# **Intelligent Travel**
# Personalised Travel Planning in the City of York

Gary Haq, John Whitelegg, Steve Cinderby
and Daniel Johnson

intelligent travel©



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# Intelligent Travel:

# Personalised Travel Planning in the City of York

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# Abbreviations

| | |
|---|---|
| CO | Carbon monoxide |
| $CO_2$ | Carbon dioxide |
| CYC | City of York Council |
| DfT | Department of Transport |
| EFM | Environmentally Friendly Modes |
| LTP | Local Transport Plan |
| NOx | Nitrogen oxides |
| OECD | Organisation of Economic Cooperation and Development |
| SEI | Stockholm Environment Institute |
| PM10 | Particulate matter less than 10 microns in diameter |
| PPG13 | Planning Policy Guidance 13 |
| SOV | Single occupancy vehicle |
| TPA | Travel Plan Associate |
| UK | United Kingdom |

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# Executive Summary

1. The City of York was one of 14 UK cities selected by the Department of Transport (DfT) in December 2002 to pilot a new approach to mobility management called personalised travel planning or individualised marketing. The York Intelligent Travel© project was initiated in January 2003 by the City of Council (CYC) in collaboration with the Stockholm Environment Institute (SEI) at the University of York. CYC and DfT funded the project on a match-funding basis.

2. Intelligent Travel has been successful in developing public-private partnerships. It was undertaken in collaboration with Norwich Union, First Group, Halfords, Selby and York Primary Care Trust, Walking the Way to Health Initiative, York St John College and York Local Agenda 21.

3. Intelligent Travel aimed to examine the potential for changing travel behaviour by reducing car use and encouraging walking, cycling and public transport use which promote health, fitness and a better environment. It tested personalised travel planning on a random sample of 5,701 households living in three wards of the City of York, using before and after questionnaire surveys to measure the effect on personal travel behaviour.

4. The importance of changing travel behaviour in UK is widely recognised as being an essential element of an overall package of measures designed to solve transport problems. Many local authorities have implemented travel awareness projects (e.g. Travel Wise) and have embraced marketing campaigns and promotional exercises, events such as "in town without my car", Bike Week and Bike2Work Day.

5. Personalised travel planning or individualised marketing is based on the principle of targeting large groups of people in specific geographical areas and working with "interested" sub-groups to bring about a move away from the car and towards more sustainable alternatives. The approaches share a common set of principles:

   - There are large numbers of people who are ready and willing to change their travel choices given the right kind of information and encouragement.
   - Targeting these willing/interested groups is an effective use of resources and can produce enough change to make a significant contribution to solving transport problems.
   - Small changes in travel choices can produce large changes in traffic conditions (e.g. 78,000 fewer vehicles per day in Perth, Western Australia).

   The Intelligent Travel project follows the personalised travel planning approach which has been implemented on a large scale in Australia and on a smaller scale in Germany and the UK.

6. The pilot study covered three wards in the City of York:

   Rural West York Ward
   Rawcliffe and Clifton Without Ward
   Westfield Ward

Within these wards four contrasting areas were defined as the study area:

*Acomb/Chapelfields* – includes low income households with low levels of car ownership but higher levels of ownership of older polluting vehicles, high levels of poor health particularly related to inactivity.

*Rawcliffe/Clifton* – includes a new private housing developments.

*Poppleton* – mainly rural, high-income areas with high levels of car ownership and use.

*Copmanthorpe/other* – mainly rural, high-income areas with high levels of car ownership and use.

The project compared two different approaches to recruiting households to take part in the pilot study to test the effectiveness of different levels of direct contact. The level of direct contact required will ultimately have cost implications for a more extensive study.

7. The first approach (Y1) involved recruiting participants for the intervention group by telephone 'cold calling' followed by a face-to-face interview at home conducted by a trained staff member (Travel Plan Associate (TPA)). The second approach (Y2) involved recruitment by post and requesting the completion of a questionnaire. These individuals were then contacted by telephone. However, no face-to-face interviews were conducted. A third approach (Y3) involved contacting people by post only to form the non-intervention group.

8. The intervention group was asked to complete a questionnaire on travel behaviour over a seven-day period. Members of the group were then offered incentives to encourage them to try the following modes of transport: bus; cycling, walking and car share.

9. At the end of the six-month period the intervention group was sent a second questionnaire requesting information on travel behaviour. This was to determine the impact of travel incentives on travel behaviour.

10. The Y1 group of participants was offered no incentive to return the questionnaire. After the deadline those individuals who had not returned the questionnaire were contacted by telephone and in some cases re-sent the questionnaire. A second reminder letter and another copy of the questionnaire was sent to all those participants who had not responded.

11. Participants in Y2 and the non-intervention group were sent also sent a questionnaire and offered entry into a draw to win a cash prize of £200 and 10 runner up prizes of £25 shopping vouchers on completing the questionnaire and returning it by a specific date. The non-intervention group questionnaire differed from Y1 and Y2 in that it did not include questions on incentives.

12. A total of 5,701 York residents were contacted as part of the study. Of the 5,101 individuals who were contacted to form the intervention group, 996 were already regular users of environmentally friendly modes of transport (41 per cent); 711 were not interested in participating (14 per cent) and 3,182 were lost from the sample due to 'leakage' (62 per cent). This group was lost due to non-return of questionnaires, being non-contactable (e.g. ex-directory), not being at home when contacted by the project team and loss of personal data due to corrupt disk.

13. Out of the 600 households contacted to form the non-intervention group a total of 97 surveys were returned – a response rate of 16.2 per cent. These individuals were not

offered any travel incentives and were contacted after six months to see if there was any change in their travel behaviour due to factors external to the project.

14. A total of 242 individuals agreed to form the intervention group, accepted the incentives and agreed to review their travel behaviour at the end of a six-month period. The total participation rate in the Intelligent Travel project was 4.7 per cent.

15. In order to determine any change in travel behaviour as a result of the project, each individual had to complete a second questionnaire survey at the end of the project period. Despite every effort being made to ensure the completion of the second survey, a total of 75 individuals did not return the second questionnaire. This is equivalent to a 31 per cent drop out rate.

16. The results of the study are based on total questionnaire returns of 167 individuals who formed the intervention group and 60 questionnaire returns from individuals who formed the non-intervention group. There is a one per cent gender split between both groups: 45 per cent males and 55 per cent female

17. The Intelligent Travel interventions produced a 16 percentage point reduction in car trips. This is the overall result for all project areas. The change over the same time period in the non-intervention group was a 5 per cent increase in car trips. Intelligent Travel has converted a potential 5-percentage point increase in car trips into a 16-percentage point reduction.

18. Walking, cycling and bus use have all increased in the intervention group. The non-intervention group changes indicate that these increases are real. Bus use has risen by 5 percentage points in the intervention group at the same time as it has declined by 4 percentage points in the non-intervention group. The number of walking trips increased by 10 points in the intervention group and decreased by 1 point in the non-intervention group. There has been effectively no change in cycling with a 1 percentage point increase in bicycle trips in both intervention and non-intervention groups

19. The total distances travelled by car for both groups decreased. The intervention group shows a large reduction in car distance travelled of more than 35,000 kilometres, which over a target population of 167 is an average fall of approximately 212 kilometres per person.

20. An increase in distance travelled by bus, bicycle and walking have been achieved at the same time as distances travelled by the non-intervention groups have declined. There has been a clear and positive effect of this intervention in increasing distances travelled by non-car modes at the same time as there has been a decline in the non-intervention group.

21. The Intelligent Travel interventions have produced a reduction of 11 percentage points in the number of trips made and a 24 per cent reduction in distances travelled.

22. The greatest reduction in car use has occurred in the urban areas of Acomb/Chapelfields and Rawcliffe/Clifton. An increase in bus use of approximately 5 percentage points has occurred across all four study areas. An increase in cycling occurred mainly in the urban areas with a reduction of 1-2 percentage points in the rural areas of Poppleton and Copmanthorpe/other. The increase in walking of 11–12 per cent has occurred across all four study areas.

23. A complete benefit-cost analysis of the York Intelligent Travel project was not part of the remit of the pilot study. However, the evidence from other personalised travel planning projects shows unequivocally favourable ratios and ratios which are considerably in excess of those routinely accepted for road building projects.

24. The York Intelligent Travel Project cost £100,000. This resource funded:

    - staff time at SEI to develop the methodology, produce the literature, implement the surveys, pay the call-centre staff and analyse the results;
    - staff time involved in recruiting and training call centre staff;
    - staff time at the City of York Council to assist with the project;
    - printing and postage costs;
    - travel and subsistence for staff visiting participants in their homes.

    It did not cover the cost of:

    - the call-centre itself, which was provided by Norwich Union as part of their environmental and community involvement strategy;
    - free and discounted bus passes provided by the First bus, the local bus operator and some other incentives.

    The total in-kind contribution from partners equalled approximately £40,640.

25. These special characteristics and the pilot nature of the project involving a great deal of methodological discussion and original survey design means that cost estimates per person or per household are not a reliable guide to future projects.

26. The York cost figures are comparable to those quoted in other studies. The cost of the York Intelligent Travel project at £17.54 per head is within the "comfort zone" in terms of delivering a cost-effective transport intervention. In line with other project reports, these costs will fall once rolled out across large populations.

27. More importantly, the reductions in car travel that have been reported (16 percentage points) in the project are more than enough to produce a favourable better cost analysis; one that is considerably better than a road-building scheme.

28. The York Intelligent Travel project was a pilot project and its results are based on a relatively small sample of people. This requires some caution in drawing inferences about impacts at larger levels of participation. The Australian experience of roll-out, however, gives us confidence that at these larger scales (35,000 participants and more) the results "hold" in the sense that similar percentages reductions on car trips and increases in the use of sustainable modes can be found. Also at this larger level the unit costs of the projects falls.

# 1 Introduction

The City of York was one of 14 UK cities that were selected by the Department of Transport (DfT) in December 2002 to pilot a new approach to mobility management called 'personalised travel planning' or 'individualised marketing'.

The importance of changing travel behaviour in the UK is widely recognised as being an essential element of an overall package of measures designed to solve transport problems. Many local authorities have implemented travel awareness projects (e.g. Travel Wise) and have embraced marketing campaigns and promotional exercises such as 'in town without my car', Bike Week and Bike2Work Day.

Public transport operators have also responded positively and enthusiastically (as in the case of First Group in York) with branded routes, high quality vehicles, attractive frequencies and persuasive marketing.

Promotion, marketing and publicity activities have been reinforced by other initiatives such as the government's support of travel plan development and funding of school travel plan, bursary posts and grants for schools. In general the impact of these initiatives has been impressive with reductions in single occupancy vehicle use, reductions in trip length and increases in walking, cycling, the use of bus and car share. These results have been summarised and evaluated by Sloman (2004)[1] in a report for DfT.

These soft measures form part of a much larger set of transport measures that are being implemented by national, regional and local government administrations. This larger set of measures includes:[2]

- land use planning policies. e.g. PPG13 in the UK, ABC location policies in the Netherlands and Smart Growth in the USA;
- public transport investment, co-ordination and pricing (e.g. Zurich and Berlin);
- cycling and walking (e.g. York, Copenhagen and Groningen);
- traffic restraint;
- limiting parking spaces;
- pricing (e.g. parking fees, London congestion charge, fuel taxation);
- speed control, 20mph zones;
- urban freight distribution strategies;
- telematics;
- environmental regulation (greenhouse gases, pollution, noise); and
- car-free housing.

This larger set of measures or system conditions can either reinforce personalised travel initiatives and harness synergy or cancel out gains made through behavioural modification.

Perkins (2002)[3] has reviewed personalised travel planning/individualised marketing projects. He identified over 50 projects in German, Austrian, Swiss and Swedish towns involving numbers of participants ranging from 2,000 to 75,000.

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1 Sloman, L. (2004) *The influence of soft factor interventions on travel demand.* Report to the Department for Transport
2 ECMT (1995) *Urban Travel and Sustainable Development,* OECD, Paris, France
3 Perkins, A. (2002) Household-focused travel behaviour change initiatives. Critical tools in Travel Demand Management, *World Transport Policy and Practice*, 8,4,31-38

These two closely related approaches to behavioural change have been popularised by two private companies (SocialData in Munich and Steer, Davies and Gleave in the UK and Australia). Both approaches are based on the principle of targeting large groups of people in specific geographical areas and working with "interested" sub-groups to bring about a shift away from the car and towards the more sustainable alternatives. The approaches share a common set of principles:

- There are large numbers of people who are ready and willing to change their travel choices given the right kind of information and encouragement.
- Targeting these willing/interested groups is an effective use of resources and can produce enough change to make a significant contribution to solving transport problems.
- Small changes in travel choices can produce large changes in traffic conditions (e.g. 78,000 less vehicles per day in Perth, Western Australia).

The Intelligent Travel project follows the personalised travel planning approach which has been implemented on a large scale in Australia and on a smaller scale in Germany and the UK. The Perth results in Western Australian are impressive[4]:

- bus patronage has gone up by 25 per cent (100,700 new trips);
- single occupancy vehicle (SOV) trips are down by 10 per cent;
- car kilometres travelled are down by 14 per cent;
- cycling trips are up by 91 per cent;
- walking trips are up by 16 per cent.

Results to date in the UK have been less impressive than the Perth project. In the pilot Gloucester project the number of SOV trips in a target population of 500 fell from 406 to 369 per person per year, which is equivalent to a reduction in mode share from 44–40 per cent. Car mileage fell from 21 km per person per day to 19km (a fall of 9 per cent).

Sloman (2004) reports reductions of car driver trips in English pilots of 4–11 per cent in urban areas and 2–6 per cent in rural areas.

## 1.1 Intelligent Travel Project

The York Intelligent Travel© project was initiated in January 2003 by the City of York Council (CYC) in collaboration with the Stockholm Environment Institute (SEI) at the University of York. CYC and DfT funded the project on a match-funding basis.

Preparatory work for the project began in May 2002, when the CYC and SEI developed a proposal to the DfT to undertake a pilot personalised travel planning in York. In this pre-project phase a number of private and public organisations in the city were invited to become project partners and provide in-kind contributions. The Intelligent Travel project has been successful in developing public-private partnerships. It was undertaken in collaboration with Norwich Union, First Group, Halfords, Selby and York Primary Care Trust, Walking the Way to Health Initiative, York St John College and York Local Agenda 21.

