li> <li>• Bias due to investigator's manipulation of events</li> </ul>
<b>Physical artifacts e.g. office layouts</b>	<ul style="list-style-type: none"> <li>• Insightful into cultural features</li> <li>• Insightful into technical operations</li> </ul>	<ul style="list-style-type: none"> <li>• Selectivity</li> <li>• Availability</li> </ul>

investigation and, when interviewing, by repeating questions and probing to try to ensure that the answer given is a true reflection of the interviewee's perceptions. Nonetheless, as Brenner (1978) stresses, the interview is "bound up with social interaction and the nature of meaning in the language" (p 123) and so inevitably the interview "gate-keeps and filters meanings" as well as revealing them. The biases of both the investigator and the interviewee can to some extent be reduced by the use of other data sources (documents, observations, other interviews) to check on the more factual information from the interview, so that the impact of bias in one source is minimised. (See for example McCall and Simmons, 1969.)

The final pitfall, that of access to the worksite, is often raised in the literature as a potential problem. The qualitative researcher is particularly handicapped if s/he is unable to gain access to the people who must be interviewed, the documents that need to be read, or the situation that must be observed if the research is to go ahead. Obviously this is not a difficulty limited solely to qualitative research but because of the technique's reliance on a number of - sometimes confidential - sources in a field location, it can cause particular difficulties for the qualitative researcher.

The methodological literature gives much advice on gaining access. For example Gans (1982) discusses his experience of being allowed into the lives of the people whom he has studied. He was rarely denied access and puts this down to an open, honest, quiet and above all non-threatening approach. Gaining access to the different case study sites in this thesis is discussed further in Section 3.7 below.



Qualitative research has been criticised on several fronts: for lacking rigour, for being influenced by the value judgements of the researcher, and for lacking reliability and generalisability. As Table 3.2 shows, the techniques of qualitative research also possess considerable strengths. As Kirk and Miller (1986) argue, the many methods of investigation used in qualitative research mean that "it possesses certain kinds of validities not ordinarily possessed by non-qualitative methods" (p 31). Marshall and Rossman (op cit) also believe that the element of subjectivity in qualitative research is one of its strengths, in that it enables the researcher to gain an understanding of the social relations of the people who are being studied. In the case studies in this thesis, it is the way in which the pattern of social relations in each organisation contribute to the development of each respective TDM programme that is of particular interest, and so it was felt that the research had to have a strong qualitative element.

### **3.4.2 Quantitative approaches**

Qualitative research in this thesis has been supplemented with the results of quantitative questionnaire surveys. They have been used to gather a limited quantity of information from a large number of respondents and the evidence from them will be used along with that from the qualitative research to explore and develop the propositions set out in Chapter 1. Quantitative data is not used in this thesis to try to find statistically significant differences between the case studies nor for hypothesis testing in the hypothetico-deductive sense.

The biggest practical advantages of questionnaire surveys are ease of administration and analysis and their ability to reach a relatively large sample at a relatively low cost in time and money. The risk of such surveys is that they may fail to ask the right question - since the researcher does not know the population being surveyed, s/he may design a survey that fails to explore issues that are of critical importance, or may be side-tracked by minor issues away from the main research questions. Fowler (1993) emphasises the importance of being very clear about the aims of the questionnaire so that it provides the answers required. A way to ensure this is to conduct a small-scale pilot questionnaire, but even so it may only be at a much later stage that the researcher realises what the questionnaire *should* have asked. Table 3.3, below, summarises some of the advantages and disadvantages of quantitative techniques.

**Table 3.3: Advantages and Disadvantages of quantitative techniques  
(based on Patton 1987 and Fowler 1993)**

Advantages		Disadvantages	
1.	Low cost - allows one researcher to gather a large amount of information efficiently and effectively	1.	Needs simple questions, especially in self-administered surveys. This limits the depth of information which can be gathered.
2.	Structured questionnaire decreases bias from different interviewer styles	2.	No opportunity for probing to get a more in-depth response
3.	Increases anonymity for respondents	3.	No control over who responds and how they understand the question
4.	Allows respondent time to consider answers (for self-administered questionnaires)		
5.	Accessibility to large populations (through postal surveys)		
6.	Random sample allows confidence that sample is representative of population as a whole	4.	Non-respondent bias - non-respondents are likely to have significantly different characteristics from respondents
7.	Provides easily-comparable information about all respondents		

The work for the thesis involved the administration of three questionnaire surveys at two of the study sites: Nottingham Trent University, and Hertfordshire.

In developing appropriate questions, an attempt was made to gauge the frame of reference of the potential respondents so that the questions would not be read out of context. An important part of this process was the piloting of two of the three questionnaire surveys conducted for the research. (In the third case the questionnaires were designed by a third party - a bus company - but analysed by the author.) Simple, clear language was used for questions to keep potential ambiguity to a minimum. These safeguards helped to ensure that the questionnaire surveys made an important contribution to the research overall.

### **3.5 Data analysis**

Yin (1994) advocates the use of guiding propositions against which to assess the many data which a case study will yield. In this thesis a number of guiding hypotheses were presented in Chapter 1 and these will be used in Chapter 6 as a basis for data analysis. Much of the data from a qualitative study will be in the form of text which can be processed using content analysis. This draws out the commonalities in, for example, interview transcripts so that generalisations can be made from the data. Other conclusions can be drawn from the analysis of primary documents and from notes made at the case study location.

A great challenge of data analysis in case study research is to ensure that the results are both reliable and valid. A study is said to possess validity if the results can be generalised

to other similar cases and similar conclusions drawn, while reliability is the condition that a different researcher using the same data would come to the same conclusions.

The reliability of the conclusions that can be drawn from a case study, or from a group of case studies, is affected by the number of independent sources of data which lead to the same conclusion. In this sense, the data are said to be either convergent or non-convergent. Convergence occurs in a single case study where evidence from different data sources (e.g. interviews, documents and observation) supports the same conclusion. In multiple case studies, convergence is said to occur when results from different data sources in different case studies also point to similar conclusions. The use of several sources of data (from one or several case studies) whose conclusions support one another is called triangulation. (Shipman, 1988.)

The analysis techniques used in this work are similar to those advocated by Tesch (1990). She suggests that qualitative data should be examined in detail until categories begin to emerge from the data; these categories should then be refined, and finally the relationships between the patterns should be explored in relationship to theoretical propositions. Tools for this process, which have been used in this thesis, include flow charts, process maps and matrices which all help to test and re-test analytical constructs against the data until final conclusions are reached.

### **3.6 Choice of case study sites**

The case study sites were chosen for a variety of reasons. In the UK, choice was limited to those organisations which had taken at least some initial steps towards the implementation of workplace TDM. At the time when the research began, in 1992, there were very few such organisations in the UK. Nottinghamshire County Council was an obvious choice because it was a partner in the research project and indeed the project would not have come into existence, were it not for the work which had already been carried out at the County Council. The City Council made a convenient comparison to the County but also provided some contrast due to its physical location (in a city centre rather than in a suburb) and also because of its slightly different organisational culture and characteristics. Nottingham Trent University was chosen because it was named as a case study site in the research proposal (see Appendix 3); the original intention was that it should be a laboratory for the testing of TDM techniques.

The choice of case study sites could be criticised for being too "Nottingham-centric" but the current literature (e.g. CBI/BAA 1996) shows that much of the pioneering work in TDM in the UK has been done in the Nottingham area, thus justifying the choice of case study sites in the city. Hertfordshire County Council was chosen as a further case study site because of its pioneering work in the field of travel awareness which meant that its employees had received some exposure to ideas related to workplace TDM. Finally, Irvine was chosen because it was situated in the South Coast Air Quality Management District area and was therefore subject to mandatory TDM requirements; because it had

an active workplace TDM programme; and also because an additional dimension was provided since the Council itself regulated other employers' workplace TDM programmes within the City boundaries.

It is also obvious that the case study sites are all public sector employers and fall into the category of either municipal authority or university. There is no coverage of other types of public sector employer (such as hospitals and central government departments) nor of any private sector employers. In the UK at the time the research started the author was not aware of any private sector employers who were considering workplace TDM; and resources did not permit the use of more than one case study abroad. This has implications for the generalisability of the research overall, a subject which is discussed at greater length in Chapter 7.

### **3.7 The methodologies used in each case study**

Table 3.4, below shows which methods were used in which case study. As the table indicates, a number of different sources were used in each. This allows the researcher to cross-check data against one another for reliability, ensuring that a conclusion or inference is supported by not just one, but several, sources. (Marshall and Rossman, 1989). Not all methods were used in each case study location, reflecting the different levels of development of the different TDM programmes. At Irvine it was relevant to interview "ordinary" employees because they had experience of the TDM programme as consumers of it, whereas at Nottingham University there was very little awareness of TDM

techniques and so it was felt that anything more than a quantitative survey of existing attitudes was unlikely to reveal a great deal.

**Table 3.4: Research Tools Used for Each Case Study**

CASE-STUDY	METHODOLOGICAL TOOLS				
	Document review	In-depth interview	Mail-out survey	Participant observation	Research diary
Irvine	✓	✓	-	✓	✓
Nottingham City Council	✓	-	✓	✓	✓
Nottingham Trent University	✓	-	✓	✓	✓
Nottinghamshire County Council	✓	✓	*	-	✓
Hertfordshire	✓	✓	✓	-	✓

- ✓ Method used.
- Method not used.
- \* Results of in-house survey used.

This "methodological pragmatism" is in keeping with the advice of authors such as Bell (1986) who advocates a flexible approach to data gathering: as the observer spends more time around the case study, s/he will become familiar with the issues and then be in a position to judge what additional data needs to be gathered and what methods should be used to do so.

Some research topics within each case study may have a slightly different emphasis to the case study as a whole. For example, the analysis at the City of Irvine of employee attitudes to TDM supports the overall aim of understanding how the programme has developed, but could also be a separate study on its own. This is what Yin (1994) calls an "embedded unit of study" and he argues that it is usually appropriate as long as it does not

become the main aim of the study as a whole. In the case of this thesis, employee attitudes at Irvine were examined because it was felt that they would inform and support the overall analysis of the development of the programme within the organisation.

### **3.7.1 Case Study 1, the City of Irvine: methodology**

Negotiating access to the City of Irvine turned out to cause very few problems. A contact at the South Coast Air Quality Management District, California, USA, was able to put the researcher in touch with the leader of the TDM Section at the City and a request was made in writing to spend about 2 months observing the team's activities. The request also described the interview research that was planned and the resources that the researcher anticipated he would need. The Section Leader asked permission from her managers and a positive response was received very promptly, after which arrangements were made for the visit to go ahead. This access route is referred to by Patton (1987) as the "known sponsor approach" and it was used in a similar way at all, except one, of the other sites.

The researcher was based in the TDM office at the City for all of October and November 1992. At that time there were five City staff in the office who were working on TDM-related matters. The aim was to become a participant observer of the employee TDM ("rideshare") programme, in order that a process evaluation of the rideshare programme (Patton 1989) could be carried out.

In order to "measure" the processes which make up the Irvine rideshare programme, a "four-pronged" approach to data gathering was taken. Participant observation and in-depth interviews with employees were the main methodological tools adopted, but these



were supplemented with document analysis and detailed field notes. The researcher was allowed to attend staff meetings, listen to and watch the Employee Transportation Coordinator (ETC - the person responsible for implementing and monitoring the programme) at work, attend workshops for employees to discuss the programme, and help with some of the day-to-day activities of the office. At the same time, the researcher was able to read documents relating to the history of the programme at the City. As events, meetings and conversations were observed, notes were made to keep a record both of the events and of the researcher's reactions to them.

The visit was timed to coincide with the annual Average Vehicle Ridership (AVR) (see Chapter 2) survey for the City. This survey is used to assess the progress which an employer has made towards meeting its AVR target of 1.5. It is the formal means by which the Air Quality Management District assesses the effectiveness of the City's rideshare programme. The visit therefore took place at one of the busiest times of year for the TDM Section at the City, allowing observation of a number of important events and access to data as it became available.

Some 40 City employees were interviewed in depth to find out their views about the rideshare programme. Research participants were solicited by sending out written requests to employees whose names were randomly selected from a City employee list and also from an up-to-date list of participants in the rideshare programme. The sample was therefore stratified to the extent that names were selected from both lists. The written requests were followed up with phone calls where necessary and times for meetings

arranged at the convenience of each participant. Meetings took place in a spare office in the department.

Obviously there was some degree of self-selection in the responses to the requests for interviews. However, the aim of the research was not to survey a sample population so as to be able to draw *statistically* significant inferences from it. Rather,

"the task is to present the experience of the people [interviewed]... in sufficient depth that those who read the study can connect to that experience, learn how it is constituted, and deepen their understanding of the issues it reflects." (Seidmann, 1991 p 41.)

Regardless of self-selection amongst the group of people who agreed to be interviewed, the interviews which did take place helped to gain an understanding of these people's perceptions of the rideshare programme and of its development within the City.

There were other methodological problems. Participant observation is a valuable research tool, but it has potential drawbacks. The researcher must decide whether to be a covert participant observer (one who attempts a deep infiltration of the case study site by not revealing their true purpose) or an overt one, who is open about their role and intentions.

As Beynon (in Bryman 1988 p 29) says, participant observation can be "the only way of investigating certain internal organisational processes", and it can also be argued that "organisations cannot be studied at a distance" (Crompton and Jones, in Bryman 1988, p 72), but rather, that close-up (participant) observation is required. However, it is possible that a covert participant observer may "go native", becoming so much a part of the organisation that the ability to sift and judge the information being gathered is lost. The

overt observer may suffer the opposite problem, being too much of an observer and not enough of a participant. In this situation, the researcher may be unable to get around the "fronts and evasions" of people encountered and may find it difficult to discover what is "really" going on in the organisation. (Gill and Johnson, 1991.) The researcher's choice of role - as overt or covert participant observer - is "largely contingent upon the aims of the research, the skills and experience of the researcher, and the nature of the social setting to be investigated" (*ibid*). Spradley (1980) also highlights the different levels or degrees of participant observation that are available to the researcher.

In the case of the study at Irvine, both the researcher's English accent and the way in which access to the research site was gained precluded anything but an overt approach. This was advantageous in that many people, realising what the purpose of the visit was, went out of their way to be helpful. There was a certain novelty value for the staff in the office to be sharing it with a foreign researcher, and many of the rideshare staff seemed to enjoy describing their work to the researcher.

On the other hand, it was not possible to become fully accepted as a member of the TDM office and therefore to be fully conversant with the way that it operates and the difficulties which it may face. This was because, firstly, the visit lasted for only two months; secondly, the researcher was not an employee of the rideshare programme and so, although usually physically present in the office, he was not always invited to participate in the same way that an employee with duties to carry out would be expected to participate; and thirdly, the visit was to a foreign country with a foreign culture. The last

meant that in-depth interviewing was more difficult than had been expected - a very subtle "language" barrier was present. It is possible that, having previously lived for two and a half years in Canada and having conducted other research in the US, the researcher was expecting a less alien culture and language in California than that which was actually encountered. The person being interviewed perceives the world in a way which is filtered through cultural norms, so the appreciation of that perception is more difficult if the researcher does not fully understand those norms. (Silverman, 1985.)

Interviewing people who did not have strong views about the rideshare programme also presented some difficulties. In this situation it is very easy for the interviewer to make the interview reflect his views on the subject, but every effort was made to avoid this. The aim was always to get away from people's "public opinion" - their "instant response to pre-digested statements" - and to try to find their private opinion, that is, what they truly think and feel. (Peil and Rimmer, 1982 p 100.) This was attempted by asking more general, factual questions (about people's job, education, and experience of commuting) initially to put interviewees at their ease before moving on to more value-laden and "controversial" subjects. (See outline interview schedule, Appendix 1.) Strategies such as probing points in interviews, rephrasing questions, and asking the same question in several different ways were also employed. More generally, the researcher always made a strenuous effort not to ask leading questions.

Furthermore, on certain occasions there arose the problem of getting different versions of the same story from two different people. However, as Silverman (*op cit*) argues, this is

not an insurmountable problem: both people can be "right" in the context which they perceived at the time. The difficulty for the researcher is to present these two versions fairly. Finally, the possibility had to be borne in mind that interviewees were giving what they perceived to be the socially desirable response (for example, saying that they felt that ridesharing was a very good idea) or saying what they thought the interviewer wanted to hear. The researcher constantly stressed that it was not his aim to persuade non-ridesharers to change their mode of travel to work, but nonetheless his link with the TDM section at the City may have made some people feel that this was in fact the ulterior motive.

It was not the intention of the study to formally evaluate the rideshare programme at the City of Irvine in terms of the quantity of resources required to reduce one vehicle trip to the workplace each day. Instead, the study seeks to test the hypotheses set out in Chapter 1. However, there is an implicit evaluation of the programme's effectiveness in the presentation of users' and non-users' views and the conclusions drawn from these. In spite of the methodological challenges discussed above, it is argued that the methodology adopted was the best one suited for this type of study, and that the results give a valuable insight into the workings of a workplace rideshare programme. These insights can aid understanding of the processes at work in such a programme, and inform the activities of others who may wish to adopt a similar strategy for employee trip reduction.

### **3.7.2 Case study 2, The Nottingham Trent University: methodology**

The researcher was a member of staff based at the University between January 1992 and July 1993, although for two months (in autumn 1992) he was in the USA while carrying out the Irvine case study. There was therefore ample opportunity for observation in the Nottingham Trent University case study, and some additional data was also gathered on occasional visits in 1994 and 1995. Gaining access to certain parts of the organisation presented no difficulty and basic resources such as office space, copying and computer facilities were easily available. Permission to survey university staff and students for research purposes was also easy to obtain with the backing of the researcher's department and a senior member of staff. These rights of access were easily obtained because of the researcher's status as a member of staff. However, access to certain "key opinion holders" such as the Head of the Estates Department and the Director of Finance was difficult or impossible to obtain. Similarly, permission was not granted to conduct an experiment involving a temporary change in working hours for a small group of staff (see Chapter 5); in this case, then, access to potential research subjects was denied.

The case study location was one in which there was no existing workplace transport demand management programme. This meant that there was no part of the organisation to which the researcher could go and observe in the way that there had been at the City of Irvine. For similar reasons there were very few relevant documents available, with the exception of those on workplace parking, a topic which had been the subject of much internal debate for many years.

The main efforts to implement workplace TDM at the University during 1992 and 1993 were made by the researcher and therefore it is hard to argue that he was engaged in participant observation since it is problematic to be both actor and relatively detached observer of one's own actions. However, it presented a unique data-gathering opportunity from a first-hand perspective which was not available at other case study sites where he was simply an observer. The researcher was able to make some observations, to review key documents and to interview one key actor, but his interpretations risk being coloured by his attempt to implement TDM at the University. The account and analysis of this case study must be read with this caveat in mind.

Again, because there was no TDM programme in place there were no participants to study. It was therefore decided that, rather than interviews, a questionnaire survey would be a more effective way of ascertaining staff and students' current travel habits and attitudes to TDM issues. Rather than a sample, the entire University population of 15,000 was surveyed (although a 100% response was not received). In retrospect, it was not necessary to undertake a survey of such size and a sample would have been adequate; however, a survey of the entire University population was one of the activities set out in the researcher's work programme (see Appendix 3) and so it was carried out. A separate questionnaire survey was carried out on those people who took part in a free bus travel promotion. Details are set out in Chapter 5.

### **3.7.3 Case study 3, Nottinghamshire County Council: methodology**

The research of which this thesis is the outcome was originally part-funded by Nottinghamshire County Council because of its interest in workplace TDM, and this meant that undertakings of co-operation had been given by the Council to the researcher's department at the University from the start. The case study research at Nottinghamshire is again based mainly on the period January 1992 to July 1993, with some additional information gathered in 1994. Although Nottinghamshire County Council had adopted workplace TDM as an aim of policy and took some action towards its implementation, no programme was put in place during the period 1992 to November 1995. Again, then, there were no TDM "customers" at this workplace and there was limited awareness of the concept. A staff survey, similar to that carried out at Nottingham Trent University, had already been conducted. Because of these constraints, the methodologies used were limited to document analysis, limited interviewing of three key actors, and participant observation. During 1992 the researcher worked quite closely with the Council's temporary Employee Transportation Coordinator (ETC) and more occasionally with other members of staff, providing research back up on TDM issues and helping to draft reports.

Access was easily obtained to key staff at the Council, and permission was also obtained to conduct interviews with other members of staff in the event that a workplace TDM programme were to be set up. Access to relevant reports and files was also granted.



#### **3.7.4 Case study 4, Nottingham City Council: methodology**

During 1995, when the research at this site was carried out, only one element of a workplace TDM scheme had been implemented. Because of this the investigation concentrated more on the process through which plans had reached their current stage and therefore the research centred mostly on document reviews and interviews with six of the people who had been involved with the development of the plans. An outline of the interview schedule used is presented in Appendix 5. Due to constraints on time and resources, participant observation was not used in this case study.

Access to a key Department was gained by letter and follow-up phone calls. Staff in the Policy and Development Departments made their files available to the researcher. The researcher reciprocated by giving a presentation to one Department and also by sharing draft conclusions with research participants. There was, however, more reluctance from other departments to contribute to the research. For example, a member of staff in the Personnel Department who had been most involved with the plans for workplace TDM initially declined by letter to be interviewed but changed his mind after a follow-up phone call from the researcher. Contacts in the Environmental Health Department were also reluctant to take part. This is obviously more than a methodological issue and so will be discussed at greater length in Chapter Five, below.

#### **3.7.5 Case study 5, Hertfordshire County Council: methodology**

The research at Hertfordshire took place in the second half of 1995. Here again there was no workplace TDM programme up and running but rather a few isolated initiatives for

staff which were put in context as part of a wider travel awareness campaign that was aimed not only at Council staff but also at the wider public in the County. Access to the site took some time to establish, first contact being made with a key actor at a conference and then followed up with several phone calls, a letter and a visit. However, following this start-up period, considerable help was obtained from the contact in distributing questionnaires to and collecting them from Hertfordshire Council staff. Access was later granted to relevant files and documents which the researcher was able to read at Hertfordshire County Hall. Informal discussions took place with two contacts at the Council but formal interviews were not considered worthwhile due to the extremely embryonic state of workplace TDM at the site. A small questionnaire survey of a random sample of administrative staff at the Council's Hertford offices was undertaken. The sample size of 94 was chosen largely for ease of distribution and other logistical reasons and in retrospect the results would have been of greater value, had a larger sample size been used.

### **3.8 Conclusion to methodology chapter**

This chapter has made a consistently argued case for the methodological strategy adopted for this thesis, in particular highlighting the importance of qualitative techniques within an overall case study approach. It has done this by comparing a range of research strategies to argue that the case study approach was the most suitable for the type of research questions which are explored in this thesis. The range of research tools available within the case study approach was then examined, and the importance was emphasised of

bringing a variety of data-gathering methods to bear on the case study in order to provide a number of different sources of data.

At Irvine a wide range of techniques was used to explore not only how the rideshare programme had developed but also how it was perceived by those at whom it was aimed. These included structured interviews, participant observation, archival and document analysis. At Nottingham Trent University, the researcher was in a unique position to both attempt to implement TDM strategies and to observe that process; the bias that this research situation may have involved is to some extent compensated for by the researcher's closeness to the research site and it is argued that this variant of participant observation has brought additional insights to the research. At the three Councils, interviewing and document analysis were the main techniques used to understand how and why the workplace TDM measures at these three sites had developed in their own unique ways, and at Hertfordshire this was backed up with a short questionnaire survey of employee attitudes. This shows how the range of techniques used in each case study was influenced by the characteristics of that site - large scale in-depth interviewing of employees, for example, was considered appropriate only where there was an existing rideshare programme about which employees could be interviewed. Time and resources available were also important factors in the level of investigation which was carried out.

Having made an argued case for the various methodologies used, this thesis now moves on to consider the results of each of the case studies in some detail.

## **CHAPTER FOUR, CASE STUDY ONE: THE CITY OF IRVINE**

The first case study for this thesis is the City [Council] of Irvine, Orange County, Southern California. The case study visit was arranged through the South Coast Air Quality Management District (see Chapters 2 and 3). It was thought that the City would be a particularly interesting site as, not only was it subject to workplace Transport Demand Management (TDM) Regulation XV, but it was also responsible for enforcing its own TDM Ordinance on companies within the City limits. Case study research was carried out in October and November 1992.

This chapter presents the story of the rideshare programme at the City of Irvine from its inception in 1989 through to the end of 1992. It gives an introduction to the geography of the City. The rideshare programme itself is then described, based on the memories of important actors, as well as on relevant City documents, and some explanations for the successes and failures of the programme are posited. Finally various employees' opinions of the rideshare programme are presented, as these are an important pointer to the way in which the organisation "took on board" any commitment to ridesharing. The analysis of the programme and its relationship to relevant theory will be dealt with in Chapter 6.

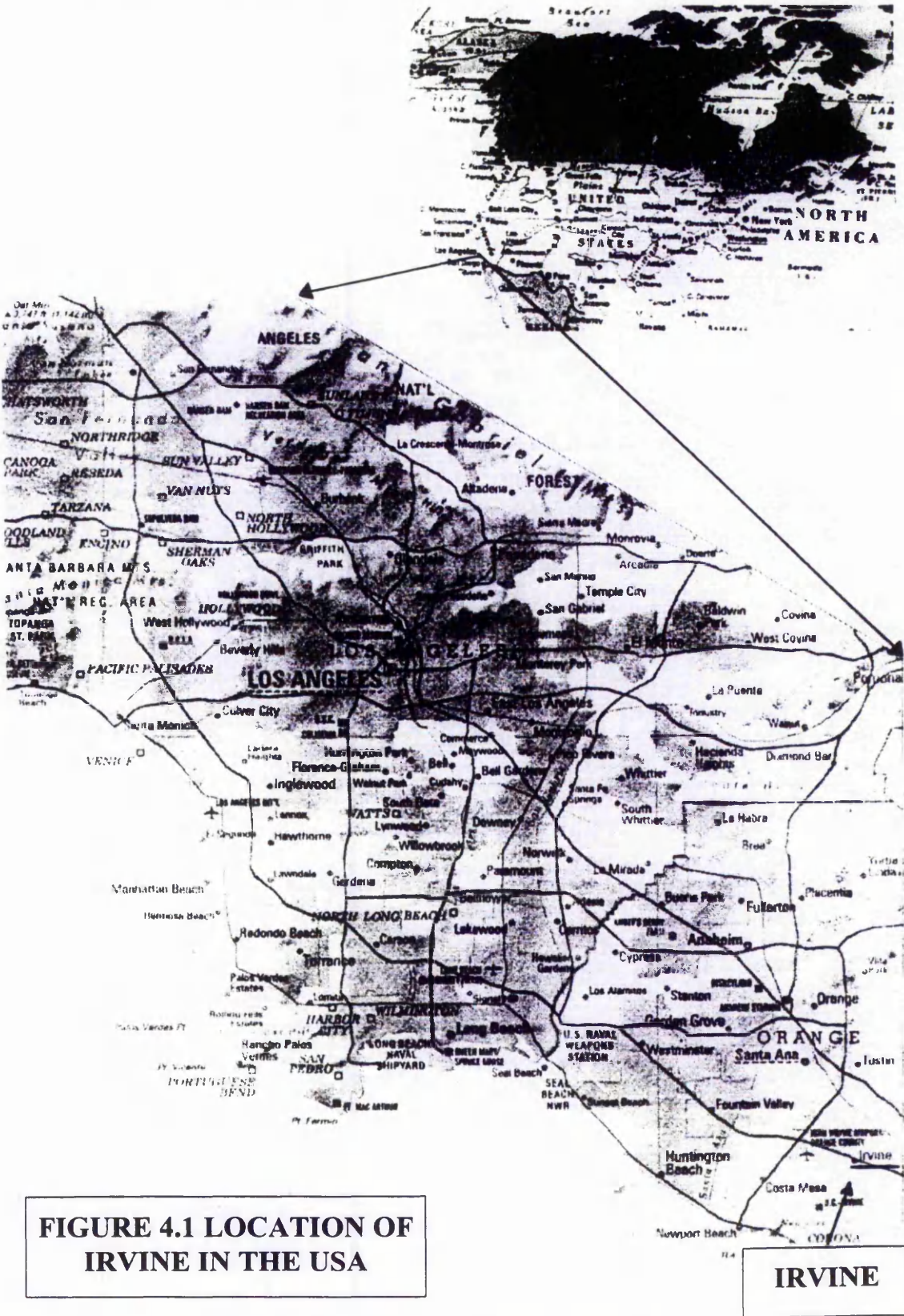
### **4.1 City of Irvine - a brief geography.**

The City of Irvine is located in southern Orange County about 40 miles south of Los Angeles. It was founded in 1971 and owes its existence to the Irvine Ranch Company, which is the largest landowner in the City and has had a great influence on its development. The City lies about 3 miles inland from the Pacific coast at Newport Beach

and is at the confluence of freeways I5 and I405 which run northwest to southeast through the City. The City is also served by the California Route 57 freeway which runs from John Wayne Airport northwards from Irvine. The City is affected by through traffic travelling from southern to northern Orange County and Los Angeles. (See Figure 4.1.)

Irvine has been deliberately developed as a "planned community", so that the pace and style of development is controlled and one neighbourhood is completed before work starts on another. This careful planning has enabled it to attract a wealthy population and also a large number of businesses which have located in business parks such as the Irvine Spectrum. Several US Corporate HQ (e.g. Toshiba, Shimano) are located in Irvine. In addition, the City is home to one of the University of California campuses. More people work in the City than live there, although this may change as development continues (in 1992, only 50% of the planned area had been developed.)

The City's infrastructure has been developed to cater for all modes of transport other than rail or tram. Six or even eight lane arterial roads have been built to cope with traffic levels forecast for the time when the City is fully developed; all streets have pavements and (on main roads) cycle lanes. The bus network is sparse and services are infrequent - City Hall is half a mile from its nearest stop. In late 1992 only two City employees, out of a total of over 700, used public transport to get to work. There is however a reasonable network of useful off-street cycle/pedestrian paths, separate from the road network and following routes such as drainage channels and rail rights-of-way, and so a few more employees

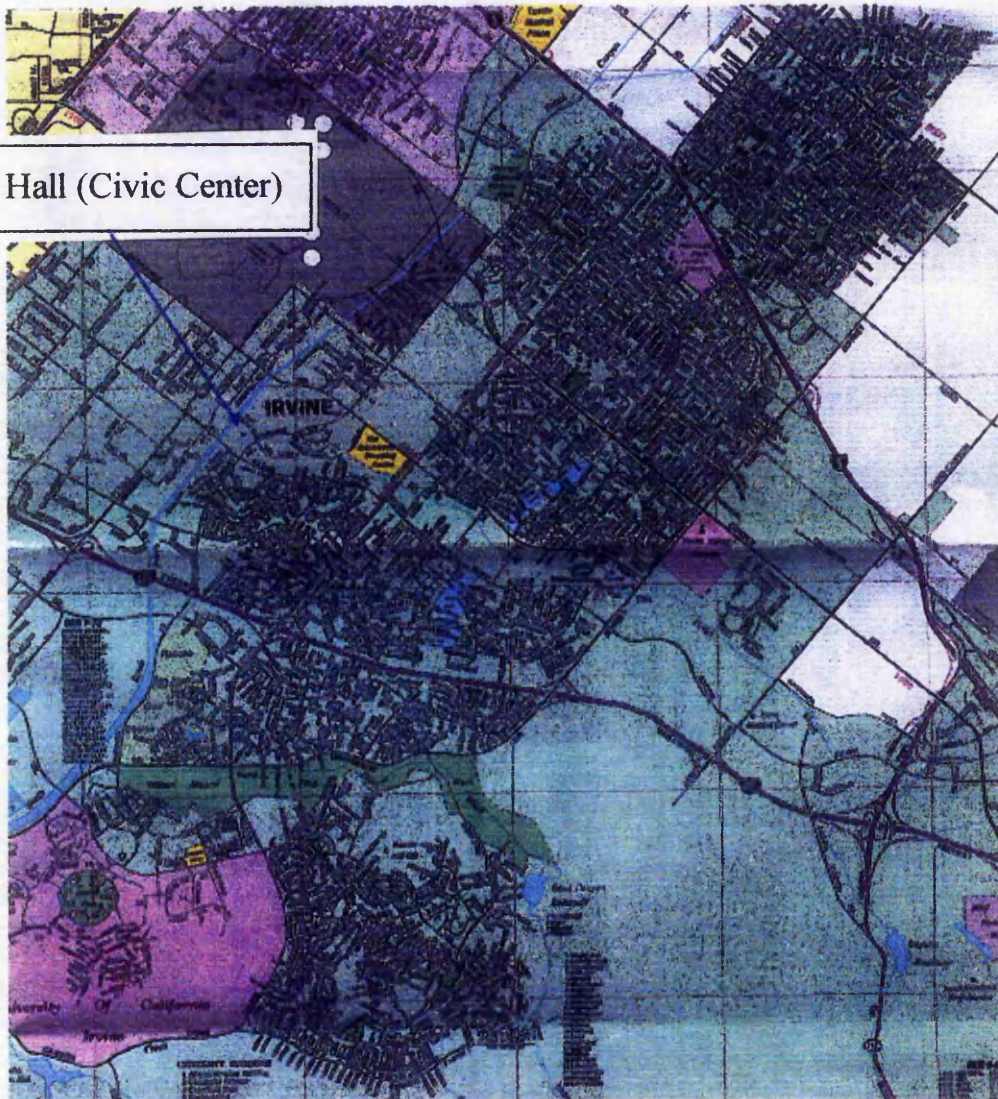


**FIGURE 4.1 LOCATION OF IRVINE IN THE USA**

**IRVINE**

**FIGURE 4.1 (cont) IRVINE**

City Hall (Civic Center)



walk or cycle to work than take public transport - though not as many as might be expected, given the generally good weather.

The scale of the roads and lack of development in certain areas nonetheless makes the City an unwelcoming place for pedestrians and often facilities are not within walking distance - the City Hall, for example, is over half a mile from the nearest shop. With a built environment of this nature, and the lack of public transport, it is not surprising that when the City first introduced a rideshare programme, its Average Vehicle Ridership (AVR, see Chapter 2) was 1.05 - that is, almost all employees were driving alone to work.

Although Irvine sells itself as a unique planned community, it is not atypical of many US suburban cities in its layout and its transport infrastructure. AVR for commuters in many similar areas of the US is close to 1 (FHWA, 1990). Even in new US suburban cities such as Bellevue, Washington, which claim to have been planned to take into account the needs of the pedestrian, the overwhelming impression of the built environment is of isolated buildings surrounded by car parks and separated by multi-lane roads. Most US city centres are much denser and so AVR is often much closer to that in comparable British cities - 22% of commuters to downtown Los Angeles use the bus, for example.

The City of Irvine is however unusual because many of its employees are paid enough to afford to live near the City and so travel-to-work distances are lower than the regional average of 18 miles one way (CTS, 1992). The average for commuters at Irvine is 12 miles (City of Irvine, 1992). TDM training literature (e.g. TMS, 1991) notes that short-



distance commuters are usually the most reluctant to change their mode because they will incur a much greater relative time or inconvenience penalty than a long-distance commuter, with little reduction in commuting cost or stress. Discussions with Employee Transportation Co-ordinators (ETCs) also indicated that highly-paid professional staff - typical of the City Council, where over half the 630 staff at the main site are professional/managerial - are very reluctant to change their mode, both because financial incentives are not large enough to attract them and also because they are very status-conscious, strongly identifying status with driving alone to work. In the following sections of this chapter, staff referred to as "managerial" are those on the City's grade of principal or above; below them are seniors, assistants and administrative staff.

## **4.2 The Story of the Rideshare programme at the City of Irvine**

The City was notified by the Air Quality Management District (AQMD), the regulatory body for the area, that it had to file a trip reduction plan in late 1989. The rideshare programme began in January 1990 when the first plan came into effect. At this time the City Council was controlled by a liberal administration which took a fairly radical approach to transportation matters - for example, it was pursuing the idea of a monorail to link a large employment centre with a planned rail station about 8 miles away. This administration lost control in November 1990 and a more conservative council was elected.

When the programme first began it was the responsibility of one person in the Public Works Department. This person applied for the post of Employee Transportation Coordinator (ETC, though officially the post was known as "Transportation Programme Specialist") because of her environmental interests. She will be referred to as "ETC1". The City was mandated to create the programme by the AQMD, but no departmental manager was keen to take it on because, as both ETC1 and the City Manager [Chief Executive] put it, "nobody really knew what to do with it." The Public Works Department had responsibility for transportation but no experience with this kind of programme. There was some precedent for fledgling programmes of this kind to start off in the City Manager's Office and then move to a relevant department once established but in the case of the Rideshare Programme this was not followed.

The initial two-year budget for the programme was \$173,601 (£112,000 at January 1995 rates of exchange). This was an estimate of what would be required, since the amount spent on incentives is obviously dependent on the degree to which people participate. The programme at that point offered the following benefits (City of Irvine, 1989):

- " **A commuter bonus** of \$25 per month to any employee who uses an alternative mode of transport for more than half the time.
- " **A city loaned bicycle programme** - reconditioned stolen bicycles from the Police Department (part of the City) were lent to employees to try bicycle commuting. If they cycled to work for more than 3 months they could keep the bicycle.

- “ **Preferential parking for carpoolers.** The City has more than one parking space per employee. The car park (a surface lot adjacent to the building) is divided up with visitors' and managers' spaces closest to the building and general employee spaces further away. Some of the closer spaces were marked for the exclusive use of carpoolers, regardless of managerial status.
  
- “ **Rideshare luncheon** - a quarterly event for those who participated in the programme in the previous quarter, to "celebrate" their participation.
  
- “ **A database for matching employees with others who want to carpool to work.**  
This produced matchlists which were given out to employees for them to find a carpool partner. It matched people living in a similar area but not those living along the length of routes to work.
  
- “ **Vanpooling.** The budget was available to subsidise employee vanpools by 50% but not enough employees were able to get together to form one.

By November 1990, after a little less than one year, the AVR at the Civic Center site had risen from 1.05 to 1.11. At that point the City was required by the AQMD to file an update plan and also a new plan for its other main worksite, the Operations Support Facility ("the Yard"), which was now over the 100 employee threshold. When measured in August 1990 the AVR at the Yard was already 1.27. (This higher figure was because of the more manual and lower-paid workforce at the Yard who, in order to find housing that they could afford, were forced to commute over much longer distances than workers at the City Hall and who consequently formed carpools to share driving and vehicle running

costs.) The AQMD made clear that more incentives and/or disincentives to raise the AVR further would be required, otherwise the new plan would not be approved.

In the Public Works Department of the City Council, the programme was, in the words of a manager who later took it on, "kind of given a back seat, it was pushed to the side". ETC1 felt that the small number of participants was in part a result of the low priority the work took within that department, and the lack of interest paid to the programme by her traditional and "maintenance-oriented" boss. "He didn't hinder the project, but he didn't exactly help with it either. It wasn't given the support and the kind of push that it needed."

Others viewed ETC1's somewhat abrasive personality as another reason why participation remained low in the early stages of the programme.

In response to the demands of the AQMD and to the low rates of participation, an update plan (City of Irvine, 1990) was developed. This put forward other ways in which AVR could be increased, including:

- **A guaranteed ride home programme** - so that people using alternative modes could get home in an emergency, either by borrowing a City vehicle, or by taking a taxi paid for by the City.
- **Public transport subsidies** - anyone commuting by public transport would get their entire fare paid.
- **Telecommuting** - allowing employees to work from home for some of the time.
- **Midday shuttle** - to ferry people to and from local shops at lunchtime.

The cost of this was estimated to be \$401,000 over two years. The largest parts of this budget were ETC salary (\$37,000 a year); vanpools (\$48,000 for 2 years); the \$25 a month bonus for ridesharers (\$129,000 for 2 years); and the lunch-time shuttle (about \$40,000 over 2 years). This proposal was amended by the Council members to reduce the cost. The ETC was hired on a contract basis on a lower wage (about \$25,000). The lunchtime shuttle was implemented but was withdrawn due to lack of use, and the vanpool subsidy remained unused due to lack of vanpoolers. In late 1992 the budget was running at about \$100,000 a year.

The biggest change which was implemented as part of the new plan was the widespread adoption of compressed work weeks. This was suggested for the 1991 plan update and so the practice was expanded in early 1991 to increase the AVR. (Several departments had had workers on compressed schedules for many years - road maintenance teams in Public Works, for example.) Compressed work weeks are discussed further, below, in section 4.5.3.