4 see http://www.dpi.wa.gov.au/travelsmart/pdfs/present_infra.pdf)

The aim of Intelligent Travel is to examine the potential for changing travel behaviour by reducing car use and encouraging walking, cycling and public transport use which promote health, fitness and a better environment. It tests personalised travel planning on a random sample of 5,701 households living in three wards of the City of York, using before and after questionnaire surveys to measure the effect on personal travel behaviour.

This final report outlines the methodological approach adopted, the response and observed changes in travel behaviour resulting from the interventions adopted in the project.

## 1.2 Structure of Report

The report is divided into eight chapters including this introductory chapter. Chapter 2 provides an overview of transport in the City of York and the context in which the project was undertaken. Chapter 3 explains the methodological approach used in recruiting participants and contacting them throughout the project period. Chapter 4 outlines the results of the study and changes in travel behaviour. Chapter 5 provides an overview of the attitudes and perceptions of the participants to travel and transport in York. Chapter 6 discusses the cost-effectiveness of the Intelligent Travel projects and compares it to similar projects. Finally, Chapter 7 discusses the lessons learnt from this pilot project and makes recommendations for the improvement of future studies. Chapter 8 provides an overall conclusion to the study.

# 2 Transport in the City of York

## 2.1 Introduction

The City of York has a population of approximately 182,000 people and covers an area of 27,200 hectares (ha). The majority of the population (133,721) live within the York urban area (6,500 ha), contained within the York outer ring road. This area is also the main location for business, industry, shopping and services. Other significant settlements are Haxby, Wigginton, Strensall, Copmanthorpe, Bishopthorpe, Dunnington and Poppleton. These are primarily commuter settlements with local services and are located beyond the Outer Ring Road. The remainder of the district is predominantly rural in character.

York is an ideal city for piloting new projects for potential extension to other parts of the United Kingdom because its demographics largely mirror those of the rest of the country. The population age, economic activity and household category demographics of York are similar to those nationally in the UK. It has, however, fewer people from ethnic minority groups and a higher proportion of residents holding degree qualifications.

York has an outstanding environment of international reputation. Yet its main feature, the many medieval streets and two rivers together with a successful economy make York extremely vulnerable to traffic congestion.

## 2.2 York's Transport Policies in Context

The city's integrated and sustainable transport policies date back to the late 1980s. The council adopted a hierarchy of road-users, which at the time was a groundbreaking concept, with pedestrians at the apex and car users at the bottom. The hierarchy of road-users concept was developed as a framework for transport planning, ensuring that transport policies and scheme design would give priority to the most sustainable modes of transport.

York's transport strategy has targeted congestion reduction in the urban centre with an integrated programme of measures. This has been based on providing a number of high quality, high frequency and reliable park and ride services from the outer ring road to the city centre, which are competitively priced in comparison to long stay car parking in the city centre. The differential between long stay car parking and Park and Ride fare has increased in most years and is currently £9.50 for long stay car parking before 10 am, compared with £1.80 return Park and Ride fare.

As the city increased its provision of Park and Ride services, long stay city centre parking capacity has been reduced from 2,984 spaces in 1988 to 1971 spaces in 2003. Park and Ride car parking capacity at the city's four sites now stands at 2,922 spaces which, when added to the long stay city centre car parking spaces, indicates that the strategy has enabled more people to access the centre of York.

The long term strategy also involved the pedestrianisation of the retail heart of the city and providing a network of on- and off-road cycle routes. York has a long history of cycling, due to its flat topography and concentration of comparatively low-paid industries in the urban area. The York cycle network currently extends to over 110 kilometres and 12 per cent of its residents cycle to work, compared to less than 2 per cent for the rest of the country. Pedestrianisation was made possible by reducing the need for vehicle trips in the city centre and has made a significant contribution to the performance of the local economy by helping to attract four million visitors to the city every year.

The first objective of York's current Local Transport Plan is to improve the health of its residents. This demonstrates an awareness in York that transport policy can influence the achievement of wider policy objectives.

The government's Ten Year Transport Plan, the introduction of Local Transport Plans and increased central government funding for integrated transport has enabled York to advance its programme of transport schemes in recent years. The authority established a Quality Bus Partnership with the city's leading public transport operators. The partnership approach was instrumental in First bus, the city's largest bus operator, with about 90 per cent of the local market, introducing a fleet of new vehicles, high frequency routes and a well-branded network entitled "Metro". The Metro brand and network is designed to make it easy for customers to identify their local service. The changes have led to a 17 per cent increase in bus patronage, based on 2001 figures.

The council has, since 1999, responded to evidence that a significant proportion of its residents have not changed their car use as a consequence of the investment in integrated transport, such as Park and Ride or cycle paths. Building an integrated transport network, it seemed, was a necessary but not a sufficient incentive for most people to switch from car use. Consequently, in recent years its strategy has included marketing, or soft measures, including city-wide marketing campaigns, school travel plan and green travel plans.

York's walking advertising campaign contributed to the city achieving its pedestrian trip targets three years ahead of schedule. The artwork from this campaign has also been successfully used by eight other local authorities. Its recent marketing work has focused on communicating the health benefits of cycling and walking, contributing directly towards the Local Transport Plan's first objective. The council wanted to strengthen the approach of its soft measures by developing more targeted interventions, such as personalised journey planning.

York is now a Centre of Excellence for sustainable transport and in 2003 its work on transport was further recognised when it was named Local Transport Authority of the Year.

# 3 Methodology

## 3.1 Introduction

The pilot study covered three wards in the City of York:

- Rural West York Ward
- Rawcliffe and Clifton Without Ward
- Westfield Ward

Within these wards four contrasting areas were defined as the study areas (see Figure 3.1):

1. **Acomb/Chapelfields** – includes low income households with low levels of car ownership but higher levels of ownership of older polluting vehicles, high levels of poor health particularly related to inactivity.
2. **Rawcliffe/Clifton** – includes a new private housing developments.
3. **Poppleton** – mainly rural, high income areas with high levels of car ownership and use.
4. **Copmanthorpe/other** – mainly rural, high-income areas with high levels of car ownership and use.

The areas were selected to test whether the personalised travel planning intervention is more effective on groups with particular demographic profiles compared to others. The council wanted to establish whether it would be feasible and effective to roll out the project to other parts of the city with similar demographics.

The project compared two different approaches to recruiting households to take part in the pilot study to test the effectiveness of different levels of direct contact. The level of direct contact required will ultimately have cost implications for a more extensive study.

The first approach (Y1) involves recruiting participants by telephone 'cold calling' followed by a face-to-face interview at home conducted by a trained staff member. The second approach (Y2) involves recruitment by post and requesting the completion of a questionnaire. These individuals were then contacted by telephone. However, no face-to-face interviews were conducted (see Table 3.1).

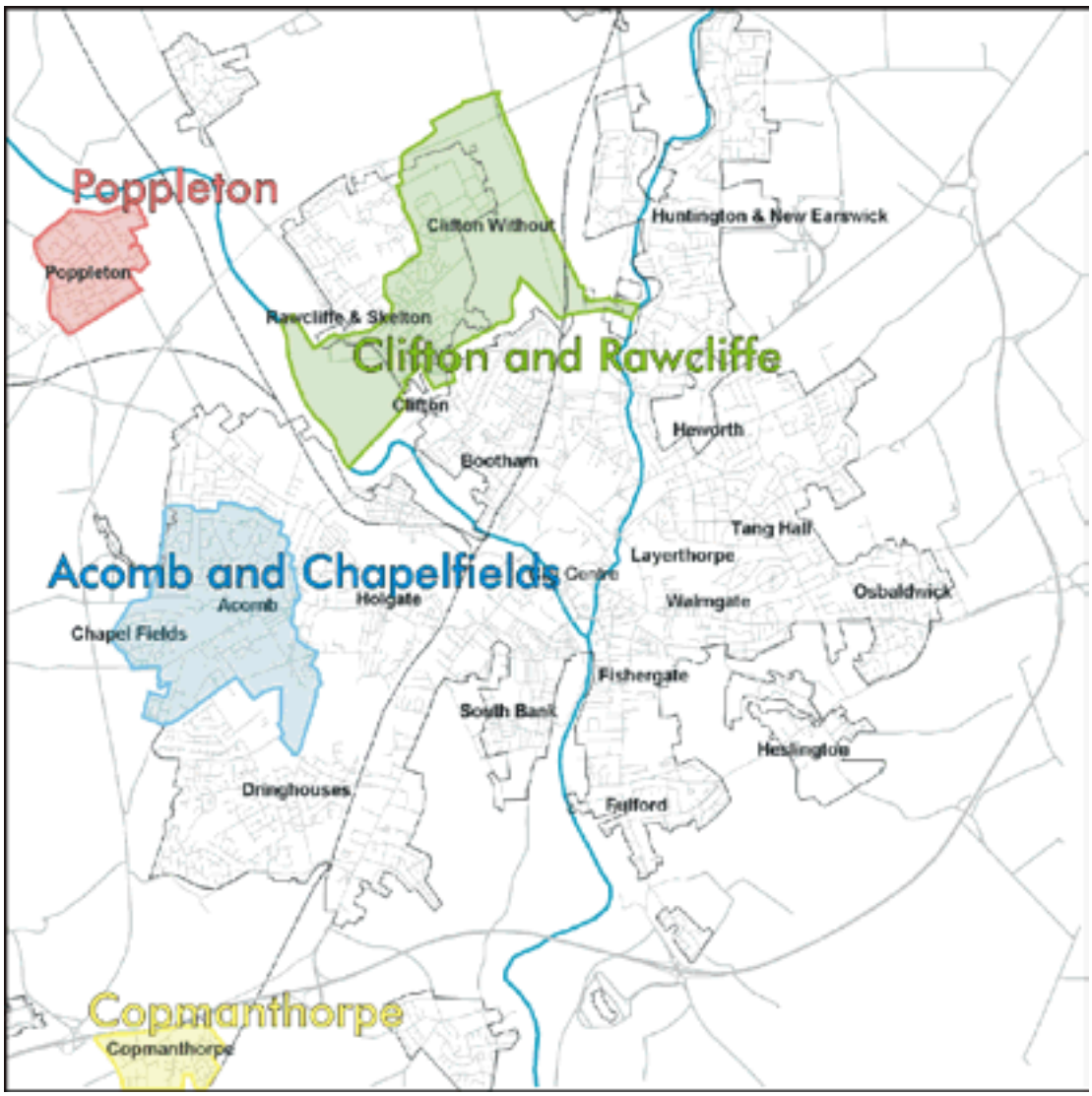




Figure 3.1 Intelligent Travel Study Area

Table 3.1 Two approaches used in the Intelligent Travel project

| | Approach | Number of Households Contacted |
|---|---|---|
| Y1 | Direct telephone contact | 2,101 taken across the three study areas |
| | Home visit | |
| | Incentives | |
| Y2 | Direct mail contact | 3,000 |
| | Follow-up telephone call | (1,000 in each of the three study areas) |
| | Incentives | |

## 3.2 Y1 Approach

The Y1 approach used in Intelligent Travel is presented in Figure 3.2 and is based on similar approaches taken in the individualised marketing studies in Perth (Western Australia) and in Frome (Somerset) and Quedgeley (Gloucester) in the UK. This approach involves direct telephone contact to identify those households who are part of the "nearly club". This group of individuals are more receptive to re-thinking how they use their car, and with appropriate persuasion and incentives may consider shifting a number of their weekly trips by car to other more environmentally friendly modes of transport (EFM).

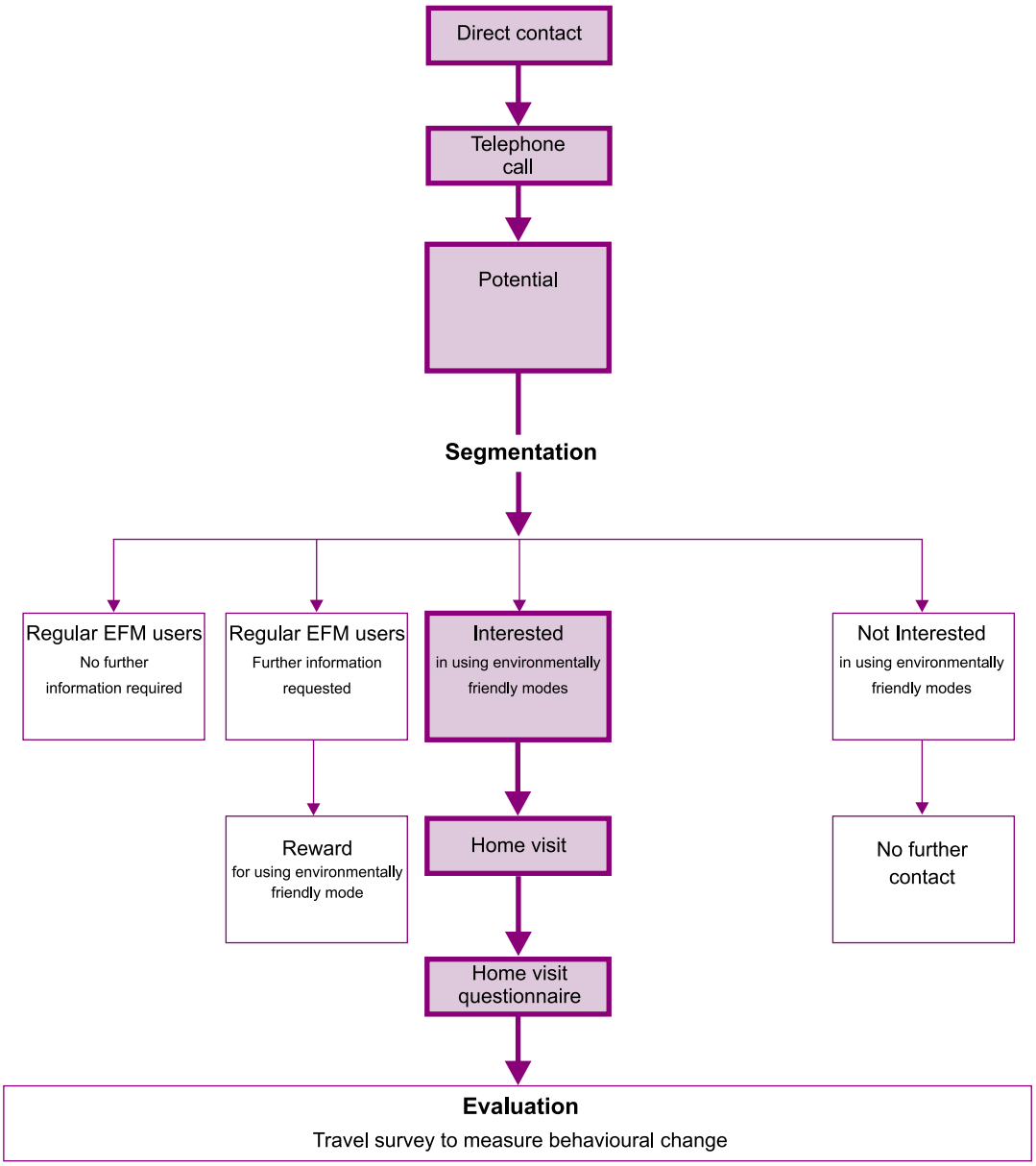


Figure 3.2 Intelligent Travel Y1 approach

In May 2003, 13 staff were employed and trained as Travel Plan Associates (TPAs) to contact households in York by telephone and conduct home visits. The Norwich Union facilities at Clifton Park were used as the Intelligent Travel call centre. A total of 2,101 households were randomly selected from the publicly available electoral register. Households can choose to opt out of the public register. The sample was therefore limited to those households who chose not to opt out of the public electoral register.