### **4.3 The Irvine Trip Reduction Ordinance and its relationship to the rideshare programme**

An Environmental Impact Assessment of a large business area in the City (the Irvine Business Complex (IBC)) revealed that, if fully developed, the trips generated would exceed the capacity of the local road network. To deal with this problem, an agency called the Irvine Transportation Authority (ITA) was set up by the Council, charged with producing a Trip Reduction Ordinance (TRO)<sup>1</sup> to keep generated trips below a certain

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<sup>1</sup>

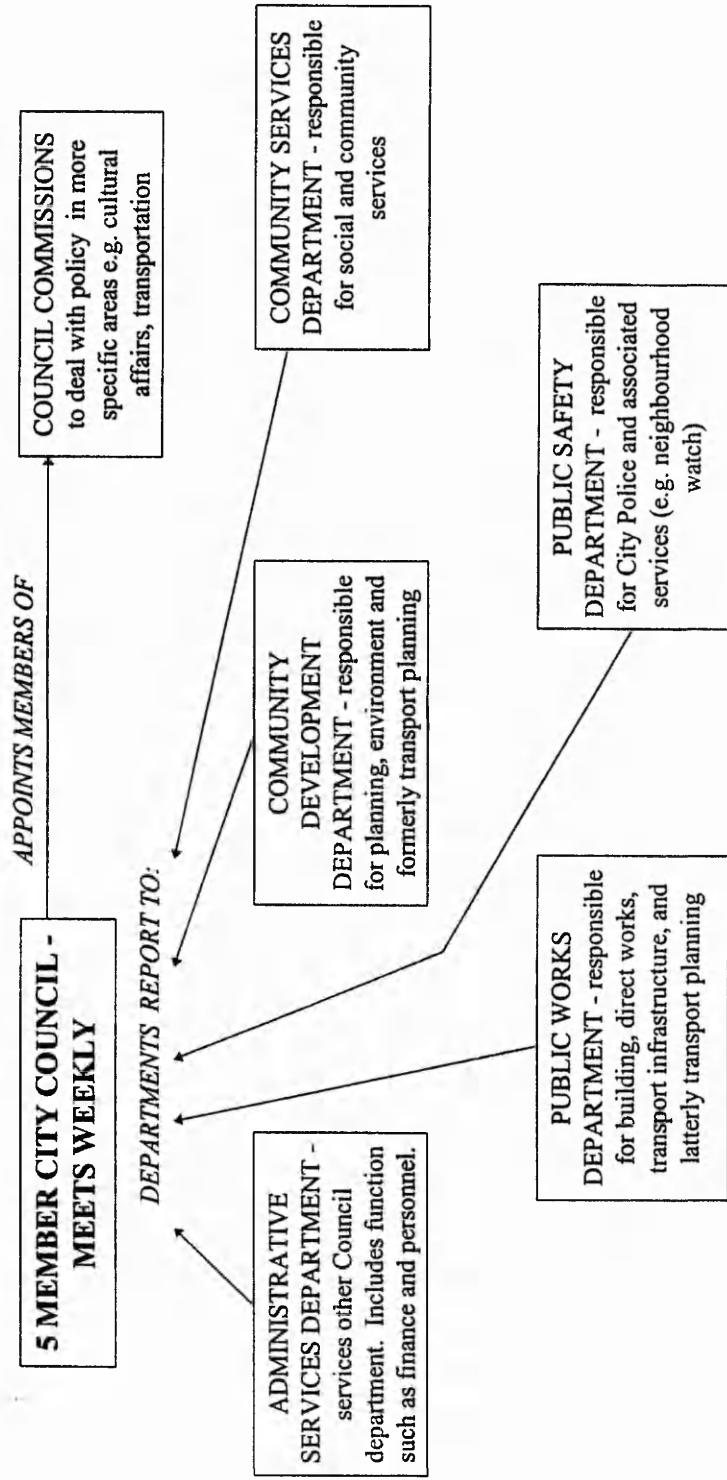
An Ordinance is a law which applies only within the City Council's area of jurisdiction.

threshold so that development could continue. A new City Council department, Advanced Transportation Systems, part of the Community Development directorate, was the executive arm of the ITA. (Community Development responsible for land use planning and some transport policy.) (See Figure 4.2.)

Advanced Transportation Systems was charged with projects such as the construction of a new railway station in the City, the monorail, and to ensure that new developments could be accessed by alternative modes (for example by checking that there was a bike path and bus stop nearby and if necessary requiring the developer to fund these). One of the department's main aims was to develop the TRO and to extend it to the whole City area. Firms were allowed to choose between regulation by the seemingly distant and bureaucratic AQMD; or, under the TRO, by the nearby and "customer-friendly" City. Under the then Regulation XV, local authorities were permitted to develop their own version of the regulation as long as it was deemed (by the AQMD) to fulfil the aims and requirements of Regulation XV. The City of Irvine's TRO was in fact slightly more onerous in the detail required in the plan forms submitted by employers, but compensated for this by being local and having been developed by the City in consultation with a group of local ETCs. The TRO was as much an economic development as a transport measure, showing that Irvine led the way on "business-friendly" regulation.

In July 1990 the rideshare programme for the City's own employees was brought within the new Advanced Transportation Systems department (and thus transferred from Public Works to Community Development) under a new and quite charismatic manager -

**FIGURE 4.2: RELATIONSHIP OF IRVINE COUNCIL DEPARTMENTS AND COUNCIL MEMBERS**



"Mover" - who had considerable experience in and commitment to TDM. He had built his reputation by creating an exemplary rideshare programme at another City in Southern California. Unfortunately, according to another Manager who worked quite closely with him, he also "pissed everybody off. He had exactly the wrong style for selling the [Rideshare] Programme. He had this attitude of "oh, you silly people, you are going to start ridesharing", and then he goes out and buys himself a BMW convertible and drives alone to work."

Mover was employed because of his expert knowledge of ridesharing, of which the Council which appointed him was very supportive. However, that Council lost office only four months after he took up his post. Mover's main concern was to set up the TRO, which he succeeded in doing, and to increase the autonomy and importance of the Irvine Transportation Authority, which he failed to do. The new City Council was unwilling to delegate authority to this new agency. As one manager put it, "I think the old Council that hired him was a lot more in line with his thinking and the newer Council was not." Whilst the previous Council was willing to allow Mover considerable freedom to develop alternative transportation in Irvine at arm's length from Council control, the new Council saw Advanced Transportation Systems as another City Department which complemented the transportation functions carried out by other departments such as Public Works and Transportation Planning.

Mover's pre-occupation with the ITA and the TRO left him little time to deal with the City's own rideshare programme. His staff working on it felt that he gave them very



little support or where he did get involved, his style "alienated a lot of people". The staff felt that the identification of the programme with Mover had repercussions on the way in which it was viewed by other City staff, even after he was forced to leave (in July 1992). As the new TDM Manager, who worked under Mover and then took over from him, said, "the last person they dealt with was Mover, and they still had this image of the programme as this image of him. And I present a different image, I am not brilliant but I am nicer!" However, in interviews with other non-management staff, there was little discussion of the role of Mover and his effect on the rideshare programme's image. Other managers, on the other hand, felt that his style had been somewhat alienating and in this sense had not helped the rideshare programme.

#### **4.4 Progress in the rideshare programme.**

Not long after Mover's appointment, and in part due to disagreements with him, the first Employee Transportation Co-ordinator (ETC1) left her job and went to work in the Police Department. The new ETC (ETC2) had been working in the division as a sandwich student and in September 1990 she took the job on a contract basis, as mentioned above. Over the first year that she was in post, and in spite of any negative image that may have been generated by Mover, the AVR at the City Hall site rose from 1.11 to 1.28; at the Yard from 1.27 to 1.46. (Jacqueline Golob and Associates, 1992.)

#### **4.5 Reasons for progress**

The apparent success of the rideshare programme over this time was due to a number of factors. These are discussed below.

#### **4.5.1 The Employee Transportation Co-ordinator**

ETC2 brought a fresh approach to the job. The importance of continual changes of approach - which may include a new ETC - is emphasised in TDM training literature (TMS, 1991). If the novelty of a programme has worn off, it can be rejuvenated with input from a new person.

The ETC2's personality undoubtedly helped to raise the profile of the programme. ETC herself recognised that people liked to talk with her. A colleague commented that "she has a lot of support from management... I think she's fun for them to talk to and they don't intimidate her." Perceived as an outgoing and very positive person, she helped to boost the image of the rideshare programme, making it more "fun". The profile of the programme was also raised with new promotional events such as the Rideshare Fayre and Luncheons, and by publicity work to raise general awareness of issues around ridesharing and air quality. Staff views on these activities are discussed in Section 4.7 of this chapter.

#### **4.5.2 Management commitment**

1991 also saw an increase in management commitment to and participation in the programme. This was noted by employees and managers alike. The City Manager himself gave ETC2 a lift into work one day a week; in his words, "At the start, if this programme was going to be successful, then our employees needed to know that the City Manager was also willing to do it". (It is interesting that he perceived this to be "the start" of the programme.)

The increase in commitment was in part because the City was implementing its own high profile Trip Reduction Ordinance and as the regulator it wanted to be seen as "practising what it preached". But the commitment was also due to the threat that if participation was not increased enough by voluntary means, it was likely that a punitive measure - paid parking at work - would be imposed on employees, with consequent negative impact on morale. Paid parking was considered in the 1991 Plan review but put on hold for a year; during that year a pay freeze and redundancies made paid parking unacceptable for implementation in the following year.

#### **4.5.3 Compressed work weeks**

Another factor which helps to explain the increase in AVR was the introduction of compressed work weeks on a large scale. This was a significant cause in the increase in AVR between 1990 and 1991. More than half of the City employees covered by Regulation XV moved on to some kind of compressed schedule. The most common was 80 hours in 9 days with every alternate Monday or Friday off. Less common was the 40 hours in 4 days schedule, which led to problems of exhaustion; and less common still was the 36 hours in 3 days which was restricted to certain staff in the Police Department. Credit was given by the SCAQMD for employees working these schedules because they obviously lead to a reduction in trips to work - a 10% reduction in the case of the 9/80 (80 hours in nine days) schedule, for example. The link between the compressed work week and a reduction in all trips is less easily proven, though Atherton (1983) carried out a travel diary survey of employees on compressed work weeks which suggested that the

new schedule led to a reduction in their overall travel rather than a simple substitution of leisure for work trips.

A review of the compressed work schedule in October 1991 found that as well as reducing commute trips, the system appeared to have had beneficial impacts on productivity and employee morale, as well as reducing absenteeism. The first 9 months of 1991 showed a 16% reduction in sick leave compared with the same period in 1990. (City of Irvine, 1991.) Staff overtime was 17% less in the second period compared to the first. Many staff saw the additional day off as a valuable benefit, and the review noted that this had boosted morale. It also recognised that, with many staff working longer days, the City was able to offer service to the public over a longer period each day, and that this benefit largely outweighed the increased difficulty of scheduling meetings.

#### **4.6 Programme stagnation and its causes**

Between October 1991 and 1992, the AVR did not change at the City Hall and fell to 1.44 at the Yard (Jacqueline Golob and Associates 1992). (In early 1993 a vanpool was finally started at the Yard and this took the worksite above its 1.5 AVR target.) If not merely survey error<sup>2</sup>, they indicate some slowing in the effort to get more people to commute by other modes. This slowdown was recognised by the ETC, by her boss, and by other managers.

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The survey uses a self completion questionnaire which asks employees how they got to work during the previous week. It is therefore a snapshot rather than a continuing assessment of people's travel habits.

There were various reasons for the slowdown in progress. One was ETC "burnout". The day to day operations of the rideshare programme required a considerable amount of administrative effort by the ETC. Each participating employee was asked to fill out a daily log of their mode used to get to work and have this signed by their supervisor. Their eligibility for incentive payments was then calculated from this form by the ETC and administrative assistant, and payments sent out where applicable. The ETC was also constantly answering queries from rideshare participants. She was required to write quarterly reports to Council on the progress on the programme, and was also responsible for "policing" the use/abuse of the preferential carpool spaces in the car park.

In addition, it was necessary to fulfil the marketing obligations of the rideshare plan. In 1991, for example, a Rideshare Fayre was held to promote the programme and the idea of ridesharing in general, and "Bus Month" and "Bike-to-Work Day" were held to promote those particular modes. In 1992 a "Rideshare Olympics" was used as the vehicle to raise the profile of ridesharing: prizes were awarded to the most dedicated participants and to the departments with the highest level of participation and greatest number of new participants. Such activities could absorb much effort, despite the fact that the number of participating employees was only 130 (out of a total eligible workforce of 600). The effort of being continually positive about such a programme can lead to ETC "burnout". Partly in consequence of this, at the end of 1992 ETC2 left the City of Irvine to work in a completely different field.

By late 1992 the novelty of the programme had worn off, not only with the ETC, but also with employees. ETC2 was no longer a new face around the City, and the publicity which she distributed did not have the same impact as it had once had. Also, attrition amongst car pools is also inevitable: as people move house, have children, or have a spell of working late, so the informal carpool arrangement is abandoned because it is easier to resume driving alone than to re-arrange the carpool. As a very senior manager - who had a baby in 1991 - said, "I stopped ridesharing, and I just didn't start again". Another employee started participating in response to exhortations from management, but stopped because personal differences with her carpool partner were threatening their friendship. They agreed that they "would rather be friends than rideshare partners!"

It was also agreed by ETC2, her supervisor and senior management that those staff who could easily be persuaded to rideshare were already doing so and those that remained would be much more difficult to persuade to change mode. This has been recognised by Orski (1993) in a review of other rideshare programmes. For a sizeable proportion of the staff in Irvine, they really had no feasible alternative: about 25% of staff went straight from work to college or to pick up children and, in the absence of a developed public transport system, driving alone was the only way to do this. (Jacqueline Golob and Associates, 1991.)

## 4.7 Employee Attitudes to the Rideshare Programme

The aim of a rideshare programme is to persuade employees to change their mode of travel to work. It was hypothesised in Chapter 1 that employee attitudes to the programme, among other things, affect organisational commitment to that programme, in that they reflect the importance given to ridesharing in the organisation. The following section will summarise the attitudes of employees at Irvine to their programme. The relevance of this to the effectiveness of the programme will be discussed in Chapter 6, when data from various case studies will be analysed.

Table 4.1, below, shows some characteristics of the City employees who were interviewed for this research. Interviews lasted anything from 20 minutes to two hours.

**Table 4.1: Interviewees at the City of Irvine.**

	Mode other than driving alone	Drive alone
Male	9 (39)	14 (61)
Female	9 (45)	11(55)
Clerical	6 (14)	3 (7)
Assistant	8 (19)	10 (23)
Senior	3 (7)	2 (5)
Principal	0 (0)	2 (5)
Manager	1 (2)	8 (19)
Average distance to work one-way	20.3 miles (including 4 people with commutes over 50 miles. Without these, average drops to 10.5 miles.)	9 miles

*Figures in brackets are percentages. One manager and one other used an alternative mode once a week. Three managers and two others were "lapsed" carpoolers who carpooled at some point in 1991/2. These are all included in the "drive alone" category.*

The questions set out in Appendix 1 formed a basic structure to the interview; further questions and discussion developed where relevant. Interviews were tape-recorded, transcribed, and then subjected to content analysis. This attempts to discover - from the mass of interview data - the important ideas expressed by interview participants, and especially those which are shared by a number of different people. The challenge of content analysis is to find these commonalities without losing the richness and the context of what has been said (Dunkerley in Bryman, 1988).

#### **4.7.1 The need for Demand Management**

There was quite a strong feeling amongst the employees interviewed by the author that there was a need for some kind of action to tackle the congestion and air pollution of the region. "Carpooling keeps one person off the freeway and so it saves me and everyone else a headache" was a comment from Assistant K. The same link between a societal problem and personal action was also recognised by Secretary L, who carpooled because "I'm one of those who doesn't care for smog that much". Only one person out of the 43 interviewed felt that Southern California does not suffer from these problems. There was support from several people for the City spending money on a rideshare programme so as to lead the rest of the community by example. There was also a strong feeling amongst some of those interviewed - most of whom had lived in the area for a long time - that the problems of congestion and air pollution were in part due to excessive population and that there was a need for growth management. As Assistant V said, "the air quality is bad - but I think overpopulation is a problem too."



There was much more debate about the effectiveness of putting so much of the responsibility for action onto employers, and about the cost of rideshare programmes. Several engineers, for example, were not convinced that the benefits of TDM had been proven before it was decided to spend \$100,000 per year on the rideshare programme. Increases in petrol tax were frequently mentioned as a more efficient and cost-effective way of reducing travel demand, perhaps because it had received much coverage in the Presidential election campaign at the time. Manager M, from the Public Works Department, felt that the emphasis on voluntary participation in a workplace rideshare programme was "pussy-footing around", and that much more draconian measures were needed to bring about a real change in people's behaviour. However, he doubted that the AQMD was the right organisation to implement such measures because it was an unelected and unaccountable body. Manager M - whose job brought him into frequent contact with the AQMD over a number of issues - voiced similar concerns.

#### **4.7.2 Indifference to the programme**

As mentioned above, only 130 out of about 700 employees had used any alternative mode to get to work at some time between August and October 1992. It can be inferred that many of the non-participating employees had no very strong feelings about the programme, but had seen what was on offer and decided that it was not of relevance to them. They were, in short, not bothered about it. This did not of course apply to all non-participants, but as one member of the TDM office staff said, "I don't think that the programme is really, you know, thought about that much".

### 4.7.3 Experience of the rideshare programme at the City

Although the indifference of many employees to the rideshare programme was mentioned in section 4.7.2, above, there were of course other people who had some experience of the programme - its publicity, its staff, or as a participant - and had formed a view of it as a result. Opinions were not polarised between people who did not rideshare and those who did. Managers were more complimentary about the programme than lower-ranking staff, in spite - or perhaps because of - lower rates of participation amongst the former. Female staff commented less positively about the rideshare section than did the men interviewed.

There were those such as the Community Development Manager who felt that the Rideshare team were doing a valuable job very well. Others such as engineer D felt that he had always had reasonable service from the staff in the section, when he had needed their assistance. On the other hand another, very committed ridesharer, L, said, "The rideshare department has been very **unhelpful**. Even acting a little interested would have helped." She was forced to set up her own carpool arrangement and, because she carpooled with school children, had to fight for this to qualify her for rideshare incentives. Other people said that the matchlists of potential carpool partners which they had received from the section had been unsuited to their needs, in that they had contained names of people who lived quite far from them and/or worked completely different hours. Finally, there was some concern that the activities of the section were frivolous - "the **appearance** is, more partying". It was recognised by manager Q,

however, that there is a very fine line to tread between drumming up support for a voluntary activity and appearing frivolous: "[they] are doing a lot of ra-ra and cheer-leading and my heart kind of goes out to them because I know what they are going through". This view was in part due to her own work organising another non-mandatory "education" campaign within the City - its employee "Wellness" (Health and Fitness) Programme.

Some employees were unsure what the rideshare staff spent their time on - although there was some confusion due to their sharing the same work area with staff who worked on the TRO. One man, who lived 60 miles from Irvine and who had been carpooling for four years, believed that the creation of a rideshare section was unnecessary: "It's a ludicrous thing, it's an exercise in bureaucratic control. They can take their AVR and go commute with it!" This man was not atypical; four other people said that they would continue to rideshare, whether or not there was a rideshare programme at the City.

#### **4.7.4 Management views on the rideshare programme**

Support from senior management is frequently identified as a key factor in the success of a workplace rideshare programme (Wachs, 1992). This was recognised by the City Manager at Irvine, himself a part-time ridesharer: "At the start, if this programme was going to be successful, then our employees needed to know that the City Manager was also willing to do it." The majority of the managerial staff interviewed were, in their statements, supportive of the rideshare programme, although some were sceptical of the

scale of benefits that accrued from a relatively large investment of resources. As the City Manager said,

"I am very supportive of the staff's effort to get more and more people ridesharing, but I must say that I have difficulties with the financial part of it as to how much money we throw at it as to the return that comes back."

Manager J, a Departmental Director, felt that the rideshare programme staff were doing a good job of promoting ridesharing but commented of the programme itself,

"I don't think it is perceived as being particularly effective. I think that the incentives encourage people to participate but I think that there are other things that might do more in terms of cleaning up the air than ridesharing - although it might be good for congestion management."

He also noted that

"If the City Council had a choice of keeping or not keeping the programme if it were not a requirement then they would get rid of it today."

This latter view was confirmed by the majority of the managers interviewed. The implications of this acknowledged lack of political support for the programme will be discussed in Chapter 6, below.

The manager who identified most with the task of running the rideshare programme was Manager Q from the Personnel Department. This was because she saw parallels between the rideshare programme and the programmes which she herself had run for City staff, notably the "Wellness" (health awareness) scheme and the occasional campaigns to encourage people to donate blood. She was aware of the importance of marketing in such voluntary programmes. Unlike many managers, she saw the

rideshare programme as a genuine employee benefit and one which probably made her employees more productive by, for example, reducing stress, and giving them more responsibility (on those days when their immediate supervisors were absent because of the compressed work week or telecommuting). She commented,

"I run the wellness programme here which is also very indirectly of benefit to the employer. Rideshare is so like the wellness programme, where you are doing a lot of ra ra and cheer leading and my heart kind of goes out to Principal D because I know what she is going through. I know that everyone needs a different way [of being encouraged], everybody receives communication differently. [She will] get a certain percentage with the ra ra, a certain percentage with the education, and another percentage by playing on the negativeness. And people will feel threatened by what you tell them and they will become defensive about it. And they feel that you are dictating their personal life and, how dare you."

These observations highlight succinctly some of the difficulties which rideshare programmes must overcome if they are to achieve their aims. These ideas will also be discussed at further length in Chapter 6.

Manager H, who had direct responsibility for the staff in the TDM section, saw ridesharing as "one of a menu of options" for tackling transportation problems - other items on his menu included congestion pricing, road building and traffic signal co-ordination. His approach to managing the section was, he said, a hands off one as long as it seemed to be making progress towards its target of 1.5 AVR, as assessed by the annual survey.

"They're doing an excellent job and if someone's doing OK then I'm not going to interfere in their business. I'm hands off unless needed. If things start breaking down then I will get more involved. But in terms of the level of management that I will give to the management [of the section] then if it's going well then we're not going to spend a lot of time worrying about it."

The experience of the rideshare staff indicates that Manager H did indeed take a more hands off approach to managing the section than, for example, to managing the section dealing with automated traffic control and traffic lights. This may have given a signal to his fellow managers and to other staff that the rideshare programme was a lower priority for him and by implication for them as well.

Only two of the managers interviewed were active ridesharers at the time. One, the City Manager, changed his work patterns sufficiently that he could carpool once a week. The other commuted 65 miles each way to work and felt that he could not drive alone because of the stress that it would cause him. Two others, the Assistant City Manager and Manager M, had carpooled for some time but "gotten out of the habit" as children and a series of evening meetings had disrupted their routine. For the others, long and variable hours, frequent evening meetings and the need for a car for work trips were the main reason for their inability to rideshare. At a focus group meeting arranged to discuss the rideshare programme at the time of the AVR survey, the Assistant City Manager pointed out that a change in work culture was needed if ridesharing at the City was to be truly successful. At that time, it appeared that this change in culture had not taken place, nor were managers, at least, likely to make or encourage it.

The ostensible importance of the role of senior managers in encouraging their employees to rideshare has already been highlighted with reference to the City Manager.

The majority of the staff interviewed, however, did not say that the way that their manager travelled to work had a great influence on their own choice of mode. They

believed that most managers' work commitments were a genuine reason for them not to rideshare. Whilst few staff felt that their managers were actively hostile to rideshare, only seven people felt that their manager had recently given them encouragement to rideshare. In addition, the rideshare programme staff reported that one or two managers had been unco-operative to the extent of refusing their staff permission to alter start and finish times by 30 minutes in order to be able to carpool.

ETC2 and Principal D (who was in charge of the programme) had further observations about the degree of management commitment to rideshare. ETC2 had met with every senior manager in the organisation around the time that the research was carried out. They agreed with her that the level of participation in the rideshare programme had reached a plateau, and that the people who were easy to persuade to change mode had by and large already changed, leaving the more intransigent people on whom to concentrate efforts. However, the managers did not suggest ways in which these people could be persuaded to change mode. Principal D felt that there was support in principle for the programme from the more senior managers, but that this was not filtering down to line managers, as it was not identified as a priority nor something against which performance should be assessed. Further, there was no change in corporate culture which could have boosted participation by for example standardising work hours for non-clerical staff to facilitate car-pooling.

There is evidence both for and against the assertion that management at Irvine was committed to a successful rideshare programme. This is summarised in Table 4.2,

below. Assessed in this way, it appears that there was more evidence to support than to refute the assertion that management were not fully committed to the rideshare programme. As the City's environmental manager said, "Management commitment? It comes and goes. For a while it was a priority; right now it's not." The Chief Executive and other senior managers expressed concern about the level of financial resources devoted to the rideshare programme compared to the results obtained; however, it is possible that more progress towards and perhaps beyond the AVR target could have been made with less cash but more management participation and commitment, as reviews have indicated that there is not a direct relationship between the amount spent on a rideshare programme and the change in employee modal split (AQMD 1992).



**TABLE 4.2 - Evidence of management commitment to the Irvine Rideshare programme**

EVIDENCE OF MANAGEMENT COMMITMENT	EVIDENCE OF LACK OF MANAGEMENT COMMITMENT
Resources devoted to the programme were above average for a workplace of this size.	A general recognition that the Council maintained the programme only because it was required to do so.
Willingness to introduce the compressed work week on a large scale to make progress towards the AVR target.	The "hands-off" approach of the manager in charge of the programme and his concentration on other projects instead.
Willingness to take part in discussions with ETC2.	Made few useful contributions in discussions with ETC2.
Participation by the Chief Executive.	Very few managers encouraging their staff to use an alternative mode.
Initial willingness to give power to Mover and the Irvine Transportation Authority (ITA) - giving alternative transport a very high profile at the City.	Later - removal of Mover and reduced role for ITA.
Running a sufficiently successful programme that it almost reached its target.	Managers asked said that rideshare was not a high priority for them and not something that their section's performance was measured against.
	An unwillingness to introduce a charge for car parking at work.
	Very few managers using an alternative mode.

#### 4.7.5 Management and employee views on the compressed work week

The option to work a longer working day but to have one or two extra days off per fortnight was taken up by a significant minority of City staff and this single measure has had the greatest effect on AVR. As discussed in paragraph 4.5.3 above, it was found that sick leave and overtime had both fallen markedly 6 months after the widespread

introduction of compressed work weeks. In interviews, most managers seemed unaware of this and argued that, especially initially, the widespread introduction of compressed work weeks had negative effects on productivity. It was uncommon for meetings to be scheduled on a Friday, the day which most people on a compressed schedule had off. Manager M, a contract administrator, was particularly vehement about the negative effects of the compressed work week.

"...somebody has to do the work. See the contractors still work five days a week. They don't give a hang whether or not you are having an alternate day off, and if you don't answer the contractors' questions and needs, then you end up paying. You pay in terms of lost productivity on the job, you pay in terms of schedule, and legally you have to pay money to the contractor if you have held them up. If you are going to do this alternative work thing then do it across the board. Everybody is off, everybody on a four day week. Contractors included. And do you think that is going to solve the traffic problem? I think not. If you are going to let [people] have a day off for air pollution reasons and traffic management reasons then take their keys away from them and shoot them if they drive their car."

Whilst not as vehement, the majority of managers interviewed shared this view and particularly bemoaned not being able to have meetings on Fridays. Manager H did say that he liked to have a day off each fortnight and also found that on the Fridays when he was at work he got more done because he had fewer interruptions. Manager Q, in Human Resources, was the strongest supporter of the compressed work week, arguing that, in spite of the problems of scheduling meetings,

"people that don't get paid overtime were probably working all those hours anyway. I know that I was. And now I get that Friday off. And I still work on that Friday a lot but I think in general I have finally gotten more of my own free time which is positive because it means I am better when I am here."

In the main, the majority of non-managers interviewed saw the compressed work week as a valuable benefit. As Ridesharer B said,

“I really like having that alternate day off. It makes a long extended weekend. It's an important part of participating in the programme. I really like it.”

One person complained that the compressed work week meant that her in-tray was more than twice as full as usual when she came in on a Monday morning, but she did not feel that this was enough of a reason to sacrifice her Friday off. Those who do not work a compressed schedule may be left with the distraction of having to answer everyone else's phone - indicating a reduced level of service to the public, especially on a Friday.

Many people interviewed were sceptical about the effect of the compressed schedule on vehicle miles travelled (VMT). As Manager Q said, “on my day off I do twice as much driving, I do all my errands, I drive all day. Everyone does, I am assuming.”

In fact, whilst most of those asked did admit to driving further on their day off than on work days, this was not an overwhelming majority, and it was of course related to the length of people's commutes. Those who drive 50 miles or more to Irvine did not drive this distance on days off. But even some employees living in Irvine said that they spent the day studying, caring for children, or making trips by bike.

The dichotomy between managers' and non-managers' views on the compressed work week was also seen when telecommuting was discussed. When asked, most managers interviewed were uncomfortable with the idea of allowing employees to work at home

un-supervised - in marked contrast to their employees, who were unsurprisingly very enthusiastic about the idea. Manager M commented that telecommuting was "a licence to print money". Senior Manager G did not concur with this opinion but nonetheless thought that it was difficult to keep control of employee productivity if employees were working from home.

A pilot telecommuting programme was underway at the City during late 1992, but it was limited to managers - most of whom did not have the opportunity to work at home because of their many meetings and their supervisory responsibilities. This anomaly was pointed out by many of the employees interviewed, who argued that such a limited pilot would be bound to be judged a failure, because the people whose jobs were most suited to telecommuting were not participating.

Although many of those interviewed cited their long and variable working hours as a reason why they could not rideshare, there was a small number of ridesharers who found that their working life had improved as a result of their change of mode. This was because they were now able to say no to additional work at the end of the day, "because my ride is leaving". Most of these people were clerical staff; the cultural change required for professional and technical staff to adopt this attitude had not taken place, with the majority of interviewees who fell into this category claiming that they tended to work until the job was done.

#### **4.7.6 Reasons for choice of mode**

The majority of those interviewed were not ridesharers. Of these, some said that they did not want to rideshare because it was "too inconvenient" - that is, it would not allow them the flexibility to go where they wanted when they wanted, and to stay at work as long as they felt was needed to complete the work in hand. The need to get away for lunch in particular was often cited as a reason for driving alone to work although, when pressed, many people said that they only did this perhaps twice a week on average.

Given the remote location of the Civic Center, without a car it was certainly difficult to go anywhere else in the lunch hour or to stop off on the way to or from work. Ridesharers got around this problem, however, by organising their errands for those days on which they had a car available or, on occasion, borrowing a car from a colleague. They recognised that this required a little forward planning and that, to an extent, it limited their mobility, but had accepted this as a part of the ridesharing "deal".

Non-ridesharers on the other hand were much less willing to accept such constraints.

Other major reasons for not using an alternative mode included enjoyment of the "private space" of the car on the way to and from work; a dislike of ridesharing, based on previous bad experience of carpools; and the inability to find a carpool partner who worked similar hours. Finally, many people argued that it was difficult for them to use public transport to get to work because of the dire lack of services to the Civic Center.

The majority of those who used an alternative mode did not wholly attribute their choice to the City's rideshare programme, but for many their change from driving alone had occurred during mid 1991 when the programme was given a high profile, and many admitted that it had played a role in at least raising their awareness of alternative forms of transport. The chief benefits of using another mode were seen to be companionship, followed by reduced commuting costs and the cash incentive, and then reduced stress. The social benefits tended to be emphasised by women and those who lived closer to work, whilst for those who lived forty miles or more from Irvine, carpooling seemed the only practical way to reduce the stress and cost of their commute. The main drawbacks were felt to be disagreements with carpool partners (particularly over lateness), while two people felt slightly uncomfortable about being dependent on others for their transport to and from work.

#### **4.7.7 Effect of Incentives on Behaviour**

The aim of the incentives offered by the rideshare programme was of course to persuade people to try taking an alternative mode to work. Many non-ridesharers were, however, not influenced by the incentives offered, largely because the level of incentive did not make up for the inconvenience of using an alternative mode. This was especially the case for more senior staff who lived close to work, worked long and irregular hours with many evening meetings, and who were paid more. Some staff had responded to specific incentives for a short time but as soon as the relative value of the incentive was reduced

- when they had a pay rise, or once they had earned their free bicycle, for example - then they reverted to driving alone.

On the other hand, eleven of the ridesharers interviewed did confirm that the incentives had had an effect, particularly on their decision to try ridesharing in the first place. Several also felt that the incentives made them more consistent ridesharers. Those people who cited financial savings as an important reason for ridesharing were unsurprisingly those whose behaviour was most influenced by the incentives, particularly the \$25/month, and the discounts on car maintenance. A small number felt that the incentives had no impact on their behaviour, but that they were a nice extra perk. The idea of a rideshare programme as an employee benefit of some kind was raised by several people - ridesharers and non-ridesharers - as a justification for a rideshare programme at the workplace. Finally there were those ridesharers, as noted in section 4.7.2 (above), on whom the incentives had no effect.

The annual employee Average Vehicle Ridership Survey is used to assess the progress which has been made towards the target 1.5 persons per vehicle. As well as questions on mode used to get to work in the sample week, it also contains a brief section which asks those people who rideshare (130 people compared with the 18 interviewed for this research) to rate the importance to them of the various incentives offered. In 1991, the top three most important incentives at each worksite in Irvine were as shown in Table 4.3, below:

**Table 4.3: Importance of different ridesharing incentives**

Civic Center		Yard	
Guaranteed Ride Home	75%	Guaranteed Ride Home	78%
\$25/month subsidy	56%	\$25/month subsidy	74%
Preferential parking	36%	Auto Service Plan	49%

*Percentages are those people rating each incentive as important or very important*

This of course fails to show that there are some people who rideshare not to benefit from the incentives that are available, but because they have found that the mode to which they have changed fits their needs. The interviews conducted by the author also revealed that, whilst only one non-ridesharer felt that more money would persuade him to change his mode, there was more support for the option of accruing additional holiday as a new incentive. Two staff felt that they would be more likely to rideshare if a better cafeteria was provided at City Hall so that they did not have to go out every lunchtime for something to eat.

#### **4.7.8 Relevance of the City's Programme to perceived problems of pollution and congestion**

The British author Jones (1994) has noted that people are willing to support measures to reduce traffic congestion and air pollution, but that they will often not translate this support into action at a personal level. He has called this the DREEM (Damn Right for Everyone Except Me) Syndrome. However, in the context of Irvine, the syndrome is



complicated in a number of ways. A majority of those interviewed, whilst agreeing with the concept of a rideshare programme, would not change their mode due to the inconvenience caused. This is consistent with the DREEM syndrome. Less consistent are those who did change their mode, either in response to the incentives offered by the programme, and/or out of a sense of social responsibility. ("Damn Right for Everyone **Including Me**".) Less consistent still are those who would have changed their mode regardless of the rideshare programme but who feel disquiet about the level of resources put into that programme - support for the **concept** of rideshare programmes is not carried through to support for their local programme. This may be because they feel that, since few or no resources were needed to persuade them to change mode, (public) money should not be lavished on other less socially responsible colleagues. ("If I don't Need it Then Why Does Everyone Else?") These important issues will be explored in greater detail in Chapter 6.

#### **4.8 Typologies of different staff attitudes to the rideshare programme**

It is useful to summarise the attitudes surveyed by presenting typologies of "typical" members of staff. These illustrate the dominant responses to the rideshare programme.

- **The hostile.** Some staff will react strongly against the idea of a rideshare programme, viewing it as a waste of time and other resources. They are unlikely ever to take part in the programme.
- **The sceptical.** These people remain to be convinced that ridesharing is worth the resources that are put into it. They would like to see a proper evaluation of

- the programme, and think that there are more effective ways of achieving the same ends. There are more sceptical than hostile staff.
- **The ambivalent.** Many staff fall into this category. They know, vaguely, that the rideshare programme exists and what it is for, but they find it at most a minor irritant and do not participate, although they might if personal circumstances change or they are forced to due to, say, parking charges.
  - **The supportive non-ridesharer.** These staff support the aims of the rideshare programme but do not themselves rideshare because they do not want to be inconvenienced by a slower journey to work or by changing their work hours. They may have used an alternative mode at some time but no longer do so because of a change in home or work circumstances. This is an important "market" for a rideshare programme to address.
  - **The supportive ridesharer.** Such staff broadly support the aims of the programme and feel that it does a reasonable job. They rideshare mostly to claim the incentives and to save running costs on their vehicles, or because they enjoy the social part of carpooling. Environmental and congestion considerations are of secondary importance to them.
  - **The committed ridesharer.** These staff rideshare out of a sense of social/environmental responsibility. They may become alienated if they sense that rideshare programme staff do not share their commitment.

- **The committed manager** is convinced of the benefits of ridesharing, tries to rideshare her/himself, and encourages staff to do likewise. These managers are few and far between compared to the
- **uncommitted manager** who pays some lip service to the idea of ridesharing but never uses an alternative mode or attempts to encourage his/her staff to do so.

These typologies show the diverse level of support which a rideshare programme may encounter. They are of particular relevance to the "niche marketing" of the rideshare "product", but also help to demonstrate the degree of acceptance (or otherwise) of the rideshare programme at the City of Irvine.

#### **4.9 Conclusion**

This chapter has charted the "rise and fall" of the rideshare programme at the City of Irvine, showing how its size, importance and impact changed between 1989 and 1992. It has illustrated how the programme started in an ad-hoc manner in response to the Regulation XV requirement for a rideshare plan and that in its early stages its achievements were limited and organisationally it lacked a "home". The chapter then went on to show how the rideshare programme changed and grew, and to describe the scope of its activities. Programme growth was linked to the need to satisfy regulatory requirements, the adoption of the compressed work week, to management commitment, and to the rôle of the second ETC. The final section on the history of the rideshare programme considered how and why the City failed to reach its AVR targets for 1992,

linking this to programme stagnation and declining levels of management and employee interest in the programme.

The chapter also examined the rôle of the different actors in the programme and attempted to chart the changes in the political importance of the rideshare programme to both the elected council and the City staff. Key actors considered included "Mover", the high profile Head of the Advanced Transportation Systems division; ETCs 1 and 2; the Departmental Directors in whose departments the programme had at one point or another been located; and the current Principal in charge of the programme.

The opinions of some 51 City employees on their rideshare programme have also been discussed in this chapter. This was based on the premise that these opinions reflect the degree to which the programme was institutionalised within the operations of the City. The mixed feelings and experience of many of the employees in relation to the rideshare programme suggest that the organisation may not at the time of the research visit have been fully committed to the organisational changes (such as further changes in working hours, and parking management measures) required to raise the AVR any further, in spite of the considerable staff and financial resources devoted to rideshare. The key issues which have been raised in this chapter and which will be discussed at further length in Chapter 6 include the importance of employee attitudes, of the culture and structure of the organisation, and of the rôle of key actors in the development and implementation of the rideshare programme in the organisation.

## **CHAPTER FIVE, CASE STUDY TWO: NOTTINGHAM AND HERTFORDSHIRE**

This chapter examines experience of workplace TDM at three workplaces in Nottingham: the Nottingham Trent University; the Nottinghamshire County Council's main offices at County Hall/Trent Bridge House; and the Nottingham City Council's main offices in the city centre. The research at the first two workplaces was largely conducted between January 1992 and July 1993. The research at the City Council took place during early 1995. It also considers the TDM initiatives at the offices of Hertfordshire County Council. This chapter is a presentation of four case studies, preceded in each case by a brief description of the site and its characteristics.

### **5.1 A brief geography of Greater Nottingham**

Nottingham is in the East Midlands region of the UK, about 120 miles north of London.

The Greater Nottingham area has a population of 463,453, with about another 500,000 people in the rest of the County of Nottinghamshire. The City of Nottingham itself has a population of 208,577 people. The rest of the conurbation and the balance of the population is under the jurisdiction of three other borough Councils, parts of which are much more suburban in character than the city. Unemployment for Nottingham (1991) was 15.24% - considerably higher than the national average of 8.1% - while the percentage of households owning at least one car was 49.3%, well below the national average of 65.5%. (Central Statistical Office, 1993.) Comparable figures for

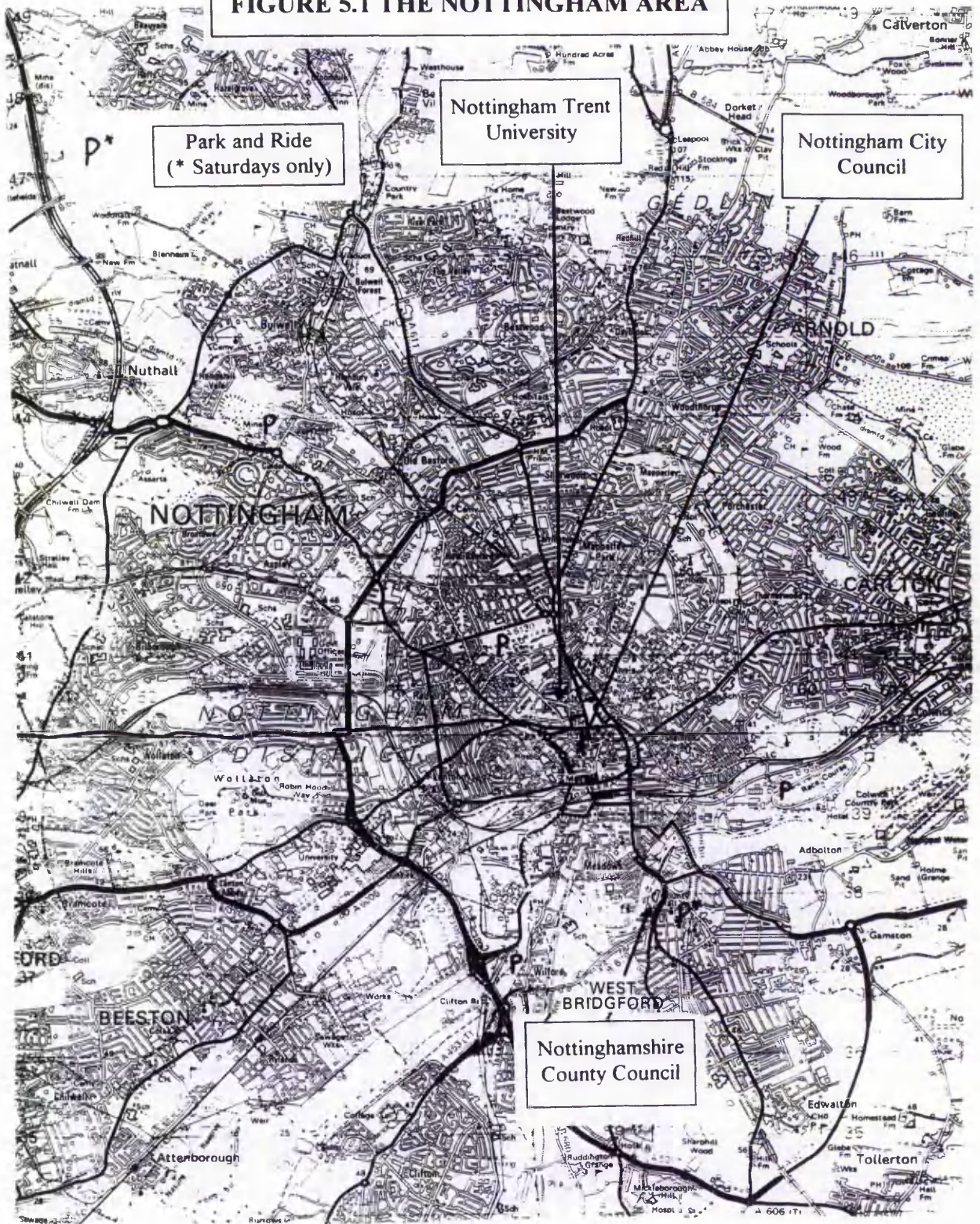
Nottinghamshire were 9.9% and 34.5%, indicating that the City is rather poorer than the areas which surround it.

Nottingham is a major administrative, industrial, medical and retail centre. Almost 100,000 people work within the boundaries of the city of Nottingham and the dominant mode of transport for work trips is the car. (See Table 5.1.) There is nonetheless a well-developed bus network, based largely on radial routes out of the city centre, operated mainly by two established companies, Trent Motor Traction and Nottingham City Transport, the latter still owned by the City Council. There is also a good network of specially-designed cycle routes, the result of a collaboration between the Department of Transport and the County Council, in the flatter south and west of the conurbation. These have helped to arrest the decline in cycle use seen in other areas of Nottingham and the UK (McClintock, 1994).

**Table 5.1 - Mode of travel to work (%), Nottingham 1991 (Source: OPCS)**

Mode	Nottingham Travel-to-Work Area	Nottinghamshire
Car	43	55
Car passenger	7.4	7.8
Bus	25	13.5
Train	0.6	0.6
Cycle	3	3.5
Walk	13.8	12.1
Other	7.1	7.7

FIGURE 5.1 THE NOTTINGHAM AREA



Greater Nottingham has no complete orbital road route, but the City Centre is partially bypassed by a ring road and by a motorway to the south and west. (See Figure 5.1.) Some through traffic is therefore forced to travel via the city centre. A major river, the Trent forms a barrier to the south which is bridged by roads in only three places in the conurbation, and these pinchpoints contribute to the generally heavy peak hour congestion on main radial routes into the city centre. There is little bus priority on these main roads, but there are now four bus-based park and ride sites which operate daily. Rail services provide some alternative for travellers from the northwest, west and east but the proportion of people travelling to work by train in 1991 was only 0.6% (Office of the Census, 1991.)

## **5.2 Nottingham Trent University**

In 1992 the University had approximately 15,000 full and part-time students and the equivalent of 1500 full-time staff. It has two main campuses, the larger of which is located in the centre of Nottingham and the smaller adjacent to a peripheral housing estate about three and a half miles to the south west. The University offers a wide range of subjects and students come from all over the country although the majority of students attending part-time are from the East Midlands.

### **5.2.1 University Transport Policy**

Transport policy at Nottingham Trent University has historically been synonymous with car parking policy. The University has conducted a number of studies of car parking



provision over the years, but the study recommendations have not been acted upon, and problems have gradually increased with increasing car use. (E.g. the 1982 Report on University Parking recommended charging but this was rejected by the University's Senior Management). Car parking is still considered by staff and students to be a problem, mainly because demand exceeds supply, but also because there is a perception that some of the few reserved spaces are allocated more on the basis of status than of need.

In the autumn of 1990 the Executive Board of the University adopted the discussion paper "Environmental Issues and the Polytechnic" [as it then was]. This set up two teams, one to "green" the operations of the University, and the other to incorporate the consideration of environmental issues into the curriculum. One of the operational issues put forward for consideration and, ultimately, action, was that of transport, although it was suggested in the paper that work on travel policies should not start until September 1992 and thereafter be "continuing"; no other targets were set for the development or implementation of University transport policies. The Dean in charge of the operational committee was required to work with the University's Finance Director to develop recommendations which would then be taken to the Executive Board which would decide how they should be taken forward. The two "greening" teams had a small budget but little power to influence either operations or the curriculum without referring each issue back to management.

At its meeting on 8th December 1992 the operational committee gave its support to the concept of demand management as a central tenet of any University transport policy. Following on from this decision, the Dean who chaired the committee put this view in writing to the Finance Director, and also requested the Estates Services Department to begin to develop a transport policy. This Department did not however warm to the request, commenting in an internal memo of 17th June 1993 that its staff were:

“reluctant to embark on what we consider to be a mammoth task of vast logistical input... Obviously some input from us is essential but I would suggest that a “steering group” is required to evaluate the criteria for a successful policy and to ensure considered views from other prime movers interested in formulating such a policy.”

This Steering Group was ultimately formed in 1995. In the meantime, the University did not adopt the recommendation for a demand management based transport policy, and its strategic plan remained without a transport policy for its staff and students.

In response to staff and student dissatisfaction with current parking provision, in late 1994 the University began a consultation process to develop a new parking policy for implementation in late 1995. The consultation material made some mention of encouraging commuting options other than driving alone. In early 1995 the Estates Department expanded this process by setting up a working group and employing a member of staff to examine options and to finally develop a University Transport Policy. As well as looking at detailed car parking management matters, this group was also charged with considering broader policy issues including the planning context for University expansion, demand management and also workplace TDM measures. The rationale for this was that:

"all guidelines for University car parking should be linked to a transportation policy which in turn should reflect the views of others in the local community and possibly nationally." (*Unpublished memorandum, 1/5/95.*)

This brief history shows that the University itself had no transport policy up to 1995 and it therefore lacked a context within which to take forward workplace TDM measures in a co-ordinated way. However, there were some attempts made as part of a research project to encourage staff and students to use other modes of transport to work by implementing workplace TDM measures, and details of these are given in the following sections.

### **5.3 Workplace TDM at the Nottingham Trent University**

In December 1991, the University advertised a post of Research Assistant in the Civil and Structural Engineering Department to study workplace TDM. Candidates were selected from the shortlist for the job of County Council Employee Transportation Co-ordinator (ETC), which was appointed at the same time (see section 3.0). The research post was part-funded by Nottinghamshire County Council's Construction and Design Department and had several aims:

- To conduct a survey of the travel-to-work habits of the University's staff and students.
- To prepare a bibliography of related literature.
- To monitor the County Council's own workplace TDM efforts.

- To implement and monitor pilot TDM initiatives for staff and students at the University.

The impetus for the creation of the post came from the County Council which wanted research support for its own TDM initiative (see Section 5.5). The manager at the County Council who was most interested in workplace TDM introduced the idea to staff in the Civil and Structural Engineering Department at Nottingham Trent University, and the idea of a parallel project at the University, part-funded by the Council, grew from there. There was also support for the initiative from the University's Environmental Initiative (the Dean and committee responsible for greening the University's operations) which funded the University Travel Survey (see section 5.3.1 below).

### **5.3.1 The University Travel Survey**

Before any programme could be developed to influence people's choice of mode for the journey to the University, it was considered necessary to understand current travel patterns and attitudes to the various measures which could have been implemented in an attempt to change staff and student travel behaviour. Hence a travel survey was commissioned to assess the potential for reducing the travel demand of commuters to the two campuses.

A pilot survey was carried out in late 1991 in one Faculty of the University. This led to the alteration of a few questions to improve their comprehensibility and the introduction of a new question regarding possible improvements to the pedestrian environment

around the University. Having made these improvements to the survey questionnaire, the full Travel Survey was then carried out across the University. Questionnaires were distributed through departmental offices to all staff and, through year tutors and lecturers, to students in classes. This method of distribution was felt to be less costly than a postal questionnaire survey, although it did have the disadvantage of relying on the goodwill of departmental secretaries and lecturers to deliver questionnaires to staff and students. This meant that distribution was more effective in some faculties, such as Environmental Studies, than in others, such as Education.

During the third week of March 1992 some 14,000 questionnaires were distributed of which 4123 were returned by the end of the second week in April. Within this overall response rate of 30%, there were considerable variations between faculties and departments. In particular there was a higher response rate from staff than from students and from science departments as opposed to arts/social science departments. The response rate as a whole is however average for surveys of this type (McNeill 1990) and 4123 responses represents a large enough sample from which to generalise for the University. At greater levels of disaggregation, there is a greater probability that the data exhibit random variations rather than the characteristics of the population as a whole.

As noted above, the survey was funded from the University's "green" budget which was intended to promote environmental issues in the University. The Dean, who was at the time in charge of this initiative, signed the letter which accompanied each copy of the

travel survey when it was distributed. The letter explained the reasons for conducting the survey and stressed its importance. A copy of the questionnaire and this letter are in Appendix 2.

### **5.3.2 Survey report and recommendations**

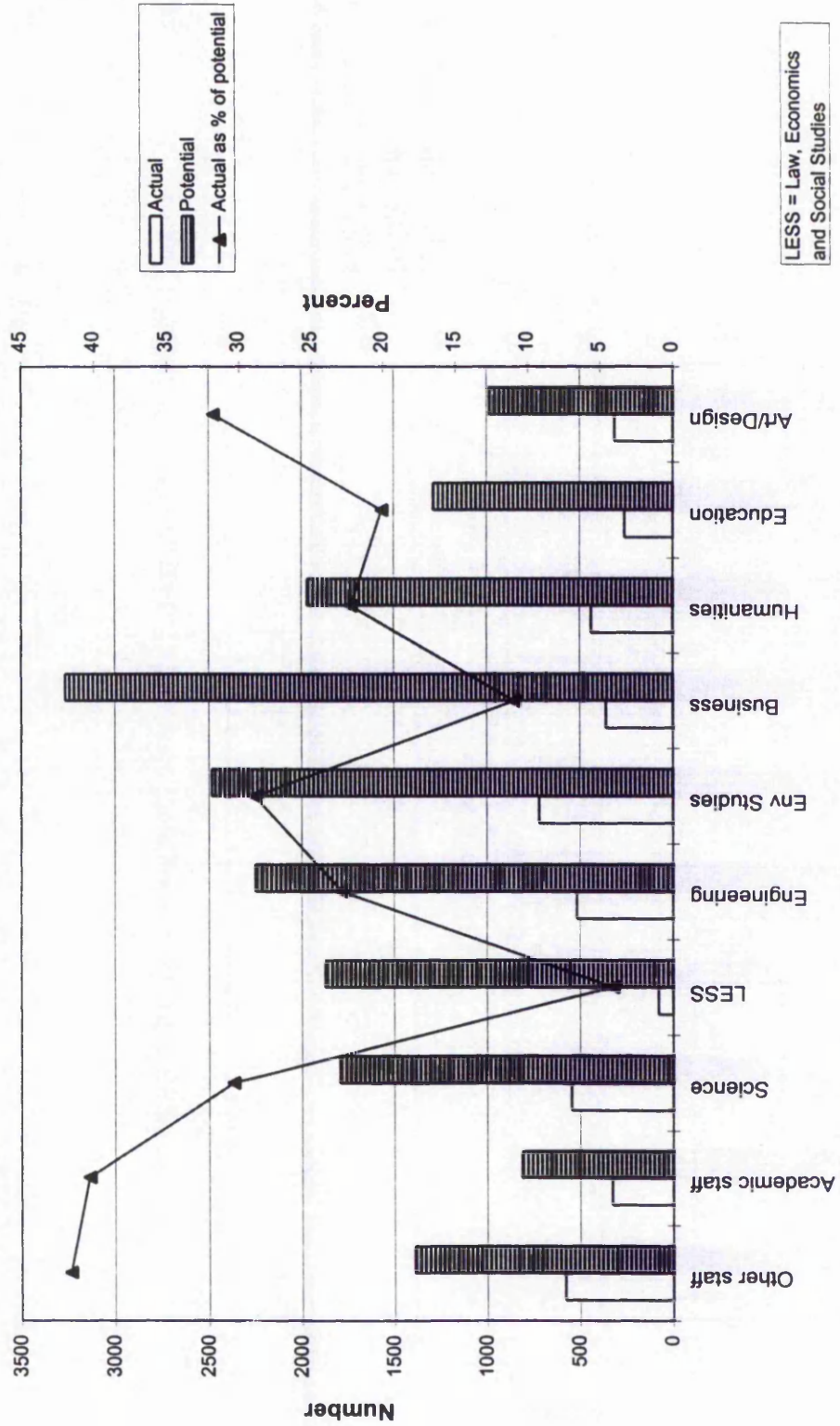
The University Travel Survey Final Report was written in September 1992 and the Executive Summary distributed to senior members of staff. The main results, conclusions and recommendations are summarised below, and are also shown graphically in Figures 5.2 to 5.8.

From the 14,000 questionnaire forms that were distributed, 4,123 were returned of which 7.8% were from academic staff, 13.9 from administrative and support ("non-academic") staff, 54.7% from full-time students and 22.8% from part-time students. Since the actual proportions within the University population are 12.7% staff and 69% full-time students, the former were over-represented in the survey returns, and full-time students somewhat under-represented. The proportionate returns from academic and non-academic staff were approximately equal. It is possible that the survey suffered from differential response such that those groups who were particularly interested in certain aspects of the survey - such as parking, or car-sharing - were more likely to respond than those who were less interested in these matters. However, it is not possible to test this hypothesis without further survey work.

The first part of the survey assessed people's current travel habits. It found a very wide range of distances travelled to get to the University, from over 50 km away at one extreme to less than 0.5 km at the other. On aggregate, however, it was found that the average trip to the University was 9.13 km (weighting the responses by respondent status (i.e. category of staff, full or part-time student)). Disaggregating by status, it was found that academic staff travelled 10.8 km to the University, non-academic staff 8.2 km, full-time students 4.7 km and part-time students 20.4 km. (See Figure 5.4.) These differences are statistically significant at the 0.001 confidence level. Over 70% of respondents were found to take less than 30 minutes to make their trip to the University, but again there were marked differences between groups of respondent which were statistically significant at the 0.001 level. Distance travelled on the commute was found to be a critical variable in people's propensity to consider alternative modes: generally, the longer the commute, the greater the willingness to *consider* other modes.

The overall modal split for the University found walking to be the single largest mode, and car drivers were in a minority. Weighting the results of the survey by status, it is estimated that 60% of staff and students reached the University by bus, bicycle or on foot, while only about 23% drove alone. This still meant that 1500 of those surveyed (i.e. up to 6,000 in the University overall) travelled to the University by car, as either a driver or a passenger. This compares to the total of about 1600 parking places which were available on the University's two campuses at that time. 3.9% and 5.1% respectively of respondents were car-poolers (taking turns to drive to University) and lift-givers.

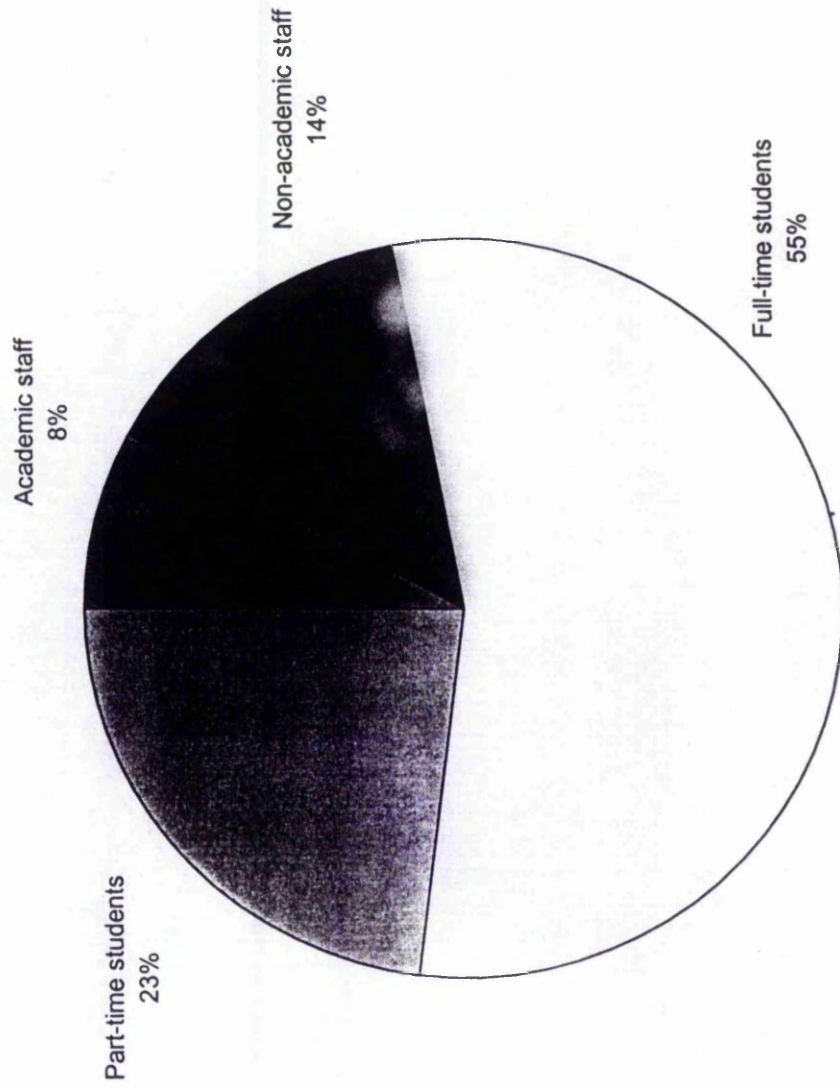
Figure 5.2: Actual and potential responses to NTU travel survey



Students by Faculty and staff by category



**Figure 5.3: NTU travel survey: percentages of response by type of respondent**



n = 4123

**Figure 5.4: Average distance travelled to the University (km)**

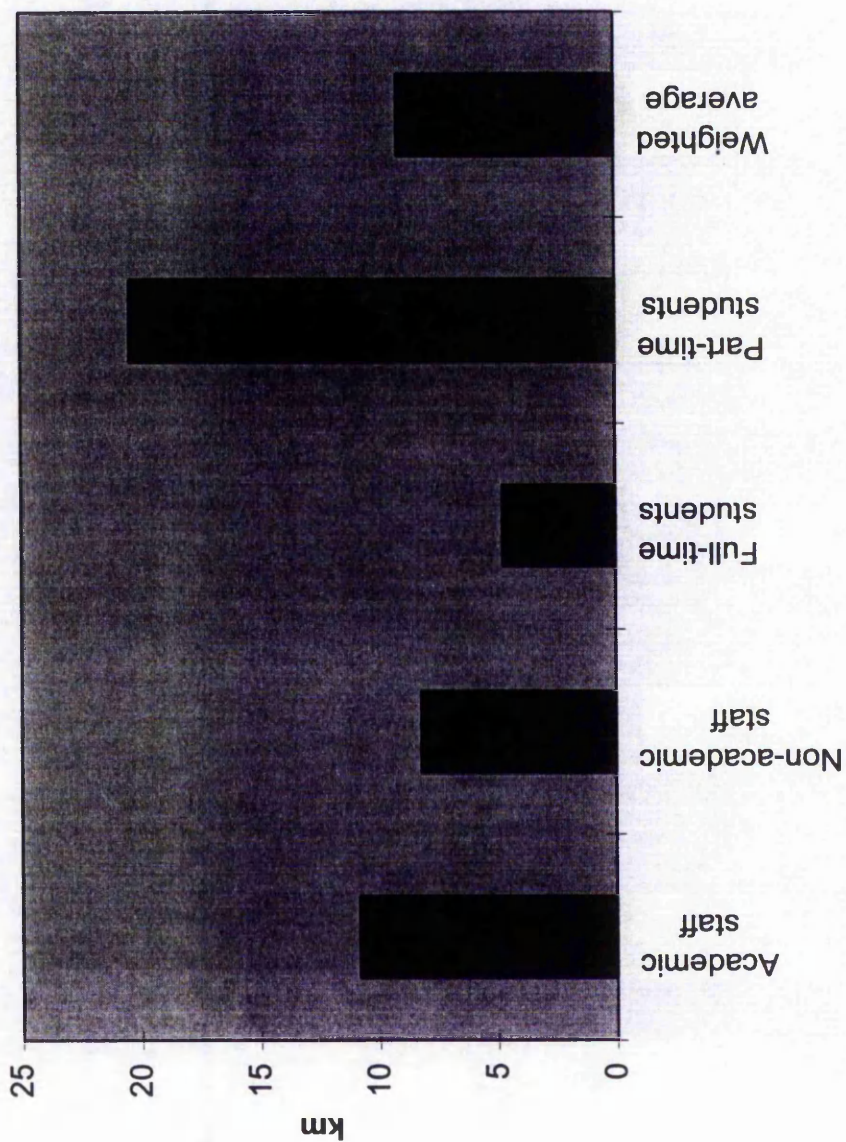


Figure 5.5: Travel time to University for different respondents

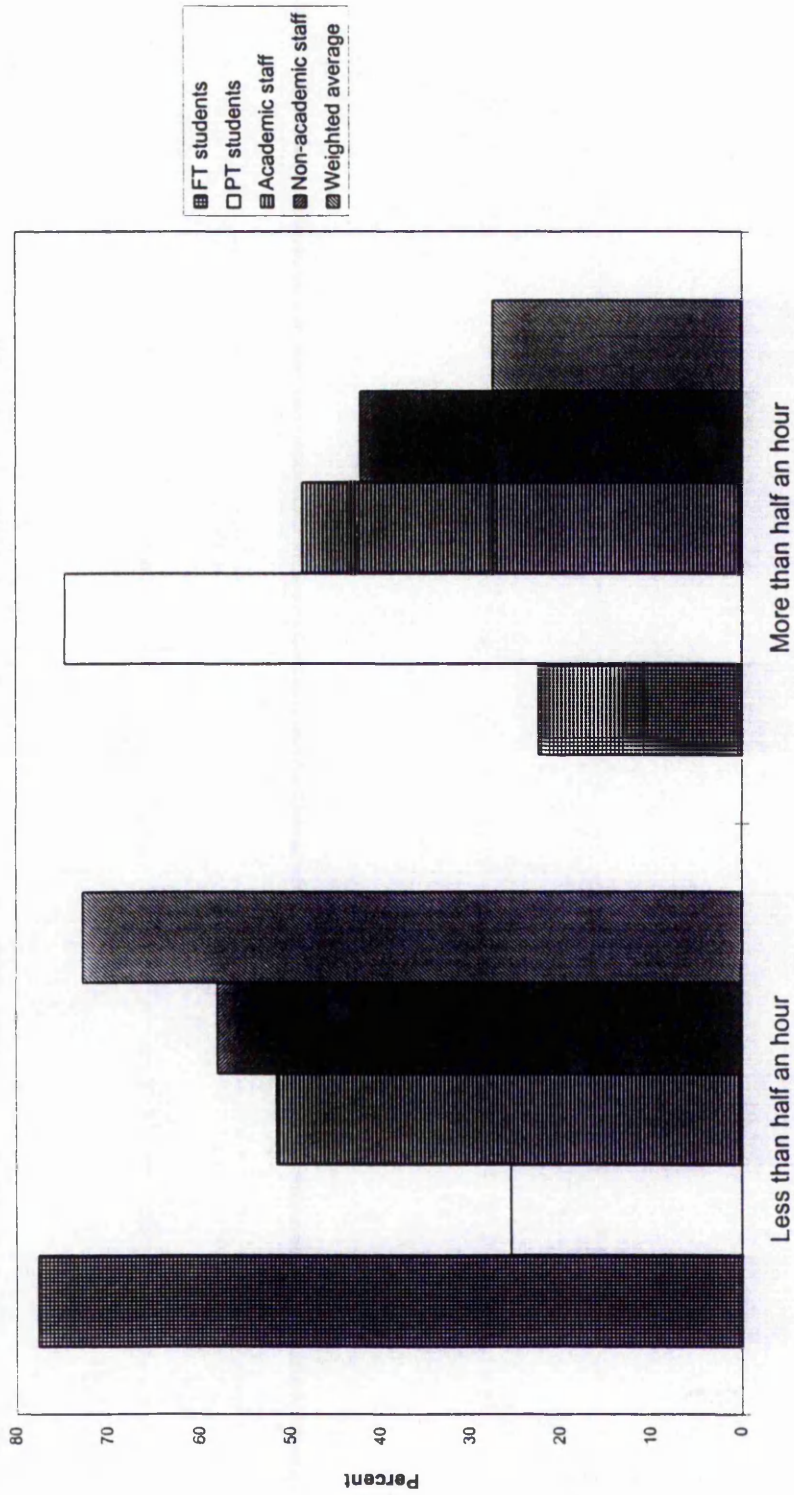


Figure 5.6: Modal split for trips to University

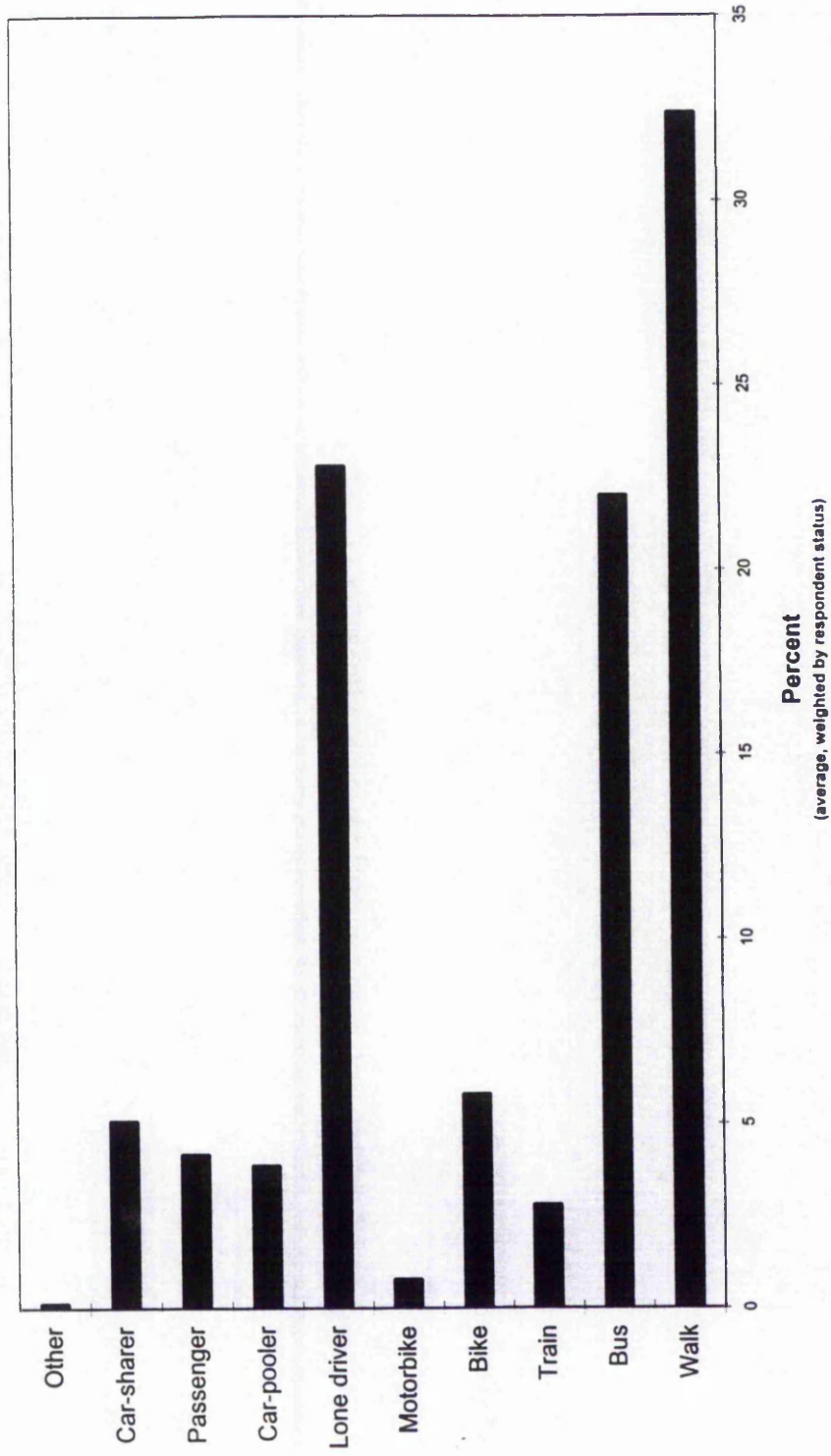


Figure 5.7: Mode to University by respondent status

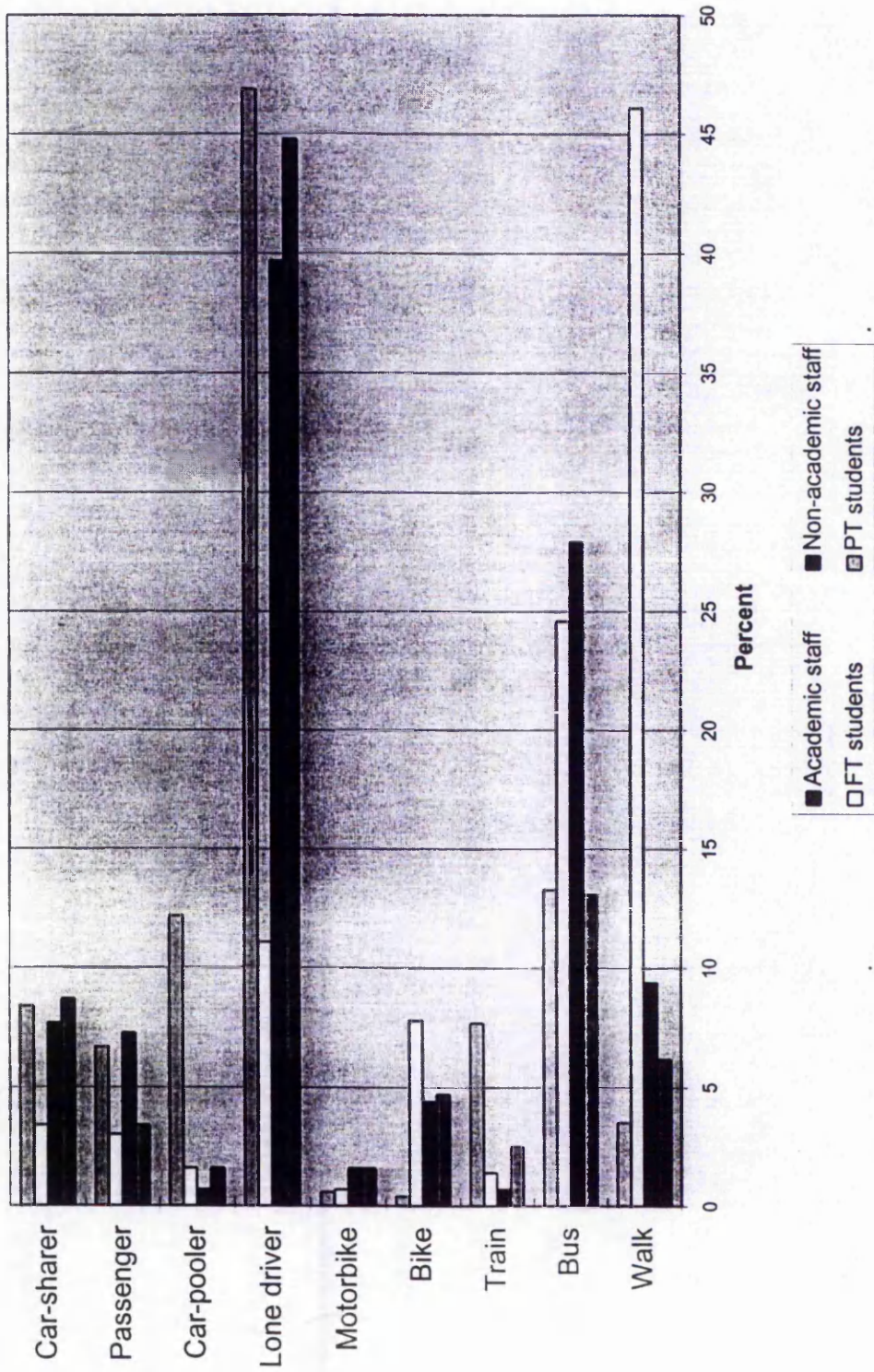


Figure 5.8: Main reason for driving to University

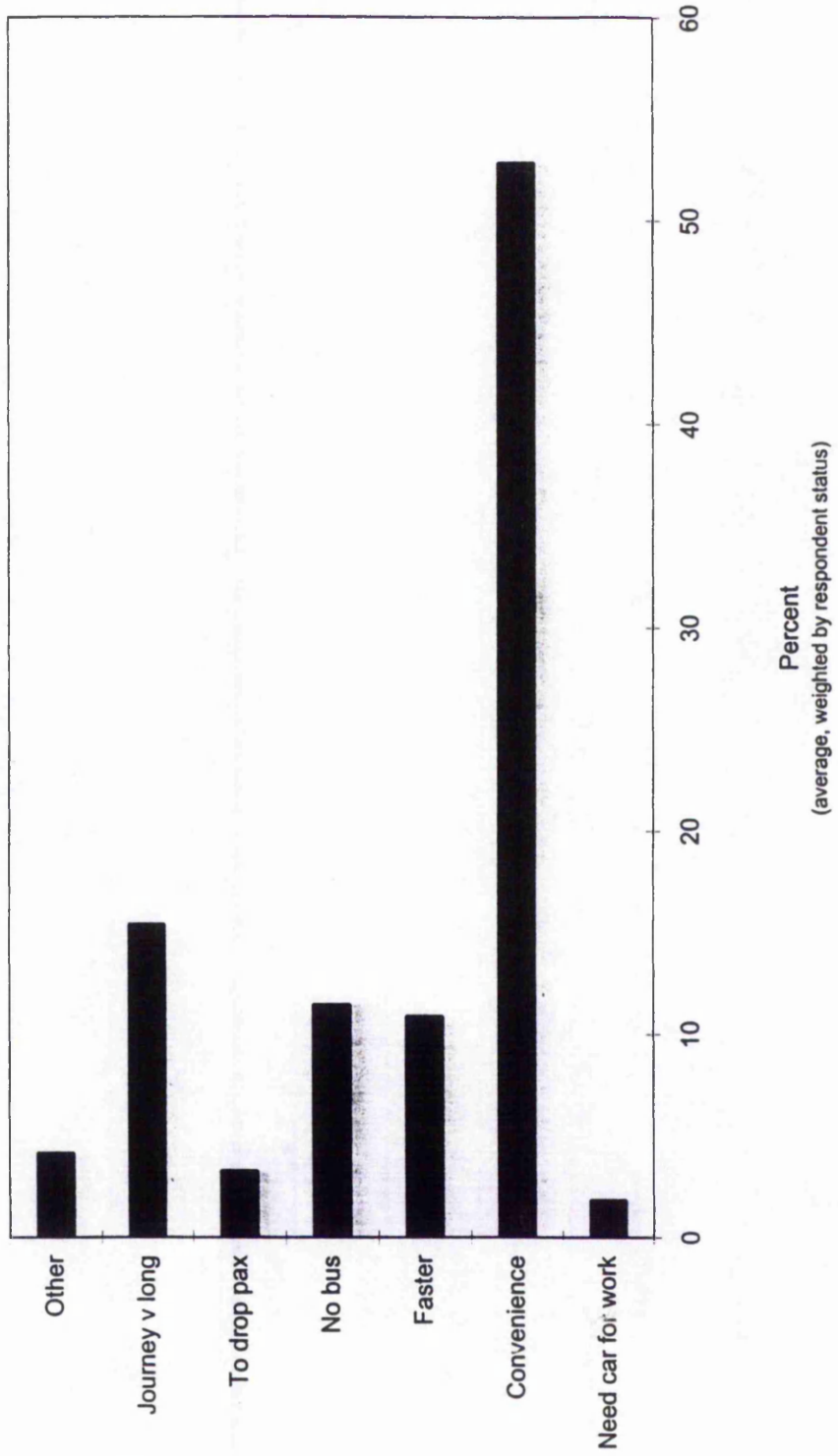


Table 5.2: Modal split for trips to University testing for statistically significant differences between respondent groups

Mode split (%)	Walk	Bus	Train	Bike	Motorbike	Lone driver	Car-pooler	Passenger	Car-sharer	Other
<b>Academic staff</b>	6.2	13.1	2.5	4.7	1.6	44.8	1.6	3.4	8.7	0
<b>Non-academic staff</b>	9.4	27.9	0.7	4.4	1.6	39.7	0.7	7.3	7.7	0.5
<b>FT students</b>	46.1	24.6	1.4	7.8	0.7	11.1	1.6	3	3.4	0.1
<b>PT students</b>	3.5	13.3	7.7	0.4	0.6	46.9	12.2	6.7	8.4	0.2
<b>Weighted</b>										
<b>Academic staff</b>	0.29	0.62	0.12	0.22	0.08	2.10	0.08	0.16	0.41	0.00
<b>Non-academic staff</b>	0.76	2.24	0.06	0.35	0.13	3.19	0.06	0.59	0.62	0.04
<b>FT students</b>	31.80	16.97	0.97	5.38	0.48	7.66	1.10	2.07	2.35	0.07
<b>PT students</b>	0.80	3.06	1.77	0.09	0.14	10.78	2.80	1.54	1.93	0.05
<b>WEIGHTED AVERAGE</b>	34	23	3	6	1	24	4	4	5	0
<b>OBSERVED</b>										
<b>Mode split (freqs)</b>	Walk	Bus	Train	Bike	Motorbike	Lone driver	Car-pooler	Passenger	Car-sharer	Other
<b>Academic staff</b>	20	43	8	15	5	189	5	11	30	0
<b>non-academic staff</b>	54	170	4	25	9	230	4	42	46	3
<b>FT students</b>	1043	555	32	177	16	255	37	67	78	2
<b>PT students</b>	33	125	73	4	6	448	115	63	79	2
	1150	893	117	221	36	1122	161	183	233	7
<b>EXPECTED</b>										
<b>Mode split (freqs)</b>	Walk	Bus	Train	Bike	Motorbike	Lone driver	Car-pooler	Passenger	Car-sharer	Other
<b>Academic staff</b>	90.93	70.61	9.25	17.47	2.85	88.72	12.73	14.47	18.42	0.55
<b>non-academic staff</b>	163.73	127.14	16.66	31.46	5.13	159.74	22.92	26.05	33.17	1.00
<b>FT students</b>	630.92	489.93	64.19	121.25	19.75	615.56	88.33	100.40	127.83	3.84
<b>PT students</b>	264.42	205.33	26.90	50.81	8.28	257.98	37.02	42.08	53.57	1.61
<b>CHI SQ</b>	55.33	10.80	0.17	0.35	1.63	113.36	4.69	0.83	7.27	0.55
	73.54	14.45	9.62	1.33	2.93	30.90	15.62	9.76	4.96	4.03
	269.14	8.64	16.14	25.64	0.71	211.20	29.83	11.11	19.42	0.88
	202.54	31.43	78.99	43.13	0.63	139.96	164.27	10.40	12.07	0.09
										<b>27 df</b>
										<b>1638.35</b>

There was a marked difference between staff and students, and between academic and non-academic staff, in mode used to get to University. For example, 44.8% of academic staff drove to work, but only 11% of full-time students used this mode. Another marked contrast was between the 27.9% of non-academic staff, but only 13.1% of academic staff, who took the bus to work. These differences, which are statistically significant at the 0.001 level and are also shown in full in Table 5.2, may be related to the incomes of the various groups; other research (e.g. the National Travel Survey 1991 (DoT, 1991a)) points to a strong relationship between income and car use. The most frequently cited reason for driving to the University was convenience (53%). Only amongst academic staff was the need for a car for work/study a major reason for driving (16.9%).