The addresses were then matched with telephone numbers from the British Telecom electronic telephone directory. Those households who were ex-directory were not included in the sample as the number was not available from the electronic directory. In addition, those households who registered their telephone number as part of the Telephone Preference Service were removed from the sample and additional numbers added to obtain the total YI sample of 2,101 households.

The launch of the project was announced in the local radio and press at the start of the call centre. The aim was to increase the profile of the project so that the households in the study areas were aware of the project.

Households were contacted by telephone from 5.30–8.30 pm for a period of eight evenings from Monday to Friday. Figure 3.3 shows photographs of the Intelligent Travel call centre.


Figure 3.3 Intelligent Travel© call centre

Each household was asked about their travel behaviour. Households were categorised into ‘regular users of EFM’; ‘not interested’ in using alternative modes to the car; and ‘interested’ in using EFM (see Table 3.2).

Table 3.2 Categories of transport users

| Category | Definition |
|---|---|
| Interested | Not a regular user of EFM |
| | Car dependent and interested in receiving more information and exploring different non-car modes |
| Regular Users of Environmentally Friendly Modes | Users of bus/bike/public transport as main mode of transport for 2-3 journeys per week. |
| Not Interested | Did not wish to be involved or discuss travel choices |

Regular users of EFM were offered further travel information and a small choice of Intelligent Travel gifts as a reward. No further contact was made with those individuals who were not interested in changing their travel behaviour.

Only those individuals who did not use EFM on a regular basis and who were interested in participating in the project were offered a home visit to discuss in detail their travel needs.

Once a date and time had been agreed a postcard confirming an appointment with a named Intelligent Travel TPA was sent to the household (see Figure 3.4).


Figure 3.4 Postcard confirming home visit with Travel Plan Associate

In the home visit the individual was informed about the aims of the study and asked to complete a baseline travel survey. Their individual travel needs and behaviour were discussed and they were offered travel information and a number of incentives to encourage them to use EFM and reduce the number of trips they make by car.

## 3.3 Y2 Approach

The Y2 approach is presented in Figure 3.5 and involves direct postal contact. In this second approach a direct mailshot of 3,000 households was undertaken. A total of 1,000 households were contacted in each ward. This time the households were randomly selected, using the electoral register, from the whole ward rather than one particular area in a ward.

A letter and travel survey was sent to the households. Each household was offered entry into a prize draw to win a cash prize of £200 and 10 runner up prizes of £25 shopping vouchers on completing the survey and returning it by a specific date.

On the basis of the returned survey, households were categorised into those already using EFM, those interested in increasing the use of EFM and those not interested. Those individuals who were mainly car users and who expressed an interest in EFM were contacted by telephone and offered the incentive package, based on their completed survey.

Those households who were already using EFMs and who requested additional information were sent travel information and a limited choice of Intelligent Travel gifts as a reward.

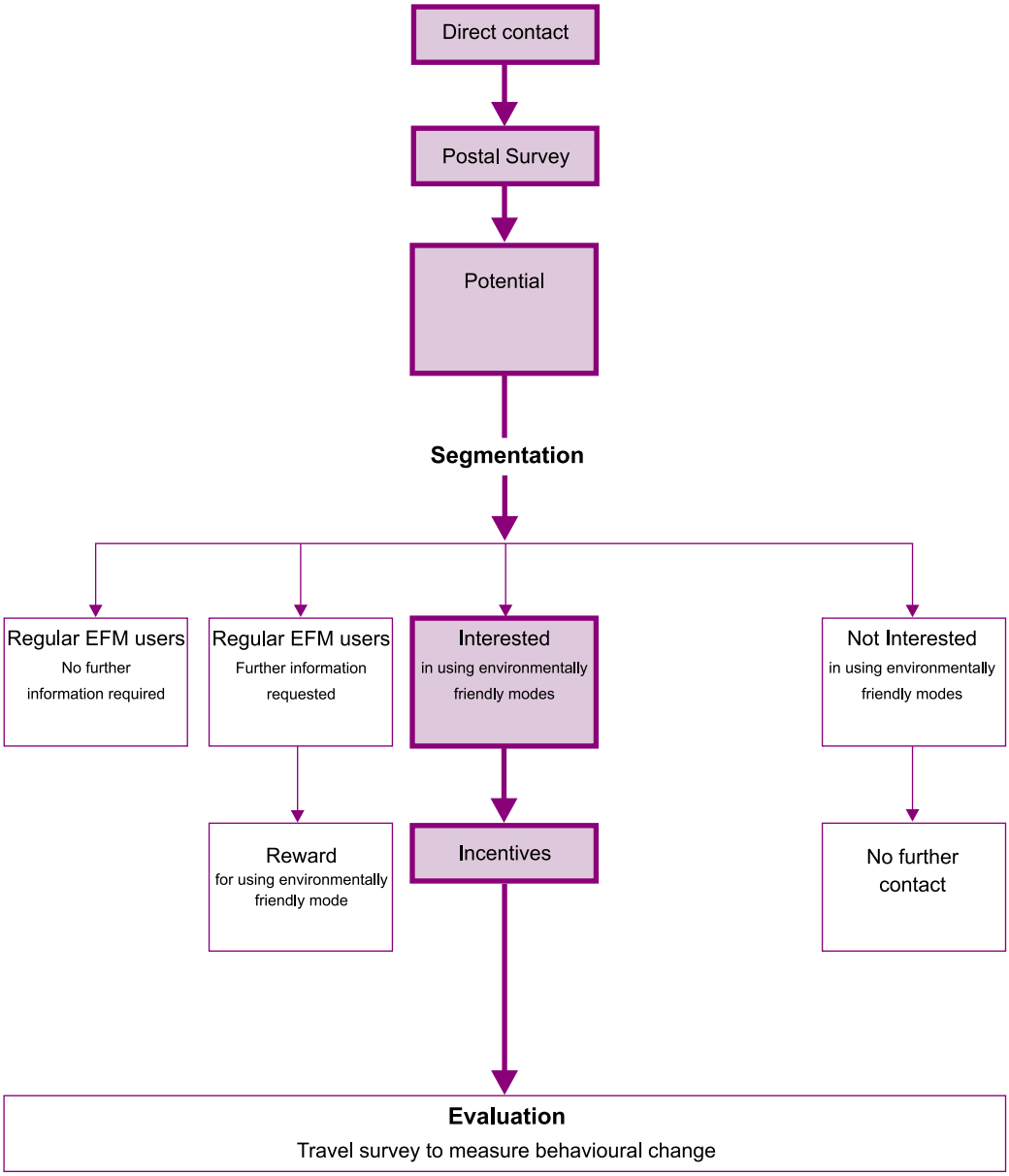


Figure 3.5 Intelligent Travel Y2 approach

## 3.4 Non-intervention Group

The third approach involved a direct mail shot of 600 households in the three study areas, which were randomly selected from the electoral register to act as the non-intervention group. A total of 200 households in each of the three wards were sent a letter asking them to complete a survey on how they travel.

The households were offered entry into the same prize draw as in Y2 for completing the survey and returning it by a specific date. However, in this approach households were not offered travel incentives.

## 3.5 Incentive Package

Households taking part in the project were offered incentives to try out the following modes of transport: bus; cycling; walking and car share.

### 3.5.1 BUS INCENTIVES

In collaboration with the First bus company based in York (First bus) the Intelligent Travel project was able to offer a free bus pass as an incentive to trial buses. The free pass allows travel on any First bus in York for a period of six months. This free bus pass was offered to those individuals who were classed as non-bus users. The bus pass was offered to households contacted as part of Y1 and Y2. In addition, households contacted as part of Y2 were offered six discount vouchers for a 50 per cent reduction on a First bus month travel pass which offered unlimited travel. This offer was aimed at those households who were identified as occasional bus users.

The willingness of First bus to offer a free six-month travel pass was due to the fact that the group of individuals identified by the project were non-bus users. This group was seen as potential new customers for First bus. The discount vouchers were offered to occasional bus users and were therefore seen as encouraging more frequent bus use.

Households contacted in both approaches were offered bus travel information for their area as well as an overground map of the complete bus service in the City of York (see Figure 3.6).


Figure 3.6 Bus travel information: timetables and overground map of bus system in York

### 3.5.2 BICYCLE INCENTIVES

To encourage cycling, individuals were offered a free York cycle route map showing over 100 kilometres of cycle route in the city and reflective 'snap and wrap' bicycle clips. In collaboration with Halfords, individuals were also offered a voucher for a free safety check and a 10 per discount on bicycle repairs and equipment at a local Halfords Superstore. In addition, a cycle training session covering basic cycling and road safety skills run by the CYC was offered as an incentive to gain confidence in cycling (see Figure 3.7).


Figure 3.7 Bicycle incentives: York cycle route map and Halfords discount/cycle training voucher

### 3.5.3 WALKING INCENTIVES

To encourage walking, a Walking the Way to Health Initiative (WHI) pedometer and a "Walk more – feel the difference" leaflet on the benefits of walking were offered as incentives. In collaboration with Selby and York Primary Care Trust, York St John College, City of York Local Agenda 21 and WHI a health map for each of the three study areas was produced (see Figure 3.8).


Figure 3.8 Walking incentives: pedometer, walking and health leaflet and health map

The maps showed places where it is possible to walk in the local vicinity and the calorie use/energy take for distances walked. The health map provided a unique aspect to the study (see Figure 3.9).


Figure 3.9 Health and Walking Map showing where to walk in Acomb

Table 3.3 Calorie burn table included in the Acomb health and walking map

| Amount of walking done | | | | Amount of energy used | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance walked** | **Steps taken** | **Chapelfields to …** | **Time taken walking an average pace (min)** | **Calories used for one trip (based on weight in kg)** | | | | | | **Calories used a week** (5 trips for a 75 kg person) (11st 11lb) | **Weight Loss** (5 trips per week for a 75kg person) |
| | | | | **50** (7st 2lb) | **60** (9st 6lb) | **70** (11st) | **80** (12st 81lb) | **90** (14st 2lb) | **100** (15st 11lb) | | |
| 1 km (0.6 mile) | 1200 | Oakland Sport Centre | 12 | 37 | 44 | 52 | 59 | 67 | 74 | 275 | 1.9 kg (4lb) |
| 2 km (1.2 mile) | 2400 | Edmund Wilson Pool | 24 | 74 | 88 | 104 | 118 | 134 | 148 | 550 | 3.8 kg (8lb) |
| 3 km (1.9 mile) | 3600 | York Station/ Odeon Cinema | 36 | 11 | 132 | 156 | 177 | 201 | 222 | 825 | 5.7 kg (12lb) |
| 4 km (2.5 mile) | 4800 | Minister/ Racecourse | 48 | 148 | 176 | 208 | 236 | 268 | 296 | 1100 | 7.6 kg (1st 2.5 lb) |
| 5 km (3.1 mile) | 6000 | York Hospital/ Barbican/ Clifton Moor Retail Park | 60 | 185 | 220 | 260 | 295 | 335 | 370 | 1375 | 9.5 kg (1 st 7lb) |
| 10 km (6.2 mile) | 12000 | Dunnington | 120 | 370 | 440 | 520 | 590 | 670 | 740 | 2750 | 19kg (2 st 13lb) |

### 3.5.4 CAR SHARING

To encourage participation in CYC's car sharing schemes, individuals were offered a car sharing information leaflet providing information on how to join the York car share scheme and a free mouse mat with the car sharing logo and website address (see Figure 3.10).


Figure 3.10 Car share incentive: information leaflet and mouse mat

## 3.6 Contact

Individuals were contacted a total of three times throughout the project period. The aim of the first contact was to identify suitable individuals (segmentation) and recruit them to participate in the project. The second time was to boost the morale of participants halfway through the six month trial period. The aim of the third and final contact was to ask the individuals to complete a follow-up questionnaire survey on their travel behaviour (see Table 3.4)

Table 3.4 Contact throughout the Intelligent Travel project

| | Approach | Number of Households Contacted | First Contact | Booster Contact | Final Contact |
|---|---|---|---|---|---|
| **Y1** | Direct telephone contact | 2,101 taken across the three study areas | May, June/July 2003 | September/ October 2003 | November 2003 |
| | Home visit | | | | |
| | Incentives | | | | |
| **Y2** | Direct mail contact | 3,000 (1,000 in each of the three study areas) | July/August 2003 | October 2003 | December 2003 |
| | Follow-up telephone call | | | | |
| | Incentives | | | | |
| **YC** | Direct mail contact | 600 (200 from each of the three study areas) | August 2003 | _ | December 2003 |
| | Follow-up telephone call | | | | |
| | No incentives | | | | |

### 3.6.1 BOOSTER CALL

Halfway through the 6 month trial period participants were sent a postcard informing them that they would be contacted by telephone (see Figure 3.11). The aim of the telephone call was to act as a 'booster' to the participants and to ensure they maintained interest in the project. It also provided an opportunity to receive general feedback from the participants on the project and to answer any questions.


Figure 3.11 Booster call postcard

The non-intervention group was also sent a letter informing them that they would be sent a second questionnaire at the end of the six month period.

### 3.6.2 FOLLOW-UP QUESTIONNAIRE

At the end of the six month period the intervention group were sent a second questionnaire requesting information on how they travel, whether the travel incentives helped them change their travel behaviour and their opinion on a range of different transport measures.