The second part of the survey set out to assess attitudes to modes other than driving alone. About 500 respondents said that they would be interested in participating in a car-sharing or car-pooling scheme organised by the University, and enthusiasm was particularly high if this was to be linked in some way to a guaranteed car parking space.

Of those expressing an interest in car-sharing or pooling, 32% were full-time students, 29.9% part-time students, 16.3% academic staff and 21.5% non-academic staff.

As the question on car-sharing was limited to those who currently drive alone to University, this response rate was highly positive compared to other schemes in the U.K. (e.g. Morris *et al* 1992; Bonsall 1981) which elicited positive responses from at most 10% of those surveyed, even at workplaces where use of non-car modes was very low. It should be noted that those who were particularly interested in car-sharing had an



incentive to return the questionnaire in comparison to those who had no interest - but the work conducted in the YORKSHARE schemes also suffered this problem. The high level of interest in this survey may be related to the high number (2,530 or 48% of the total number) of part-time students surveyed at the University. As they travel at set times, often only one day per week, and also frequently from longer distances from the University, the inflexibility of car-sharing was less important to them than to the typical daily commuter.

Amongst current non-users of public transport, there were perceived problems with high fares and poor reliability. If services were improved (to a level unspecified in the questionnaire), survey respondents said that they would use public transport on average 3 days a week more to get to the University. Current bus users also identified high fares and poor reliability as drawbacks of their current mode. In spite of the relatively good provision of park and ride in the city, there was a widespread reluctance to use it, partly due to a perception that vehicles left there were at greater risk of theft than if left in a city-centre car park, and also due to the inconvenient location of the sites and bus stops in relation to the University.

The survey identified the perception amongst cyclists and non-cyclists alike that there is a severe lack of secure bicycle parking at the University. Staff were also keen to see more shower and changing facilities for cyclists and walkers. A supplementary survey revealed that about 90% of staff who cycled to work had at some time had their bicycle

tampered with or stolen while it was on University property. Pedestrians wanted to see the campus pedestrianised and greater emphasis put on personal security in the area.

Those who drove to the University were asked what their reaction would be to an unspecified car parking charge. Almost half said that they would pay it - somewhat reluctantly, and depending on their level. As noted below, a charge of between £50 and £100 per year was the figure most frequently cited as "reasonable". Students were much more likely than staff to say that they would respond to parking charges by changing to a different mode, reflecting their lower income.

A summary of comments received on survey forms showed that there was, unsurprisingly, a great hostility to parking charges. They also showed a perceived injustice relating to the provision of reserved parking spaces for a few senior members of staff, apparently on the basis of seniority rather than need. A figure of £50 to £100 per year was cited by a number of respondents as a level which they might be prepared to pay for the opportunity to use a "first come, first served" parking space at the University. (Leasing a space in a prime city centre car park run by NCP cost about £1200 in 1992.) Table 5.3, below, summarises some of the more common comments made by members of staff who responded to the survey and shows (in the column headed "Count") how many people made similar comments. Table 5.3 indicates that there was amongst other things a widespread feeling that free parking at work was not a perk but a right and something that would be provided automatically by other

comparable employers. Senior University staff were well aware of these feelings and were anxious therefore not to implement

**Table 5.3: Content Analysis of Survey Comments**

Categories of comments made.	Count.
I need my car for work and so alternative modes of transport are not flexible enough	38
Car-sharing is too inflexible.	27
Parking charges would lead to trouble, work to rule, resignation etc.	23
I need a car to transport children and other family members	17
I would pay for parking if...	15
Cycling improvements.	15
The out-of-town campus has specific problems in relation to the use of alternative modes of transport	12
Alternatives modes are no good, expensive, need improving.	12
Personal security problems in car parks and/or on public transport.	11
Park and Ride security is inadequate.	9
"People of my status in similar organisations have a right to free parking at work."	7
Alternative modes work well for me.	7
I have health problems so need car to travel.	6
Comments in praise of the Travel initiative.	6
Inter-site commuting is a problem.	6
Park and ride is too near to Poly for my short journey.	5
Reserved parking system is not acceptable at present.	5
The whole Polytechnic parking situation needs sorting out.	4
Car-park security is not adequate at present.	4
Don't let car-sharing initiatives penalise those who for good reasons are not able to car-share.	4
Distances travelled to work should affect access to parking.	3
Rail travel has great possibilities.	3
The distance I travel to work makes using alternatives difficult.	3
More Polytechnic pool vehicles are needed.	3
Free parking is one of the few perks for working here.	3
Using alternative modes on Polytechnic business would lead to greater inefficiency and higher costs.	3
I use alternatives already and it is very expensive on my wage.	2

policies that could inflame them. For example, when a previous (1982) review of the University's parking situation had recommended charging, Senior Management had rejected the proposal. On the other hand, the survey showed that the University population could be receptive to a number of positive measures (such as a car-sharing scheme) that might help to relieve the pressure on car parking.

The survey report recommended the investigation of the following measures to reduce the level of car commuting to the University. With a possible workplace TDM programme in mind, these measures were proposed as subjects for investigation.

- A minibus connecting the railway station with the University.
- Continued promotion of the University-sponsored bus service which was introduced to link its two campuses (see section 2.2, below).
- More public transport information available at the University.
- A car-sharing scheme, linked to the provision of a free parking space for car-sharers.
- Lobbying highway authorities to pedestrianise the city centre campus and to improve the quality and extent of cycle routes linking the University to other parts of the conurbation.
- Publicising what bicycle routes *were* available to get people to the University.
- Installing extra bicycle parking, including secure lockers or cages.
- A new parking management policy.
- Expansion of workplace-nursery provision.

The report was copied to relevant senior members of staff but was not formally considered by any decision-making body in the University. The Estates Manager, Mr G, wrote to the Finance Director in response to the survey indicating that a few proposals, such as more secure cycle parking and pedestrianisation of the main campus, should be taken forward. No process was set in train to implement any of the report's recommendations. In the absence of such a process, there was instead an ad-hoc implementation of a few TDM schemes where possible. These are described below.

### **5.3.3 Public transport promotion**

The survey report recommended certain actions regarding the promotion of public transport at the University. Given Nottingham's relatively high quality bus network, and also given the disappointing results from car-sharing schemes in other parts of the UK, the author felt that promotion of public transport at the University would be the most productive avenue to explore. To this end, a number of public transport initiatives were organised.

### **5.3.4 Public transport information**

Using money from the University's Green Budget, the author was able to buy leaflet racks for public transport information. These were installed in the University's main foyer, and periodically re-stocked by the bus operators.

### **5.3.5 Inter-campus bus service**

In September 1992 the University Estates Department arranged and funded an express bus service for staff and students linking the two campuses in the city centre and at Clifton. The fare charged was £1 round trip on the daytime-only service, and at this level it required some subsidy. The service has continued to operate since. The main reason for operating the service was to offer staff an alternative to driving between the two campuses (and therefore to relieve pressure on parking), although the majority of users are students. The bus service was periodically promoted by the University and by the operator, Nottingham City Transport (NCT).

### **5.3.6 Public transport promotion for University staff**

In June 1993 the author arranged and publicised a public transport promotion for staff at the University's city centre site. The event was timed to coincide with the national "Green Transport Week" whose aim was to raise the profile and use of more environmentally-friendly modes of transport.

Staff who did not usually commute to work by normal service bus (not the inter-site bus) were offered the chance to try the bus for a week at no charge. This initiative was funded by the bus operators themselves, rather than by the University. The special offer was advertised by sending an individually addressed letter to each of the 1700 members of staff at the city campus, to which the offer was limited because of its much higher level of bus services than at the other suburban campus. The letter was signed by the Dean of Environmental Studies, head of the University's Environmental Initiative. The

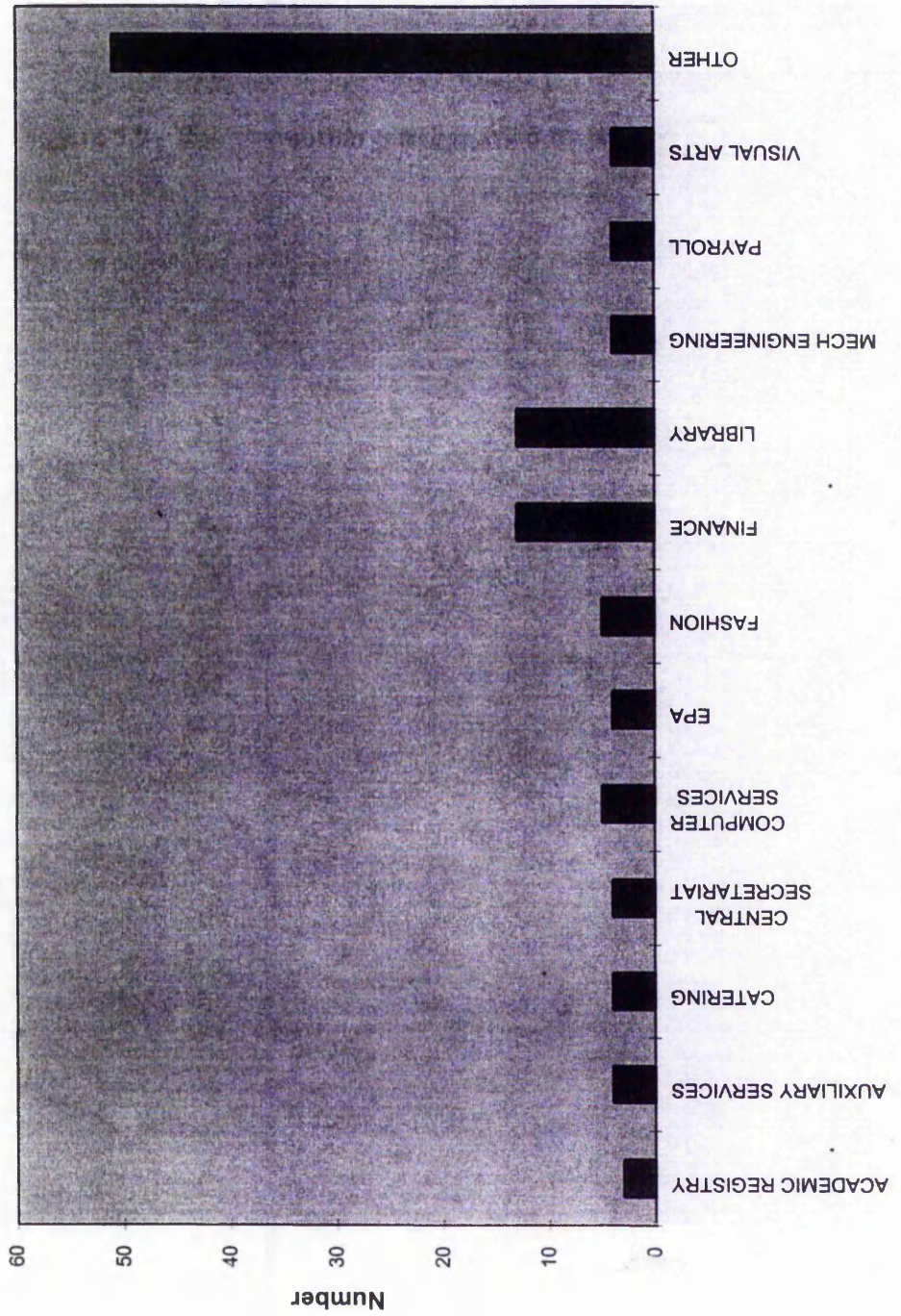
offer was also advertised in the staff newsletter, and using posters. All the promotional literature stressed that the offer was aimed at staff who currently drove to the University.

The offer was generally well publicised within the University and also received some external publicity. The Vice-Chancellor took part in a photo call and the Dean in charge of the University's environmental initiative used the bus on two days during the week of the promotion.

Staff were able to pick up their free tickets from bus company staff who spent a morning in the main lobby of the University. When receiving their tickets, people were asked if they normally drove to work and if they were members of staff, but no proof of status was required, so the offer was operated essentially on an honour basis. In return for the tickets, they were asked to fill in a travel diary - designed and supplied by the bus companies - giving feedback on their experience. People were asked to sign the travel diary to say that their journey to work was normally made by car; but obviously, there was no obligation to return the diaries. A copy of the letter and each survey form is attached in Appendix 4.

185 people took up the offer of free tickets. 106 people (71 women and 35 men) returned their travel diaries, of whom 35 had used Trent buses and the rest NCT. This reflects the distribution of staff within and around the conurbation: more of them are served by NCT than Trent bus services.

Figure 5.9: Participants in NTU staff bus promotion by department





Distribution of respondents by University Department is shown in Figure 5.9; as can be seen, participation was higher in administrative and support departments than academic departments. Due to the different format of the two companies' diaries, it was possible to learn much more about the "bus experience" of NCT users compared with users of Trent buses.

The cost of bus fares and the extra time taken to get to work by bus were often cited as reasons for *not* taking the bus again. For example, one respondent used the NCT85 which took 45 minutes to make a journey which she could drive in 15-20 minutes. Another, who tried Trent buses, said, "The use of the bus is seriously under consideration because it is so much less stressful, but £1.50 is excessive for a 10 mile journey". However, the level and quality of service was not often criticised.

Five people were very positive about their experience and said that they probably would use the bus more often as a result of the offer. One respondent said, "I have used the bus since the offer, and it makes a relaxing alternative to driving" - despite the service to her village being only one bus a day each way. During the offer, one man changed from car to bus for his 35 mile commute which, although adding an hour to his day, cut out the stress of driving on the M1. Only two respondents mentioned concern for the environment as a reason for their participation. This is significant, given that the event was a "Green Transport" promotion, and it suggests that appeals to people's altruism may have a very limited effect on their travel behaviour, at least in the short term.

The initiative showed that a promotion of this type could encourage some people to try out and even regularly use public transport to get to the University where they had not previously done so. However, the promotion was not repeated the following year and there was no formal consideration of, for example, the University subsidising tickets for bus users as a means to encourage staff to use the bus more often. The promotion was a one-off event dependent on the presence of a member of staff to organise it; corporate commitment to run the event on a regular basis was not evident.

### **5.3.7 Other initiatives**

The literature (e.g. Van Vlinker 1983) on compressed working weeks suggests that both productivity gains and reductions in travel occur as a result of staff working a standard (35 to 40 hour) week but in four instead of five days, or 70 to 80 hours in nine instead of ten days. However, the majority of the literature is based on American findings and the author was interested in exploring the concept in a UK context. It was with this in mind that in June 1993, with the support of his department, the author put a request to his Faculty Executive that the non-academic staff in the Faculty (there were 130) be given the option to work a compressed work fortnight of 74 hours in 9 days rather than the usual 10 days. The proposed experiment was to be for a limited period of one month (September 1993) and included monitoring by the author of participating employees' travel habits, productivity and the degree to which normal working patterns within departments were affected, if at all. The request was however rejected because of senior management perceived it to have difficult industrial relations implications: it was felt

that a pilot scheme in one department could have repercussions for other departments. As the Dean of the Faculty put it in an internal memorandum of 21 June 1993, "The internal ramifications appear profound and the Faculty Executive is reluctant to approve the pilot proposal without detailed consideration."

Similarly, requests to the Estates Department for preferential parking spaces for people who were willing to share their cars to work were not successful as the resources were not available to allocate and police these spaces. It was felt by the author that a car-sharing scheme was unlikely to succeed without the incentive of a guaranteed parking space for sharers and so a scheme was not pursued. New outdoor bicycle parking was installed by the Estates Department as part of an on-going programme, but there was no increase in the amount of secure covered bicycle parking: it remained limited to one building plus ad-hoc storage of cycles in offices.

#### **5.4 Workplace TDM at Nottingham Trent University: conclusions**

To summarise, the extent of workplace TDM efforts at the University in 1992 and 1993 were as follows:

1. The Civil and Structural Engineering Department, in conjunction with the County Council, funded a post to research and implement workplace TDM measures at the University.
2. A travel survey was carried out, on whose results recommendations for further action were made. It was funded at a cost of £2,000 by University's environmental initiative.

3. An inter-site bus service was started, subsidised by the University's Estates Department. In addition, there was some promotion of public transport to employees.
4. Additional cycle parking was installed by the Estates Department.
5. The committee which ran the University's environmental initiative agreed that any University transport policy should be based around the concept of demand management.

The project description for the research post is in Appendix 3. This shows that a successful research project would have had some implications for the University's corporate activities - particularly staff parking provision - and require some input of staff and other resources from departments outside the Civil and Structural Engineering Department, including some non-teaching departments such as Estates, which is responsible for planning and allocating car parking.

However, while the creation of the post gained approval from the University's Environmental Studies Faculty Board, it is not clear that the implications that the post could have had for University operations had been fully addressed. A Research Assistant is normally employed to carry out research within a very defined subject area and to disseminate its results. This was part of the TDM research post; but the job also required the research assistant to try to act like an informal employee transportation co-ordinator (ETC) for the University, without the University itself having recognised that it needed such a post. It was, for example, not clear from the project description that

other departments were prepared - nor aware that they might be asked - to provide the resources necessary to allow pilot TDM projects to go ahead. The experience gained in trying to implement these projects suggests that there was a lack of senior management commitment to trying to manage demand for transport to the University and that this inevitably made any TDM projects very difficult to implement. The role of senior management commitment - in terms of time and financial resources devoted to TDM - and of the ETC in the organisation will be discussed in the next chapter.

## **5.5 Workplace TDM at Nottinghamshire County Council**

In 1990 Nottinghamshire County Council's transport functions were divided between two departments: Planning and Economic Development (PED) had responsibility for transport planning, transport policy and public transport, while Construction and Design (CaD) was formed as the client and design contractor for highway infrastructure projects, including Park and Ride. Both departments developed an interest in workplace TDM for a number of reasons. Firstly, the 1989 National Road Traffic Forecasts in Nottinghamshire, as everywhere else in Britain, focused minds on ways of making better use of existing road capacity rather than attempting to build enough to meet demand. It was recognised that the national forecast of an increase in motor vehicle traffic of up to 142% by 2010 could not be accommodated and that there was instead a need to manage demand. Secondly, the Council was also committed to becoming a more environmentally responsible organisation, reflecting greater public and national government interest in "green" issues, especially after the 1992 Rio Summit. Thirdly,

one manager in CaD who had visited the USA on several occasions had been impressed by American efforts in the field of workplace TDM and felt that they could be of some value in Nottingham.

In January 1991 the Green Working Group of the PED conducted a survey of the Department's workforce to discover how staff currently got to work and what factors were currently discouraging those who drove alone from using a more environmentally-friendly mode. The survey was undertaken with a view to implementing measures to encourage more people to commute by modes other than driving alone. Although some 54% of those surveyed currently drove alone, it was found that 28% of staff said that they would be interested in car sharing or minibus pooling as an alternative.

On July 31st 1991 the County Council's Environment Committee considered a joint report from the PED and CaD entitled "Green Issues - Reducing Car Dependence". The report recommended that the Council pursue car and minibus pooling for staff, and that to do this it should employ an Employee Transportation Co-ordinator (ETC), initially for one year, to plan and implement the scheme.

Employee transport demand management was also mentioned in Nottinghamshire's 1992 Transport Policies and Programmes (TPP) document<sup>1</sup>, which foresaw the Council implementing elements of an employee transport plan (such as car- and minibus-

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1. The TPP is the Council's annual bid to government for capital funds for transport. It sets out the Council's plans within their policy context before making bids for specific projects.

pooling) and leading other large local employers by example (Nottinghamshire County Council 1992).

The new ETC started work in January 1992 within the Construction and Design Department to develop an employee transport plan for the County's main central worksites. These are in the Trent Bridge area of Nottingham (about a mile to the south of the city centre), where some 2240 employees were based at that time. The plan on which he worked had many corporate implications (for finance, personnel, and facilities management, for example). However, work on the plan was concentrated in CaD and other departments were not consulted to a great extent. This was because of a departmental management decision that the concept of an employee transport plan should not be raised corporately until the Department was itself certain that its plan would work. (Internal memorandum, 12/5/92.)

In the opinion of one manager, this strategy was a mistake - he felt that the concept should have been put to the cross-authority managers' team at an early stage to establish it as Council policy. However, as it was, even the PED - in spite of its interest in the area - had little input into the ETC's work because he was employed by a different department. The PED's involvement was largely limited to commenting on the various drafts of the employee transport plan that the ETC produced.

None of the drafts produced by the ETC were judged by his supervisors to be of sufficient quality to be taken to corporate level and so the plan remained within the CaD

department. During this time the ETC also attempted to persuade some of the staff in his department of the wisdom of taking the bus or cycling to work. At the end of 1992, however, the ETC's contract was not renewed. This was in part due to some interpersonal difficulties, as well as to the problems he had in developing a plan of sufficient quality to take to other departments in the Council, and more generally because of a reassessment of priorities for funding and filling vacancies.

It can also be argued that little commitment to the idea of an employee transport plan had been built up before the arrival of the ETC - there was sufficient support for the relatively uncontroversial move of employing a member of staff on a temporary contract, but much less unanimous support for what the ETC was supposed to be doing. The Council's Environment Committee had endorsed the strategy of employing a member of staff to attempt to reduce the environmental impact of the Council's employee and business transport, but there was no Councillor or senior Council officer who was enthusiastic enough in their support to act as a "champion" for the idea. This meant that the new ETC had an uphill struggle to build this commitment at the same time as trying to draw up (and possibly begin to implement) the plan - one manager in his department thought that the ETC may have been employed too early in the process.

In March 1993 one of the ETC's ex-managers put a revised employee transport plan to his Assistant Director for comment. This plan suggested a phased introduction of measures and envisaged expenditure in the first year of £29,000 plus £18,000 for a new ETC. The main elements of the first phase of the plan were a Ridesharer's Charter and



Charter Benefits (staff would pledge themselves to participate for a certain number of days per week and receive benefits as a result); parking management (essentially rationing parking for staff); improvement of facilities for staff cycling and walking to work; promotion of public transport at the workplace, funded by operators; a carpool matching scheme; and emergency ride home programme. Clear targets would be set for annual reductions in the proportion of Council employees driving alone to work so that the plan's effectiveness could be monitored. Details of the proposals were published in an article in the Surveyor magazine (27 May 1993) which commented that "If the proposed commuter plan is adopted this bold initiative will lend much weight to the County Council's other major "green transport" initiatives in the area." (McClintock, 1993.)

However, this new plan, too, failed to be taken forward. Cycle facilities were funded from the cycling budget but the rest of the plan was not: its industrial relations and resource implications were too great a concern to senior managers. The payment of car user allowances to staff travelling on Council business was the subject of a national industrial dispute in the summer of 1993 and therefore there was a risk that any TDM measures could be perceived as a further attempt to reduce these payments.

There was also a reluctance to put any more staff time into the initiative after the perceived failure of the first ETC position during 1992. According to one of the ETC's managers, there was no "wholesale commitment" to the idea of an employee transport plan amongst the higher managers in Construction and Design. Somewhat contrary to

this view, another manager feels that the idea still lives on, but "on a back burner", but he does also concede that it is not one of his department's priorities.

The Council's Public Transport Section (part of Planning and Economic Development) organised bus travel promotions in much the same way as at the University. The Council's promotion took place in 1992, 1993 and 1994, and each time it was timed to coincide with a major sports event nearby, when there was reduced staff car-parking on site. The promotion was available to all staff rather than only those who currently drive alone - this was ostensibly because discrimination on the basis of mode of travel to work is deemed to be unfair. This caution suggests that there could have been considerable resistance to introducing any more controversial measures such as parking management or a transportation allowance. Up until early 1995, then, the periodic promotion of public transport and the improvement of secure cycle parking facilities was as far as the County Council moved towards implementing a transport plan for its employees. There does not appear to have been sufficient internal support to take the plan forward. However, in early 1995 the Director of the CaD - a traffic engineer - died, and was succeeded by a new Director, who was an architect by training. Shortly thereafter a report went to the Council's Environment and Policy and Resources Committees recommending the development of an employee transport plan.

## **5.6 Nottingham City Council**

The City Council has seven main offices spread around the city centre, although there are also some outlying employment sites. About 1,800 people work for the City Council in the city centre, making it one of Nottingham's largest employers. Roughly 600 of these staff are deemed to need a car for their job and therefore qualify for a free parking space in one of the city centre car parks owned by the Council. For internal accounting purposes, departments are charged £420/year (1995 prices) for each parking space used by their members of staff, but this is not a cost to the Council since it owns the car parks. About 55% of staff employed at sites in the city centre currently drive to work or come as car passengers (City Council Staff Travel Survey, 1995).

### **5.6.1 An employee transport plan**

Certain officers in the city began work on the development of an employee transport plan - the Green Commuter Plan (GCP) - at the end of 1993. The impetus for the plan came from a number of sources. Firstly, one of the City Council officers who was most committed to the concept of the GCP had been influenced by the ideas of the same County Council officer who had studied employee transport plans in action in the USA, as both attended a Greater Nottingham transportation working group.

Secondly, the importance of environmental issues in Local Government increased after the Rio Summit in 1992 and, in Nottingham Council, this spawned an Environmental Topic Group. The officers on this group felt that sustainable transport, and in particular

a GCP, was an important subject and so, with the support of the Chief Executive, a further group, the Sustainable Transport Working Group (STWG), was formed in April 1994 to consider relevant issues at a corporate level and to make recommendations to Council committees where appropriate. The STWG attempted to be corporate in scope, with representatives up to Assistant Director level from the Personnel, Environmental Services, Housing, Design Services, and Leisure Services Departments invited to its meetings. At its first meeting one of the lead officers on the group, PF, noted that

"there are a number of topics that are to be considered by this group that have wide implications for the working practices of the whole authority and the inclusion on this group of officers from a range of Council departments will enormously strengthen [its] effectiveness." (*Internal memorandum 19/4/94.*)

In a later interview (12/5/95) PF said that the members of the group had in part been chosen for their relatively "green" views:

I suppose to a certain extent we were guilty of recruiting people who have a positive view of these [green transport] things on the team anyway. So we were all amongst friends.

However, meeting minutes indicate that those from leisure services and housing attended only once, and the Assistant Director for Personnel who was invited to attend instead delegated attendance to one of her staff two levels down the hierarchy. It was acknowledged that the most active members of the group were officers from the Chief Executive's and Planning Departments. As TS, a planner and active member of the group said,

I think our section and the green policy section have been the most active. Perhaps I am not aware of other things going on around me because I only work in this section and I don't know what the others sections talk about they might be very supportive of this. [But] there has been quite a lot of resistance.

The third driving force behind the development of the GCP was demand management. In common with many local authorities in the UK, there was at Nottingham City Council an increasing realisation of the need to manage demand for transport rather than catering for it, and latterly there was also increasing concern about the impact of transport on air quality, which added further impetus to the need to be seen to be taking steps to control the impact of the Council's transport activities. The GCP seemed like an innovative and appropriate means to address both these concerns. It was hoped that it would have the further impact of leading other large local employers by example, and encouraging them to adopt similar measures.

Fourthly, the importance of personalities in the development of the GCP should not be overlooked. As planner AA noted,

“It's all very personality - notably PW [a planner] who has no conception of the boundaries of conventional planning; and TS started with us - he's a very committed flag-waver.”

And PW himself commented:

“TS wasn't actually recruited specifically to do this work but it became apparent that this was where his interest lay so I actually directed him to do it and to take all the work that he is supposed to be doing off him.”

Other interviewees noted that it the interest shown by a senior member of staff from the parking services section and by the Chief Executive had also been significant. Evidence from interviews thus points to the role of a few key actors in pushing the GCP forward. However, personnel assistant FL commented that the STWG was in danger of being identified with these few people and that it was “seen by senior managers as PF's group

- a bit beards and open-toed sandals". This suggests that there was a need for the GCP initiative to walk a tightrope between being corporate but no-one taking responsibility for it, and being driven by a few committed people whose ideas were then marginalised.

The main initiatives on which the sustainable transport group worked were an electric pool car scheme; targets for modal split to be incorporated into the Local Plan (these were later added to the draft of the plan); and the green commuter plan, including a monthly discounted bus pass which was launched in August 1994. All Council staff had the option of buying the monthly ticket for which they paid via monthly salary deduction. They then received their ticket along with their salary slips. There was some initial resistance from the administrative sections of the Council to taking on the new task of processing payments for the travelcards and then distributing them. Planner TS commented:

"It was very hard to get the administration units of each department to agree to it, because each department has what we call the support services manager and within that they have their teams in every field. We had to get them to agree to administer the scheme. They had no problems in employing an officer to this car insurance scheme they are located in the City Treasurer's department but when it came to this new thing about supporting bus users it was difficult."

The system was however eventually put in place. The 15% discount was provided by the bus operators rather than the Council, and after the scheme had been running for six months some 5% of those using the service had transferred from car travel (Internal Survey 1995).

Research work for the STWG was carried out by officers from the planning, personnel, environmental services and design departments. The commuter plan was reviewed during its development by members of the STWG but the various drafts were written by the planning department. The majority of the co-ordinating work to set up the discount bus pass was also done by planning staff.

At the same time as developing an internal commuter plan, the Council was looking for ways to involve other local employers in employee transport initiatives. Planning department staff had discussions about such initiatives with both of the city's universities, with a large retailer whose administrative offices were moving to the city centre, and with a local college that wanted to expand. In the latter case the City, as planning authority, had some leverage on the college. These cases helped to build external awareness of the commuter plan concept. However, they also helped to raise internal awareness. The GCP concept was awarded a prize by a national transport pressure group, as a result of which the Council obtained both consultancy resources and national publicity, to the point that it was mentioned in a national Labour party policy document - no mean feat. Through the debate over the Local Plan, members were exposed to the concept of commuter plans. These factors made the Council's own GCP less easily overlooked and more difficult to marginalise within the organisation.

Publicity was produced within the Council itself to advertise the discount bus pass and there was also some discussion of the commuter plan idea in the city's staff newspaper. Nonetheless, most people interviewed believed that, other than at the level of the

officers involved discussions around the development of the GCP, there was low staff awareness of the idea: planner AA estimated that at most a quarter of the city centre staff would have some idea of what it was about. All interviewees recognised that, should the plan reach the implementation stage, there were bound to be some staff who felt threatened and who would react negatively. Engineer RS, for example, felt that it was important to introduce “carrots before sticks” but still believed that many staff would look at the GCP, say “what’s in it for me?” and conclude that it could offer them nothing. Planner PW also supported the carrots before sticks strategy, observing:

“I have the experience of problems of changing peoples work conditions in the past - you only have to do things like trying to change tea and coffee rotas to know that you are playing with fire. You could have strikes, in fact the only way you’ll get a strike in local government is over things to do with cars. The first thing is you introduce a load of opportunities. Only then should you start to take away some of the rationale of why people have to have their cars at work.”

Despite these concerns, a complete version of the City Council's Commuter Plan was produced as a discussion paper in March 1995. Its stated objectives were:

- i) To reallocate existing Council travel budgets more equitably between staff, including renaming the car allowance a travel allowance;
- ii) To improve the environment through reducing traffic;
- iii) To improve health by reducing traffic;
- iv) To lead other organisations by example;
- v) To form part of a sustainable transport strategy for Nottingham, helping to make the city a more attractive place to live and work.



The paper suggested initiatives such as an expanded discount travelcard scheme, car sharing schemes, reviewing staff car-parking, changing the car allowance to a Green Travel Allowance, reviewing eligibility for travel allowances when jobs are about to be refilled, and increasing facilities for cyclists. As at the County Council, altering the size of and eligibility for car allowances and parking at work were highly politically sensitive issues. Two previous initiatives had attempted to address each issue: in 1992 a policy was adopted to review travel allowance eligibility when vacancies arose, but it was rarely acted upon; while in 1994 the personnel department had embarked upon a review of staff parking allocation, but this had in the words of personnel assistant FL "died without trace", indicating the sensitivity of this subject. In his opinion, the bitter dispute over car allowances in summer 1993 meant that "senior management don't have any taste at all for going over that again - unless there's a direct input from members." The Commuter Plan proposal had the advantage, however, of taking all such initiatives together and putting them in a broader context which, it can be argued, made them more difficult to sideline.

The commuter plan paper was well-received by the Personnel Working Groups in March 1995; it then faced the hurdles of the controlling Labour Group and finally the Personnel Committee of the Council. The corporate approach was again indicated by the decision to take the paper to Personnel rather than Transportation Committee and highlights the steps that were taken to try to avoid the marginalisation of the GCP by other Council departments as "just a transport thing".

In mid-1995, therefore, considerable progress had been made in drawing up the GCP and taking it through the various steps towards its adoption as policy. It had had a relatively easy passage up to that time; however, this could be because it was not sufficiently developed to threaten anyone by requiring them to take action. This was recognised by PF when he said in an interview:

there is clearly a conflict between some of the objectives of the GCP and other priorities. So they were the kind of issues that surfaced but they weren't sufficient at this stage not to be able to present them positively within the discussion paper... we have had a very easy life so far. We have yet to meet any serious obstacles but the kind of resistance we would get would be from chief officers I think. I would anticipate more resistance from them but we haven't yet put it to them.

Ultimately however the GCP proposal had built up sufficient political momentum within the Council to overcome this resistance and it was approved by Councillors when it was put to a number of committees in October and November 1995. The committee report recommended:

- “1. That the Green Commuter Plan for the City Council is approved in principle and that further reports are submitted on the details of the measures contained within it.
2. That a temporary Staff Travel Co-ordinator post is established for the three year implementation period of the Green Commuter Plan.
3. That Service Managers be asked to produce a Transport Management Plan for their service area consistent with the aims and objectives of the Green Commuter Plan Strategy”.

This did not commit the Council to implementing the strategy, but it gave a strong steer in that direction and acknowledged that the initiative was one worthy of resourcing.

The report went on to recommend a number of options for funding the GCP, of which

the one proposing “top-slicing” a proportion of each department’s car allowance budget was the one most favoured by Councillors.

### **5.6.2 Review of GCP implementation strategy**

It is possible to identify a number of factors which have played a part in the implementation of the GCP which have helped it to reach an advanced stage relative to the other UK workplace TDM initiatives which have been reviewed in this thesis so far. Firstly, several committed people have been in the same place at the same time to work on the GCP. Secondly, they have recognised that plan development and implementation is bound to be slow. TS, for example, explained how political considerations held up one stage of the process:

“Basically, the latest GCP discussion document is a refinement of my original report which was actually prepared for committee but which never got there, because it was felt by PF, who is the policy co-ordinator on green issues, that it was too early and we needed to get ideas informally from the Labour members rather than Personnel Customer Working Groups.”

Thirdly, there was a deliberate attempt from an early stage (1993) to portray the GCP as more than simply a transport issue - indeed, in some respects to play down its transport aspects if this was politically advantageous. Parallels between the GCP and other non-mandatory employer-based programmes were drawn, both by AA who referred to her work on equal opportunity policy at a time when it had been politically marginal, and by PF who noted the gradual acceptance of restrictions on smoking at work. Most of all, the proponents of the plan put as much emphasis as possible on its equal opportunities

benefits. Planner PW related his experience of discussing the GCP with an informal group from the Personnel and Customer Care Committee, for example:

“They were impressed by not so much the green argument - I could see their eyes glazing over when I started to go into that, so I cut that very short. What they were interested in is the opportunity of spreading the benefit of being an employee of the City Council and making that benefit more equally applied.”

Fourthly, there was an attempt from early in the process to make the initiative a corporate one. As noted above, this was not always successful but it was explicitly recognised by PF as essential for success:

“It comes from the centre and doesn't then appear as an issue dealt with by one single department because there is always the danger that in a authority like ours which is often departmentalised that initiatives tend to be seen as the responsibility of one department and that can be inappropriate when really what we are dealing with is a corporate issue.”

Fifthly, and related to the issue of the corporate approach, while the need for an employee transportation co-ordinator (ETC) to implement the GCP was recognised in the committee report, up until that point there was a reluctance to appoint one because of the risk that the GCP would become identified with the ETC alone, and that s/he would then become isolated. Finally, the proponents of the GCP made efforts to build the profile of their work outside the Council, thus making it less easily marginalised within the organisation.

### **5.6.3 Conclusion to Nottingham City Council**

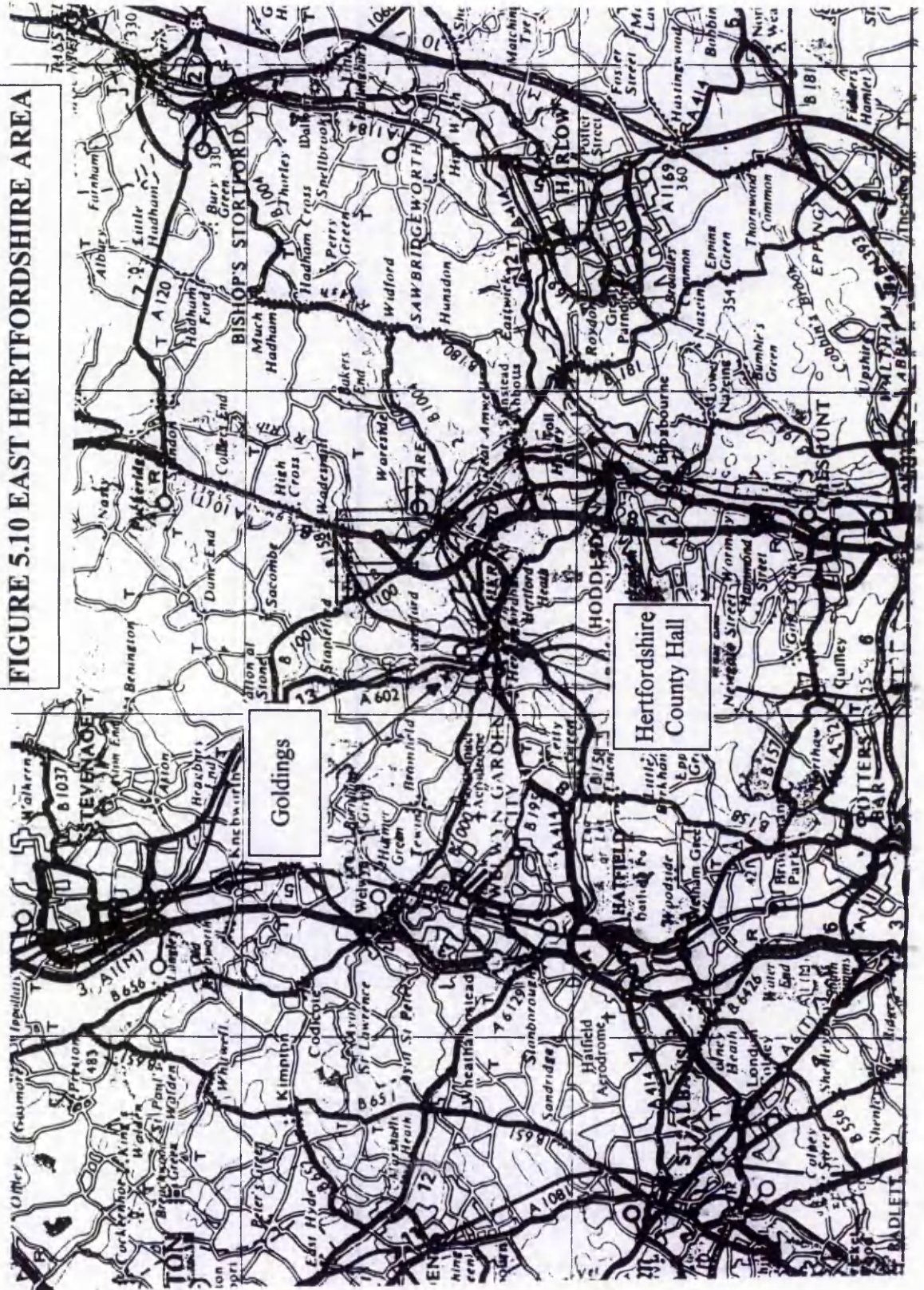
This section has shown how Nottingham's proposed Employee Transport Plan has developed and how its proponents have manoeuvred politically to try to ensure that the

initiative is not marginalised. They succeeded in moving the initiative onto the Council's agenda and getting agreement in principle that resources should be found for the plan from other transport-related expenditure. They also succeeded in putting into operation a discount bus pass scheme for employees. However, even here, this was the only element of workplace TDM that was implemented; otherwise, two years had been spent purely on preparing the ground.