The Y1 group of participants was offered no incentive to return the questionnaire. After the deadline those individuals who had not returned the questionnaire were contacted by telephone and in some cases re-sent the questionnaire. A second reminder letter and another copy of the questionnaire was sent to all those participants who had not responded (see Figure 3.12).

Participants in Y2 and the non-intervention group were sent also sent a questionnaire and offered entry into the draw to win a cash prize of £200 and 10 runner up prizes of £25 shopping vouchers on completing and returning it by a specific date. The non-intervention group questionnaire differed from Y1 and Y2 in that it did not include questions on incentives.

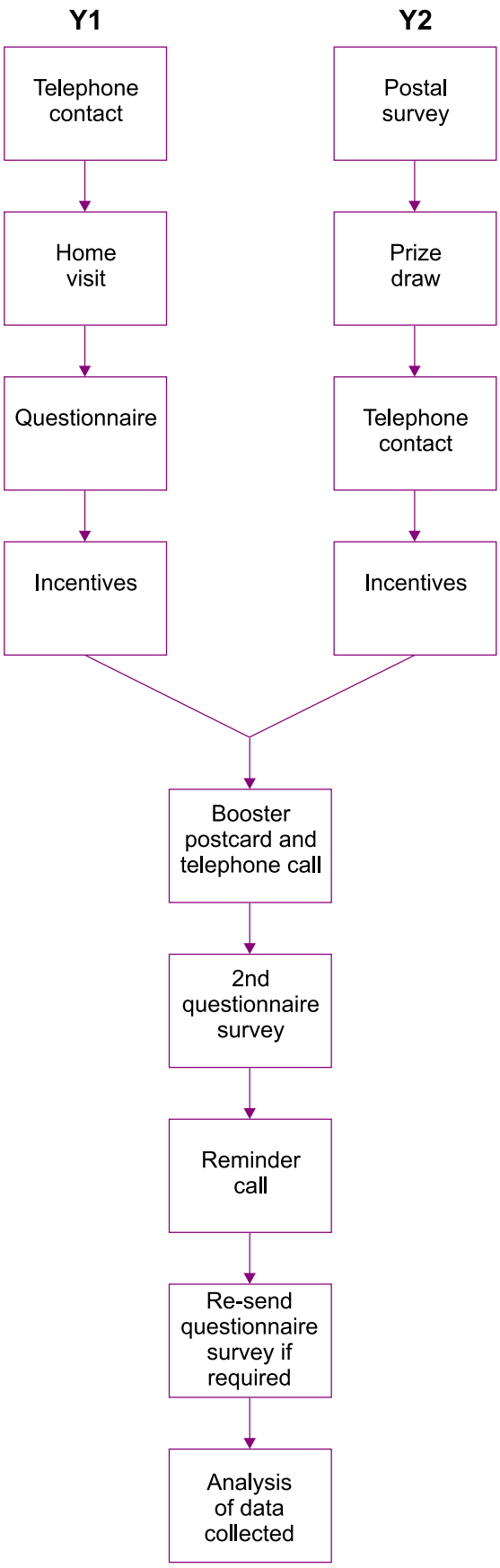


Figure 3.12 The Follow-up approach

# 4 Change in Travel Behaviour

## 4.1 Introduction

This chapter presents the results of the questionnaire survey of participants before and after the intervention.

## 4.2 Y1 Approach Participation

A sample of 2,101 individuals across the four study areas was contacted by telephone. Of this total, 1,664 people were successfully contacted (79.2 per cent). A number of individuals (18.5 per cent) were not contactable due to changes in telephone numbers or the individuals being ex-directory. Details of telephone contact were kept on a database. A total of 48 data files were lost from the sample (2.3 per cent) due to corruption of computer disks. Of the original 1,664 individuals contacted 870 individuals were already using environmentally friendly modes on a regularly basis (52.3 per cent), while 689 individuals were not interested in participating in the project (41.4 per cent). A total of 105 individuals were interested in participating in the project which is equal to a 6.3 per cent of the individuals successfully contacted. Of the 105 appointments, a total of 91 home visits were completed. Fourteen home visits were either cancelled or the individual was not a home when the TPA called (see Table 4.1 and Figure 4.1).

Table 4.1 Participation using the Y1 approach

| | Number | Percentage of total sample (2,101) | Percentage of individuals successfully contacted (1,664) |
|---|---|---|---|
| Telephone calls | 2101 | | |
| Non contactable | 389 | 18.5% | |
| Lost/corrupt data | 48 | 2.3% | |
| Contacted | 1664 | 79.2% | |
| **Total** | **2101** | **100%** | |
| EFM – No further information requested | 767 | 36.5% | 46.1% |
| EFM – Further information requested | 103 | 4.9% | 6.2% |
| Not interested | 689 | 32.8% | 41.4% |
| Interested | 105 | 5.0% | 6.3% |
| **Sub-total** | **1664** | **79.2%** | **100%** |
| Home visit | 91 | 4.3% | 5.5% |

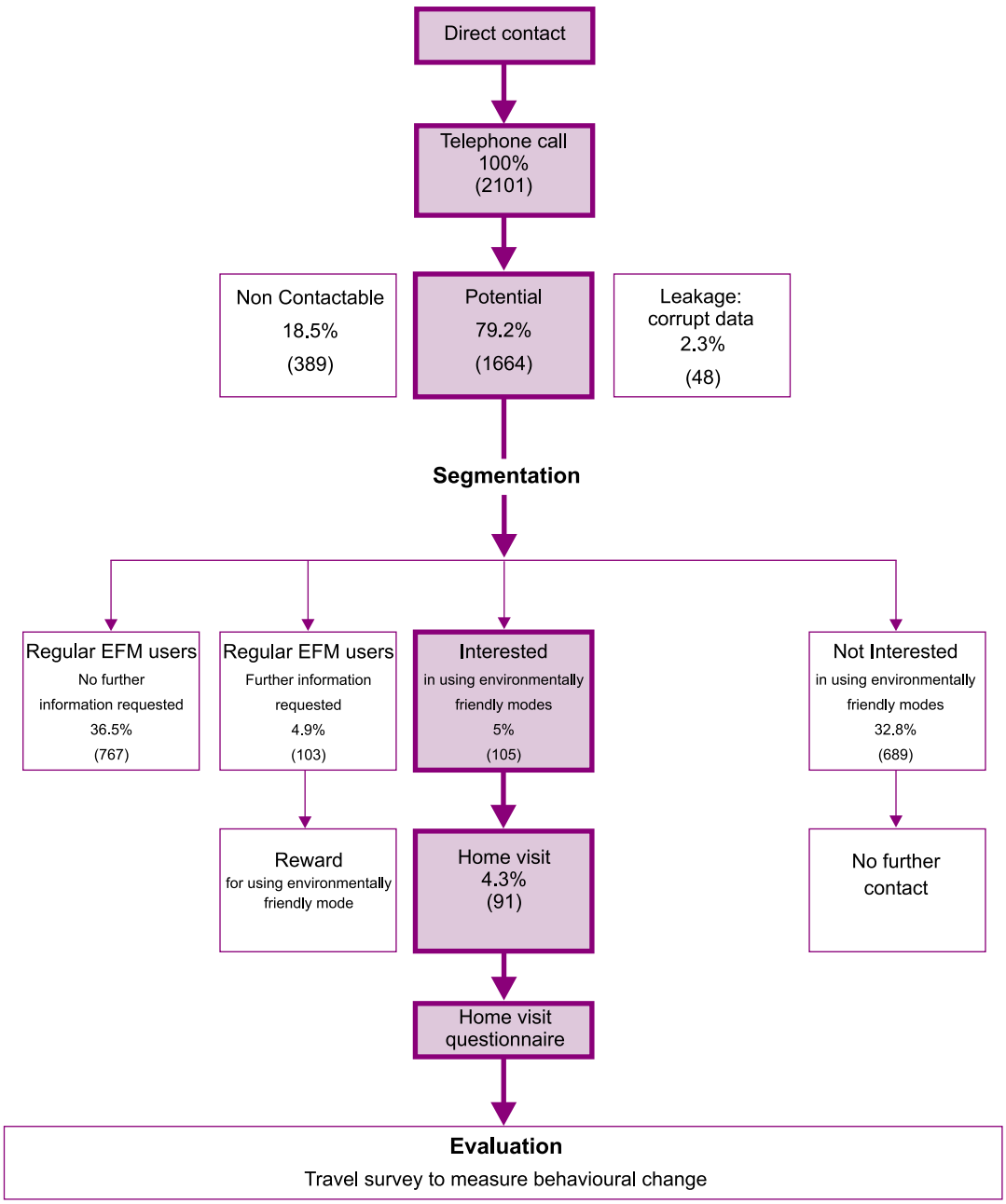


Figure 4.1 Results from the Y1 approach

## 4.3 Y2 Approach Participation

In the Y2 approach 3,000 travel surveys were sent out to households in the three study areas (1,000 in each area). A total of 294 surveys were returned – a response rate of 9.8 per cent. Of this total 32.7 per cent were already using EFM.

A total of 151 individuals (51.4 per cent) out of the 294 who returned the surveys were interested in participating in the study. These individuals were contacted by phone and offered the package of travel incentives. A total of 8.5 per cent of this sample was not contactable due to the telephone number being ex-directory or not being at home when called by the project team. A further 7.5 per cent were not interested in using EFM (see Table 4.2 and Figure 4.2).

Table 4.2 Participation using the Y2 approach

| | | Percentage of total sample (3,000) | Percentage of households successfully contacted (294) |
|---|---|---|---|
| Postal questionnaires | 3000 | | |
| Returns/Contacted | 294 | 9.8% | |
| EFM – No further information requested | 9 | 0.3% | 3.1% |
| EFM – Further information requested | 87 | 2.9% | 29.6% |
| Not interested | 22 | 0.7% | 7.5% |
| No answer | 25 | 0.8% | 8.5% |
| Interested | 151 | 5.0% | 51.4% |
| **Sub-Total** | **294** | **9.8%** | **100%** |

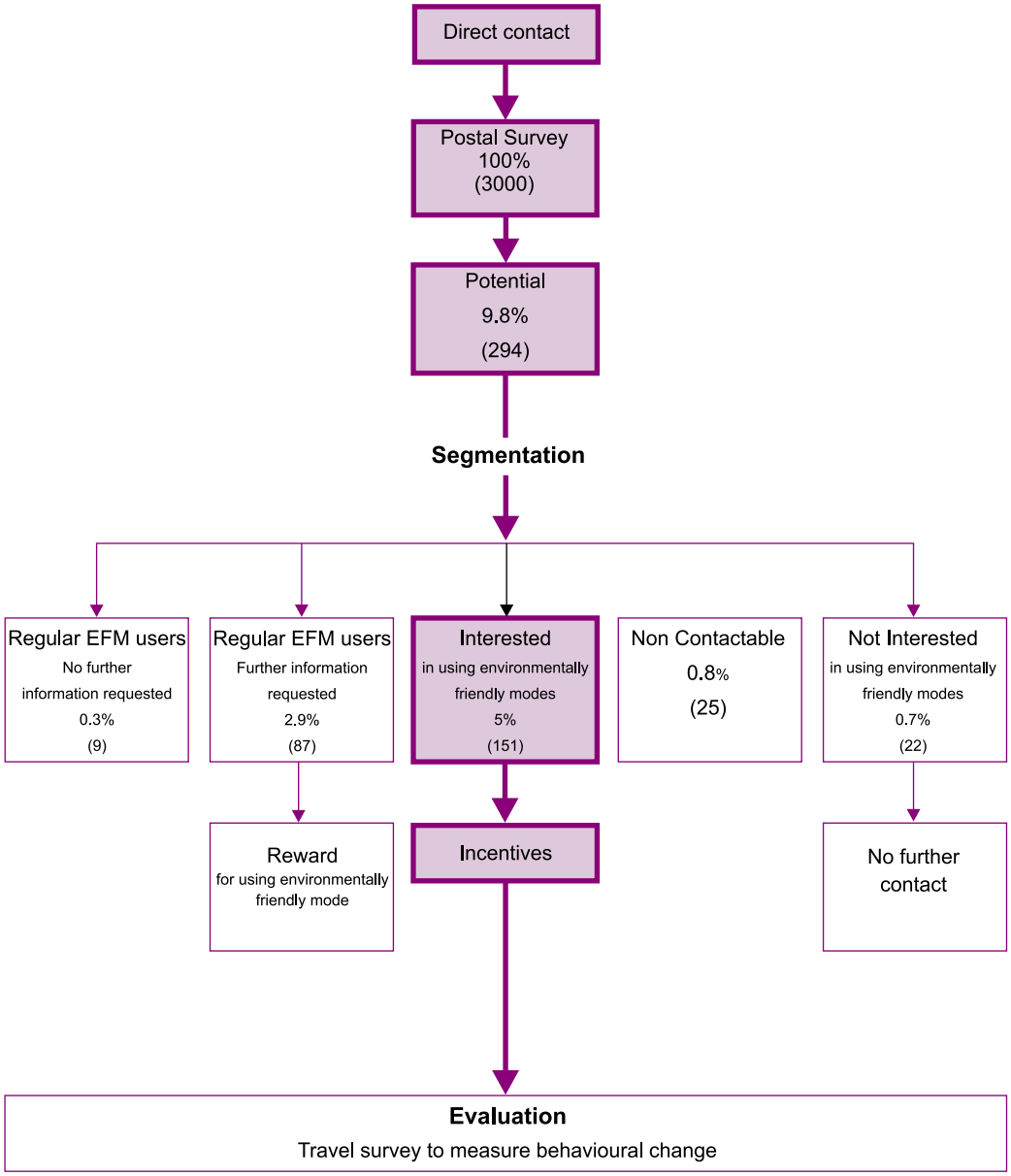


Figure 4.2 Results from the Y2 approach

## 4.4 Y3 Approach Participation

Out of the 600 households contacted to act as the non-intervention group a total of 97 surveys were returned – a response rate of 16.2 per cent. These individuals were not offered any travel incentives and were contacted again after a six month period to see if there was any change in their travel behaviour due to factors external to the project.

## 4.5 Overview of Participation

A total of 5,701 York residents were contacted as part of the study. Table 4.3 provides an overview of participation based on the three approaches used in recruiting participants. Of the 5,101 individuals who were contacted from the intervention group, 996 were already regular users of environmentally friendly modes of transport (41 per cent); 711 were not interested in participating (14 per cent) and 3,182 were lost from the sample due to 'leakage' (62 per cent) (see Figure 4.3). This group was lost due to non-return of questionnaires, being non-contactable (e.g. ex-directory), not being at home when contacted by the project team and loss of personal data due to corrupt disk.