## 5.7 Hertfordshire County Council

Hertfordshire is a County of 780,650 people situated immediately to the north of London. The percentage of households owning at least one car in 1991 was 77.9%, while unemployment was 6.36%, both figures being above and below the respective national averages of 67.8% and 8.1%. In some areas these figures are even more extreme: in the East Hertfordshire District (which includes Hertford), the respective percentages were 82.6% and 5.28%. (All figures from UK Census and Central Statistical Office.) While Hertford is the County town, Hertfordshire has no single dominant centre, but instead a polycentric structure with complex patterns of travel between a number of major towns and the surrounding countryside, and London. This structure makes the County particularly difficult to serve by public transport. (See Figure 5.9) This structure, coupled with very high car ownership, helps to explain why, in 1991, 56% of trips to work in Hertfordshire were made by car and only 4.4% by bus. The respective figures for Hertford District were 66.5% and 2.21%.

The County Council (HCC) employs 20,000 people across Hertfordshire, with its largest employment site in the County town of Hertford at County Hall, where 1250 people work, and an outlying site at Goldings, about 1½ miles from the town centre (250 employees). The employees at County Hall are provided with about 1,000 free parking spaces, some of which are leased by the Council from private owners. A 1995 sample survey indicated that about 90% of employees drive to work.



### **5.7.1 Policy origins of employee TDM; the Travelwise campaign**

In 1992 HCC radically revised its transport policy in response to the 1989 National Road Traffic Forecasts, drawing from them the conclusion that traffic growth could not be accommodated through increased road building but that, instead, demand management would be needed. The Council adopted the recommendation of its Transportation Department, that the new policy should be put into context using a publicity campaign called Travelwise. This was to be aimed at the public in general but it was also felt that the Council's own workforce was a suitable captive audience for the campaign message: that drivers should think carefully about car use and should try, when possible, to use a different mode of transport. When the campaign was first launched it was intended only to raise awareness of transport problems and alternatives to car use, rather than to provide incentives/disincentives to influence travel behaviour.

The County incorporated its new policies into its Transport Policies and Programmes (TPP) document in July 1993 and three months later launched the Travelwise campaign with a press conference, roadside posters, and local radio advertising. Later that year the Council launched a car-sharing scheme aimed at all the County's drivers and administered through the local public transport information phone line. Aside from this scheme, the campaign consisted entirely of publicity and advertising to encourage behavioural change. The campaign inevitably invited comment from the press on what the Council itself was doing to "set its own house in order" with respect to staff travel to, from and at work (Hertfordshire Mercury, 1/10/93).



Council employees were targeted with more Travelwise publicity than were members of the public, partly because they were an easy audience to reach, but also to counter such criticism that the Council as an employer was not addressing its own transport impacts. When the campaign was launched, senior managers in the Council were sent information packs, the contents of which they were asked to distribute to their employees. A video was produced for the campaign and this too was shown to employees at special workshops which were organised in several departments, but, according to one of the members of the steering group which organised the implementation of Travelwise, they took place principally in Transportation. November 1993 payslips also carried the Travelwise message<sup>2</sup> to all Council employees. Finally, campaign material was added to the induction pack for all new employees, and they were made aware of the car-sharing scheme. This shows that employees received a relatively large amount of publicity material, but that it remained just that and at during the planning and very early implementation stages of the campaign (in 1993), suggestions of an integrated employee transport plan were minimal.

### **5.7.2 Employee transport: beyond the publicity campaign**

To further address the question of employee travel the County Management Board (CMB) set up a relatively informal officer committee called the Transport Policy Implementation Group (TPIG) whose terms of reference were "to devise and implement measures to be taken by... the Council as an employer to restrain car use and promote bus, cycle and walk

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2 . The message was: "Traffic Congestion is everyone's problem - to find out how you can help phone 0990 777888. Travelwise - think before you use your car."

modes". The members of the group came from Law and Administration, Transportation, Planning, Personnel, Education and Social Services and included officers of up to Assistant Director level (i.e. two levels below the Chief Executive in the Council hierarchy). The members from Education and Social Services attended one meeting fewer than did the other members.

The TPIG first met in October 1993. It agreed that its priority areas should be incentives rather than disincentives and in particular decided to focus on car-sharing, working from home, flexible working hours, compressed work weeks and cycle facilities. A report from the group to CMB in May 1994 briefly discussed the possibility of charging for parking at work. While the A.D. for Transportation pointed out that this probably the single most effective means of influencing employee modal split, the TPIG as a whole recommended that it was not pursued because of the possible impact of employee parking on streets surrounding County Hall.

The energies of the TPIG were absorbed largely by a project to fund and build improved facilities for cyclists at County Hall. The group aimed for 50 new covered cycle parking spaces for employees, showers and lockers, plus a few covered cycle stands for visitors, to be sited in a prominent position in the Councillors' car park, where they would replace a car parking space. The group took the view that, since the cycle facilities would be used by employees from all parts of the organisation, they should be funded corporately, with a contribution from all departments. This principle met with some resistance from the budget holders who were being asked to contribute, and there were objections on other

grounds as well. For example, one departmental head expressed "serious reservations" about the proposed visitors cycle parking, arguing in a memo of 21st July 1994 that "well-designed standard direction signs to existing cycle parking would give a much better message and would be a lot cheaper". It thus took 10 months before the facilities were installed, in August 1994. The cost was £11,000 compared to an original estimate from the Property Department of £17,000. There was no "before and after" study conducted by the Council to assess the impact of the new cycle facilities on levels of employee cycle commuting. After the cycle parking had been installed the TPIG "died a death" because, according to one of its members from the Transportation Department, so much of its energy had been absorbed by this one issue.

A second employee transport initiative was the provision of special bus services linking an isolated workplace on the outskirts of Hertford to the town centre. Morning and evening peak services were introduced to take employees to the railway stations, but more popular was a lunchtime shuttle bus to the town centre. Both services were still running in late 1995, but their impact on employee transport was not monitored.

A third initiative, of relevance to employee transport although not organised as part of the Travelwise campaign, was a seminar on working from home and altered work hours. This was organised by the Personnel department in July 1994 and included a speaker from the Transportation Department to emphasise the transport benefits of such altered work patterns. Interest from Personnel came mainly from the potential of working from home to

make service provision more local and to cut down on staff travel on work's business, as well as its attractiveness as a staff benefit.

These initiatives, though interesting, were not co-ordinated and marketed as part of an overall employee transport plan. This is because such a plan had not originally been envisaged as part of the Travelwise campaign; the Transportation Department only began investigations into the development of such a plan towards the end of 1995, on the grounds that it was a logical extension of Travelwise, and could act as a context for the re-launch of Travelwise to employees. Earlier, there was little emphasis put on developing an integrated plan to mitigate the impact of the Council's employee travel: indeed, in March 1994 a senior member of staff in the Transportation Department felt that the Council had "now adequately dealt with the question of [our own] employee travel" (internal memorandum 3/10/94) - adequately enough, that is, to deal with criticisms of the Council's own transport impact rather than to substantially reduce this impact. The employee transport initiatives within Travelwise were instead very much part of a wider campaign which was aimed at the public as well as the Council's own employees. However, it might be expected that Travelwise had some impact on those employees and it is this question which is discussed in the next section.

### **5.7.3 Employee response to Travelwise**

This short survey at Hertfordshire County Council's headquarters in Hertford (County Hall and the smaller out of town site) was carried out in August 1995 to gain some idea of the reaction of Council staff to the Council's "Travelwise" travel awareness campaign. The

short self-completion questionnaire (see Appendix 6) asked staff about their current travel habits, their perceptions of traffic problems in the area, their knowledge of Travelwise and response to it, and their preferences for County Council spending on transport. The survey concentrated on choice of mode of transport to work and reasons for this choice. However, this was not an exclusive focus and in particular the section on people's response to Travelwise covered both work and non-work trips.

**Table 5.4: Hertfordshire Staff Survey: Sample Size and Response Rate**

<b>Department or section</b>	<b>Males surveyed</b>	<b>Females surveyed</b>	<b>Total surveyed</b>	<b>Responses (total)</b>
Business	0	3	3	0
Corporate services	11	6	17	12
Education	1	1	2	2
Legal	0	4	4	2
Arts	2	6	8	6
Personnel	4	4	8	3
Planning	10	5	15	7
Environment Service	4	3	7	5
Rights of Way	3	1	4	3
Property	7	3	10	3
Social Services	2	0	2	1
Transportation	8	0	8	4
Finance	0	6	6	4
<b>TOTAL SURVEYED</b>	<b>52</b>	<b>42</b>	<b>94</b>	<b>52</b>
<b>TOTAL RESPONSES</b>	<b>29</b>	<b>23</b>		

The survey was delivered in July 1995 through the Council's internal mail system to a total of 94 staff whose names were picked at random from the internal phone directory. Staff had about three weeks to complete the questionnaire and return it to the Transportation Department. Numbers of questionnaires distributed and returned are shown in Table 5.4, above.

With 52 replies the response rate was 60% - quite high for this type of survey (Mann, 1985), but a small enough sample for the results to be treated with some caution, particularly where small sub-groups of respondents are involved (e.g. those who claimed to have changed their travel habits as a result of Travelwise). The standard errors for many of the results are so large as to make the findings tentative at best. The responses are broken down by gender and department in Table 5.4, above, showing that there was some variation in response rate by department but little variation by gender. None of the differences are significant at a 0.1 level of confidence, however (Chi Square = 14.1 with 12 d.f.). It is recognised that, if the survey were to be carried out again, a large enough sample size should be used to ensure statistically significant results, and that the sample should be stratified so that there were sufficient replies from each sub-category (gender, department and so on) to establish statistically meaningful differences between their responses.

The main results of the survey are summarised below, including both quantifiable and open-ended responses. The overwhelming majority - 47 people, or 90.4% - of those surveyed drove to work. Four people walked, and one person used the bus. Some people used a different mode on certain days; most popular among these was the bike (four people used this as a second mode). Car-sharing was not used as a main mode (see Figure 5.11).

Commute distance was extremely high compared with the UK average of 6.2 miles (UK National Travel Survey 1995). This may reflect the polycentric nature of the County and also the high car ownership levels amongst the staff surveyed. 73.1% of staff commute more than 5 miles one-way, half more than 10 miles and 15.4% (eight people) more than 20 miles to work (see Figure 5.12).

The most frequently cited reason for using a car to get to work was the need to use it for trips on work business. Exactly 50% of respondents claimed to use their car for such trips at least twice weekly. Nine respondents said that they had no viable or practicable alternative mode available and several stressed this in written comments, for example:

"Without better public transport, personal interests will always override social concerns about pollution etc."

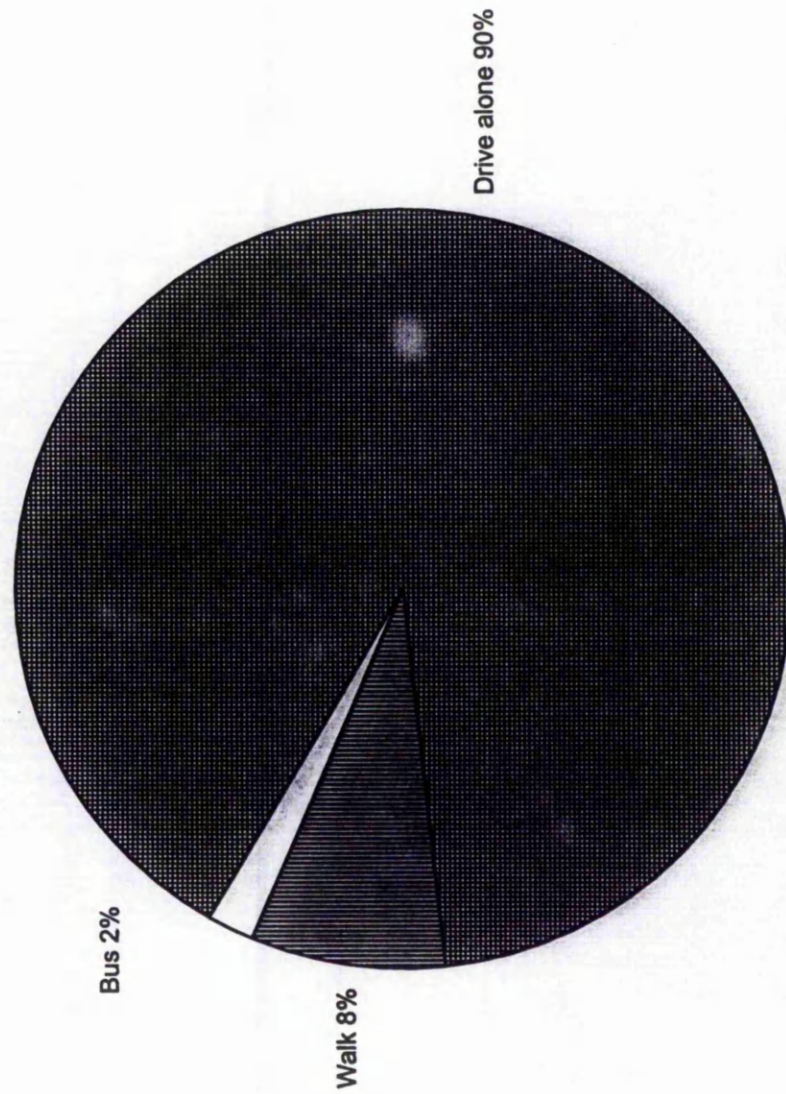
"Improve the public transport network and make it cheap! (I don't think they would be allowed to do this.)"

"It's not possible for me to do my job without a car."

A speculative question about the effect of a workplace parking elicited the response from most people that they would park elsewhere, but that they would only do so under duress. This shows that any such initiative would require on-street parking controls around the work sites and would also need careful presentation as part of a package of incentives and disincentives, if it were to have a chance of acceptance by the majority of staff.

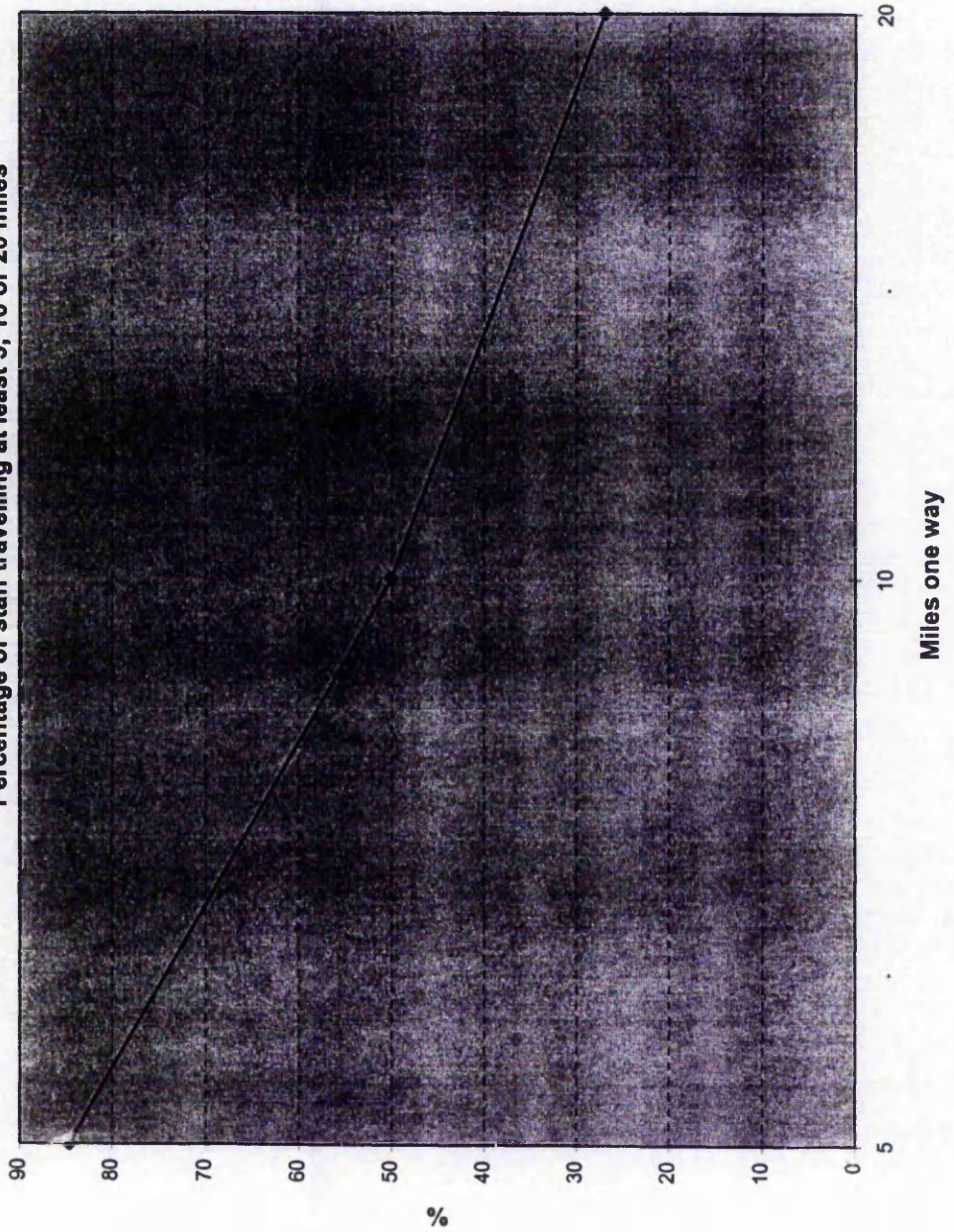
The survey asked people to assess the seriousness of traffic-related problems in the County. 75% of respondents (39 people) said that they felt that Hertfordshire has a problem with traffic congestion but only 57.7% (30 people) felt personally negatively affected by it. The respective figures for air pollution were 60% and 51.9%.

**Figure 5.11: Usual mode of travel to work - Hertfordshire  
County Council employees (n=52)**





**Figure 5.12: Journey to work distance, Herts CC**  
Percentage of staff travelling at least 5, 10 or 20 miles



n = 52

Some 42 respondents - over three quarters of those surveyed - had heard of Travelwise and the majority of these were able to define it with reasonable accuracy. About half had noticed external publicity and more than two-thirds had been exposed to publicity at work.

Significantly, 17.3% of respondents (nine people) claimed to have changed their travel habits in some way in response to Travelwise, 61.2% (32 people) said that they had not, one said that he was planning to do so, and the remainder did not respond. (Half of those not responding were not required to by the rubric of the questionnaire, as only those who had heard of Travelwise were asked to state their response to it.) The standard error of the percentage of people who claimed to have been influenced by Travelwise is 5.3% at a 98% confidence interval - that is, 98 times out of 100, the true value represented by this sample statistic will be 17.3% +/- 10.6. However, with samples this small, standard error results must also be treated with some caution.

In contrast to these very encouraging figures, far fewer staff thought that Travelwise had had any impact, with over 60% (31 people) estimating that none of their colleagues had changed their travel habits. Of those who said they had changed their travel habits, two claimed to have cut their car use by one journey per month, two by one journey per week, and four by several journeys per week. One did not specify her personal reduction in car use. The substitute modes for these former car trips were walking, car-sharing, and cycling. No-one admitted to using the bus more as a result of Travelwise; open-ended responses indicate that it is not perceived as a viable mode.

Almost half the respondents said they would be upset and/or feel resentful if car parking charges were introduced, with one of these "outraged" and another promising that he would "create a riot" in response. There was a number of people who took the view that a charge would be "excessive - if I'm provided with a car then I should be provided with a parking space", and that, since a car was necessary for them to carry out their work, then they should be provided with parking and would claim any charge back from their employer. There was also a feeling that parking should be provided free of charge as this had always been the case and was therefore (an unwritten) part of contracts of employment, while one respondent reinforced this opinion with the view that "[free parking] was one of the reasons that most people took a job at County Hall, which is placed at the top of a large hill". In common with the other organisations studied, then, parking at work was an issue close to people's hearts.

Only nine respondents said that they thought the Council should spend less on Travelwise, with 22 happy to see spending stay at its present levels and 15 believing that the scheme requires more resources. More people might have been expected to argue for less to be spent on Travelwise since 13 respondents did not think the County has a problem with traffic congestion; this indicates that some respondents may have been giving a "socially desirable" response rather than stating their "true" opinion.

The survey was able only to give a snapshot of employee reactions to the publicity and exhortations which they had received as part of the wider Travelwise campaign. It shows that there was a perception amongst most employees that their area suffered from those

problems, the causes of which the campaign aimed to ameliorate. However, relatively few employees translated this perception and into a change in behaviour but this was not unsurprising since the campaign was not complemented by a workplace transport plan which could have materially affected the costs and conditions for commuting to County Hall in Hertford. The survey also indicated that, in common with the other UK local authorities which were used as case studies, the issue of car allowances and the contractual need for a car for work was a major deterrent to the introduction of a workplace transport plan.

## 5.8 Conclusion to Chapter Five

This chapter has examined the development of transport demand management at four workplaces in the UK. At none of these was a commuter plan - in the sense of that described in Chapter 2 - implemented, although three of the four employers experimented with elements of workplace TDM. To summarise developments at each workplace:

- At Nottingham Trent University, there was no formal recognition by the University that workplace TDM was needed to help to deal with the institution's transport problems. However, certain departments *did* identify a need for such measures and attempted to address this by for example appointing a researcher, carrying out surveys, reviewing parking policy and by recommending that the University adopt the concept of demand management as a basis for any transport policy. Elements of TDM implemented included improved cycle parking and promotion of public transport at the workplace.

- At Nottingham County Council the Councillors, who set Council policy based on recommendations from officers, made an initial commitment to workplace TDM for the Council as an employer. However, there was no formal recognition by officers across the Council that workplace TDM was needed to help to deal with the institution's transport problems. Two departments had some commitment to the concept and went as far as employing a member of staff to develop an employee transport plan. However this was never circulated beyond a few officers in the two interested departments and no measures were implemented apart from an annual free bus promotion.
- Of the U.K. case studies examined in this thesis, Nottingham City Council made the most progress towards the implementation of an employee transport plan. An inter-departmental working group was established in an attempt to make the initiative corporate in scope, and officers also built up external awareness of their work in order to raise its internal profile. Staff stressed the equal opportunity advantages of workplace transport plans as much as their potential transport and environmental benefits. A report recommending the "in principle" implementation of the commuter plan was approved by Councillors, with the recommendation that it should be funded from existing departmental budgets for car allowances.
- At Hertfordshire County Council, workplace TDM was set within the context of a wider public awareness campaign which was seeking to influence people's travel behaviour. Few workplace TDM measures were implemented, apart from two additional buses to an out-of-town workplace and some new showers and parking

spaces for cyclists. However, employees were targeted with campaign publicity in much the same way as they would have been with the marketing and promotion elements of an employee transport plan, and a small sample survey indicated that this had had an effect on the travel behaviour of a limited number of staff.

Attempts to introduce workplace TDM at the case study sites in this chapter were all voluntary rather than being required under mandatory legislation. It is clear that some initiatives developed further than others, nonetheless. The data gathered appear to indicate a number of reasons for these differential rates of progress. At Nottingham County Council, for example, the lack of a corporate approach, plus low levels of support from senior management and an unsuitable ETC all contributed to the slow progress of the initiative. At Nottingham City some of these pitfalls were avoided but there were difficulties with low levels of support from managers in some critical departments, and a general reluctance to change eligibility for car user allowances. At Nottingham Trent University there was a little recognition of what TDM could offer and the person responsible for implementing it did not have access to the resources to do so. Finally, at Hertfordshire County Council there were difficulties in achieving consensus across departments over a minor TDM initiative (cycle parking) but otherwise the Travelwise campaign caused few disagreements within the Council because it aimed only to educate and encourage behavioural change rather than re-allocating resources to achieve its aims.

This chapter's examination of the four case studies has raised several factors which appear to be linked to the development of the workplace TDM programmes and which will therefore be discussed in the next chapter. These include: the importance of car user allowances; the rôle of the employee transportation co-ordinator (ETC); the importance of a corporate approach when attempting to implement a TDM programme across an organisation; the culture and structure of the organisations considered and how this may have affected programme development; and levels of political support for the concept and the implementation of workplace TDM.

## **CHAPTER SIX: CROSS-CASE ANALYSIS**

### **6.1 Introduction**

This chapter will consider all five case studies together, draw out the similarities and differences in the findings from each, and from this analysis arrive at conclusions about the conditions which are conducive to the implementation of workplace transport demand management in large organisations. The framework for this analysis will be the guiding hypotheses which were set out in Chapter 1 (page 5). These hypotheses relate, firstly, to the importance of organisational commitment in implementing workplace TDM and to the various components which together produce that commitment; and, secondly, to the employer's and employees' perception of environmental problems which may be mitigated by TDM. Each of the hypotheses will be dealt with in turn and an assessment will be made of how far each one is supported or refuted by the case study data, and to what extent other issues which were not identified in the hypotheses have been shown to be important.

The second part of this chapter will deal with some of the theoretical issues which are of relevance to this study. From a theoretical perspective, the implementation of workplace TDM can be seen as a form of organisational change. Section 1.4 explained the author's interest in the "organisational peripherality" of workplace TDM; this viewpoint relates directly to the nature of TDM as a form of change which is often instigated by a group that is not the dominant one in the organisation, and whose aims are not necessarily congruent with the main aims of the organisation (such as providing



services or making a profit). This then raises further questions about the relationship of TDM to organisational structure, organisational goals, and power and leadership in organisations. It also begs consideration of the degree to which organisations may wish to engage in activities which are socially desirable but from a short term and economic perspective are irrational. This is the field of corporate social responsibility. Further theoretical insight can be gained by looking at TDM from a policy analysis perspective, to attempt to establish general reasons why a policy may or may not be implemented within an organisation. It will be argued that the data in this thesis adds depth to existing theories of organisational change and corporate social responsibility and that in this respect the work is contributing to theory building, as well as offering practical insights for TDM practitioners.

## **6.2 Effectiveness of TDM programmes in case studies**

In Chapter 1 it was noted that there is no explicit attempt to make a comparative assessment of the effectiveness of the TDM programmes studied in reducing the number of trips to their respective workplaces. However, implicit in the hypotheses is a recognition that some judgement must be made as to how far the objectives of the programmes have been attained. At the City of Irvine, it is possible to measure effectiveness in terms of the number of participants in the programme and progress made towards achieving the target AVR (Average Vehicle Ridership). At the other case study sites, such concrete targets did not exist and in addition no programmes were actually implemented during the period of this study. Here, then, effectiveness must be

viewed more as the degree to which plans for TDM moved towards implementation and how many, if any, elements of the programme were implemented. On this scale it is argued that the programme at Nottingham City Council was the most effective of those studied, followed jointly by Nottingham Trent University and then Nottinghamshire County Council. Hertfordshire County Council is not strictly comparable in that no plans were made by any section of the Council's staff to implement an employee transport plan. However, some of the aims of the awareness campaign were achieved: a few material measures were implemented to complement the campaign and the survey results in Chapter 5 indicate that there was some change in employee modal split. To the extent that much of what was planned was achieved then this case study, too, is judged to be one of the more effective programmes reviewed in this thesis. On a "continuum of effectiveness" the programmes can be placed in the following order (most to least effective): Irvine, the City of Nottingham, then Hertfordshire, with Nottinghamshire County Council and the Nottingham Trent University in joint last place.

### **6.3 The degree of organisational commitment at the case study organisations**

The guiding hypotheses framed for this work made a distinction between organisational and (senior) managerial commitment to a TDM programme. In Chapter 1 some of the "proxy" factors which were viewed as indicators of organisational commitment included

"finances, staffing, the length of time taken to implement programmes, levels of management participation in any TDM programme, public statements of support for TDM, and employee perceptions."

These are what will be referred to below as “proxies” for managerial commitment.

It is quite possible that an organisation can make some degree of commitment to workplace TDM without every manager being completely in favour of the planned programme; equally it is possible that senior managers may be very committed but unable to communicate this to their subordinate managers who may feel differently about the programme, given that it is they who will have to cope with its operational effects. Nonetheless, many of the “proxies” listed above are dependent on decisions taken by senior management. In practice, therefore, it was felt that the distinction between organisational and managerial commitment was somewhat artificial and that it would make the analysis more illuminating to consider the two together.

It is clear from the research results that at each case study location the organisation was largely *uncommitted* to the TDM programme. This was particularly the case at the University and at Nottinghamshire, where levels of awareness of the initiatives were very low and where management support was limited to a departmental head (at the former) and to team leader (at the latter). It was less the case at Nottingham City Council and Hertfordshire; in the former case, coalition-building helped to raise levels of awareness and organisational commitment. At the latter, an external awareness campaign had an effect on the council’s own staff as well as forcing the council to be seen to be doing something to mitigate the impact of its own staff’s travel. Irvine was a special case in that senior management had been forced by regulations to put time, effort

and resources into the rideshare programme. Evidence from interviewees indicated that, without the regulation, there would have been no programme at Irvine. As the City Manager said, "I question whether the City would have a rideshare programme if we didn't have the AQMD Regulation 15". This indicates that organisational commitment at this site was in this way quite superficial.

Evidence from the case studies also indicates that organisational commitment can be increased by taking a corporate approach to the development of the TDM programme. At Nottingham City and at Hertfordshire this helped in both raising awareness of the concept and in achieving objectives such as the staff bus travelcard at the former location, and installing improved cycle facilities at the latter. At Irvine the programme was obviously at a more advanced stage of development than at the other locations and it had reached the stage of being the responsibility of a single section within a department: however, this made it solely the concern of the rideshare section and the success or failure of the programme was identified with them. There was little corporate ownership of the programme, which may account for low levels of commitment. For example, the annual round table discussion of the programme revealed an authority-wide disinterest in its fortunes. It is perhaps instructive in this respect that Nottingham City Council's proposals included making individual teams responsible for developing and monitoring team commuter plan targets.

While a corporate approach is identified, therefore, as a means of increasing the likelihood that workplace TDM will be successfully implemented, it should also be

noted that it cannot wholly break down departmental loyalties and barriers. Within a corporate style “working group”, some people will be much more committed and do more work than others. This was certainly the case at both Hertfordshire and the City of Nottingham. The people who tend to put the most into the group are those whose departments have a particular interest in some aspect of transport and/or those who are instrumental in founding the group. At the City of Nottingham, these included the group members from planning, transport, green issues and parking.

It has already been shown that not all the managers who were aware of the workplace TDM initiatives at the case study sites were committed to their respective programmes. There are a number of reasons for this. Firstly, managers at Irvine pointed out that their performance targets did not include the number of people in their department or team who were using an alternative mode to get to work. This suggests that there were other targets which were judged to be more important and to which the manager could be expected to commit more time and other resources. As M at Irvine said,

“The performance of the rideshare programme’s not, er, no, it’s not specifically one of the things that the Director looks at I guess, perhaps you should ask him.”

Managing the demand for transport is a something for which only certain departments have an explicit responsibility; for others, it is likely to come low down the managerial list of priorities. In a local (highway) authority these departments include transportation, planning, facilities management and (sometimes) environmental health; in other organisations, there will be even fewer departments with a direct interest in

transport. The second, related, reason is that, in a bureaucratic organisation structured along departmental lines, a TDM initiative may be perceived as transport departments “interfering” in the affairs of other departments, and old-established departmental allegiances will be stronger than loyalty to the concept of workplace TDM. A third reason for the low level of priority afforded to TDM at the local government case study sites is the lack of involvement of elected councillors (members). For most of the time at the case study sites, support from elected officials was limited; but support from (key) members has been identified as a driver of policy formulation and implementation in local government (see Morphet, 1990 for example). At Irvine, there was support in the very early stages of the programme from the liberal mayor who, shortly afterwards, lost his seat. Thereafter the main concern of elected members was controlling the cost of the rideshare programme. At Nottinghamshire, councillors endorsed a committee report on workplace transport demand management measures, but there was no evidence from interviews or internal documents that particular members were active in pressurising officers to take the proposals forward; it was an officer-driven initiative. At the City of Nottingham also, neither document review nor interviews revealed any active involvement from members, but the Green Commuter Plan idea became increasingly politically important as it made its way onto the Nottingham Labour Party’s local election manifesto and latterly onto the national equivalent. Inevitably council officers will devote more time to those issues which are perceived as priorities with councillors, and this may help to explain why in the local authority case studies examined in this research, workplace TDM was not often a high priority for officers.

Other reasons why managers may find it difficult to give commitment to a TDM programme include the sheer novelty of the concept. Results from Irvine and, to a lesser extent, from Nottinghamshire, indicate that managers were sceptical about the efficacy of the TDM approach and wanted evidence that it was a cost-effective use of resources - evidence that is not always available given the relatively un-tested nature of many TDM techniques (particularly in the UK). As Irvine's City Manager said,

"I am very supportive of the programme, but I must say that I have difficulties with the financial part of it as to how much in terms of dollars we throw at it compared to the return that comes back."

A sceptical manager is unlikely to exhort his or her staff to participate in a TDM programme. This may be the case if he feels that such exhortations would be an unwarranted intrusion into staff members' personal lives, but particularly if she or he feels that there are aspects of the programme which may be seen as a threat to the staff member's income or non-monetary perks (such as car allowances and parking at work).

At the City of Nottingham, Engineer DJ commented:

"The [green commuter] plan will be received on the basis of 'what's in it for me?' and I think the answer will be 'very little I would think' - the car allowance is too big an incentive."

This research has identified car parking and (in the UK local authorities studied) car allowances as an important common thread in all the case studies. For UK local authorities the past six years has been a time of financial retrenchment, reorganisation and large-scale change driven both by central government and by a desire on the part of authorities to be seen as more "customer-friendly" (Midwinter, 1996). These organisational changes have absorbed considerable managerial effort, not least because

they involved changes in working practices and redundancies. As a result, managers may not be enamoured with the prospect of further alienating staff by trying to introduce workplace TDM, especially if it is perceived as a change which will have little impact on the services delivered by the authority. A similar argument can be made in higher education, where large scale change has increased stress on management and staff.

This section has shown that organisational commitment to workplace TDM was not great at any of the case study sites. It has suggested a number of reasons for this, such as the novelty of the idea and the other demands which compete for managerial attention. It has also argued that organisational commitment can be increased by working corporately on a workplace TDM initiative. The next section goes on to consider the importance of this lack of commitment.

#### **6.4 Evidence to indicate that organisational and managerial commitment are or are not important**

It appears from the evidence collected in this study that organisational and managerial commitment are correlated with programme effectiveness. The evidence in favour of this finding is as follows:

Firstly, the majority of interviewees who were managers said that they thought there was a link between management commitment and programme effectiveness. As

Irvine's Environmental Manager said,

"I think, I mean, in any organisation if the top person wants to give something a lot of emphasis, then everyone will think about it a lot more. I guarantee it."



Both at Nottingham Trent University and at Nottinghamshire, the lack of managerial commitment made it extremely difficult for staff lower down the hierarchy to achieve many of their TDM objectives. At Hertfordshire, the lack of organisational commitment to the proposal that all departments contribute to the cost of new cycle facilities meant that much time and effort was expended on achieving this relatively modest aim. Had a senior member of staff been more actively involved in this work, it is likely that agreement on joint funding of these facilities would have been reached much earlier. In Irvine, at the time that responsibility for the rideshare programme moved into Community Development Department, there was an increase in management participation in the programme which was part of an increase in participation at all levels of staff. In comparison to the other case study sites Irvine's programme was effective. This is linked to elements of management commitment such as willingness to resource ridesharing and to recognise that (at least while the regulation applied) there was a need to have a visible workplace transport demand management programme. This in turn is linked to the issue of marshalling resources in general: in hierarchically structured organisations it is management which has control of (especially financial) resources and therefore has the power to decide whether or not to commit them to TDM.

There is some evidence to contradict the thesis that organisational and managerial commitment are important for programme effectiveness. Firstly, at Irvine, the majority of lower level staff interviewed said that their decision to rideshare (or not) had not been

affected by either exhortations from or participation in the programme by their and other managers. There was a general recognition that managers were too busy to use alternative modes most of the time. Secondly, and again at Irvine, management participation during 1992 declined more sharply than did participation by other members of staff; if there was a direct link, then they might be expected to rise and fall together. Finally, at the City of Nottingham the group of staff which conducted much of the preparatory work for their commuter plan was (with one exception) not composed of senior management staff, yet it managed to build awareness of the plan and to implement the staff bus travelcard scheme without major input from senior managers. This indicates that in the early stages of the development of workplace transport demand management it may be possible to progress without management commitment as long as managers do not obstruct the ideas which are generated by any TDM "working group". This can be termed "management passivity", and is not necessarily incompatible with workplace TDM.

While there is some evidence to the contrary, then, most of the data gathered from the five case studies indicates that management and organisational commitment are important to the successful development of workplace transport demand management. However, the latter evidence shows that programmes can develop even if management interest is non-existent, suggesting that other factors are also important. These are dealt with in the following sections.

## **6.5 The importance of key actors' personal commitment to a workplace TDM programme**

The hypothesis in Chapter 1 stated that organisational commitment to workplace TDM was related to:

the personal work interests of the actors involved in the implementation of any programme. These actors include department heads, Chief Executives and other senior managers. Levels of organisational commitment are affected by these people's relationship with the individual or department responsible for implementing the TDM programme, and by their response to any external pressures such as regulations requiring workplace TDM, community lobbying, or external publicity.

Experience from the case studies indicates that, if there is a corporate TDM working group, then the personal interests of its members are also an important influence on the level of organisational commitment to the development of a programme. Excluding the City of Irvine because of the mandatory nature of its programme, the organisations which achieved the most in implementing TDM were those which had the largest number of people working on the development of the measures - Hertfordshire and the City of Nottingham. At the latter location, five of the group's members were actively involved in the development of their commuter plan, while at Hertfordshire, the corresponding figure was three. This small sample suggests that there may be a link between the number of committed key actors and organisational commitment to the programme.

When a workplace TDM programme is still in its developmental stages, the commitment of key actors can have a great impact. In the cases which have been

studied in Nottingham, much of the initial impetus for the programmes has come from people at the level of team leader (i.e. middle management). This is an important point: pressure for this type of organisational change has come from the lower ranks of the organisation rather than from the top. The evidence indicates that these lower managers need considerable perseverance and the ability to build alliances with others at their level if plans for workplace TDM are to get off the ground. For example, middle managers at the City of Nottingham worked for three years on the commuter plan concept before they felt that they had prepared the ground sufficiently to formally take the concept to a Council Committee. There is also evidence to suggest that these managers can have a negative impact on the staff who are actually responsible for implementing TDM: at Irvine, TDM staff felt that their work was undermined by Mover, while at Nottinghamshire ETC's team leader distanced himself from the ETC rather than supporting him.