A total of 242 individuals agreed to participate in the study and accepted the incentives and agreed to review their travel behaviour at the end of a six-month period. The total participation rate in the Intelligent Travel project was 4.7 per cent.

Table 4.3 Overview of participation in the Intelligent Travel project

| Approach | EFM users | Interested | Not interested | Leakage | Total |
|---|---|---|---|---|---|
| Y1 | 870 | 91* | 689 | 451 | 2101 |
| | 41% | 4% | 33% | 21% | 100% |
| Y2 | 96 | 151 | 22 | 2731** | 3000 |
| | 3% | 5% | 1% | 91% | 100% |
| YC | | 97 | 503 | | 600 |
| | | 16% | 84% | | 100% |
| Total population contacted | | | | | 5701 |
| Intervention Group (Y1 + Y2) | 966 | 242 | 711 | 3182 | 5101 |
| | 19% | 5% | 14% | 62% | 100% |
| Participation rate | | | | | 4.7% |

* Total number of home visits completed was 91 despite 105 individuals having agreed to a home visit
** This number represents those individuals who did not return the questionnaire that was sent out as part of the Y2 approach

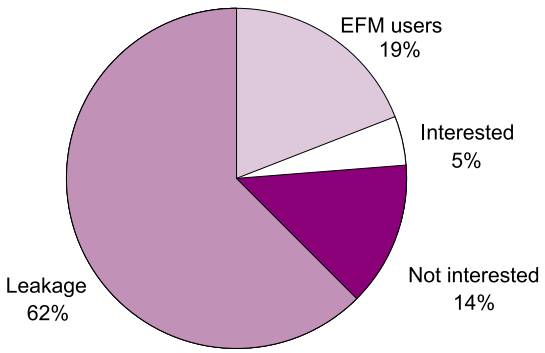


Figure 4.3 Overview of participation in the Intelligent Travel project

## 4.6 Follow-up

A total of 242 individuals agreed to participate in the Intelligent Travel project at the beginning of the six-month period and completed a baseline travel questionnaire. In order to determine any change in travel behaviour as a result of the project, each individual had to complete a second questionnaire survey at the end of the project period.

Section 3.2 explains the procedure adopted in contacting individuals and maintaining their interest over the six month period. Despite every effort being made to ensure the completion of the second survey, a total of 75 individuals did not return the second questionnaire. This is equivalent to a 31 per cent drop out rate (see Table 4.4).

From the two different approaches (Y1 and Y2) used in recruiting the participants, the greatest 'drop out' was from the Y2 sample. This sample was offered the added bonus of being entered in a prize draw together with the YC sample if they returned the second questionnaire.

From the total sample, slightly more male participants (39 drop outs) did not return the second questionnaire compared to female participants (36 drop outs).

A key factor resulting in the 'drop out' was a change in the participant's circumstances over the six-month period which prevented them from continuing their participation in the project. These include changes in address, moving away from the area, changes in health, apathy and loss of enthusiasm for the project.

A similar drop out rate of 38 per cent occurred in the non-intervention group. This group was offered the added incentive of being included in a prize draw.

Table 4.4 Drop out from the intervention and non-intervention group

| Group | Agreed to participate | Completed 2nd Questionnaire after 6 months | Change | Percentage drop out |
|---|---|---|---|---|
| Intervention Group (Y1) | | | | |
| Male | 40 | 29 | -11 | |
| Female | 51 | 37 | -14 | |
| Total | 91 | 66 | -25 | |
| Intervention Group (Y2) | | | | |
| Male | 75 | 47 | -28 | |
| Female | 76 | 54 | -22 | |
| Total | 151 | 101 | -50 | |
| Total Sample (Y1+Y2) | 242 | 167 | -75 | -31% |
| Non-intervention Group | | | | |
| Male | 44 | 27 | -17 | |
| Female | 53 | 33 | -20 | |
| Total Sample (YC) | 97 | 60 | -37 | -38% |

The following results are based on total questionnaire returns of 167 individuals who formed the intervention group and 60 questionnaire returns from individuals who formed the non-intervention group. The gender split for both the intervention and non-intervention groups was more or less equal (see Figure 4.4).

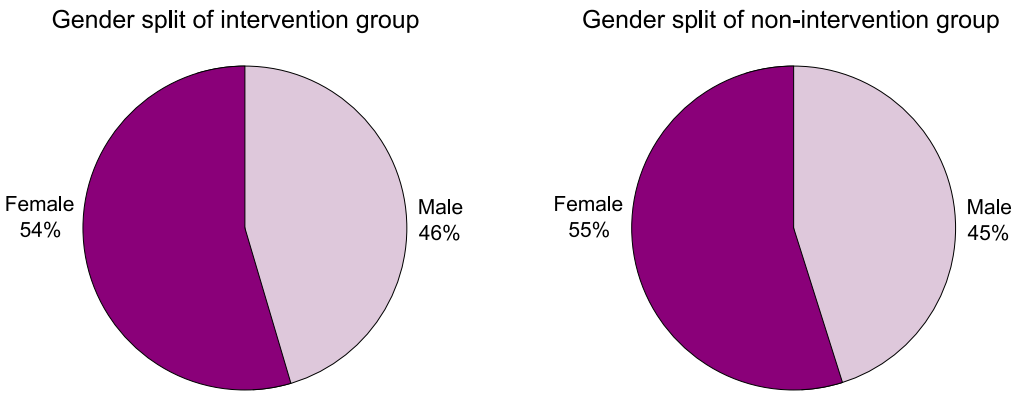


Figure 4.4 Gender split between intervention and non-intervention groups

## 4.7 Change in Travel Behaviour

The Intelligent Travel interventions have produced a 16 percentage point reduction in car trips. In the baseline data 85 per cent of trips were made by car and in the follow-up questionnaire six months later this was 69 per cent (see Table 4.5 and Figure 4.5). This is the overall result for all project areas. The change over the same time period in the non-intervention group was a 5 percentage point increase in car trips. In the before survey (non-intervention group) 71 per cent of all trips were by car and in the after survey this increased to 76 per cent (see Figure 4.6)

Intelligent Travel has converted a potential 5 percentage point increase in car trips into a 16-percentage point reduction.

Table 4.5 Percentage modal split in the intervention and non-intervention group

| | Intervention | | | Non-intervention | | |
|---|---|---|---|---|---|---|
| | **Before** | **After** | **Change** | **Before** | **After** | **Change** |
| Car | 85% | 69% | -16% | 71% | 76% | +5% |
| Bus | 4% | 9% | +5% | 12% | 8% | -4% |
| Bicycle | 3% | 4% | +1% | 7% | 8% | +1% |
| Walking | 8% | 18% | +10% | 9% | 8% | -1% |

Walking, cycling and bus use have all increased in the intervention group. The non-intervention group changes indicate that these increases are real. Bus use has risen by 5 percentage points in the intervention group at the same time as it has declined by 4 percentage points in the non-intervention group. The number of walking trips increased by 10 points in the intervention group and decreased by 1 point in the non-intervention group. There has been effectively no change in cycling with a 1 percentage point increase in bicycle trips in both intervention and non-intervention groups.

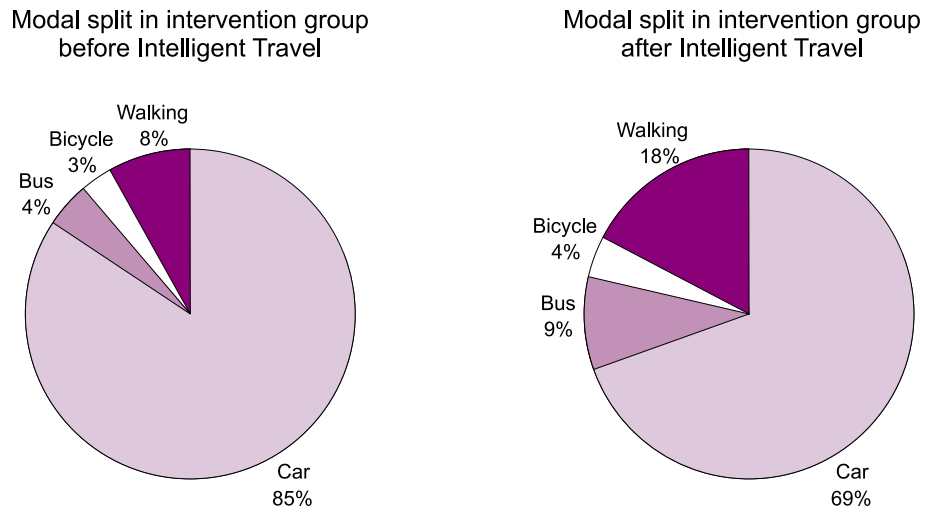


Figure 4.5 Change in modal split in the intervention group

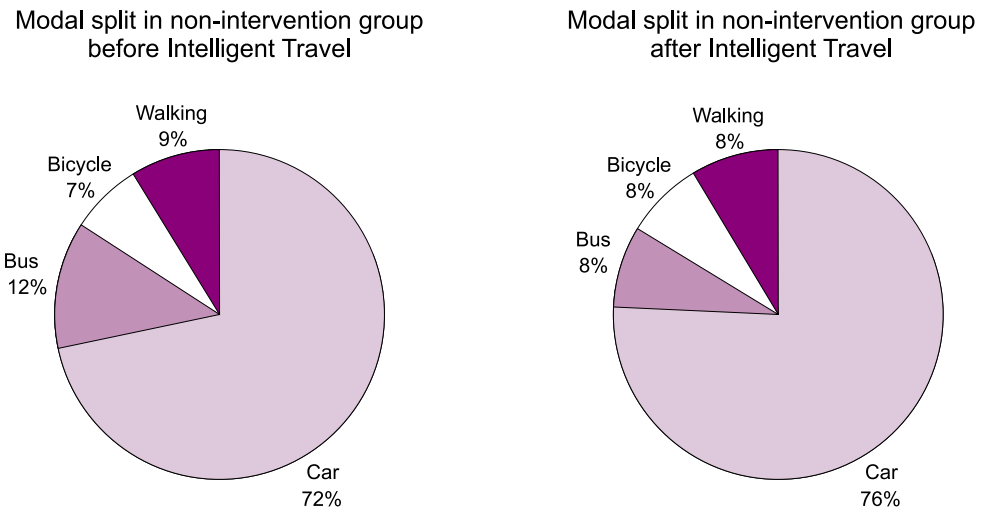


Figure 4.6 Change in modal split in the non-intervention group

The total distances travelled by car for both groups had decreased. The intervention group shows a large reduction in car distance travelled of more than 35,000 kilometres, which over a target population of 167 is an average fall of approximately 212 kilometres per person.

The increase in distances travelled for bus, bicycle and walking have been achieved at the same time as distances travelled by the non-intervention groups have declined. There has been a clear and positive effect of this intervention in increasing distances travelled by non-car modes at the same time as there has been a decline in the non-intervention group.

Table 4.6 Distance travelled (Km) in the intervention and non-intervention group*

| | Intervention | | | | | | Non-intervention | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Before | (dpp*) | After | (dpp) | Change | (dpp) | Before | (dpp) | After | (dpp) | Change | (dpd) |
| Car | 72,067 | (303) | 36,670 | (232) | -35,397 | (-71) | 17,830 | (232) | 16,295 | (296) | -1,535 | (+64) |
| Bus | 1,105 | (27) | 1,578 | (20) | +473 | (-7) | 1,359 | (41) | 425 | (19) | -934 | (-22) |
| Bicycle | 462 | (16) | 678 | (19) | +217 | (+3) | 685 | (49) | 430 | (43) | -255 | (-6) |
| Walking | 641 | (11) | 985 | (11) | +344 | (0) | 323 | (9) | 177 | (9) | -146 | (0) |

* Per person trips can mask changes in the number of users. For example, walking distances remained constant but the number of users increased. See Table 4.7 and 4.9 for greater detail.
** Distance per person.

The overall impact of the intervention has been to reduce car trips and vehicle kilometres at the same time as increasing trips and distance travelled by bus and walk modes. The 10 percentage point increase in walking trips and 5 percentage point increase in bus trips demonstrates that these modes can attract additional usage. This is corroborated by the increase in users (see Table 4.7). The number of people undertaking walking trips has increased by 35 in the intervention group (2 in the non-intervention group) and by 36 for bus use (-11 in the non-intervention group).

Table 4.7 Number of users by mode in the intervention and non-intervention group

| Number of Users | Intervention | | | Non-intervention | | |
|---|---|---|---|---|---|---|
| | Before | After | Change | Before | After | Change |
| Car | 232 | 164 | -68 | 77 | 55 | -22 |
| Bus | 41 | 77 | +36 | 33 | 22 | -11 |
| Bicycle | 26 | 27 | +1 | 14 | 10 | -4 |
| Walking | 64 | 99 | +35 | 18 | 20 | +2 |

Another way to examine the overall impact of the Intelligent Travel interventions is to convert absolute numbers into rates. This makes comparisons independent of sample size and is a better indicator of the performance of each mode for the intervention group (See Table 4.8).

Table 4.8 Trip rates for walking and bus travel, before and after for the intervention group

| | Before | | | | After | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mode | Number of trips | Number of users | Trip per person/ week | Annual trips | Number of trips | Number of users | Trips per person | Annual trips | Change |
| Car | 3,825 | 232 | 16.49 | 857 | 2,202 | 164 | 13.43 | 698 | -159.2 |
| Bus | 184 | 41 | 4.49 | 233 | 276 | 77 | 3.58 | 186 | -47.9 |
| Cycle | 133 | 26 | 5.12 | 266 | 139 | 27 | 5.15 | 268 | +1.7 |
| Walk | 351 | 64 | 5.48 | 285 | 574 | 99 | 5.80 | 302 | +16.3 |

Table 4.8 shows that there has been a decrease in the number of users, trips and distances travelled by car in the intervention group. The number of trips and users by bus have increased, however, the distances travelled have decreased. Therefore a larger number of people are using the bus for short distances. The number of cycle and walking trips has increased. The increase in walking from 285 to 302 trips per person per annum is an important increase in walking activity, which will deliver substantial public health (e.g. reducing obesity) and transport objectives.