Another important actor is the departmental head who appears to have a crucial role in allowing the concept of workplace TDM to filter up through the organisation for consideration by other departments. At Nottinghamshire, the original departmental head and deputy head played a crucial role in blocking the progress of the TDM initiatives. They did this by keeping the proposals for a commuter plan out of any arena where they might have to be debated with other staff or with councillors. In contrast, at the City of Nottingham, the Head of the planning (Development) department was, according to his staff, broadly supportive, while at Hertfordshire there was some

pressure from the Head of the Transportation Department for the Council to be seen to be doing something to respond to public criticism of its staff travel impact in the light of the Council's public travel awareness campaign. In all the cases studied, the Chief Executive (or equivalent) seems to have played a minimal role and it can be concluded from this that his or her active support and participation may not be essential for there to be organisational commitment to the concept of workplace TDM. This may reflect the informal status of the Chief Executive which, in some organisations, is less important than his/her position at the head of the formal hierarchy may suggest (Morphet, 1990).

Key stages for the development of a workplace TDM programme are, firstly, getting organisational approval (for example through the key Council Committees) for the idea and, secondly, using the resources obtained in the first stage to put the programme into effect. Once a programme is up and running, it appears from the data gathered at Irvine that it can then run without a great deal of commitment from key actors such as other department heads and the Chief Executive. Even the active support of the manager of the Transportation Division did not appear to be necessary - he admitted to taking a very hands off approach with the TDM section, but the programme continued to function with a roughly stable level of participation and level of awareness amongst employees. Should the programme falter, however, action from the TDM section alone may not be sufficient to resuscitate it. Thus it is not only the level of commitment which is important, but also the stage at which it is shown.

The example of Mover at Irvine shows the danger of having actors who are or who seem to others to be (almost) too committed to the “cause” of TDM - those who are perceived by their colleagues as evangelising and/or over-zealous in their pursuit of high participation rates in the programme may simply alienate those colleagues. Again this shows that not only the level of commitment to TDM that is important but also the way in which that commitment is presented.

The hypothesis also suggests that external pressures are important in affecting individuals’ interest in implementing TDM. The data show this to be the case: aside from the example of Irvine where regulation mandated workplace TDM, Hertfordshire and the City of Nottingham show the effect of (respectively) negative and positive publicity on the priority given to workplace TDM by managers.

This discussion of the interests and commitment of the actors involved in the TDM programmes in these case studies indicates that there is some need for a revision of the original hypothesis. The evidence indicates that it is team leaders more than department managers in general who have played an important role in the development of the TDM programmes studied. There is little data to support the assertion that Chief Executives and department heads in general have a particularly important active part to play. However, it has been shown that heads of the departments from which the initial impetus for TDM comes are crucial in either allowing the initiative organisational space in which to develop or, alternatively, stifling it.

## **6.6 The importance of employee attitudes and the perception of employee travel as a problem which needs solving**

The hypothesis suggests that organisational commitment both shapes, and is itself shaped, by employee attitudes to workplace TDM. It is self-evident but nonetheless important to note that employees will be unable to form an opinion about TDM at their workplace if they are not aware of it. At Nottinghamshire and Nottingham Trent University this was the level of staff awareness (although the travel survey at the latter site indicated some strong feelings around the subject of staff travel in general), whereas at the other sites there was some general cognisance of workplace TDM efforts.

Rankin (1995) emphasises the importance of employee consultation on and participation in programme development, and Frederick and Valk (1992) note that there was some evidence from Southern California that those employers who saw the greatest increases in AVR were the ones who involved employees in the development of their programme from an early stage. It can be argued that, since there was no agreement amongst managers at Nottingham Trent University and Nottinghamshire that workplace TDM was required, there was little point in making employees aware of an idea which might never be implemented. However, at the City of Nottingham, consultation within the sustainable transport working group (STWG) built unexpected alliances (for example between the Planning staff and the Car Parks Manager), and widespread consultation is an integral part of the further development of the Green Commuter Plan approved by the Council's committees in November 1995. This shows that a widespread and long term

participation by employees in the development of the programme can have an important impact on its success.

It has already been noted in the section on management commitment that managers are unlikely to exhort their employees to participate in a workplace TDM programme if they feel that the programme will lead to those employees losing perks and privileges. Managers possess some level of power over their employees; in a modern, regulated public-sector organisation this is likely to be based on a combination of their personality and their ability to command respect through their ability to do their job (charismatic and legitimating power (Pfeffer, 1981)). They are unlikely to be in a position to use the threat of violence or other coercive measures to force their staff to do something (coercive power). In situations where managers are having to build a consensus for changes in employee behaviour (as in a workplace TDM programme), they will be less willing to expend effort on this enterprise if, firstly, it is unrelated to their production and service delivery targets and, secondly, they sense that their staff are sceptical about the programme. Interviews at Irvine revealed considerable scepticism about the rideshare programme, while at the City of Nottingham, interviewees from Personnel and Environmental Services were equivocal in their predictions of how the commuter plan would be received by staff, commenting that “employee travel in general just isn’t an issue with staff” and “the thing will be received with a lot of scepticism”. In this sense, then, employee attitudes help to shape managerial and therefore organisational commitment to workplace TDM.



Conversely, however, employee enthusiasm for elements of a TDM programme may not be reflected in similar enthusiasm among management staff. At Irvine, reports from rideshare staff suggested that some managers were unwilling to let their staff change their work schedule in order to be able to car share with a colleague. More generally, at Irvine, the Nottingham City Council, Nottinghamshire and Nottingham Trent University there was a management reluctance to make any commitment to compressed work weeks and/or part-time telecommuting, despite the obvious appeal of these measures to staff. In this example, then, managerial concerns about the potential impact of changed work patterns on service delivery outweighed employee enthusiasm, reflecting the imbalance of power between the two groups.

There is also evidence to suggest that large numbers of employees will be unaffected by the level of organisational commitment to TDM. First of all there is a group that is ambivalent or hostile to the programme. Secondly there may be programme participants who, in spite of their commitment to TDM, take a dim view of the programme overall and who will carry on using an alternative mode with or without it. As the interviews at Irvine showed, these staff can be hostile to the image that the programme portrays and of the resources devoted to it. These perceptions may be difficult to alter, particularly as there will be a continuing need to market the programme to staff who continue to drive alone.

This discussion of the role of employee attitudes leads on to a further hypothesis, which stated that:

To achieve a significant reduction in the number of commuters driving alone, workplace TDM also needs:

- a) A local traffic congestion and/or air quality problem to be perceived by the employer and its employees.

At Irvine, there was a perception amongst most of those interviewed that there was a problem with traffic congestion and air quality in the region and that the City as an employer had some role to play in mitigating this. This perception was however tempered among some respondents by a belief that the region's problems were also caused by over-population. Survey and interview results from the UK sites suggested, however, that (with the exception of Hertfordshire employees) the main problems with travel to work were defined by employees as poor public transport and, overwhelmingly, a lack of parking at the workplace. An organisation's initial response to a problem defined in this way is likely to be to look to provide more car parking rather than to go to the effort of developing and presenting a TDM package with its uncertain results. That said, at Nottingham Trent University's city centre campus there had been a recognised parking problem since the early 1980s and yet no attempt to ameliorate this was made until late 1995 - indicating a reluctance to take difficult decisions related to the whole issue of employee travel to work. As one of the members of the City of Nottingham's STWG commented, "When it comes to dealing with staff parking, service managers like the easy way."

There is considerable evidence (from documents, minutes and interviews) that senior managers at all the sites recognised that their local areas suffered from the problems of congestion and (mostly in the USA but also latterly in the UK) air pollution from traffic.

However, this did not necessarily translate into a commitment to workplace TDM. At Irvine, in an area where the role of the employer in combating these problems was written into legislation, some managers were still reluctant to agree that it was fair for government to “pass the buck” in this way. As Irvine’s environmental manager commented:

“I agree with the employers that it is not their fault that they built a facility and that people come to work at that facility. Yes they build a facility, yes people come to work, yes that has impacts and yes they should pay for it but should they set up the programme that aims to reduce congestion and may be air pollution, because they built that facility or they established that business? I don't think so. Should they kick in some money through taxes to deal with the issue? Yes. We asked them to do all kinds of things to help pay for sewers to help whatever, we ask them for many things. They pay because they do have impacts on the city but we don't ask them at the same time to say hey would you mind designing a sewer system because when you locate here you are creating a problem by flushing the toilet. You don't ask them to do that, so why are we asking them to design a transportation system? I think it was a politically expedient thing to do but it was stupid”.

Compared to many of his colleagues, though, this view was an extreme one: the majority of those questioned felt that the employer had a role in managing the demand for transport but that the government too should be more active, particularly in the provision of better public transport.

In the UK, the case study results indicate that aside from the transport professionals in each organisation, managers are reluctant to consider the transport impacts of employees travelling to and for work as long as those employees can do so with relative ease. Such evidence includes the several reports on staff parking at Nottingham Trent University

whose recommendations remained un-implemented; and the resistance of some Hertfordshire managers to paying for staff cycle parking from their own budgets.

Workplace TDM is a new idea and the assumption underlying it - that all parts of the organisation have a role to play in mitigating its transport impacts - is not yet fully accepted, in spite of a general recognition in many areas that there are problems of congestion and air pollution. This shows that Jones' (1994) *Damn Right for Everyone Except Me (DREEM)* syndrome (see Chapter 4 page 99) may apply to organisations as well as to individuals. Individual and organisational attitudes to reducing staff commuting by car reinforce one another in, for example, the provision of staff car parking and car allowances, and in managerial reluctance to endorse workplace TDM (see above).

## **6.7 The role of the ETC**

The case studies show that the employee transportation co-ordinator (ETC), who is responsible for the implementation of the workplace TDM programme, can have a crucial impact on the its development and effectiveness. However, it is worth noting that an ETC may be counterproductive in the early stages of a programme's development. At Nottinghamshire it has been noted that the ETC may have been employed too early in the process. At the City of Nottingham, although there was a member of staff in the Development Department who could have played the ETC role, there was a conscious decision on the part of the staff on the STWG *not* to identify the

programme solely with this person, but rather to give it a broader base of support to reduce the risk of its being marginalised.

Once the programme is up and running there may be a need - because of the amount of work involved in its monitoring and administration - to have a person whose main task is this work, but it will also be valuable to retain a broad-based steering group so that responsibility for key decisions is seen to be shared. Other potential problems which the manager of any ETC should be aware of have been shown to be isolation and "burnout". Since workplace TDM is a new idea, the ETC may suffer from their association with it: as Irvine's ETC2 noted, "It's not ... it's kind of a job with very little respect to begin with", while ETC1 commented on her experiences of promoting a programme which was not positively perceived by her fellow staff in the following way:

"And [the alternative modes of transport to work] they are not very savory alternatives and it is really hard to be the person that has the job of promoting those kind of alternatives and of making it work, and of maintaining your attitude of this fun, I love my job, I am excited about this, you know, it is not an easy thing to do".

The research has shown that a number of personal abilities are particularly important if an ETC is to be effective. Negotiating skills will be vital for cases when managers are reluctant to allow employees to alter their working hours, for example. The ETC obviously has a vital role in promoting the programme and working to ensure that it has a positive image among staff. Monitoring skills are an equally important part of the job once any programme is up and running, since the ETC will at some point have to show to management that the programme is attaining its targets. Finally the ETC needs to be

optimistic, able to work with a wide range of people without alienating them, and able to work towards realistic targets rather than “biting off more than she can chew”. Coussey and Jackson (1981) write in much the same way regarding the qualities needed by equal opportunities professionals, particularly when their programme has not long been established within an organisation. Watson (1977), writing on personnel managers, comments that:

“if the personnel manager is to carry real weight inside his organisation, he must be a profit-minded money-talking businessman who is clearly and measurably seen to contribute to the profitability of the firm.” (pp 52-3)

Watson’s work shows that personnel managers are in some respects very like colleagues in TDM who have to struggle to gain acceptance, establish their credibility, sell their service, and persuade others that their work is actually of value to the organisation.

## **6.8 The role of regulation**

The initial hypothesis stated that regulation was required if workplace TDM was to be effective. On a macro (regional) scale, in Southern California, this was shown to be the case: prior to the introduction of Regulation XV, the AQMD maintained a Rule 7, which was a voluntary code which exhorted employers to encourage ridesharing, especially at times of especially poor air quality. The majority of employers did not respond to this code (AQMD, personal communication, 1992). Regulation XV was introduced because of the requirements of the Federal Clean Air Act, but the ineffectiveness of Rule 7 helped to make the case for mandatory trip reduction legislation.

At the scale of the individual employer, the research has shown that regulation can also force an organisation to implement workplace TDM in a relatively shorter time than it might in an unregulated situation. Regulation, however, is not essential: two of the UK employers studied did make progress towards implementing workplace TDM, even though they were not mandated to do so by regulation. It took them a long time to take even a few tentative steps but they have shown that regulation is not the only factor which can give an organisation sufficient impetus to develop a programme. In other cases such as Queen's Medical Centre in Nottingham, Heathrow Airport and IBM (see DoE, 1995) there have been other imperatives<sup>1</sup> which have led these organisations to adopt some TDM measures in a much shorter time than the organisations studied in this research.

The conclusion to this short discussion is that regulation may be the only way to ensure widespread adoption of workplace TDM in a city or region. However, at the level of the individual organisation, regulation is not necessarily required. There is debate as to the effectiveness of Regulation XV achieving its aims across Southern California (see Kessler and Schroeder, 1995), so it is reasonable to assume that a voluntary programme would have even less effect at a regional level because fewer organisations would participate. However, workplace TDM appears to have potential to mitigate small scale

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<sup>1</sup>. The imperatives were, respectively: the need to provide "customer" rather than staff car parking on site; the ability to save money by reducing office space per employee through promoting home-working; and the need to be seen to attempt to reduce Heathrow's transport impacts in a congested area of west London, particularly in the light of the application for a fifth terminal.

local traffic problems, particularly if these are mainly caused by one or two dominant local employers.

## 6.9 TDM as a form of organisational change

Section 6.1 made reference to the idea of workplace TDM as a form of organisational change. This section will explore this concept in more detail. According to Singh *et al* (1986),

“organisational change primarily reflects the decisions and strategies of leaders and dominant coalitions in organizations in response to changes in environmental threats and opportunities” (p 589).

The majority of the literature on organisational change is concerned with these types of macro-level changes which can be seen as critical to the survival of the organisation. Hannan and Freeman (1984) give a summary of the main theories of organisational change, as follows (p 150):

1. The population ecology view which sees change as an evolutionary process with only the more successful organisations surviving.
2. The rational-adaptation view of change as a planned technological response to changes in the external environment.
3. The contingent matching of organisational structure with the demands of the organisation's environment.
4. Organisational change as an attempt to reduce uncertainty about the external environment.
5. Change as a response to new or altered societal norms and expectations.



6. A Marxist view, which sees change as a means of increasing the rate of extraction of surplus value from employees.
7. Finally, "random transformation theory", which argues that organisations change "in response to endogenous processes", and that changes are "loosely coupled with the desires of organisational leaders and with the demands and threats of environments" (p 150).

In general, then, the organisational change literature on the private sector appears to be concerned with changes such as new competitors, the introduction of new technology and/or processes, the launch of a new product, or restructuring in pursuit of higher productivity. In the public sector in the UK, the chief concerns are re-organisation, compulsory competitive tendering and improving the delivery of local services to residents. For example Haynes (1981) studied the considerable restructuring in internal processes in the newly-created Birmingham Metropolitan City Council in 1974. The aim of these was to increase efficiency and improve service delivery by moving away from old departmental approaches to problems and replacing them with a new corporate style of management. He notes that:

"the management task of local authorities was interpreted more and more as one of relating the activities of the local authority to the changing needs and problems generated by its essentially dynamic and complex environment" and that administrators "need[ed] to initiate change in response to environmental instability" (pp 37 and 71.)

In so doing he locates the cause of organisational change firmly in the external environment. Elcock (1994) in his study of local government in the UK considers macro-level changes which have been driven by central government's imposition of

competitive tendering in local authorities, and the increasing concern in local authorities with cost-effective, "customer-focused" service delivery.

In contrast to these macro-level changes, this thesis argues that TDM is small scale, internal, marginal and un-related to the organisation's survival or primary aims. It is only indirectly linked to increases in productivity, competitiveness or better service delivery, and in only one case studied for this research have TDM initiatives been directly linked to a change in the external (regulatory) environment. In all other cases the main impetus for change has been internal to the organisation, although often in response to the external problems of congestion and pollution caused by private motor vehicle traffic (as perceived by certain groups in the organisation). Nonetheless TDM has an importance larger than the individual organisation's productivity or efficiency.

### **6.9.1 The degree of organisational change required for the successful implementation of TDM**

There is a need at this point to clarify the amount of organisational change which is demanded by the implementation of workplace TDM. If a TDM programme is to consist of a few "low-intervention" measures such as preferential parking for car-sharers, cycle parking and the dissemination of information on alternative modes of travel, then it can be argued that little organisational change will be required. At the other extreme, however, a programme may require a great deal of change throughout the organisation. This change might be typified by compressed work weeks, telecommuting, the creation of a new staff position (ETC), the marshalling and redistribution of

considerable financial resources, parking management (marking the departure from a culture of free parking at work) and a willingness on the part of management to change working practices to accommodate TDM. This is illustrated well by the example of the headquarters of Toshiba USA in Irvine, where a Japanese work culture required employees to be seen to remain at work until their manager went home, even though they were not always fully occupied for all this time. The ETC was able to persuade senior managers to change their working practices so that they left for home at the same time every evening, and this of course made the formation of car and van-pools much easier. (Personal communication, 1992.) This represented a considerable change in organisational behaviour in order to facilitate TDM.

### **6.9.2 The impetus for TDM as organisational change**

As noted above, the impetus for workplace TDM in the UK case studies has come not from senior management but from middle managers, usually (in the local authorities studied) in planning or transport departments. These are departments which are not normally concerned with the internal functioning of the organisation in the way that a Chief Executive's or Personnel Department might be - the expectation, as defined by their functions, of planning and transport departments is that they look outwards and provide services such as roads, lighting and land use control. This is likely to affect, at least initially, the legitimacy with which they can turn their attention to the internal issue of staff transport - such attempts may be viewed by other departments as

unwarranted and illegitimate interference in areas which should be of no concern to planners and transport policy makers.

Much of the literature, in contrast, makes an implicit assumption that the impetus for change in large organisations will come from senior management. This is implicit in the view of organisations as systems (Kast and Rosenzweig, 1985) and in the bureaucratic model of organisations as originally put forward by Weber, where information filters up the organisational hierarchy and commands filter down (see section 6.11 on organisational structure). Haynes (1981) is also of the opinion that in local government the main impetus for change must come from senior management. There are exceptions to this view: Brunsson (1985), for example, considers that pressures for change will come from many levels within the organisation, while Lawton and Rose (1994) in their study of local government are of the opinion that individuals and groups in organisations often develop aims which are in conflict with the aims of the organisation as a whole (as set out by senior management). Mangham (1979, p 123, emphasis in original) notes that

“no matter how subtly our perceptions are shaped by the dominant organisational definitions, there remains the *possibility* of there not being a one-to-one match between our perspectives and those of other members and thus the possibility of our seeking to bring the situation more in line with our goals. This is particularly true of complex organisations since its very nature, a high degree of specialization, in effect institutionalizes different perspectives and interests...”

The data from the case studies support this more pluralistic view more than they support that which ascribes the main impetus for change to senior managers alone. Only at the

City of Irvine did managers play an important role in the initial stages of the programme, but this was because they were responding to an external stimulus. The evidence from the other case studies may initially suggest a model of these organisations as places in which “anything goes”, where any member of staff can come up with an idea for the development of the organisation and its operations, and where such ideas will be given a hearing. However, such “organisational anarchy” has not broken out in the institutions studied, largely because such suggestions are mediated and deflected through a set of power relations which are crucial in deciding the course of action which the organisations take. This theme will be considered in more detail below, but first the discussion will turn to the ways in which TDM as a form of change can be implemented within the workplace, and what barriers stand in the way of such change.

### **6.9.3 Barriers to organisational change**

A considerable number of barriers to change are identified in the literature, some of which are echoed by the evidence from the case studies. Firstly, organisational structure is seen as a potential barrier by authors such as Brunsson (1985), Morgan (1989) and Weggemans *et al* (1996). They argue, variously, that a rigid organisational structure can inhibit the flexibility needed to take on new ideas; that organisational structure may need to change to accommodate the new activities required (for example, to find space for a section to deal with the administration of a TDM programme); or that different levels of departmental autonomy in different organisations may affect the way in which

priorities for change are disseminated through the organisation. There is evidence from Irvine, Nottinghamshire and the University that the organisational structures were, initially at least, not adaptive enough to find space for TDM activity: at Irvine, no-one really knew what to do with the rideshare programme when it was first formed, while at the University there was a case for siting any TDM activity in an operational department (such as Estates, which had a remit to deal with university transport issues) rather than in an academic department. At Nottinghamshire the member of staff worked largely on their own in trying to develop workplace TDM. There is some evidence which supports the location of TDM staff in a Chief Executive's Department, at least until the programme is running. Further, there is a strong indication that any TDM initiative will fare better if staff responsible are not isolated in the organisational structure.

Middle managers are also seen as a major barrier to the implementation of organisational change. From the organisational literature the definition of middle managers is not clear but, for the purposes of this work, they are those situated in the hierarchy between dean/departmental director on the one hand and line staff such as ETCs on the other. This definition therefore includes section and team leaders and staff such as departmental administrators.

Mangham (1979) argues that this is because people's roles in organisations are often clearly defined, and this leads them to take on a particular definition of themselves in relation to the organisation. If change demands different roles from them (for example, rather than to work until the job is finished, to work until the time their car-pool is

leaving) then they may feel threatened. This analysis brings him to the conclusion that there is a tendency for members of organisations to have an inherent conservatism, since to change their activities is to change their view of themselves. Haynes (1981) points out that specialisation and departmentalism in organisations means that, when senior managers hand down goals and objectives to middle managers in other departments, these goals may be displaced and/or redefined to make them more compatible with the existing goals of the people working in that department. He argues that this makes the work of cross-departmental teams particularly difficult. Eddy (1981) notes that commitment to a new policy may be much less at the level of middle as opposed to senior managers, since it is the former who face the challenge of actually implementing that policy, while it is usually the latter who have developed it. As he says (p 79)

“the involvement of staff in policy-making is highly desirable, because the level of the organization’s commitment to goals that members have no part in setting or influencing is apt to be low.”

Finally Kast and Rosenzweig (1985) believe that senior managers are closer to the organisational nerve centre and therefore tend to identify with and internalise organisational goals to a greater extent than their colleagues lower down the hierarchy, and therefore imply that more senior managers will be more willing to implement these goals.

Middle managers were seen to be a “weak link in the chain” at Irvine, and those interviewed were more circumspect in their views on ridesharing, particularly because they had to contend with its operational consequences.

“You know, it's, it's just a policy and the way that I see it is that cities and other agencies are taking that policy to their... you know, as they like. They want to, they apply it if they want to. It says "Achieve the 1.5" but it's kind of

iffy, like do we really? What are we doing? A lot of money's being spent and they created an Agency, the AQMD. And if you were to look at the budget of the agency and the budgets of all the other local agencies, there are no mention of {outcomes?}. I mean, what are we really achieving?"

However, the situation was reversed at the Nottingham Trent University and at Nottinghamshire, where lower level staff were attempting to initiate change. Here senior managers failed to respond adequately, or sometimes at all, and thus effectively stalled any changes, and even at Nottingham City Council, the Personnel Director took little interest in the TDM initiative until the efforts of its proponents made it too politically important to ignore. This indicates that, in general, the co-operation of middle management is particularly important in the implementation stages of a TDM programme, but that senior management can have an equally important role at the developmental stage.

Theorists such as Bennett (1994) and Pugh (1990) have highlighted the importance of communication between staff and departments in fostering organisational change. If the idea of TDM is not communicated across the workplace it is highly unlikely to be successfully implemented, and it cannot be assumed that people committed to TDM will be successful in spreading the idea around the organisation. As Weggemans *et al* (1996, p 45) note:

“a convinced company director does not necessarily mean that the rest of the organisation wants to work on measures that have no mandatory basis.”

Communication must be a central part of building a common recognition of the need to change employee travel practices right across the organisation rather simply than in a



small group in the originating department. The inter-departmental working groups at Hertfordshire and the City of Nottingham attempted to address this need whereas, at the University and at Nottinghamshire, such corporate communication channels were largely unavailable, since no group had been created to discuss the topic of staff transport. There is also evidence from Irvine that, in spite of a barrage of communication from the Rideshare Section, other staff were still unsure about the Section's role, which indicates a need for quality as well as quantity if communication is to be effective. Furthermore, communication of TDM concepts is an essential part of effective consultation with staff during the development of a TDM programme.

Two additional barriers to change which were not identified in the review of theoretical literature are seen to be important in the case studies. The first is the role of personalities and the opinions of key actors in allowing or blocking change. At Nottinghamshire the head of the Construction and Design Department (a Highway Engineer) strongly disagreed with the concept of workplace TDM and there was little progress on its implementation while he was in position. His replacement (an Architect) looked more favourably on the concept and the Council suddenly became more committed to TDM. At the same workplace, the abrasive personality of the temporary ETC proved to be an impediment to the successful progression of the TDM initiative because he alienated other staff whose support was essential to open the communication and information channels required to start an organisation-wide initiative. At Irvine, Mover's personality negatively influenced other managers' subsequent views of the

rideshare programme. This evidence shows that the personalities and backgrounds of key actors should not be discounted when examining the causes of organisational change.

The second barrier which was identified in the UK local government case studies was the provision of car user allowances (and, with them, workplace parking) for staff who are deemed to require a car for their work duties. As noted in various sections above, this allowance is a highly sensitive industrial relations issue and one with which managers are reluctant to tamper. Though seen in this research only in the local government case studies, employer-subsidised motoring is an accepted part of corporate life in the British public and private sectors (Transport 2000, 1995). In local government it is institutionalised in the organisational structure and processes as a part of each eligible employee's job description, but car use on business has also become a feature of organisational culture, which is defined by Allaire (1984, p 213) as a "system of shared and meaningful symbols manifested in myths, ideology and values". Car allowances are, in addition, a significant supplement to the salary of many employees. This shows that barriers to change can exist whose intractability results from the interplay of several mutually reinforcing factors.

#### **6.9.4 Ways in which organisational change can be brought about**

Given that managers tend to have more leverage over their staff than vice versa, they are in theory at least able to impose organisational change, even when this is unpopular with

employees. This ability is predicated upon the power relations between management and staff, and can border on the coercive, in that managers are able to threaten to withhold bonuses, wages or (ultimately) jobs if employees will not accept change. This is noted by Mangham (1979), amongst others. (It is therefore feasible that managers who were particularly committed to TDM could threaten to use similar sanctions to coerce staff into participating in a programme, in response to which staff could threaten to withdraw their co-operation and their labour. Workplace TDM has always been presented by its advocates, however, as an activity in which participation is voluntary.)

However, as has been explained above, the impetus for workplace TDM in the case studies has come from those who are not in especially powerful positions within their organisations, and so they have had to find other means to bring about the changes which they have proposed. Bennett (1994) highlights the importance of negotiating and lobbying in generating commitment to organisational change, and the evidence shows that this played an important role at the more effective UK case study sites. Lobbying was also critical in raising awareness of the TDM proposals at the City of Nottingham; the use of external consultants took the issue outside the organisation and was in effect a circumvention of normal routes of communication and an appeal to higher authority (councillors and to a lesser extent the public) to press for the implementation of workplace TDM. Johns (1973) advocates the building of alliances between groups for organisational change to be successful, and this too was found to be very significant at the City of Nottingham, and to a lesser extent at Hertfordshire.

Ultimately, though, lobbying, negotiation and alliance building can only go some way to redefining the power relations within organisations, and it is to these processes which the discussion now turns.

### **6.10 Power in organisations and its links to TDM as organisational change**

Power has been identified, above, as a key factor in the ability of individuals and groups in organisations to bring about the changes required to implement TDM. Power can be defined as the ability of one person or group to require another person or group to do something which they might otherwise not do (Etzioni, 1975). The critical issue is how this control is exercised and legitimated. Many theorists have considered this question, and a number of their ideas are considered in this section, followed by a review of their relevance to the empirical findings. Power can be seen as something with which someone is imbued, or it can be seen as the product of being in control of particular resources, or as the result of a person's position in a "structure of domination" which is related to the ownership of the means of production (Clegg and Dunkerley, 1977).

The case study findings show that power was exercised in two main ways in the organisations considered: firstly, to control and allocate resources and courses of action, such as whether to charge for car parking or to redistribute car allowances; and, secondly, to co-operate (or not) with TDM initiatives by, for example, attending meetings of corporate working groups. While the former appeared to be controlled

largely by senior managers (Directors of Departments in the councils, and Deans and above at the University), the power (not) to co-operate was much more widely spread.

There are a number of examples of these ways in which power was exercised. Firstly there was the power to cut off channels of communication, which was exercised by a manager at Nottinghamshire in order to distance himself from the ETC who was identified with the TDM initiative. Essentially the manager in question was difficult for the ETC to reach and therefore the ETC's isolation was increased. This power is not limited to managers, but in a bureaucratic organisation, where channels of communication run mainly up and down the formal hierarchy, managers may exercise more control over communication by virtue of their place higher up in that hierarchy.

There are several examples from the case studies of power being exercised through non-co-operation and/or non-participation. At Nottinghamshire, again, the ETC experienced difficulties in obtaining records relating to spending on car allowances; while at the City of Nottingham there were considerable problems in setting up the discount staff travelcard because the Department which was asked to administer it was initially unwilling to do so. At Irvine, the power of non-co-operation was exercised by managers who would not allow their staff to change their work hours to rideshare.

Non-participation was seen in the groups which were formed to push forward workplace TDM. At Nottingham City Council, representatives from Leisure Services and Housing attended meetings of the Transport Working Group once and twice respectively, whilst

at Hertfordshire, representatives of the same departments were infrequent attendees. Non-co-operation in this way makes the promulgation of a corporate initiative more difficult because it reduces available channels of communication into that department.

The power of senior managers in controlling access to resources and decisions about courses of action was seen at all case study sites. At the University, the decision to not carry out the compressed work week experiment was made by the Dean of the Faculty concerned. At Nottinghamshire, the Director of the Construction and Design (CaD) Department had the ultimate responsibility of taking the TDM initiative to the (general) cross-authority management team and, ultimately, to the various committees of elected members. He was able to control what his Department submitted for the consideration of these committees and, in the case of TDM, he exercised this power by refusing to allow the initiative to proceed, in spite of some pressure from the ETC's manager to do so. At the City of Nottingham, the development of the Commuter Plan took much longer than the more active members of the corporate transport working group would have preferred. This was because, once again, the decision on when to take the relevant reports to committee lay not with them but with their respective assistant directors who were more cautious and wanted to ensure that the ground was fully prepared before the reports were formally considered at Council committees. They prepared the ground by, for example, meetings with less formal groups such as Personnel Customer Care Working Group.

At the City of Irvine, senior managers decided that there should be no parking charges for staff, and that the telecommuting programme should be very limited in scope. The most obvious example of the exercise of managers' power also took place at Irvine, where Mover was effectively forced to leave the Council by a re-organisation which left no place for him in the new structure. He had attempted to create a new structure for himself (the Irvine Transportation Authority (ITA)) but was ultimately outflanked by the changing politics of the situation and by the fact that managers above him in the hierarchy were more easily able to redefine the structure of the organisation, because of their greater power.

These examples show that senior managers in the organisations studied have more important powers to control the course of events to a greater extent than do their subordinates. This is because of their ability to control both the allocation of resources and the distribution of information, much as Pfeffer (1981) suggests. Theorists such as Clegg and Dunkerley (1977) have in the past suggested that authority may be based on the control of the means of production which in turn produces a "structure of domination" within which power can be exercised. In public sector organisations this is relevant as an explanation of managerial power only insofar as the structures of such organisations mimic those of the private sector, where the distribution of power does echo the patterns of control of the means of production.

While the preceding discussion has shown how managers possess more control over resources than their staff, this power is by no means unlimited. This is shown by the

way in which the proponents of TDM at the City of Nottingham were able to circumvent the power of somewhat sceptical senior managers (particularly in Personnel) in a number of ways. Firstly, through the corporate working group, they tried to build as wide a base of support for their ideas as possible; secondly, by publicising the concept outside the organisation so that it was more difficult to ignore; and finally (and related to the second strategy) using mechanisms less formal than the committee process to raise awareness of the commuter plan among elected members, to whom senior managers in a local authority are ultimately accountable. Thus, for example, the commuter plan concept was initially circulated as a discussion paper rather than as a formal Committee report; it was taken to members in the Personnel Customer Care Working Group, and it reached the local Labour party manifesto before it had been debated by the Policy and Resources Committee of the Council. This evidence shows that formal power relations can to an extent be circumvented through the use of unconventional channels of communication; however, as has already been noted, decisions to follow a particular course of action still rested in the case studies with senior managers. Informal channels of communication were therefore a way to alter the frame of reference within which managers exercised power, rather than a complete replacement for managerial power over decision-making.

Managerial power is also mediated through the need for managerial decisions to be seen by their subordinates to be legitimate, if managers are to be taken seriously. As Etzioni (1964) notes, authority in bureaucracies is based on legitimacy and so if managers lose



this they also lose their authority. In the organisations studied, managers have very few tools available to force their employees to carry out tasks, as these organisations are quite strictly regulated by contractual rules which severely curtail the degree to which managers can coerce employees into a particular course of action. Subordinate staff will comply with requests from managers to engage in discretionary activities (such as participation in a TDM programme) only if they feel that the manager is making a legitimate demand on them. The employee's perception of their manager's legitimacy is based partly on the manager's technical competence and partly on his status (both formal and informal) in the organisation. If he is in a position to exercise some choice over whether or not to carry out a task (i.e. is not being strongly pressured to do so by a more senior member of staff or a councillor), a manager may not wish to do so if he feels that it may call into question his technical competence and therefore the legitimacy of his position of control. This relates to managers' reluctance to promote a TDM programme which might be perceived to reduce employee benefits, as discussed above, section 6.3. A manager is to this extent constrained to making only those demands on his staff and in himself engaging in discretionary activities for which, he believes, his staff will also perceive a need. This view of a constrained form of managerial power is supported by Calabria (1982), who argues that, in bureaucracies, managers are dependent on the semi-voluntary compliance of others. Foucault (1980, p 156) goes much further when he says that power is a machine "that no-one owns...in which everyone is caught, those who exercise power just as much as those over whom it is

exercised". It appears from the case studies in this research, however, that there is more support for the former than the latter view.

There are many other theories of power in organisations. The originator of much of today's organisational theory was Weber, who saw the bureaucracy as the ultimate in organisational form. For Weber, power which is not based on the ability to coerce people into a particular course of action must instead be based on legitimate authority.

This stems from one of three sources:

1. **Rationality.** In a rational-legal bureaucracy, the norms and rules of the organisation set out specific powers which are associated with a particular position therein. Therefore, by virtue of these norms and rules, the incumbent has the authority to exercise the powers associated with his/her position and his/her subordinates will accept this.
2. **Tradition.** Traditions confer authority upon the occupier of a particular position, and loyalty is owed to that person rather than to the position itself.
3. **Charisma.** People will follow a particular leader and the norms of behaviour which s/he requires because of that person's character and personality.

Weber viewed rational-legal authority as superior to the other two forms, because tradition and charisma are transitory and more "primitive". There are a number of criticisms of his theory, however. Firstly, over time rational-legal authority will weaken, as the structure of the organisation and the roles within it are redefined in response to changes in the external environment. Certain situations in the organisation

retain power simply because they always have done, rather than because everyone in the organisation is aware of the exact bounds of the authority which is conferred upon that job because of its location in the organisational hierarchy. Secondly, the fact that different people in the same job are able to carry it out with greater or lesser success indicates that power is still related to personal characteristics as well as to position. This is shown in the differing experiences of the two ETCs at Irvine. Finally, a new position in the hierarchy will not automatically gain the same degree of legitimate authority as an old-established position at an equivalent point in the hierarchy, as the experience of the ETCs in the case study shows - their legitimacy had to be earned, and was by no means assured.

Pfeffer (1981) and Watson (1977) take a highly functionalist view of power, which defines it as a quality possessed by different departments in an organisation, dependent upon their role in the organisational system. They consider the most powerful departments to be those which control essential resources; which carry out functions that cannot be performed by any other department (un-substitutability); and those which can reduce uncertainty in the organisation's future (by, for example, predicting sales or critical exchange rates). Each takes some account of the social context of organisations - Pfeffer by arguing that uncertainty, un-substitutability and critical resources are all socially defined concepts, and Watson by taking the view that each department's authority is bounded by social structures of power external to the organisation - but for each of them power is still largely defined within rather than outwith the organisation.

This thesis argues strongly that proponents of TDM lack much power to bring about the changes needed for their organisations to adopt it. This is in part due to the fact that TDM is not essential for the organisation to function and thus the findings from the research strongly support Pfeffer's conception of departmental power in organisations.


### **6.11 Organisational structure.**

It was hypothesised in Chapter 1 that organisational commitment and therefore effectiveness in implementing TDM would be affected by organisational structure. This is defined by Kast and Rosenzweig (1985, p 267) as "the established patterns of relationships between the components or parts of the organisation", and they also go on to make a distinction between formal and informal structures. For them, the former is set out in structural charts and phonebooks which define the formal relationships between managers and subordinates and between different departments, while the latter is less obvious and consists of the personal relationships which may bear less resemblance to formal organisation charts but which are nonetheless crucial to the way in which the organisation functions.

The organisations studied for this work are all in the public sector and all bar one are local government bodies. This strengthens the conclusions of the research as they relate to public sector bodies, but it does also point to a need for further research work to assess how the structure of private sector organisations affects the implementation of workplace TDM, and what differences exist between implementation attempts in the two sectors.

### 6.11.1 The structure of the case study organisations and its influence on the implementation of TDM

Morgan (1989) sets out a continuum of organisational types, as shown below in Table 6.1.