### 4.7.1 MOBILITY

The Intelligent Travel interventions have produced a reduction of 11 per cent in the number of trips made and a 24 per cent reduction in distances travelled. Trip making behaviour and/or distance travelled is seen as being a fundamental source of congestion and in a wider sense of non-sustainability. This is a different point to the more usual "modal shift" approach where transport policy would normally seek to shift the journey to work (for example) from the car to the bus or from the car to walking and cycling on two days each week. The York Intelligent Travel project has shown that trip making and distances travelled can be influenced. This is shown in Table 4.9.

Table 4.9 Trip making and average distances travelled in the intervention group (all areas aggregated)

| | **Before intervention** | **After Intervention** | | | **Before Intervention** | **After Intervention** | | |
|---|---|---|---|---|---|---|---|---|
| | Average trips made per person/week | Average trips made per person/week | Change | Percentage change | Average distances travelled per week (km) | Average distance travelled per week (km) | Change | Percentage change |
| Car | 16.5 | 13.4 | -3.1 | -19% | 310.6 | 223.6 | -87 | -28% |
| Bus | 4.5 | 3.6 | -0.9 | -20% | 27 | 20.5 | -6.5 | -24% |
| Cycle | 5.1 | 5.1 | 0 | 0% | 17.8 | 25.1 | 7.3 | +41% |
| Walk | 5.5 | 5.8 | 0.3 | +5% | 10 | 10 | 0 | 0% |
| **Total** | **31.6** | **28** | **-3.6** | **-11%** | **365.4** | **279.2** | **-86.2** | **-24%** |

If this result in the intervention group could be replicated across all of York's citizens the 24 per cent reduction in distances travelled would effectively eliminate congestion in the city and make a significant contribution to reducing urban air pollution and greenhouse gas emissions.

The non-intervention group shows that the distance reduction effect is even more dramatic than revealed in Table 4.9. The 24 per cent reduction in distances travelled in the intervention group is matched by an 11 per cent increase in the non-intervention group. The interventions made in this project have converted a potential 11 per cent increase into a 24 per cent decrease in distances travelled in a situation where the average number of trips made per week in the intervention and non-intervention groups in the "after" stage is identical at 28. The non-intervention group results are summarised in Table 4.10.

Table 4.10 Trip making and distances travelled in the non-intervention group (all areas aggregated)

| | **Before intervention** | **After Intervention** | | | **Before Intervention** | **After Intervention** | | |
|---|---|---|---|---|---|---|---|---|
| | Average trips made per person/week | Average trips made per person/ week | Change | Percentage change | Average distances travelled per week (km) | Average distance travelled per week (km) | Change | Percentage change |
| Car | 12.5 | 13.2 | 0.7 | +6% | 231.6 | 296.3 | +64.7 | +28% |
| Bus | 5 | 3.3 | -1.7 | -34% | 41.2 | 19.3 | -21.9 | -53% |
| Cycle | 6.9 | 7.6 | 0.7 | 10% | 48.9 | 43 | -5.9 | -12% |
| Walk | 7 | 4 | -3 | -43% | 9 | 8.9 | -0.1 | -1% |
| **Total** | **31.3** | **28** | **-3.3** | **-11%** | **330.6** | **367.4** | **+36.8** | **+11%** |

### 4.7.2 DIFFERENCES IN TRAVEL BEHAVIOUR CHANGE ACROSS STUDY AREAS

An important part of the Intelligent Travel project was to compare results across four different sub-areas in York (see Chapter 3):

1. Acomb/Chapelfields
2. Rawcliffe/Clifton
3. Poppleton
4. Copmanthorpe/Other

There has been a decline in car use in all four study areas and an increase in walking and bus use with more marginal changes in cycle use, which echo the aggregate results (see Table 4.11).

Table 4.11 Changes in modal split according to study area

| **Acomb/Chapelfields** | | | | | | |
|---|---|---|---|---|---|---|
| Modal split | | **Intervention** | | | **Non-intervention** | |
| | Before | After | Change | Before | After | Change |
| Car | 83% | 58% | -25 | 55% | 74% | +19 |
| Bus | 5% | 12% | +7 | 15% | 9% | -6 |
| Bicycle | 3% | 9% | +6 | 5% | 6% | +1 |
| Walking | 10% | 21% | +11 | 25% | 11% | -14 |
| **Rawcliffe/Clifton** | | | | | | |
| Modal split | | **Intervention** | | | **Non-intervention** | |
| | Before | After | Change | Before | After | Change |
| Car | 89% | 66% | -23 | 69% | 68% | -1 |
| Bus | 4% | 9% | +5 | 8% | 6% | -2 |
| Bicycle | 2% | 7% | +5 | 16% | 19% | +3 |
| Walking | 6% | 18% | +12 | 7% | 7% | 0 |
| **Poppleton** | | | | | | |
| Modal split | | **Intervention** | | | **Non-intervention** | |
| | Before | After | Change | Before | After | Change |
| Car | 82% | 66% | -16 | 89% | 80% | -9 |
| Bus | 3% | 8% | +5 | 4% | 6% | +2 |
| Bicycle | 4% | 3% | -1 | 5% | 3% | -2 |
| Walking | 11% | 22% | +11 | 2% | 11% | +9 |
| **Copmanthorpe/Other** | | | | | | |
| Modal split | | **Intervention** | | | **Non-intervention** | |
| | Before | After | Change | Before | After | Change |
| Car | 85% | 70% | -15 | 59% | 77% | +18 |
| Bus | 5% | 10% | +5 | 13% | 11% | -2 |
| Bicycle | 4% | 2% | -2 | 1% | 4% | +3 |
| Walking | 7% | 18% | +11 | 27% | 8% | -19 |

The Acomb/Chapelfields result is particularly clear with a 25 percentage point reduction in car trips (from 83 to 58 per cent) at the same time as the non-intervention group shows a 19 percentage point increase (from 55 to 74 per cent) (see Figure 4.7). The intervention in Acomb/Chapelfields has converted a 19-percentage point increase into a 25-percentage point decrease (a difference of 44 percentage points). In the same area bus use has increased in the

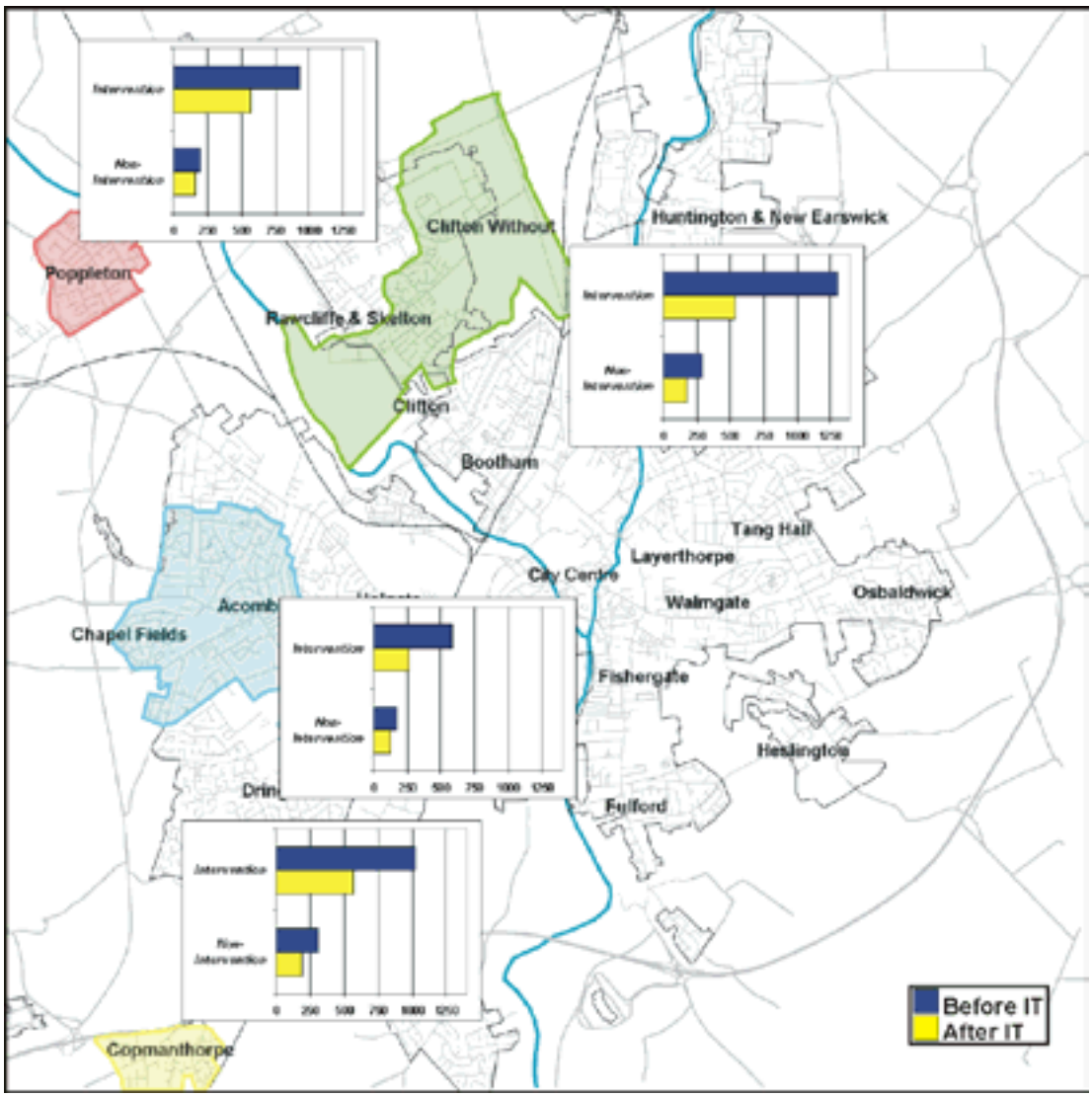




Figure 4.7 Total number of car trips across the study areas

intervention group by 7 percentage points whilst decreasing by 6 percentage points in the non-intervention groups (see Figure 4.8). Similarly, walking has increased by 11 percentage points in the intervention group and decreased by 14 percentage points in the non-intervention groups. The 14 percentage point decrease in the non-intervention groups for walking has been converted into an 11 percentage point increase in the intervention group (see Figure 4.9). This is a 25 percentage point difference giving a considerable boost to walking.

The Rawcliffe/Clifton area shows a slightly weaker effect with a 23-percentage point fall in car trips (from 89 to 66 per cent) and Poppleton weaker still with a 16-percentage point fall in car trips (from 82 to 66 per cent). This is very similar to Copmanthorpe's 15 percentage point decrease in car trips in the intervention group and 18 percentage point increase in the non-intervention group. Poppleton's changes in bus use and walking are less impressive. The non-intervention group showed a 2 percentage point increase for bus use and a 9 percentage point increase for walking. This demonstrates that the effects noted for the intervention groups are less impressive with only a 3 percentage point differential point for bus use and a 2 percentage point differential for walking trips. The changes in the non-intervention group in Poppleton

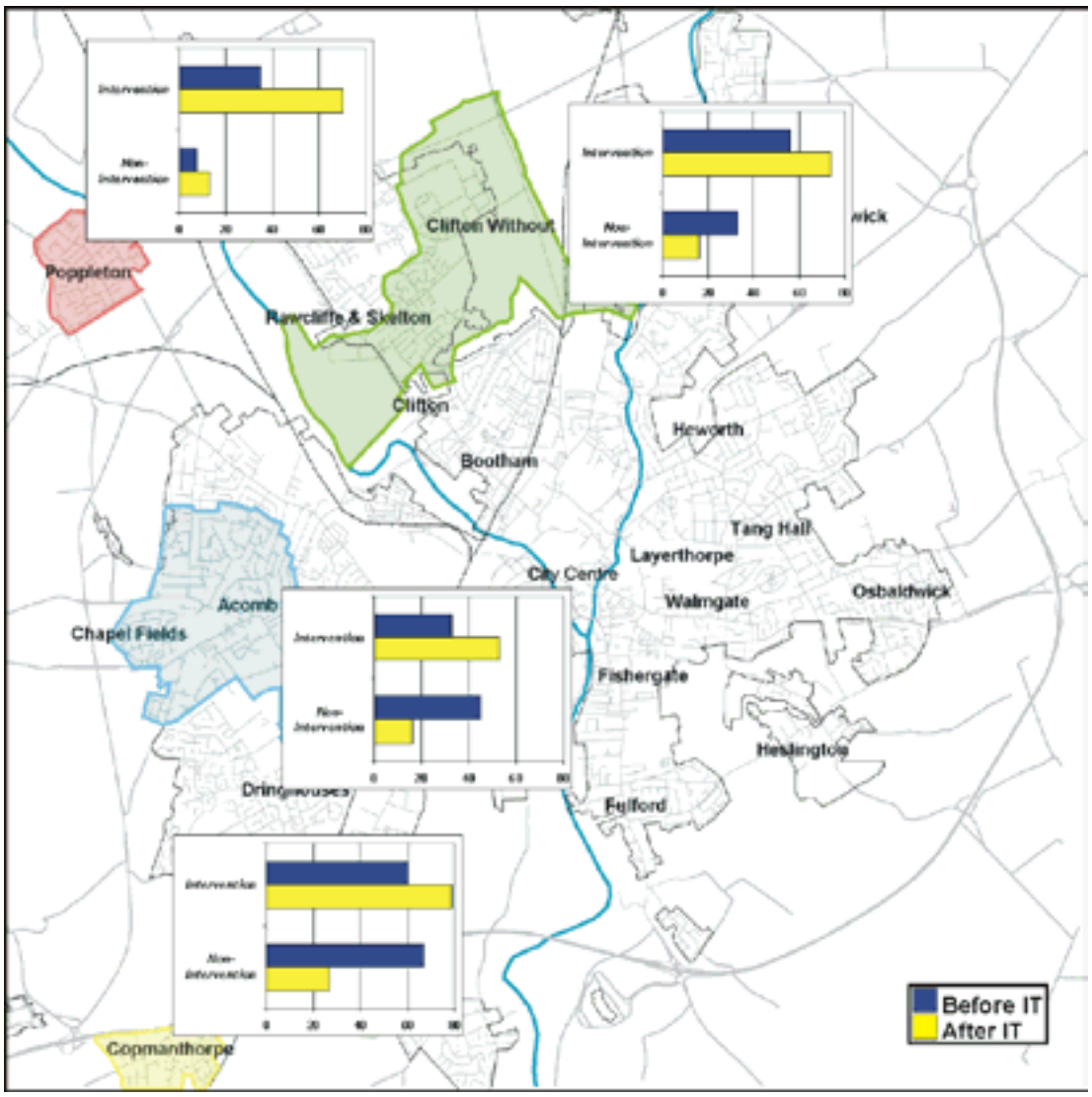




Figure 4.8 Total number of bus trips across the study areas

have revealed that something other than the intervention occurred to increase walking and bus trips.