CHARACTERISTICS OF ORGANISATIONAL STRUCTURE	CONTINUUM
<ol style="list-style-type: none"> <li>1. Rigid bureaucracy, relationships highly codified, operating in a stable environment</li> <li>2. Bureaucracy with differing types of departmental structure and style; not all responses to problems and issues can be codified, leading to a need for meetings to resolve ad-hoc responses to these issues.</li> <li>3. Many cross-departmental task-forces and project teams. Representation on these remains, however, on a departmental basis and decisions on the allocation of resources to different projects are still made by departments.</li> <li>4. A matrix format in which there is a dual focus on the functional aims of departments, and the end product aims of particular projects.</li> <li>5. Structure is based primarily on project teams. Functionally defined departments provide only a support role. Senior management defines the organisation's "strategic direction" and then allows project teams to carry out tasks in the light of this guidance.</li> <li>6. A subcontracting organisation where the different parts relate to one another through contracts; may become a loose network of separate organisations.</li> </ol>	<p style="text-align: center;"><i><b>Mechanistic/ bureaucratic for stability</b></i></p> <div style="text-align: center;">  </div> <p style="text-align: center;"><i><b>Organic network for flexibility and change</b></i></p>

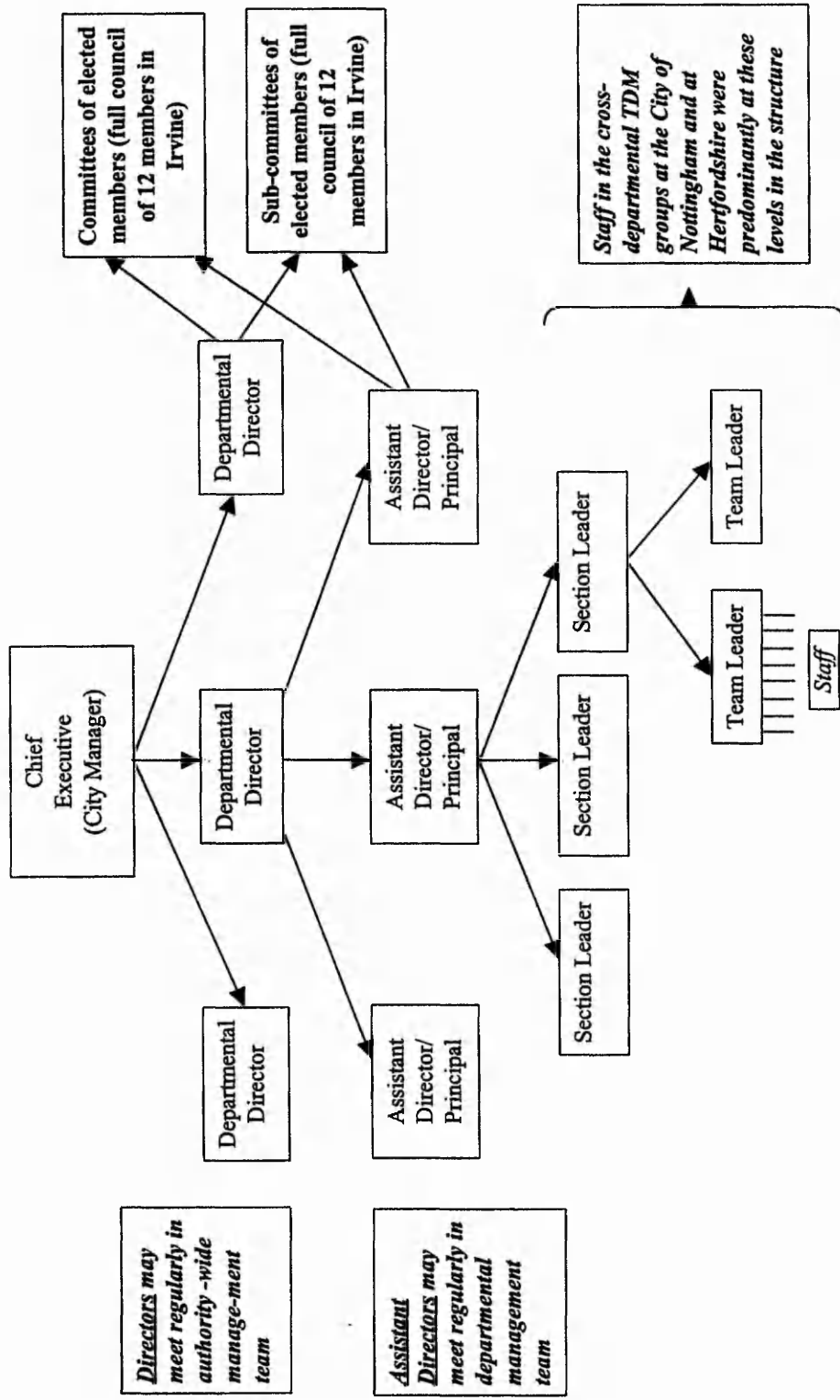
**Table 6.1: A Continuum of Organisational Types (after Morgan, 1989)**

It is possible to place all the case study organisations on this continuum, and it can be seen that they would all group quite close to the mechanistic end since they are all to a greater or lesser extent hierarchical and bureaucratic organisations with formal structures and quite clearly defined relationships between departments. They all also feature a quite rigid division of labour and grading structure, with responsibilities for the provision of specific services allocated to specific departments which each normally reports to a particular committee of elected members (except in the case of the

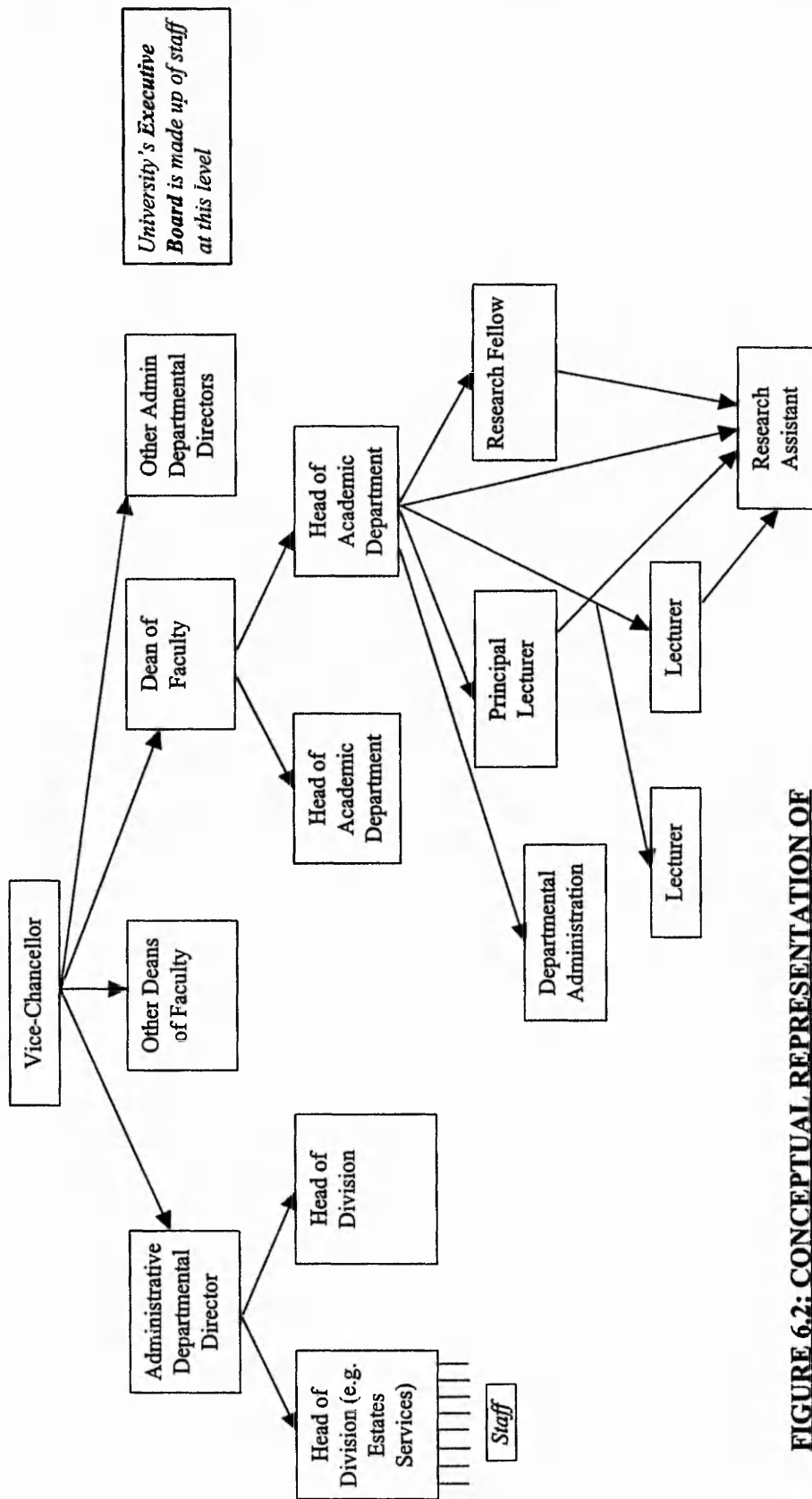
University, where there is one main executive board made up of senior management staff). The departmental structure of each of the case study organisations is shown conceptually in Figure 6.1.

Formal mechanisms for cross-departmental working in these organisations was limited to bodies such as the authority-wide and departmental managers' teams. Outside these groups, the formal structure implies that requests from one team for other departments to help it in its aims must be referred up to top management and then back down the hierarchy in the department concerned. As Figure 6.1 also shows, the majority of the staff who were the initial proponents of workplace TDM were relatively low in the hierarchy and so depended on their managers to communicate their ideas to other managers both in and outside their department through the managers' teams. Thus in this way the organisational structure reinforced the managers' power.

The structures that are exhibited in the case study organisations owe their existence to two main influences. The first is organisational theory, based on the ideas of Weber, which puts forward the bureaucratic departmental model of organisational structure as the one which is the most effective for carrying out the aims of an organisation. This is because, it is argued, each actor has their organisational role precisely defined; they are trained to carry out that role; their relationship with their co-workers, superiors and



**FIGURE 6.1: CONCEPTUAL REPRESENTATION OF CASE STUDY LOCAL AUTHORITY STRUCTURE**



**FIGURE 6.2: CONCEPTUAL REPRESENTATION OF NOTTINGHAM TRENT UNIVERSITY STRUCTURE**



subordinates is codified; and the division of labour ensures that each member of the organisation knows exactly what they are supposed to do. This in theory allows those at the top of the organisation to control exactly what the organisation does by controlling the activities of each member of the organisation through the management structure. (Weber, 1947.)

The second reason is related to the first: current local authority structure in the UK owes much to organisational theorists of the late nineteenth and early twentieth century who wanted to set up a techno-rational, professionalised and bureaucratic local government in order to distance themselves from the history of corrupt and patronage-driven local authorities which had been typical in the early part of the nineteenth century. In spite of other, newer, organisational theories, notably systems theory (see Haynes, 1981 for its application in a new authority structure in Birmingham) and contingency theory, the bureaucratic model has, it is argued here, been remarkably durable in the case study organisations. This was the case not only in the local authorities studied, but also at Nottingham Trent University, as it was for many years controlled by the local education authority and therefore retains many of the features of a bureaucratic organisation such as an hierarchical structure and a strict division of labour.

The case study evidence shows, however, that the bureaucratic organisation is not well-suited to accommodating change which does not emanate from the top of the organisation. This is illustrated, for example, by the difficulty which TDM staff had in disseminating their ideas through their organisations. At Irvine, for example, the ETC

faced problems in securing the co-operation of other managers in promoting ridesharing; and at the University and Nottinghamshire, it proved extremely difficult to find mechanisms through which to disseminate the idea beyond even certain staff in the parent department.

As Hoggett (1994) argues, the structure of a bureaucracy with its emphasis on control from the centre inevitably leads to departmentalism and segmentation because the centre expects each part of the organisation to deal only with certain functions/activities set out in the formal organisational structure. According to Lawton and Rose (1994), departmentalism works against the spread of ideas through the organisation, and structures are not well-developed for dealing with corporate issues which address a range of functions. Kakabadse *et al* (1988) contend that “tall” organisations - i.e. those with many layers of management - are less effective than “flatter” organisations with a reduced hierarchy because, in the former, there is more potential for communication difficulties and the dilution of senior management control. Although they consider “tall” organisations in relation only to the difficulties of implementing changes desired by senior management, the reverse is also the case: a many-layered structure makes it more difficult for ideas for change which emanate from lower down the hierarchy to be heard.

Kast and Rosenzweig (1985) believe that attempts to address communication problems through the formation of cross-departmental working groups are common in the public

sector, but Haynes (1981, page 187) counters this argument by stating that the effectiveness of such groups may be compromised because:

"managers will be placed within an unfamiliar, less permanent managerial setting involving equally unfamiliar personal relationships and where the operational concern is less with service provision and more with inter-departmental, interdisciplinary analysis and problem solving."

The experience from the case studies indicates that to have these groups is likely to make the implementation of workplace TDM more likely but that ad-hoc corporate working groups cannot fully overcome departmentalism. As Lupton (1983) argues, each department in a bureaucratic organisation has a relatively strictly-defined "area of competence", and if its members attempt to stray beyond this area, their actions become less legitimate in the eyes of their colleagues in other departments - corporate working groups notwithstanding. Workplace TDM is an excellent example of how the department which begins the initiative may soon find itself outside its normal area of competence, and this is one reason why a corporate working group can be so helpful.

Much of the debate over organisational structure has centred on attempts to find that organisational form which will deliver the most effective organisation (effectiveness measured by its ability to meet its goals). For this research, a related question must be whether there is a particular type of organisational structure which is most conducive to the implementation of workplace TDM. Systems and contingency theory have already been referred to, above. The former argues that an organisation is an entity which responds to environmental influences, takes in inputs from the external environment, and produces outputs which are defined by organisational goals. Organisational

structure should, therefore, be determined with reference to the inputs to and outputs from the organisational system. The latter theory argues that the structure of the organisation should be contingent upon the (changes in the) environment within which it operates; if there is little congruency between the two then the organisation is unlikely to be effective (Lawrence and Losch, 1967). A related theory propounds the idea that mechanistic bureaucratic organisations cannot respond adequately to pressures for change and that they must instead turn to a more organismic form where roles and structures are less clearly defined, where communication is lateral rather than vertical through the organisation, and where authority is knowledge-based and not necessarily resident at the “top” of the concern. The flexibility of the organismic organisation will, theorists argue, allow it to respond effectively to pressures for change, although it is not clear how internally-generated change is to be dealt with, nor how the mechanistic organisation can move to this new advantageous structure (Burns, 1963).

As Figure 6.1 shows, there are few obvious differences in the structure of the case study organisations and they all fall into the category of mechanistic/bureaucratic organisations. It is therefore not possible to judge on the basis of the case study evidence whether an organisation with a less mechanistic/ more organic structure would have implemented workplace TDM any more effectively than did the City of Nottingham or the City of Irvine. Other models of organisational form attempt to find structures which will improve the organisation’s ability to respond to external environmental change, rather than to internally-generated change. This analysis *has*

highlighted the importance of cross-departmental working as a way of circumventing the more formal hierarchy of the organisations in the more successful case studies. This at first sight suggests that a structure based on project teams, which exist independent of functional departments, might be more effective. However, workplace TDM, like personnel and health and safety, is something which the whole organisation must carry out if it is to be effective, and it is by no means certain that a "TDM project team" - even one equal in status to a functional department - would be able to raise the required commitment to the concept throughout the organisation. This part of the analysis concludes, then, by arguing that differences in organisational structure may not be crucial to the successful implementation of workplace TDM, but that what is required instead is the permeation through the whole organisation of the idea of TDM as an aim towards which the whole organisation should work. This requires a change in the organisation's goals and culture, and it is to these concepts that the discussion now turns.

## **6.12 Organisational culture and organisational goals**

Etzioni (1964, p 6) defines organisational goals as "that future state of affairs which the organization as a collectivity is trying to bring about". This implies that organisations have only one set of goals to which all organisational members subscribe; but this is an over simplistic view and Etzioni himself later (page 8) says that organisational goals are the result of power-play and organisational politics. Much of the literature (e.g. Silverman, 1990; Cyert and March 1983) argues that organisations will possess multiple

goals, some formally stated and others much more implicit and/or informal, and that these goals may often conflict. Kast and Rozenweig (1985) list a number of examples of goals which the organisation and its sub-units may be pursuing at any one time, including: the output of goods or services; efficiency/profitability; organisational (or departmental) viability; obtaining resources; and the observance of codes of behaviour. They argue that the importance of these to the organisation as a whole is being changed continuously through a "bargaining-learning process" (page 181).

In the organisations studied for this research, the implementation of a successful workplace TDM programme was some way from being a goal of the entire organisation; it was rather the goal of a sub-group of organisational members, although at Irvine it was also something which the leaders of the organisation were prepared to cite as an organisational goal, for as long as it was required by regulation.

It is obvious that there were conflicts at the case study sites between the goal of TDM implementation and other goals such as the maintenance of industrial relations; spending money on service delivery rather than on the salary of an ETC or on "frivolous" TDM incentives; the maintenance of the status and income related to parking at work and to car allowances; and ensuring that staff were available to carry out their duties at times set down by their supervisors.

Workplace TDM initiatives were supported and complemented by different organisational goals. These included (at the City of Nottingham) the pursuit of equal

opportunities for staff, and (at Nottingham Trent University, Nottinghamshire and the City of Nottingham) the investigation of ways to make the organisations' operations more environmentally friendly through various "Greening" initiatives. It is clear from this list of supporting and conflicting organisational goals that they need not be stated explicitly for them to have an important influence (car allowances is an example of this) and, conversely, their inclusion in written policy statements may not guarantee their importance (as for example with the initiative to "green" Nottingham Trent University). The evidence from the case studies indicates that the (unwritten) organisational goal of maintaining car allowances for those who receive them is more important than any written corporate commitment to reducing the transport impacts of the organisation.

This finding supports the ideas of Burns (1963, page 73) who notes that

"the individual member of the concern is not only committed to the organization as a whole. In addition, he is a member of a group or a department with sectional interests in conflict with those of other groups, and all of these individuals are deeply concerned with...their future security or betterment."

The interview and other data from the case studies unfortunately do not establish a hierarchy of organisational goals and thus allow workplace TDM to be placed on the hierarchy according to the priority it afforded in each organisation. However, there are a number of more general insights which can be posited regarding the overall importance of workplace TDM as an organisational goal.

Firstly, in higher educational institutions, it is reasonable to argue that there are two main organisational goals. The first of these is to attract high quality students, since (in the

USA and UK) these assure the institution's funding and survival; the second is to produce high quality and volume research, from which the university derives both status and funding. There may be differences in emphasis on these goals between different members of the organisation, particularly staff and administrators, as Kast and Rozenweig (1985) point out. However, they are two essentially very important goals to which other aims, such as reducing the environmental impact of the university's transport operations, may well be secondary, since transport and other operations are not aims in themselves but are rather services to the university's main activities. This reduces the importance that is likely to be accorded to TDM as an organisational goal in a university.

Secondly, it has already been noted that local authorities tend to have a greater number of goals towards which they (or some of their departments) are trying to work. These can be grouped into two main areas which are to an extent in conflict with one another. The first comes from the Radcliffe-Maud and Wood (1974) model of local authorities as service providers. This has been reinforced in more recent years with the idea of local government as an organisation which, rather than providing services itself, is an "enabler", entering into contracts with other (usually private sector) organisations to provide the services on its behalf (Hoggett, 1994). In these models, the emphasis is on maximising the quality of service provision through a quasi-market process while ensuring that costs are kept to a minimum. The second general area sees local councils as "governmental" organisations, trying to co-ordinate the activities of private, public and voluntary sector in their localities on the grounds that local municipalities have a "general responsibility for



the prosperity and happiness of the people in their areas" (Elcock, 1994, page 301). The "governmental" municipality is one which will have many more goals than its "enabling" cousin. These two models are "ideal types" which in many cases both co-exist within the same authority, as different departments are affected to differing degrees by central government controls on spending, and by legislation requiring the outsourcing of certain services. Nonetheless the models have implications for financial and staff resources, both of which affect the chances of workplace TDM being implemented.

In this slightly schizoid model of local government, there may be many groups of staff with different goals - one of which might be workplace TDM - and each of these groups must try to raise awareness of its aims within the relevant department(s) and/or throughout the whole council. Each goal has implications for the allocation of the council's overall resources and at this point it may come into conflict with the organisational aims of the council as "enabling" authority. Peattie and Hall (1994) write, referring to a survey of general environmental initiatives in local government:

"Several interviewees felt that a few committed members or officers were driving the greening process along, with the majority within the council paying lip-service to something they perceived as fashionable."

This could equally well apply to workplace TDM: although it is a stated organisational goal, it is in fact the goal of only a few staff, and this means that where choices must be made about the allocation of resources between this and other goals, those which enjoy greater support are more likely to gain those resources. For a workplace TDM programme to be successfully put in place, then, there is a need to move it from the

status of “organisational goal to which most people pay lip service” to that of one which enjoys more widespread genuine support. There is no guarantee that this process can be successfully accomplished, but the ways in which in section 6.4 it was suggested that organisational commitment to TDM could be strengthened will also apply to ensuring that a TDM programme becomes a more important organisational goal.

### **6.12.1 The role of culture in shaping organisational goals**

An important factor which influences the way in which organisational members define the goals of their organisation is its culture. Morgan (1989, page 157) states that organisational culture is

“the language, values, rituals, myths, stories and daily routines that form part of a coherent “reality” that lends shape to how and what people do as they go about their work”

and it is within this reality that people define their goals and those of their organisation. Organisational culture is a useful but over-arching concept: its manifestations include phenomena as diverse as the physical layout of offices, the terms of address used by staff when talking to their superiors and subordinates, the expectations of “normal” working hours, or the ways in which work teams are organised. When the term was first coined, however, it was associated most strongly with firms which appeared to have a firm vision, shared by all staff, of their goals and how to achieve them. (Deal and Kennedy, 1982.)

The discussion, above, of organisational goals in the case study organisations has shown that there were multiple and conflicting goals which did not suggest an overall vision of

the aims and objectives of the organisations concerned. All were bureaucratic in their operations, however, and Bryman (1989, page 40) argues that bureaucracy is itself a form of organisational culture which, rather than generating a vision for the organisation, instead tends to “promote resistance to change”. Based on his experience of working within and visiting the case study organisations, the author would argue that, while the bureaucratic structures were largely similar, there were variations in culture which could be perceived. Irvine, for example, was quite formal in the way in which different departments related to one another; the City of Nottingham suggested a longer tradition overlaid, in certain departments, with a more relaxed way of working; the Transportation staff at Hertfordshire managed to project an image of a “business-like” local authority; while at Nottinghamshire structure and practices appeared quite traditional. This leads the author to argue that there are variations in the culture of bureaucracies which may make them more or less conducive to changes such as those required for workplace TDM. The cultural aspects of the organisation which are important to the implementation of TDM are:

1. A tradition of open channels of communication, as opposed to communication which is allowed only through the formal hierarchy.
2. A willingness to consider cross-departmental working.
3. Less traditional working practices.

There were also some more specific manifestations of organisational culture which worked against the implementation of TDM. The author perceived at Nottingham Trent University a culture that prescribed the boundaries of a research assistant’s activities and to attempt to influence the university’s transport operations was outside these

boundaries. Secondly, the example of parking and car allowances as a perk defined in (sometimes unwritten) contracts but whose legitimacy is reinforced by culture has already been mentioned. Thirdly, at Irvine many staff who were interviewed mentioned a general attitude of not counting hours but working until the job was done (and sometimes coming in on weekends to do so). Planning Assistant CS said, for example:

Before I rideshared I would stay around a lot of times but then I think ridesharing has made me much more conscientious about how I use my time.

This pattern of working long hours was also exhibited by management and used by them as a justification for not using alternative modes.

“I am back and forth all the time you know here and there and er you know if this was if there was one work station and I arrived at 8 o'clock and I could go home at five that would make it really simple but I am I am every I am like horse shit, you find me everywhere.”

This tendency to work long hours is an important cultural trait and one which inhibited the organisation's ability to adopt TDM as part of its way of working; as the example of Toshiba (above, page 22) indicates, it is possible to change such cultural practices, but this requires an ETC who is skilled at negotiation with and, arguably, manipulation of her colleagues.

This section has shown the difficulty of re-defining organisational goals to take on board workplace TDM, particularly in organisations with many, sometimes conflicting goals. It has also considered the ways in which corporate cultures can vary across organisations with similar structures, and has noted the manifestations of culture which can inhibit the changes required for TDM. The discussion now turns to a related theme,

that of corporate social responsibility, which some writers (e.g. Welford, 1995) have suggested requires a sea change in corporate culture as well as a complete redefinition of organisational goals.

### **6.13 Corporate social responsibility**

Corporate social responsibility (CSR) describes the idea that an organisation exists within society, to which it has responsibilities over and above the maintenance of its own existence (by generating profits, in the case of private business organisations).

Carroll (1979, page 500) defines CSR as

“The social responsibility of business encompasses the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time.”

Although CSR first emerged as a response to growing concern about the concentration of economic and political power with a small number of increasingly large national and trans-national private sector companies (see for example Jacoby, 1973), it is also applicable to the public sector. The idea of local governance sees councils as organisations which can set examples of best practice to their communities, while educational institutions may find it to their advantage to portray themselves as responsible members of their local community. CSR stresses that organisations have a responsibility to adopt best practice in wide range of their activities. Some of these include (McKie *et al*, 1974) corporate law; the relationship of the organisation with government; implementing regulations; dealing with the consumer; mitigating the

organisation's environmental impact; the role of the organisation in regional and overseas development; and its treatment of its employees.

Hay, Gray and Smith (1989) set out a hierarchy of levels of CSR, implying that some responsibilities are more important than others. The first level of obligation is economic: to continue to produce and sell goods and services, and to remain in business. The second is legal: to fulfil the first level of obligation within the laws and regulations applying in that state. The third is ethical responsibility, which is

“not precisely defined and may vary over time. Some examples are compliance with the letter of the law, not just the spirit of the law; fair, rather than unfair, behaviour when transacting with constituents... and being a good corporate citizen.” (*ibid*, p 13.)

Finally, there are discretionary responsibilities, such as funding arts and charities and employee health programmes. Until such a time as employee travel becomes an ethical issue, it is into this category that workplace TDM not required by regulation will fall.

The difficulty for organisations which may wish to act responsibly is, that if such action raises their short term costs and/or reduces their income, they may suffer in relation to other organisations which choose not to act responsibly and which therefore need not bear these costs. There are a number of explanations as to why organisations should act in a socially responsible manner. The first argument is that advanced by Kast and Rozenweig (1985), who postulate that an organisation has a number of “stakeholders”, including the people to whom it sells or provides goods and services (its clients); its employees; its shareholders; and the people in wider society on whom the activities of

the organisation impinge. They argue that the organisation has an “contract” to act responsibly in its relations with these groups, but offer no explanation beyond this of the forces which make this contract binding.

The most frequently stated reason for organisations acting responsibly is termed “enlightened self-interest” (Clutterbuck, 1981; Anderson, 1989). Such enlightened organisations are those which are prepared to bear the short term costs of CSR in return for longer term gains. These might include the adoption of particular practices in production and marketing to create a socially-responsible image which appeals to a certain segment of the market - Britain’s Body Shop cosmetics chain is a frequently-cited example of this. Another reason for adopting, in particular, more environmentally-friendly practices is to reduce costs in the use of materials, space and fuel. Another example might be the adoption of high-quality staff training to maximise productivity and minimise staff turnover. And a final example might be to act more responsibly in a particular area in order to reduce a perceived threat of mandatory government regulation. The enlightened self-interest thesis implies that discretionary socially responsible activities which do not improve the organisation’s public image, reduce costs/increase productivity, or head off the threat of regulation, will not be adopted.

Examples of enlightened self-interest as it relates to workplace TDM include reducing an organisation’s transport impact to placate local residents and to be seen as a good neighbour; converting parking spaces to other more valuable uses; and increasing employment on site without having to increase parking provision. A real life example

of this is the Boots company in Nottingham which has implemented some TDM measures at its main manufacturing site in Beeston in an attempt to release for building land which is currently used for parking.

Beyond enlightened self-interest, a more radical argument has been advanced by Welford (1994, 1995), who sees corporate social responsibility as something which organisations must adopt because of the imperative of sustainable development. He amplifies calls from other writers for CSR to be accompanied by a change in organisational culture when he writes (1995, page 21)

“Ultimately, sustainability requires us to change the way we do business..., to think about the very way in which we organise the workplace, the way we treat and respond to workers’ needs, and the relationship between the business and the rest of society.”

However, Welford fails to highlight any examples of organisations which have changed in such radical ways in order to embrace sustainable development, and he does not offer any explanation of what will force organisations to make these changes.

The experience of the case study organisations does nothing to support Welford’s case. As has already been shown, radical (cultural) change was not put in place; even in Irvine, change was quite incremental and there were limits to the degree to which the aims of the rideshare programme were permitted to impinge on existing management practices (telecommuting, changes in working hours). The proponents of TDM at the other case study sites struggled to make their case and even at the most successful, TDM did not reach the status of major organisational change.



The environmental impact of an organisation's activities is an increasingly important part of its social responsibilities, and the case study organisations were no exception. The City of Nottingham founded the Nottingham Green Partnership, a broad-based organisation aimed at improving the city's environment in many ways; the University had its own initiative to green both its curriculum and its operations; Irvine had a senior manager who worked exclusively on environmental issues; and Nottinghamshire had adopted a policy which declared that the council would

“Lead by example in satisfying or exceeding national and international standards relating to care for the environment and the conservation of natural resources”. (Nottinghamshire County Council Policy and Resources Committee minutes, February 1991.)

These initiatives are all examples of the case study organisations adopting a socially responsible policy stance on the environment. These policies helped to lend weight to the arguments of those staff who felt that workplace TDM was an obvious example of the way in which their organisations could operationalise their commitment to CSR in environmental issues. There was also a desire on the part of some of these staff for their organisation to lead by example in the area of workplace TDM: as SW at the City of Nottingham noted in an internal memorandum (6/1/95) to the Chief Executive:

“We can be proud very proud of the work [of the Sustainable Transport Group], especially the green commuter plan element. I'm aware of only one other local authority which is looking at this. It is nice to be on the leading edge.”

However, as has already been shown, local government organisations in particular have multiple and conflicting goals, and while they may declare a commitment to acting in a

socially responsible manner in environmental matters, they may fail to do so if other goals are perceived to be more important. It is argued here that this happened in the case study organisations and it helps to explain why progress towards implementing workplace TDM was so slow. It is also clear from the case studies that, while the organisation as a whole may commit itself generally to acting in a socially responsible manner, initiatives which try to convert such general commitments to specific actions such as workplace TDM may come from much smaller groups within the organisation, and they cannot necessarily depend on other groups sharing their particular vision of, for example, TDM as a socially responsible activity for their organisation.

It is further argued that the “enlightened self-interest” explanation for socially responsible action is supported by the case study evidence. Environmental activities such as recycling and clearing litter have more immediately obvious benefits and are much easier to implement (because they can be accommodated without disruption to most people’s working environment) than workplace TDM. Nottingham Trent University’s green policy statement, for example, recognised that, as a socially responsible employer should attempt to address the issue of its employees’ travel to work, but it also recognised the difficulty of so doing and, thus, this issue was one of those which the policy suggested should be left to be dealt with at the longest time horizon. The concept of enlightened self interest is therefore correct explanation of motivation for CSR, and it is argued here that the costs of TDM are perceived to be too

great and the benefits (usually) too ill-defined for it to be an attractive proposition to most enlightened but self-interested organisation.

There is evidence from those employees at Irvine who expressed disquiet at the amount of money that was spent on incentives and “partying” in the rideshare programme that they viewed it as socially *irresponsible* in view of the City’s duty to use its citizens’ tax-dollars efficiently. Although this would be less of an issue where workplace TDM is financed from existing staff travel budgets and/or a parking charge, it is still a good example of the way in which workplace TDM in a local authority must find its place amongst a number of conflicting organisational goals.

Closely related to corporate social responsibility are health and safety, equal opportunities and employee health programmes. The parallels between equal opportunities and workplace TDM were recognised by SF at the City of Nottingham, who noted that both require education and change throughout the organisation, and can be perceived as threatening to individuals. Coussey and Jackson (1991, pages 25-26) also recognise this when they write:

“An effective equal opportunities policy means instituting change throughout the organisation, [and] affecting the decisions and behaviour of everyone in the organisation, particularly every manager.”

The similarities between ridesharing and wellness were recognised by personnel manager Q at Irvine, who noted the difficulties of running a successful programme that is non-mandatory (for employees and managers) and dependent on “cheer-leading” and awareness-building. Again, culture and organisational change are cited in the literature

as key aspects of successful health programmes. Flynn (1995, page 64) states that the healthiest organisations are those in which

“a cultural change has taken place. Throughout the company, both organizationally as well as individually with employees, the norm is health. When people are trying to make changes [in their personal health], the organization as well as co-workers support them.”

Dewe (1994, page 23), notes that an important part of employer-based stress management programmes is reducing the stresses in the working environment, but that

“this requires planned change in organizational structures. These changes have the potential for disrupting organizational functioning and frequently challenge traditional power bases.”

Health and safety literature, too, emphasises the need for similar changes (see Stranks, 1992; Martin, 1993; Cooper, 1994). But, returning to the “enlightened self-interest” theory, Martin (*op cit*, page 14) argues that

“You cannot expect a manager to take safety seriously for its own sake, without convincing him or her that there is a business benefit”.

It is argued in this thesis that while health and safety and equal opportunities are similar in many ways to workplace TDM, there are important differences which help to explain why the latter has so far been adopted by many fewer organisations. Firstly, it is a much newer concept and awareness of it is therefore much lower. Secondly, health and safety and equal opportunities are higher up the hierarchy of CSR (see above, page 54), largely because they are requirements of government legislation. Thirdly, their benefits to the organisation are more obvious: an active health and safety policy can reduce costs from sickness and accidents, while equal opportunities programmes help to ensure that the

most suitable staff are recruited for particular jobs. The benefits of TDM are less easily demonstrated and to the sceptical manager its costs may appear to outweigh its benefits.

This section has shown how TDM relates to the concept of corporate social responsibility. It has argued that the slow adoption of workplace TDM by the case study organisations is consistent with the theory of enlightened self interest, which sees organisations acting in a socially responsible manner where there are obvious long term benefits to be gained from so doing. Finally it has highlighted some of the similarities and differences between workplace TDM and other socially responsible activities which organisations may undertake.

#### **6.14 Conclusion to cross-case analysis**

This chapter has compared the results from the five case studies and has identified a number of commonalities which will be of use to other practitioners who may be considering the implementation of workplace TDM. The chapter has also considered the data in the light of the hypotheses which were set out in Chapter 1. Two of these hypotheses were modified as a result of the data, and a number of conclusions were drawn about the hypotheses. In addition, the relevance of the case study findings to theories of organisational change and corporate social responsibility was assessed, and additions to the theories suggested where they were found not to explain the phenomena observed in the case studies. The thesis now turns to the final chapter in which the findings will be summarised and recommendations made which may aid the more successful implementation of workplace TDM programmes in future.

## **CHAPTER SEVEN: CONCLUSIONS**

### **7.1 Introduction**

The preceding chapters of this thesis have considered the implementation of workplace TDM from a number of view points: Chapter 2 reviewed the relevant literature; Chapter 3 considered the methodological issues related to this research; Chapters 4 and 5 considered the experience of attempts at TDM implementation at five public sector workplaces; and Chapter 6 analysed these results and attempted to relate them to relevant theories of organisational change. Subsequent sections of the conclusion will go on to draw together these findings and suggest some avenues for future research.

First, however, it is pertinent to draw some broader conclusions about the generalisability of this research. These will be largely conjectural, but are very important nonetheless. Chapter 3 has shown that the validity of qualitative research and hence its generalisability are linked to the number of sources upon which the research draws. In this thesis, care was taken to use a variety of sources from the different case study sites to increase the validity of the findings. In addition, informal discussions with other employers (such as Western Digital in Irvine, and Edinburgh City Council in the UK) have indicated similar difficulties with the implementation of workplace TDM as those found at the case study sites. This shows that the conclusions of the research can be generalised with some confidence at least to organisations of a similar nature to those which were studied.

It has already been noted that all the case study sites were all public sector employers with a preponderance of local highway authorities among them. This begs the question: would the conclusions have been different, had the case studies included one or more private sector employers? In the author's view, the structure of public sector organisations is more conducive to the *initial* development of multiple and sometimes conflicting organisational goals, of which workplace TDM is one. However, the fact that there are so many conflicting organisational goals means that the implementation of workplace TDM may falter as its organisational importance wanes in relation to other goals. In contrast, limited private sector experience (from the IBM in the UK, for example (see DoE/JMP, 1995)) indicates that, while these organisations are more reluctant to commence the *initial* development of workplace TDM, once they have committed to doing so, they are more active in its implementation than are their public sector counterparts, due to the smaller number of organisational goals in the private sector. This conjectural conclusion would apply only to those private sector organisations which *choose* to implement workplace TDM, and not to those in which the organisational goal of TDM is imposed by an external regulator. This implies that, had the research used private sector case studies, the conclusions might have been somewhat different. For this reason, it is recommended that further research work be conducted in the private sector to assess the implementation of workplace TDM in that context. The results of *this* research should, therefore, be generalised only to large organisations in the public sector.

## **7.2 The hypotheses**

The guiding hypotheses set out in Chapter 1 related the implementation of workplace TDM to organisational commitment. This was itself postulated to be associated with a number of other factors which are listed below, together with a summary of the research findings which relate to each of these factors.

### **7.2.1 The importance of organisational and management commitment to workplace TDM**

The original hypotheses drew a distinction between managerial and organisational commitment, but the research has discovered that these are difficult to distinguish from one another and to measure, but that there are a number of “proxy” factors which can be used to indicate how much the organisation has committed itself to workplace TDM. These proxy factors include management participation levels, both in groups which are working to set up a workplace TDM programme, and in any programme once it is up and running; the amount of money that is spent on the programme;

Management commitment has been shown to be important in communicating ideas about workplace TDM up/through the organisational hierarchy; in committing resources to any commuter plan; and in permitting necessary changes in working practices. It appears from the experience at Irvine that senior management participation in the programme is *not* essential for it to function with a stable level of staff participation: staff did not feel that they were any more likely to use an alternative mode if their manager did so, and most understood their managers’ reasons for not ridesharing.



Experience at all the Nottingham case study sites also indicates that senior management involvement is not necessary for initial steps to be taken in setting up a workplace TDM initiative, as these were taken in all cases by staff lower in the hierarchy. The role of senior management becomes crucial once the concept is developed to the stage at which it is put to the formal decision-making bodies in the organisation. Management commitment is also important if participation in an existing programme is declining and it needs to be resuscitated.

The personal interests of "key actors" in a workplace TDM programme were also thought to be of importance to organisational commitment at the time of drawing up the hypotheses. The personal interests of managers whose departments were directly involved with TDM initiatives *were* found to be important - the programme at Nottinghamshire, for example, took a great leap forward when the new departmental director, an architect, joined the Council, replacing the previous director who had been an engineer. At Irvine, the personal interests of "Mover" and Manager R were also seen to be crucial to the effectiveness and the perception of the TDM programme. However, the interests of higher managers and particularly the Chief Executive were seen to be less important.

### **7.2.2 The role of the employee transportation co-ordinator (ETC)**

The ETC was shown to have a vital role at the City of Irvine, where a new ETC helped to markedly increase the number of people using alternative modes and to improve employee perceptions of the programme. The skills which the "ideal ETC" should

possess were identified as, amongst others, negotiating abilities; resilience; the ability to administer and monitor carefully; and the ability to deal tactfully with people. It was shown that the job is one which, by virtue of its novelty and its “organisational peripherality” has, problems gaining credibility with other staff.

The ETC at Nottinghamshire was employed too early in the programme’s development, indicating that in its early stages workplace TDM may better be developed by a group of people. This avoids potential isolation of an individual and also reduces the risk of the concept being identified with one person alone and thus more easily marginalised. When the programme is up and running, an ETC will be invaluable to its smooth operation but should be backed up by a committee which can provide resources and support where necessary.

### **7.2.3 Employee attitudes to workplace TDM**

The difficulty at the majority of the case study sites was that no workplace TDM programme existed and it was therefore impossible to measure employee attitudes to it. Surveys of attitudes to staff travel in general were carried out at Nottingham Trent University and at Hertfordshire, and these showed car parking and the use of private cars for works business to be of prime importance to employees, although they also indicated that some commuters would change their behaviour in response to certain measures, and at Hertfordshire, a small number of those surveyed already had.

Interviews at Irvine showed a wide variety of attitudes to TDM, ranging from indifference and disquiet to committed support. There was acceptance among many employees that there should be a rideshare programme but there was some unease about the money spent on it, and a desire to see proof that the money was spent effectively. It is vital to the success of a TDM programme that as many employees as possible look positively upon it, as this will feed back to managers who will be prepared to support it to a far greater extent than if they felt that their employees looked only negatively on the programme.

#### **7.2.4 The organisational characteristics of the employer**

It was hypothesised that these would have an influence on levels of organisational commitment. It was not possible to draw any conclusions about the importance of organisational structure, as the research did not carry out a comparison of each organisation's shape and form. However, organisational culture was found to play an important role in facilitating or otherwise the implementation of workplace TDM. For example, the political culture of Nottingham City Council as an inner-city Labour local authority made it possible to promote TDM as part of the promotion of equal opportunities more generally. At most case study sites, cultural norms - for example those which help to govern communication, and the formation of informal cross-departmental groups - were found to play a crucial role in the development of TDM initiatives.

### **7.2.5 A local traffic congestion and air quality problem**

A further hypothesis was that there was a need for employers and employees to perceive a local traffic congestion and air quality problem, if workplace TDM was to be effective. At Irvine this was found to be the case, although several respondents also felt that air quality and congestion were the result of "over-population" rather than simply too much traffic. At other case study sites, these problems were cited by proponents of TDM as a primary reason for its implementation; however, they were also anxious that their organisations should "set a good example" to others in the locality. It is not surprising that these actors perceived their local area to suffer from air quality and congestion, as they tended to work in departments which traditionally have a pre-occupation with such problems. It remains to be seen whether other staff perceived the problems to the same degree.