Bus and walking trips in Copmanthorpe have all increased in the intervention group. Bus trips increased by 5 percentage point (compared to a 2 percentage point decrease in the non-intervention group) and walking trips increased by 11 percentage points compared to a large 19 percentage point decrease in the non-intervention group.

The Rawcliffe/Clifton improvements in walking and bus use in the intervention group are less affected by general system wide changes. The 5 percentage point increase in bus trips in the intervention groups is matched by a 2 percentage point decrease in the non-intervention groups producing a differential of 7 percentage points. In the case of walking, the non-intervention group was static and the intervention group showed a 12 percentage point increase, which is an impressive growth in walking.

The cycling results across all four areas are quite mixed (see Figure 4.10). Acomb/Chapelfields has experienced a 6 percentage point increase in cycle trips in the intervention groups and a

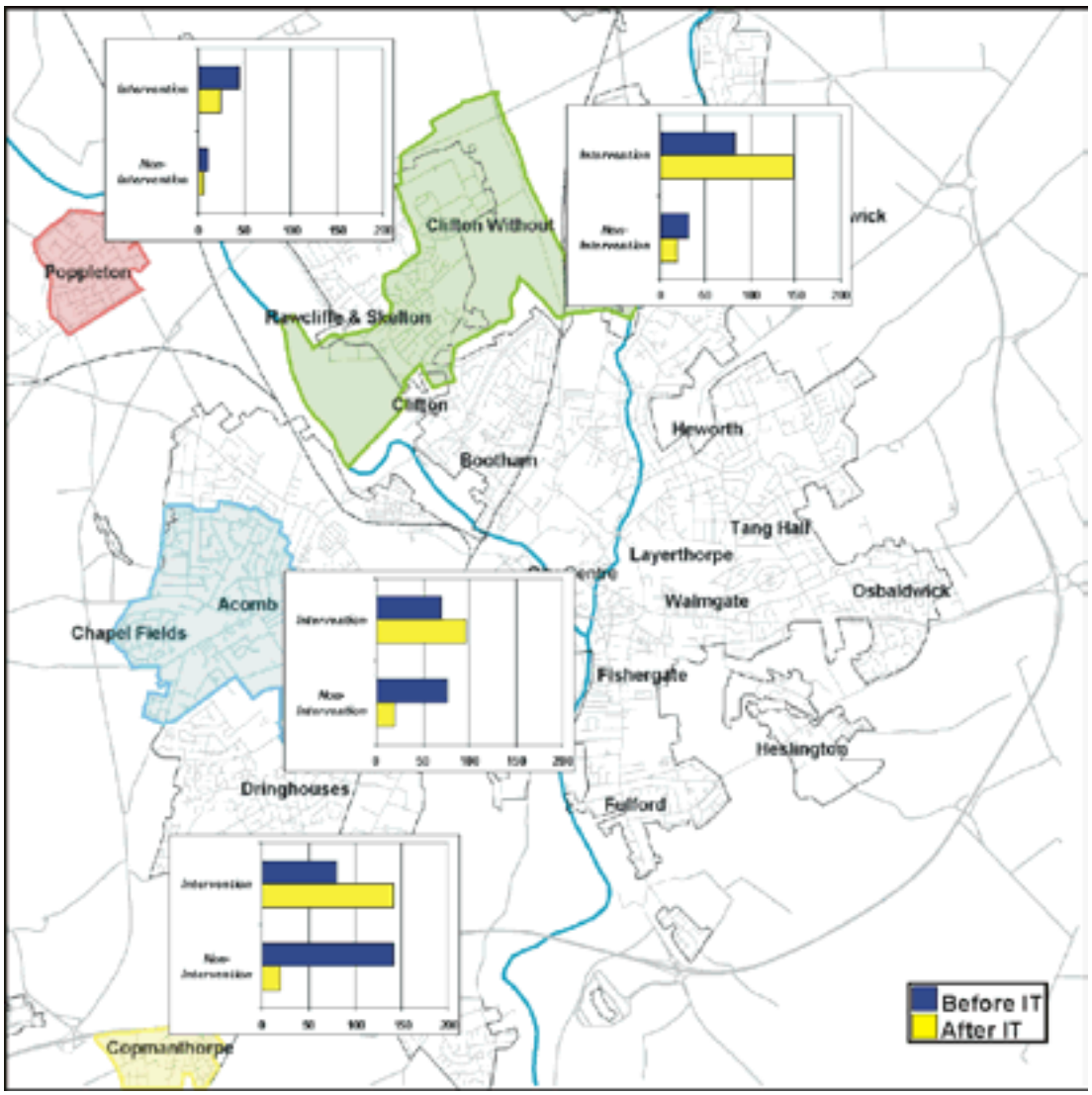




Figure 4.9 Total number of walking trips across the study areas

1 percentage point in the non-intervention groups. Rawcliffe/Clifton has had a 5 percentage point increase in the intervention group and 3 percentage point in the non-intervention groups (from an already high 16 per cent of trips). Poppleton has had a 1 percentage point decline in the intervention group and a 2 percentage point decline in the non-intervention groups. Copmanthorpe experienced a 2 percentage point decrease in the intervention group and a 3 percentage point increase in the non-intervention group which means there has been no effect at all in the intervention groups as a result of the interventions. These changes are difficult to interpret especially when taking into account some of the small numbers of individuals.

The greatest reduction in car use has occurred in the urban areas of Acomb/Chapelfields and Rawcliffe/Clifton. An increase in bus use of approximately 5 percentage points has occurred across all four study areas. An increase in cycling occurred mainly in the urban areas with a reduction of 1-2 per cent in the rural areas of Poppleton and Copmanthorpe/other. The increase in walking of 11–12 per cent has occurred across all four study areas.

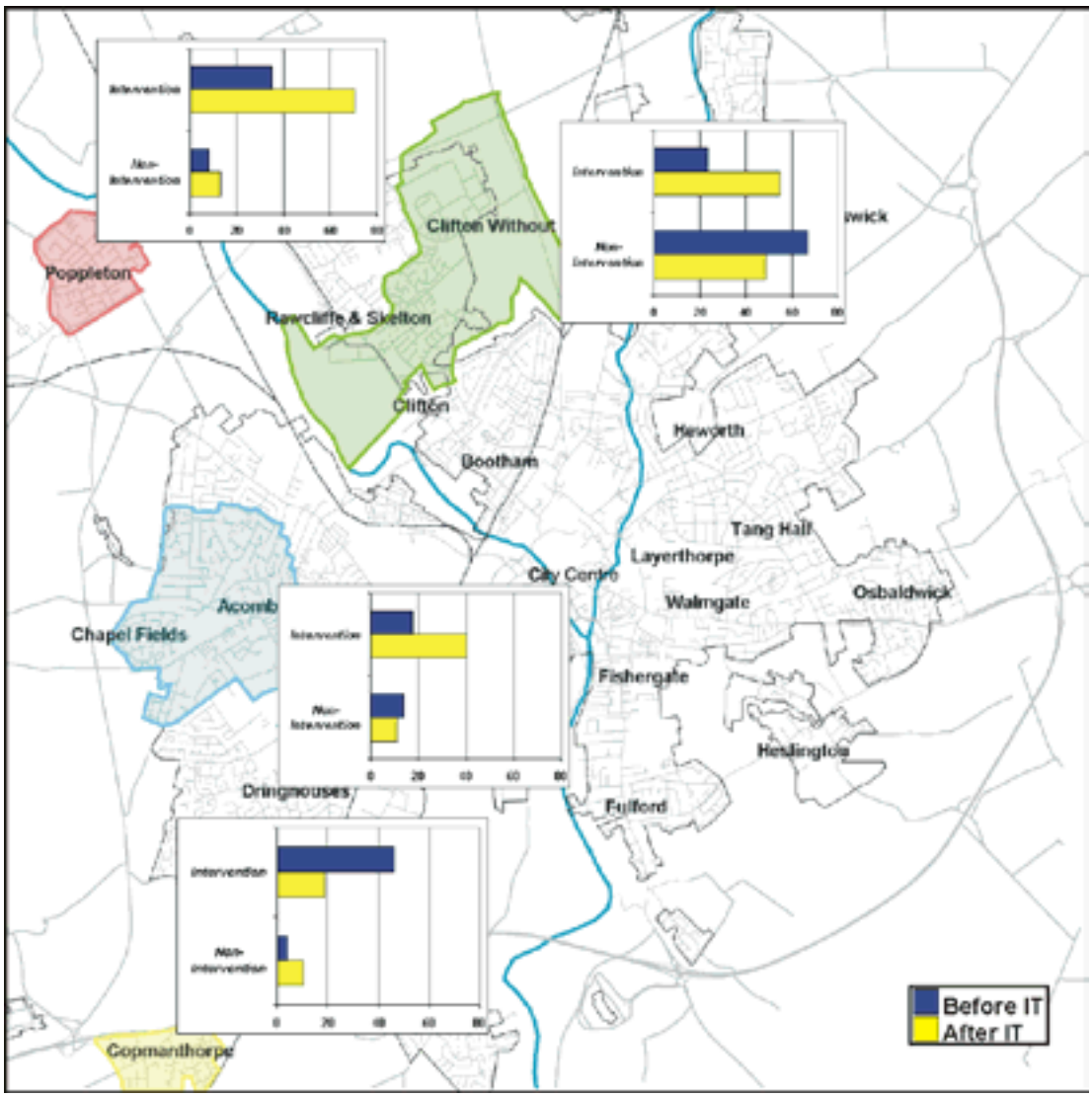




Figure 4.10 Total number of cycling trips across the study areas

### 4.7.3 JOURNEY PURPOSE AND CHOICE OF MODE

The impact of the Intelligent Travel project on car trips can be followed through the data on journey purpose. There has been a 3 percentage point decline in use of the car for the journey to work in the intervention group, a 2 percentage point increase for the education journey and a 1 percentage point decline for the shopping trip. The non-intervention group has had a larger decline in car use for the journey to work (9 percentage points) and an increase in car use for the shopping trip of 3 percentage points.

The use of bus for the journey to work has decreased by 13 percentage points (from 46 to 33 per cent) but increased for education and shopping trips. There was a 27 percentage point increase for shopping trips (from 17 to 44 per cent). In the non-intervention group bus use declined by 9 percentage points for the journey to work and increased by 19 percentage points for the shopping trip.

Walking trips increased for work, shopping and education purposes in the intervention group. They also increased for work and shopping in the non-intervention group but decreased by 13 percentage points for education trips (from 16 to 3 per cent).

There are similar variations and results at the disaggregated area levels. However, the smaller numbers at this detailed level are not reliable enough to justify comparisons on an area-by-area basis.

## 4.8 Environmental Impact of a Change in Travel Behaviour

Table 4.9 showed that Intelligent Travel produced a 28 per cent reduction in average distance travelled by car per person when comparing the results from all car using respondents to the first questionnaire (232 people) with the results of all such respondents to the second questionnaire (164). The change in car use can be used to estimate the potential reduction in air pollutant emissions from cars, which has important implications for urban air quality and global climate change.

In order to gauge the likely impact of intervention on the air pollutant emissions from cars, it was decided to select the results from a subset of car users (159 individuals) representing those who returned both questionnaires and had travelled by car in the past seven days. Air pollutant emissions associated with their car use both before and after the intervention were estimated using emission factors[5] combined with the data on the distance travelled and the number of car journeys undertaken. For this subset, the reduction in car mileage was 22 per cent and the reduction in the number of journeys undertaken by car was 18 per cent which translate directly into reductions in air pollutant emissions of between 21–22 per cent depending on the pollutant chosen (see Table 4.12). People living in the York urban area own 78,288 cars and vans (Census 2001) and so this subset of car users represents approximately 0.02 per cent of York's total car/van population.

Table 4.12 Reduction in pollutant emissions (tonnes) in the intervention group

| | NOx | CO | $PM_{10}$ | VOCs | Benzene | 1,3 – Butadiene | $CO_2$ |
|---|---|---|---|---|---|---|---|
| Before intervention | 1.81 | 11.9 | 0.03 | 1.33 | 0.07 | 0.022 | 475 |
| After intervention | 1.42 | 9.4 | 0.02 | 1.05 | 0.06 | 0.017 | 371 |
| **Change** | **0.39** | **2.5** | **0.01** | **0.28** | **0.02** | **0.005** | **104** |

If the 22 per cent reduction in car trips observed in the intervention group subset were reproducible in York's car-using population as a whole, then it is possible to explore the current potential for reductions in total air pollutant emissions according to different scenarios. Table 4.13 shows the reduction in pollutant emissions if 10, 25, 50 and 75 per cent of the car using population in York reduced their car trips by 22 per cent as that achieved in the Intelligent Travel project.

5 National Atmospheric Emissions Inventory, see: http://www.naei.org.uk

Table 4.13 Potential reduction in air pollutant emissions (tonnes) in York's car driving population

| | Assumed extent of penetration | | | |
|---|---|---|---|---|
| **Pollutant** | **10%** | **25%** | **50%** | **75%** |
| NOx | 19 | 48 | 96 | 144 |
| CO | 122 | 305 | 610 | 915 |
| $PM_{10}$ | 0.3 | 0.8 | 1.6 | 2.3 |
| VOCs | 14 | 34 | 69 | 103 |
| Benzene | 0.8 | 1.9 | 3.8 | 5.7 |
| 1,3-Butadiene | 0.2 | 0.6 | 1.2 | 1.8 |
| $CO_2$ | 5,130 | 12,824 | 25,648 | 38,472 |

A great deal of uncertainty surrounds these calculations but they illustrate a significant potential to bring about reductions in urban air pollutants and greenhouse gases. The main uncertainty relates to extrapolating from the small sample of 159 in the intervention group up to 19,572 of the car driving population in York (25 per cent penetration rate). There is no guarantee that the reductions in miles driven in an intervention group of 159 persons can be replicated in a group of 19,572. However, the experience of Perth and Brisbane in Australia is that 'trading up' from small-scale pilots to much larger numbers can be very successful. There is no evidence that larger scale projects have failed to deliver the same level of results as the smaller scale pilots.