### **7.2.6 The need for regulation requiring workplace TDM**

The literature review and the case studies themselves indicate that many organisations, given the choice, will not voluntarily implement a workplace TDM programme. This suggests that there may be grounds for considering regulation which requires employers over a certain size to implement commuter plans. Such a regulation should differ from Regulation XV in that it should penalise employers for not making progress towards their target, and not just those who do not draw up a plan, otherwise it is largely toothless. Regulation is however a great step to take, and it should only be considered if evaluation of TDM indicates that it can significantly reduce the number of vehicle trips

made to work and that these are not replaced by other, currently suppressed, trips. It is the author's view that as yet this has not been demonstrated and that, therefore, regulation would be premature without further research.

### **7.2.7 Effect of the availability of transport infrastructure and alternatives such as public transport**

It was hypothesised that these would have an effect on the shape of a workplace TDM programme. Since only one programme at the case study sites was fully up and running at the time the research was conducted, it is not possible to carry out a full comparison of the structure of each worksite's programme. However, early initiatives in Nottingham concentrated on improvements for cyclists and public transport users, which can be seen as a reflection of the city's relatively good existing bus and cycle networks and of short journeys to work. In Irvine, in contrast, the programme focused on car-pooling, and on the compressed work week. This finding supports the hypothesis that the nature of the programme reflects the transport infrastructure and services provided in the area of the particular worksite.

## **7.3 Theory building**

It was further hypothesised that the organisational characteristics of the employer would also affect the way in which TDM was implemented. This examination of characteristics such as structure, culture, goals and the management of change allowed a comparison of empirical results with related organisational theory. The following sections summarise the theoretical findings.

### 7.3.1 Organisational change

This thesis has defined workplace TDM as a form of organisational change, since it can require changes organisational structure and in resource allocation, but perhaps more fundamentally in working practices and in attitudes to work. These may include, for example, permitting homeworking or compressed work weeks, or moving to a more consistent daily arrival and departure time at work, in order to facilitate ridesharing.

This research has shown that pressure for organisational change can emanate from areas in the organisation other than senior management, and that these proposed changes need not be a response to a direct change in the organisation's external environment. Much organisational theory (e.g. Daft, 1983; Dean and Goodman, 1982; Guest, 1986) implies that change stems from the top of the organisation, and change is seen as something which its senior management proponents must persuade people lower down the hierarchy to accept. The UK case studies in this thesis have shown that it is possible for the reverse to be the case, but the findings have also illustrated the difficulty for groups lower down the organisational hierarchy in trying to implement such changes.

In future, in order to more easily compare organisations which are trying to implement workplace TDM, it may behove researchers to use indicators in order to measure the degree of organisational change which is occurring in the organisations under consideration. In the context of workplace TDM, key indicators of change appear to be, firstly, changes in working hours and practices to facilitate the use of different modes to work; and, secondly, the level of management participation in the programme.

Indicators could also be derived for organisational structure and culture: it appears to the author that the number and frequency of formation of ad-hoc cross-departmental project groups; and the traditions and methods of internal (particularly cross-departmental) communication would be particularly pertinent measures in this case.

### **7.3.2 Power in organisations**

The research has also shown the importance of power relations in the organisation in mediating pressures for change. In particular it has highlighted the power of non-co-operation, and the power of controlling communication and resources, as particularly important for the progression or otherwise of a workplace TDM programme. Management in the public sector organisations studied has been shown to have important powers, including the ability to control communication and to decide on the allocation of resources and on particular courses of action. However, the research has also shown that this power is limited by the need for the exercise of this power to remain legitimate, and because staff right through the organisational hierarchy retain the important power of non-co-operation.

The concept of power as a quality possessed to a greater degree by certain departments in the organisation than others, depending on how critical they are to the aims and survival of the whole, has also been shown to be relevant to workplace TDM. It has been argued that TDM departments are in most cases not central to the organisation's survival or to its main aims, and they will therefore have relatively little influence on the way that the rest of the organisation operates.

It has been noted that public sector organisations, particularly local councils, often have multiple and conflicting goals, among which TDM may be just one goal of a small number of staff in one department. The case study evidence has shown that, for TDM to become a more widespread goal of the organisation, its proponents can adopt a number of strategies.

The first is to build alliances with those who have goals which can also be served by the adoption of TDM in the workplace. At the City of Nottingham and at Hertfordshire, this was attempted with the formation of a cross-departmental TDM working group. Additionally, at the former location, TDM was portrayed as an initiative which would help to meet another politically important goal, that of improving equal opportunities (through re-allocating the existing staff travel budget).

The second strategy for those who are attempting to build awareness of TDM but who are relatively low in the organisational hierarchy is to attempt to circumvent conventional communication channels. The final strategy is to test ideas on TDM with groups other than those which ultimately decide on the allocation of resources, so that when the concept is taken to those groups (e.g. the policy and resources committee of a council) the majority of possible sticking points have already been dealt with at less critical meetings. Thus change is negotiated by those with relatively little power.



### **7.3.3 Corporate social responsibility**

The research has shown that workplace TDM is a good example of corporate social responsibility. It has further shown that the principle explanation for socially responsible behaviour by organisations - the “enlightened self-interest” thesis - is applicable to TDM. This argument sees organisations undertaking only those social responsibilities which have a clear benefit to them over an identifiable time span and whose costs do not outweigh these benefits. This helps to explain why the implementation of TDM in the UK case study organisations took such a long time, in spite of three out of four of those organisations having adopted policies which recognised the importance of socially/environmentally responsible behaviour in the area of employee transport. This also shows that different groups in an organisation will have different conceptions of socially responsible behaviour, and will therefore want to try to operationalise policies in different ways.

It is argued that there are cases in which workplace TDM does have clear benefits to organisations. These include:

- The need to provide transport as an employee recruitment/retention tool.
- The need to release land currently used as staff car parking for new buildings and/or for customer car parking.
- The need to cut office costs by promoting home working.
- Where an organisation’s image is suffering because of perceptions of its local transport impact, TDM can be used in an attempt to change this image.

In the majority of cases, however, it is argued that the perceived benefits of TDM do not outweigh its perceived costs and therefore, as the enlightened self interest thesis predicts, difficulties were experienced in the case study organisations in reaching agreement to implement TDM measures.

#### **7.3.4 Theoretical overview**

This section has shown that, in a number of ways, this research has added to existing theory. This will increase understanding of the process of organisational changes and policy implementation not only with regard to TDM, but in other areas whose organisational circumstances are similar.

### **7.4 A model of the implementation of workplace TDM in large organisations**

The five case studies considered in this research, together with the analysis in Chapter 6, provide sufficient insight into workplace TDM for the author to develop a conceptual model of its implementation. This will be of use to practitioners who may be considering a TDM programme for their own organisation. The model is not predictive, nor does it guarantee successful implementation, but it does give some guidance on the factors which affect the chances that a TDM initiative will be successfully implemented.

The principal “ingredients” of the implementation of a TDM initiative are the following:

- A corporate working group, as at the City of Nottingham and Hertfordshire.

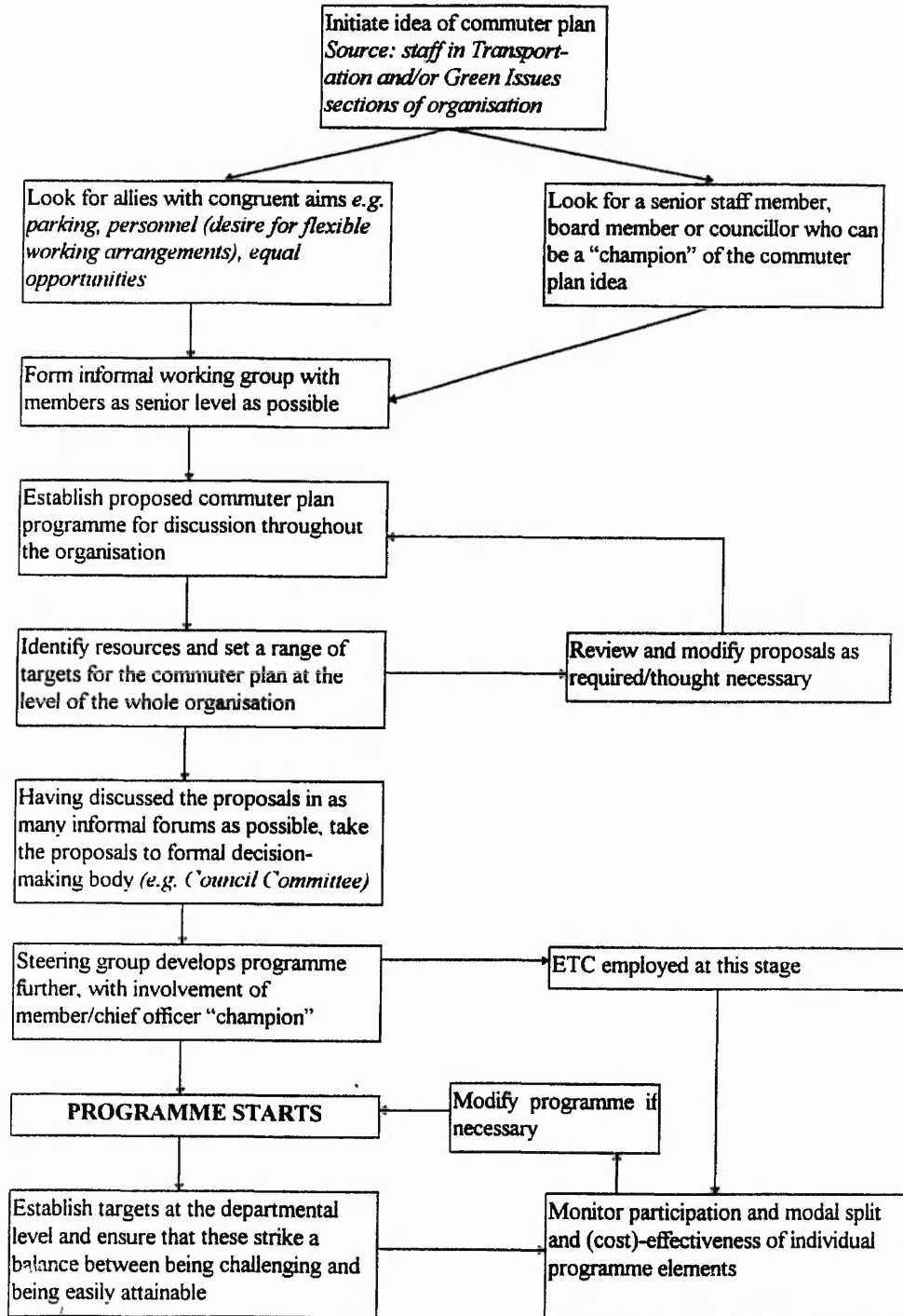
- Alliances with other groups whose aims are in some way congruent with those of the TDM group. This will expand the range of justifications for TDM as a course of action, and thus broaden its appeal.
- A senior member of staff who is sympathetic is crucial, as they will be required to take the concept to other senior managers. A hostile manager can block channels of communication, rendering the TDM initiative impotent. (See typologies of staff in Section 4.8.) In a private firm or local government body, a committed member of the board/member of the council can also be helpful in driving the implementation process along.
- Identify resources, unless agreement can be reached to levy a workplace parking charge to fund the programme from the start. Ideally these resources should be committed by all the departments at whose staff the programme is aimed.
- Appoint an ETC, but only after the initiative has momentum within the organisation as a whole, rather than simply in its parent department. A new member of staff cannot be expected to build up a programme on their own. To reduce the risk of isolation of an ETC, they should meet regularly with a steering group whose members should undertake tasks in co-operation with the ETC to boost his/her morale and reduce the risk of “burnout”. The ETC should be chosen very carefully and the selection should emphasise the importance of “people skills”, since negotiation and persuasion are central to the job function.

- Targets for both implementation and participation should be modest initially. Their achievement will help to build awareness of the programme, boost morale and act as a justification for further measures.
- It has been shown that loyalties and goals differ between departments, but that management also has some power to define goals. It may therefore aid the implementation of a workplace TDM programme if departmental managers are responsible for TDM targets in their own areas and are assessed on their achievement in meeting these targets, as this will emphasise that TDM is an organisational goal.

The ability of proponents of TDM to adopt these “key ingredients” will be affected by the context within which they are working. For example, an organisation which places a particularly strong emphasis on its public image will be more receptive to internal initiatives to promote TDM, as will an organisation which faces particular pressures on its workplace parking provision. The ability to build working groups and cross-departmental alliances will to an extent be dependent on the traditions of communication and corporate working pre-existing in the organisation. Such caveats should be borne in mind when considering the model: it is quite possible that because of such contextual factors, the same group of TDM advocates following the model in exactly the same way in two different organisations would bring about completely different results in each.

Figure 7.1 on the next page sets out the elements of this model in diagrammatic form.

FIGURE 7.1: SCHEMATIC MODEL OF WORKPLACE TDM IMPLEMENTATION



## **7.5 Beyond implementation: the successful workplace TDM programme**

This thesis has concentrated in the main on the implementation of workplace TDM within the organisation, rather than the effects of such a programme on the travel habits of its staff. This was because of the apparent difficulty of implementing such programmes outside certain areas in the USA. However, since one of the case study organisations (in the USA) *had* implemented a programme, this section will review in brief how the research findings add to our understanding of such programmes in practice. In particular it will assess whether such programmes can have an impact on the modal split to work, and at what cost.

The typologies of different staff at Irvine (Section 4.8) showed that there were a number of different attitudes to the rideshare programme which influenced participation in it. The majority of staff will either not consider the programme or consider it briefly and decide that there is little in it for them, and then discount it. Some will begin to participate because of the incentives offered and remain as participants because of these benefits, although there is evidence that these benefits become less important as participants move up the pay scale or as their home life changes. Some will become indifferent to the material incentives but will remain as participants for other reasons, such as enjoying the new routine or the social benefits of carpooling. Others will participate for altruistic reasons - and may have been doing so even before the workplace established a TDM programme - and may therefore be sceptical of the need

for the programme, but will continue to actively use alternative modes. The example of Hertfordshire also shows that an awareness programme on its own without material incentives can have an impact on modal split to work.

Discussions with Travelwise staff at Hertfordshire and Rideshare staff at Irvine both identified a need for periodic re-launches of their respective programmes to maintain awareness and participation. This shows that the staff in charge of the programme must be aware of their many different target audiences, and be imaginative enough to periodically repackage the programme to boost participation. Staff's lives change as they move jobs and houses, as salaries increase, or as old staff leave and new ones arrive. It is for these reasons that a programme must be constantly "re-packaged".

The example of Irvine shows that a workplace TDM programme can reduce the number of drive alone commuter trips to the workplace, but this may be of relatively little value if it is achieved at great cost. The figures from the AQMD's evaluation of Regulation XV (Ernst and Young, 1992) indicated that the cost of programmes across the region averaged \$11.00 per trip reduced. The figures from Irvine show a much lower cost for the number of trips reduced: based on the annual AVR surveys and the budget for the programme, and assuming 250 working days per year, the figures imply a cost to the employer of £1.16 per one-way commute trip per day. Since these figures include those people who were working a compressed work week, it cannot be assumed that in all cases a work trip has not been replaced by a different trip, but it is likely that those trips

made on the employees free day are made in the off-peak rather than the peak and are therefore of net benefit to the transport network.

While the majority of this thesis has concentrated on the process of setting up and implementing a workplace TDM programme, it is also argued, then, that there is evidence that, at the level of the individual employer, programmes can influence modal split to work and that this change can be achieved at a bearable cost which is not unsustainable.

## **7.6 Further research**

There is considerable scope for further research in the field of workplace TDM, particularly in Europe as opposed to the USA. Firstly, this study has considered only public sector organisations and, in the main, local councils. Work needs to be done to establish the circumstances under which private sector organisations will consider implementing workplace TDM programmes, and what main barriers exist to them so doing.

Sorely lacking as far as the review of the literature has been able to find is an in-depth assessment of the number of private vehicle trips which a workplace TDM programme can remove from the road network, both in the short and the long term. There is some evidence (from for example the University of Washington in Seattle) that a programme can in the short term relieve congestion on the road network adjacent to a large workplace. There is a need to quantify these impacts and to assess whether they remain



in the long term or whether other car users gradually move in to take up the space that has been vacated by those who have switched to alternative modes. A related piece of work, which has not yet been adequately carried out, is to assess the costs of a workplace TDM programme. Such assessments would be critical to judging the cost-effectiveness of such a programme.

Thirdly, this thesis has suggested that there are some circumstances in which organisations will wish to implement a workplace TDM programme because it is in their "enlightened self-interest". Such cases are worthy of investigation to assess how the regulatory and fiscal environment could be changed in such a way that TDM is in the enlightened self-interest of a greater number of organisations. Related to this topic, there is a need in general to survey organisations to understand in more detail how they would react to regulations requiring workplace TDM.

Much work, therefore, remains to be carried out in this field. This thesis has concentrated on the implementation of a workplace TDM programme because this appeared to the author to be the first major hurdle to be cleared before research could be carried out to assess the impacts of any programme on modal split. Hopefully a number of UK employers will shortly introduce commuter plans and further research work will then flow from these.

## **7.7 Conclusion**

This thesis has considered five case studies, on the basis of which it has made a realistic assessment of the difficulties of implementing workplace TDM. It is hoped that some of the recommendations will be of use to policy makers and to practitioners as they search for additional cost-effective tools in their work to combat urban traffic congestion and air pollution.

**ENDNOTE: THE SITUATION AT EACH CASE STUDY  
WORKPLACE AT THE TIME OF WRITING (DECEMBER 1996)**

**Irvine**

The rideshare programme became largely moribund after ETC2 and the Principal in charge of the Section left the City in early 1993. Since the end of mandatory TDM regulation, the City has abandoned the Rideshare Programme altogether. This is not surprising in the light of the interview data gathered from senior management staff at the City. In terms of the “key ingredients” identified in Chapter 7, the City lacked a corporate working group and a “champion” senior member of staff to ensure the programme’s survival after the end of mandatory trip reduction.

**Nottingham Trent University**

Car parking charges for staff were introduced in September 1996. The Estates Department has been working for over a year on a commuter plan which was approved by the University’s Academic Board in spring 1996, but the plan has yet to be implemented. There have been periodic meetings of a cross-departmental working group, but these have lacked input from a high level “champion”, and it has been more difficult to build alliances between departments, as there is only one - the Estates Department - which has a direct interest in improving the employee transport situation at the University.

**Nottinghamshire County Council**

The County Council implemented the first elements of its commuter plan, STEPS, in January 1996. It aims to reduce the number of lone drivers to worksites in West Bridgford by 25% over three years. The initial elements of the plan include better cycle facilities, cycle user groups, car pool matching, public transport information and an ETC who was appointed in December 1995. This quite abrupt change appears to be due largely to the appointment of a new Departmental Director; however, it was also predicated upon the large amount of work which had already been done in the years leading up to his appointment. The implementation of the plan has now slowed again, due to the departure of the ETC, indicating the importance of a skilled member of staff in this position.

**Nottingham City Council**

Further elements related to the cycling components of the Green Commuter Plan adopted in November 1995 have been implemented. An employee transportation coordinator is about (early 1997) ed, and the Council has been very active in working with other employers in Nottingham to implement commuter plans at their workplaces. It has attracted European funding to help to do this. However, the implementation of the GCP has not been as quick as the Committee Report of November 1995 had envisaged., Nottingham City Council is the one case study site which to some extent fails to conform to the model of workplace TDM implementation set out in Chapter 7. "Key ingredients" were very much in place, including a strategy for funding the plan and a

higher level of political pressure (from elected members) to make the plan work than at any of the other case study sites, yet relatively little has happened. However, it was stated that the model is not a predictive one but more of a guide to implementation which cannot guarantee success. Further research is required at Nottingham City Council to understand why the programme has not developed further.

### **Hertfordshire**

Hertfordshire has continued to promote the Travelwise theme. It has surveyed other UK councils to find out their commuter plan activities but as yet has not implemented its own formal plan. This is not wholly surprising given that Travelwise is not specifically directed at the Council's own workforce, and also since the relatively minor matter of corporate provision of employee cycle parking required a great deal of effort from its proponents.

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## **APPENDICES**

### **APPENDIX ONE: Outline Interview Schedule, Irvine**

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## QUESTIONS FOR INTERVIEWS WITH EMPLOYEES.

Name                      Age                      Gender                      Occupation                      Time with City  
Home Area                      JTW distance and time                      Mode(s)  
Bike/car ownership                      Caring responsibilities at home?

Why do you use the mode you do?

How long have you used this mode?

Have you heard of the City's ridesharing programme and incentives? If so, how did you hear of it?

Did the programme have any effect on your choice of mode? Which particular incentive/group of incentives? Can you think of incentives which you would find more "stimulating"? Do you think that it is important for the City to have a programme at all? Do you know the ETC? Did you know the previous ETC? What do you think of them? What is their image?

### **IF YOU RIDESHARE:**

What do you like about it? How is it better than your previous mode? How is it worse? Is it more/less convenient than your old mode? If it is less, what makes you stick with it? What were the most significant factors which made you change mode? e.g. concern for the environment, traffic congestion (because it made me late/tired/pissed off), ridesharing incentives, because other people were doing it/HOV lanes?

Can you foresee changes which might make you give up ridesharing?

Do you think ridesharing is doing anything to ease traffic congestion or air pollution?

Has changing your mode affected your ability to do your job - do you need a car for work or does your job demand very flexible starting and leaving times?

What do you use now if you use a vehicle for work?

Has your immediate boss been supportive if your change to ridesharing has affected e.g. your ability to work overtime? How does s/he get to work?

Do you think car-parking should be provided free at work?

Do you think the City should provide senior members of staff with a vehicle for their personal use?

### **IF YOU DON'T RIDESHARE:**

Why do you drive alone? What do you like about it (and what don't you like)? e.g. freedom, flexibility, convenience, status, privacy? Do you use your car at lunch times or to run errands after work on most days, or just a few? What puts you off about taking the alternatives? If you had to take one, which one would it be, and why?

Do you need your car for work? How often? How would it affect your performance of your job if you didn't drive to work? How would it affect your free time/home life?

Do you think free parking should be provided at work for all employees? Why? Since it is a subsidy to employees who drive, do you think that employees who use other modes should get a subsidy too? Do you think that traffic congestion is a problem? Economically, environmentally, or how? Can ridesharing help to solve the problem? What do you think you can do and what can the government and firms do to solve the problems of traffic congestion and air pollution?

**TELECOMMUTING:**

Do you telecommute? How often? How supportive is your boss? Do you see telecommuting as a reward for ridesharing? Do you enjoy it more than being at work at the City? How do you structure your day when you telecommute? Do you drive as much as you do on days when you're at the City? Do you think you work more effectively at home or at "work"?

**GENERAL:**

Do you feel that ridesharing is taken seriously by the top managers in the City? Do you think their attitudes encourage/discourage people from ridesharing? Or have no effect? Do you think their choice of mode affects the choice of other people lower down the hierarchy?

*employees also*

Are the social aspects of car pooling important to you - if you car pool?

What do you think of the bus - if there was a service, would you use it?

How much driving do you do on your alternate work week day off?

Is ridesharing something you feel you should do? How do you feel when people who are paid by the City tell you that you should do it? Do you resent that? Do you deal with it in a different way from being told to do something you feel is more connected with your job?

**FOR MANAGERS:**

Where would you put encouraging ridesharing on your list of managerial priorities? Is it more or less of a priority than it was 2 years ago?

Does the City Council now attach as much importance to shaping transport policy in Irvine as did the previous administration? How has this impacted on the rideshare programme?

Why is rideshare being moved back into Public Works, and do you think this will have any effect on its activities?

**APPENDIX TWO: Copy of Survey Questionnaire and Accompanying Letter,  
Nottingham Trent University**

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**Nottingham  
Polytechnic**

Faculty of Environmental Studies  
Department of Civil and Structural Engineering  
Head · R K Hawkins  
MSc PhD CEng FICE FIHT

Dear Staff and Students,

### **Nottingham Polytechnic Travel Questionnaire**

Travel to and from Nottingham Polytechnic through the City Centre can be unpleasant at the best of times. The Polytechnic is now investigating a range of initiatives which could help solve this problem for members of the Polytechnic. The accompanying questionnaire is intended to provide an up-to-date picture of Polytechnic-related journeys by various modes of transport. The results may enable the Polytechnic to adopt an increasingly *green approach* to staff and student transport, for example, by introducing car sharing schemes or by improving cycle facilities. A survey on this has never before been attempted within the Polytechnic. Every member of the Polytechnic (staff and students) will receive a questionnaire.

Your cooperation would be greatly appreciated as the questionnaire is being issued in conjunction with a research project. I should be grateful if you would complete and return the questionnaire by:

**FRIDAY 17 JANUARY 1992**

**ALL RETURNS RECEIVED BY THIS DATE WILL BE ENTERED FOR A PRIZE DRAW. PRIZES INCLUDE A PAIR OF NPSU GIG TICKETS AND A £25 VOUCHER FOR GREEN GOODS.**

I wish to stress that the information you give will remain confidential to the Polytechnic and will contribute only to the development of *green initiatives* and, in turn, to a less frustrating journey to and from work.

I look forward to receiving a good response to this survey in order that in-house transport improvements can be pursued for the benefit of both the local and global environments as soon as possible.

Best wishes,

Prof. Peter Elliott  
Chair Greening the Polytechnic Initiative

**APPENDIX THREE: Outline of TDM Research Post at Nottingham Trent  
University**

#### 4.5 Description of the Proposed Programme

Within the City of Nottingham, new attempts are being made to decrease peak period commuter traffic congestion, bringing with it the corresponding benefits of environmental improvements and a better quality of urban living and working. These processes are being developed along a number of fronts. For example the familiar exhortations to encourage car commuters to switch to public transport and cycles will continue as will the development of electronic traffic management aids to squeeze more capacity out of the system, especially at junctions; but new processes such as the Nottingham Rapid Transit system, car sharing, vehicle pooling, high occupancy vehicle (HOV) lanes, parking management systems and 'telecommuting' are beginning to be considered as alternatives. Such methods could, in part, impinge on current work practices and could include the use of incentives (both financial and material) to alter current commuting patterns.

The County Council has set up a working group to actively progress some of the above new ideas and to pioneer a pilot demonstration project in a suburban area. This project relates to the development of car sharing methods in conjunction with on-street travel incentives for high occupancy vehicles. There is a total dearth of experience in the UK for such systems although Los Angeles has pioneered the process over a number of years. Little is known of any continental attention to these ideas. The Polytechnic project therefore is an opportunity, in conjunction with the County Council, and with the cooperation of the City Council, to pioneer the development of an inner city car sharing or pooling management technique which will benefit the Polytechnic and city. The results will be of national interest and could assist in the development of wider, national, methods of reducing congestion, parking demand and arresting environmental deterioration in large urban areas.

The researcher will initially investigate the availability of techniques worldwide. If possible a trip to Los Angeles will be financed by the County Council to view the advanced processes coming into use there, as a result of legislation relating to Air Quality Management. This will enable a comprehensive survey of Polytechnic staff travel habits to be carried out, along the lines of a recent Automobile Association in-house survey, in order to establish travel habits, modes and demands. A similar student survey might also be carried out at a later date. The results of a comprehensive analysis will yield information which should indicate the possibility of a range of measures which might be adopted to reduce parking demand at the city centre and Clifton sites. The researcher would then develop practical strategies which if implemented should reduce the parking demand. At this stage it would be necessary to have Polytechnic approval to progress a chosen strategy.

Of special consideration would be the development of the computer matching of journeys for car sharing, the provision of incentives for high occupancy vehicles (eg a guaranteed parking place), the possibility of mini-bus pooling and the value, logistics and resource requirements for telecommuting (ie working from home but in contact with the Polytechnic).

The final phase of the project, which would be necessary if the work extended to a third year, would concentrate on a pilot study of a chosen strategy and an evaluation of the method for wider implementation, both within the Polytechnic, the city and the potential elsewhere. The evaluation would cover quantifiable (eg car occupancy rates), social and environmental effects and will develop models to demonstrate the area-wide effect of these strategies if adopted universally. Such effects would have both positive and negative benefits and the researcher will indicate a framework for assessing these which could indicate a preferred solution. The researcher will be required to disseminate his/her knowledge to the wider profession and public through conferences and papers, and there would be excellent potential to hold a national or international conference on the theme, in Nottingham.



**APPENDIX FOUR: Copy of Survey Questionnaires and Promotional Letter,  
Nottingham Trent University Bus Promotion**

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3rd June 1993.

To: All Staff at the City Site.

*Faculty of  
Environmental  
Studies*

Dear Staff Member:

**Save money, stress and solve your parking problems.**

If you normally drive to the University, two local bus companies are offering you the chance to try riding the bus to work for a week - for free.

The offer is available on Trent/Barton (red) and Nottingham City Transport (green and white) buses for the week of 14-18th June. Tickets will be valid on normal buses and for Park and Ride from Queen's Drive and the Forest.

Representatives from the bus companies will be at the University in Newton Foyer from 9 am to 1 pm on Thursday 10th June to give out tickets and exact information on where and when to take your bus. All you have to do is to agree to fill in a short travel diary for the week - but there is of course no obligation to use the bus every day.

This offer is part of a National "Don't Choke the City" anti-congestion campaign for the month of June, and I would urge you to try it if you can - for one or two days, if not the whole week. You may be pleasantly surprised.

So remember, tickets are available from 9 am to 1pm in Newton Foyer on Thursday June 10. If you have any questions, ring Tom Rye x 2045.

Yours faithfully,

Prof John Moohan, Dean of Environmental Studies.

P.S. All Nottingham City Transport buses are now non-smoking throughout.

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Department of  
Civil and Structural  
Engineering  
Head - Professor  
Roger Hawkins  
MSc PhD CEng  
FICE FIHT

Burton Street  
Nottingham NG1 4BU  
Tel: (0602) 418418  
Telex: 377534 Polnot G  
Fax: (0602) 486450

## YOUR DAILY BUS RIDE TO WORK

Name					
Department and extension					
Worksite					
Day and date					
Bus number and operator					
Departing bus stop location					
Length of walk from home to bus stop					
Was the information at the stop clearly displayed or obscured or vandalised or not present?					
Was your pocket timetable accurate and easy to understand?					
How long was your wait for the bus?					
Did you feel this was excessive?					
	<i>DAY 1</i>	<i>DAY 2</i>	<i>DAY 3</i>	<i>DAY 4</i>	<i>DAY 5</i>
<b>THE BUS:</b> Was the interior clean or dirty?					
Did you get a seat? If so, was it comfortable?					
Was there enough legroom for you?					
Did you find the ride comfortable?					
Was the driver helpful, neutral, or unhelpful?					
Did the bus arrive on time? If not, how late was it?					
In the light of your experiences on local buses, would you become a regular bus commuter? If not, why not?					
Would the offer of reduced price season tickets be enough to make you commute by local buses?					

When complete, please return to Tom Rye, Room 811, Newton Building.

**APPENDIX FIVE: Interview Schedule, Nottingham City Council**

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## INTERVIEW SCHEDULE - CITY OF NOTTINGHAM

When did your involvement in the GCP begin? What has been your involvement?

Why is the person being interviewed particularly interested in GCPs?

What responsibility does a large employer have to reduce the (environmental) impact of its employees' commuting?

Is it important for the council to lead by example by having a commuter plan for its staff, or should it concentrate on providing more "core" services to the public?

What are the main barriers to the successful implementation of a commuter plan?

What are the most important elements of a commuter plan?

Is a commuter plan an effective way of reducing numbers of drive alone commuters? Are there other policies which the Council of Government could adopt which might be more effective? (Effectiveness measured in terms of cost percentage change in modal split.)

Is it legitimate to target incentives/disincentives to a particular group of commuters in an attempt to influence that group's mode? (e.g. ticket subsidies for those who commute on the bus or train, but no subsidy for car commuters' costs)

Do you think that the commuter plan would be more effective if there was a member of staff to work solely on its implementation, monitoring, evaluation and administration, as in some US companies?

How did you initially look up on the idea of a commuter plan when the issue was first raised? Have your views changed in any way?

As a commuter yourself, is there any way in which the Council could encourage you to change your mode of transport to work?

Tell me a bit about how you envisage the Council's GCP developing.

What do you think is the current level of employee awareness of the Commuter Plan and/or of Commuter plan type ideas?

Would you be more inclined to change to a more environmentally-friendly mode if you felt that senior staff were also doing so, and that they regarded the commuter plan as a priority?

How could councillors and senior members of staff indicate to other staff that the commuter plan was a priority for them?

What would you do to encourage the staff whom you manager to try using a different mode?

If the council did encourage you to change your mode of transport to work, would you regard its attempts as an intrusion on your personal life? Do you think your staff might sees it this way?

Should parking be provided free at work for all employees who want it? If so is there also a case for providing a benefit of similar value for those employees who do not want or need parking at work?

How far do you commute, by what mode, and what is their experience/image of other modes.

When was the idea of the GCP first put forward?

What has been the process so far, and what have been the major achievements and setbacks so far?

What has been the relative involvement of the various members of the corporate working group?

**APPENDIX SIX: Copy of Survey Questionnaire, Hertfordshire County Council**

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**APPENDIX SEVEN: Glossary of Terms Used in the Thesis**



## GLOSSARY OF TDM TERMS

- AFO* Adequate Facilities Ordinance. A regulation used by some (usually high growth) municipalities in the USA to ensure that the transport and other infrastructure can cope with the impact of new developments. Initially used to fund the construction of infrastructure but increasingly used instead to mandate developers to set up ridesharing schemes in new developments. These are underwritten with a letter of credit so that, if the developer's ridesharing scheme is unsuccessful, the municipality can provide a scheme or build new facilities.
- AVR* Average vehicle ridership. A measure of the occupancy of vehicles arriving at the work site between 6 a.m. and 10 a.m. Calculated by dividing the number of employees arriving and the number of vehicles arriving between these times.
- AQMD* Air Quality Management District. Organisation which monitors and if necessary takes measures to improve the air quality of a given region.
- Carpooling*  
When commuters who all have access to a car choose to ride together to work, alternating drivers and vehicles.
- Carsharing*  
This term refers to lift giving, when a regular driver shares their car but not the responsibility of driving with the other person(s). It may or may not involve passenger(s) paying the driver.
- CBD* Central Business District - the central commercial area of a town or city.
- ETC* Employee transportation Coordinator - the person within a firm/agency charged with setting up, marketing and monitoring a ridesharing scheme.
- HOV* High Occupancy Vehicle: in the USA this means a public transport vehicle, a car with more than one occupant (although to use some HOV facilities occupancies must sometimes be 3 or 4), or a vanpool (see below).
- HOV Facility*  
A facility designed to give preference to HOVs e.g. a reserved lane on a road, car parking spaces closest to the place of work.
- Minibus-pool (UK) (cf Vanpool (US))*  
A term for a group of people who get together to lease a minibus which they then ride in to work each day. Often provided with some assistance from their firm. Usually has a designated driver who looks after the bus and in return is able to use it as a personal vehicle outside work hours. Passengers almost always pay fares, based on distance and the cost of the bus lease.
- Regulation XV*  
The regulation in the SCAQMD which mandates employers to implement TDM measures or else face fines of up to \$25,000 a day.

### *Ridesharing*

A term used to refer to all forms of commuting to work that do not involve driving alone for five days per week. Hence cycling, walking, taking public transport, even working flexitime or a compressed work week all come under the umbrella term.

### *SCAQMD*

The southern California AQMD responsible for air quality in Riverside, San Bernadino, Orange and Los Angeles Counties. Reflects the geography of air pollution in the region as much as political boundaries. Responsible for Regulation XV.

*SLO* Service level ordinance - similar to the AFO.

*SOV* Single occupant vehicle. A car and driver without passengers.

*TDM* Transportation demand management - the technical term for measures which attempt to influence demand for transportation by encouraging people to use different modes or not to make a trip at all.

*TSM* Transportation Systems Management - this pre-dates TDM and refers to measures to improve the capacity of existing transportation infrastructure e.g. computerised traffic signal control. There is some overlap with TDM as TSM has in the past included for example HOV facilities. TSM is not directly concerned with reducing transport demand, however.

### *Telecommuting*

Much office work need not be done in the office but can be done at home or at a satellite work centre closer to home, thus obviating the need for the worker to travel from home to main workplace. He/she may be connected to the main office by telephone, fax and/or modem, but this is not a prerequisite. Usually, telecommuting is only part-time.

### *Telecommuter/ Teleworker*

Someone who telecommutes all or part of the time.

*TMO* Transportation Management Organisation (sometimes Association). A private-public partnership, non-profit organisation, set up to promote and sometimes to provide ridesharing activities in a particular area. Members are large firms and agencies in the area and these groups fund the organisation.

### *Vanpool (US) (cf Minibus pool)*

An American term for a group of people who get together to lease a minibus which they then ride in to work each day. Often provided with some assistance from their firm. Usually has a designated driver who looks after the van and in return is able to use it as a personal vehicle outside work hours. Passengers almost always pay fares, based on distance and the cost of the van lease.

**APPENDIX EIGHT: Correspondence from SCAQMD on demise of Regulation  
XV in Southern California**

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THESIS: APPX 7.



# South Coast Air Quality Management District

21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

March 20, 1997

Mr. Thomas Rye  
Transportation Research Institute  
Napier University  
10 Colinton Road  
Edinburgh, Scotland

Dear Tom:

What a pleasant surprise to hear from you! Of course I remember who you are and I hope all is well. This letter addresses your E-Mail of March 4, 1997, requesting information about the fate of region-wide mandatory trip reduction in the United States.

**Question:** Is there some replacement for Rule 1501 which maintains the threat of mandatory trip reduction if various targets are not met?

**Answer:** There is a replacement for Rule 1501, but trip reduction programs are no longer mandated. They are optional now. A bit of history on the evolution of the rules will help clear the confusion.

On April 14, 1995, Rule 1501.1 (Alternatives to Work Trip Reduction Plans) was adopted. The intention of this rule was to provide employers with emission reduction strategies less costly than vehicle trip (VT) reduction as required by Rule 1501. These new compliance strategies included the use of remote sensing to detect and repair high-polluting vehicles, the scrapping of old gross-polluting vehicles, reduction of work-related but noncommuting VTs, and an air quality investment program which allowed employers to pay fees in lieu of implementing a trip reduction plan. While Rule 1501 continued to emphasize trip reduction, Rule 1501.1 focused strictly on direct mobile source emission reduction options.

On December 8, 1995, Rules 1501 and 1501.1 were rescinded and replaced with Rule 2202 (On-Road Motor Vehicle Mitigation Options). Rule 2202 was adopted in response to additional criticisms of the rules by employers and, most importantly, in response to enacted California state legislation prohibiting the mandatory implementation of trip reduction programs by employers. As a result, Rules 1501 and 1501.1 were merged into Rule 2202, which shifted the regulatory focus from VT reduction to emission reduction.

Under Rule 2202, trip reduction is strictly a voluntary option. If employers decide to use emission reduction options instead of trip reduction to comply with the Rule, they are required to achieve emission equivalency, i.e., the emission reductions that would have been attained had the employer met its target Average Vehicle Ridership (AVR) by implementing a trip reduction plan. If employers choose the trip reduction option instead, they are required to implement a trip reduction plan and demonstrate a good faith effort to attain the policy-prescribed target AVR.

A copy of Rule 2202 and the Implementation Guidelines are enclosed for your information.

**Question:** Do you know of any report which summarizes the degree to which trip reduction was implemented in non-attainment areas before the demise of the federal requirement?

**Answer:** To our knowledge, there is no comprehensive report that addresses your question. However, the enclosed summary report includes a chart that identifies programs implemented as of December 1993. It also has agency names, persons to contact, and telephone numbers, in case you would like to research this topic further.

I hope this information has provided answers to the questions you've raised, and proves to be helpful to you. Should you have further questions or comments, please contact Transportation Specialist, Waldo López, of my staff. His E-Mail address is wlopez@aqmd.gov. And if you get a few minutes, I'd love to hear about your new role in Scotland. As you know, my E-Mail address is cwasikowski@aqmd.gov.

Sincerely,



Catherine L. Wasikowski  
Director  
Transportation Programs

CLW:WL

Enclosures

(c:\email\tomrye.doc)