It is also the case that "across the board" improvements from a 22 per cent reduction in miles driven can be achieved. Reductions in $CO_2$ and other health damaging air pollutants will be followed by reductions in congestion. A reduction of 10-20 per cent in miles driven by car is enough to transform York from congested to non-congested and to give buses much improved journey times. Walking and cycling would also increase their modal share. Currently there is no other policy, measure or intervention on offer outside London that can deliver these results. Personalised travel planning offers that potential.

## 4.9 Attitudes to Travel Incentives

As part of the project the participants were offered a range of incentives to encourage them to try out different modes of transport (see Figure 4.11 and Table 4.14). The section examines whether the participants actually used the incentives given and the usefulness of the incentives in encouraging them to change their travel behaviour.

### 4.9.1 BUS

Those participants who classified themselves as non-public transport users were given a six-month free bus pass, which allowed them unlimited travel on the First bus network in the City of York. Those individuals who were occasional bus users where offered a discount bus voucher to receive a 50 per cent discount on a monthly bus pass. Figure 4.12 shows the usefulness of the bus incentives.

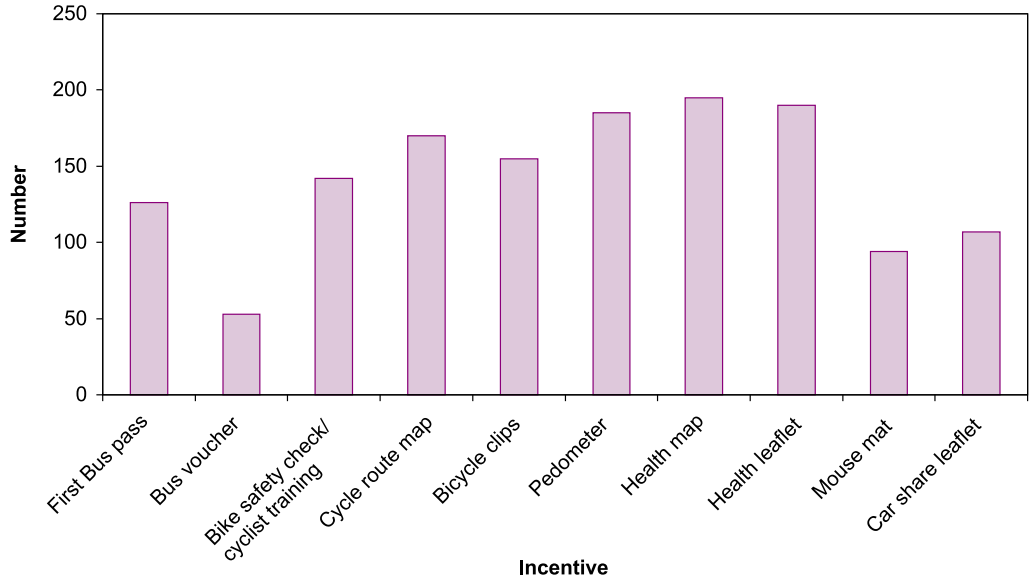


Figure 4.11 Number and type of incentives offered to participants

Table 4.14 Number and type of incentives offered to participants

| Incentive | Number |
|---|---|
| First bus pass | 126 |
| Bus voucher | 53 |
| Bike safety check/cyclist training | 142 |
| Cycle route map | 170 |
| Bicycle clips | 155 |
| Pedometer | 185 |
| Health map | 195 |
| Health leaflet | 190 |
| Mouse mat | 94 |
| Car share leaflet | 107 |

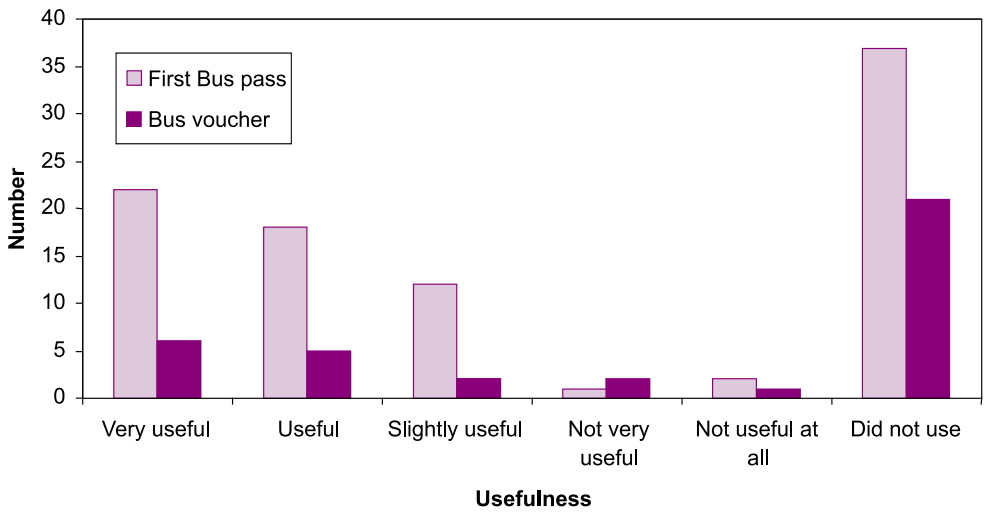


Figure 4.12 Usefulness of bus incentives

Of those participants who were given the six-month bus pass, 24 per cent found the incentive 'very useful' and 20 per cent 'useful" and 13 per cent 'slightly useful'. However, a high proportion of participants (40 per cent) did not use the bus pass. In comparison, 30 per cent of those participants who were offered bus discounts found them to be useful ranging from 'very useful' (16 per cent), 'useful' (14 per cent), 'slightly useful' (5 per cent) (see Table 4.15).

Table 4.15 To what extent did you find the bus incentive useful?

| Incentive | Very useful | Useful | Slightly useful | Not very useful | Not useful at all | Did not use | Total |
|---|---|---|---|---|---|---|---|
| First bus pass | 22 | 18 | 12 | 1 | 2 | 37 | 92 |
| | 24% | 20% | 13% | 1% | 2% | 40% | 100% |
| Bus voucher | 6 | 5 | 2 | 2 | 1 | 21 | 37 |
| | 16% | 14% | 5% | 5% | 3% | 57% | 100% |

Of those participants who received the free bus pass, 19 per cent felt they had increased their use of public transport 'a lot' and 50 per cent 'a little'. Of the participants who received the bus vouchers, 36 per cent felt they had increased their use of pubic transport 'a little' while 11 per cent felt they had increased it 'a lot'. A total of 50 per cent of this group felt use of public transport had remained the same while 3 per cent felt it had reduced. In comparison, 31 per cent of the bus pass group felt their use of public transport remained the same (see Figure 4.13 and Table 4.16).

Although a high proportion of participants who were offered the bus pass did not use it, those that did felt it was useful and that it assisted them in increasing their use of public transport.

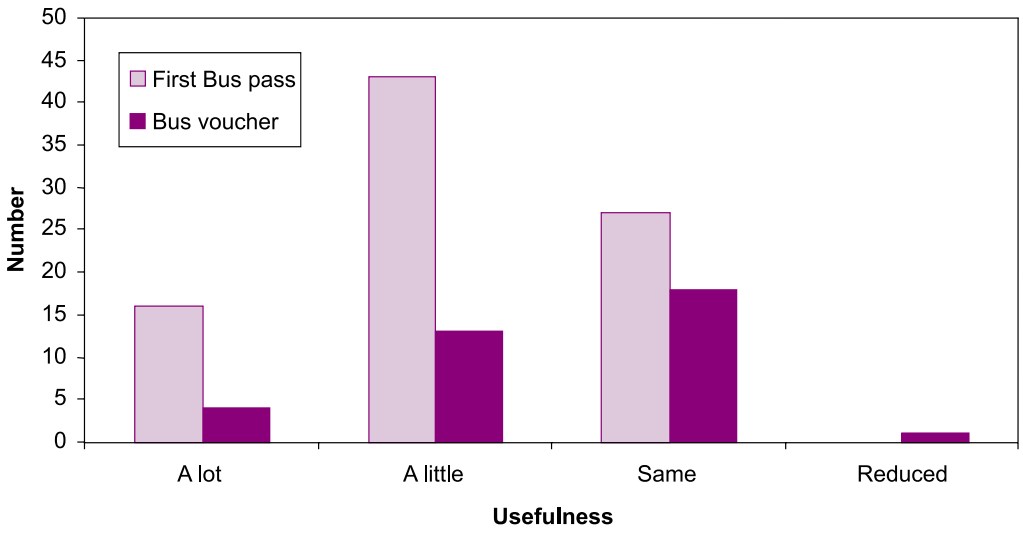


Figure 4.13 Increase in the use of public transport

Table 4.16 Has taking part in the Intelligent Travel project increased your use of public transport?

| Incentive | A lot | A little | Same | Reduced | Total |
|---|---|---|---|---|---|
| First bus pass | 16 | 43 | 27 | 0 | 86 |
| | 19% | 50% | 31% | 0% | 100% |
| Bus voucher | 4 | 13 | 18 | 1 | 36 |
| | 11% | 36% | 50% | 3% | 100% |

### 4.9.2 CYCLE

Of those participants who were offered the free bicycle maintenance check a total of 8 per cent of the participants thought it was 'useful'. However, a high proportion (79 per cent) did not use the incentive (see Figure 4.14 and Table 4.17). Similar results were obtained for the free cycling training with only a total of 3 per cent of participants finding them useful while 90 per cent did not use the incentive (see Figure 4.15).

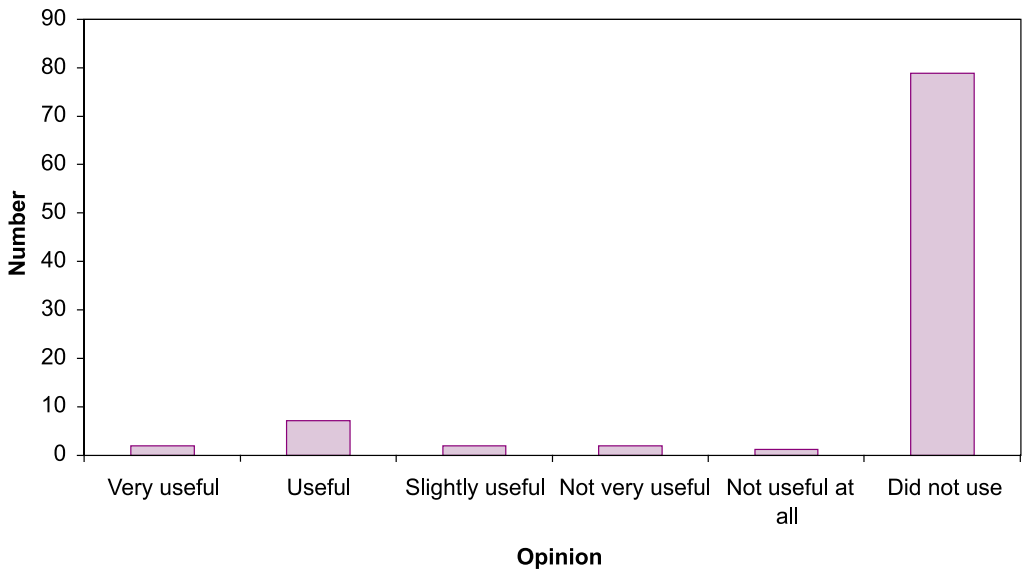


Figure 4.14 Usefulness of free cycle check

Table 4.17 Usefulness of bicycle incentives

| Incentive | Very useful | Useful | Slightly useful | Not very useful | Not useful at all | Did not use | Total |
|---|---|---|---|---|---|---|---|
| Free Cycle Check | 2 | 7 | 2 | 2 | 1 | 79 | 93 |
| | 2% | 8% | 2% | 2% | 1% | 85% | 100% |
| Free Cycle Training | 0 | 3 | 2 | 2 | 2 | 83 | 92 |
| | 0% | 3% | 2% | 2% | 2% | 90% | 100% |

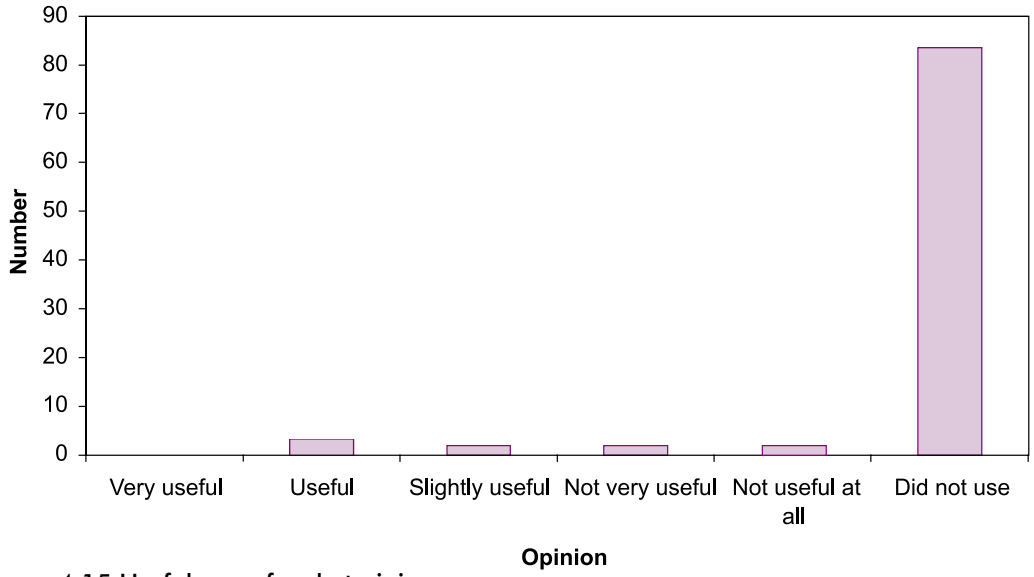


Figure 4.15 Usefulness of cycle training

### 4.9.3 WALKING

Of those participants who received the pedometer, 18 per cent thought it was 'useful', 14 per cent 'very useful' and 25 per cent 'slightly useful'. A total of 34 per cent did not use the incentive (see Figure 4.16 and Table 4.18). Of the participants who received the health map, 8 per cent found it 'very useful', 17 per cent 'useful' and 25 per cent 'slightly useful'. Again, a high proportion (39 per cent) of the participants did not use the health map.

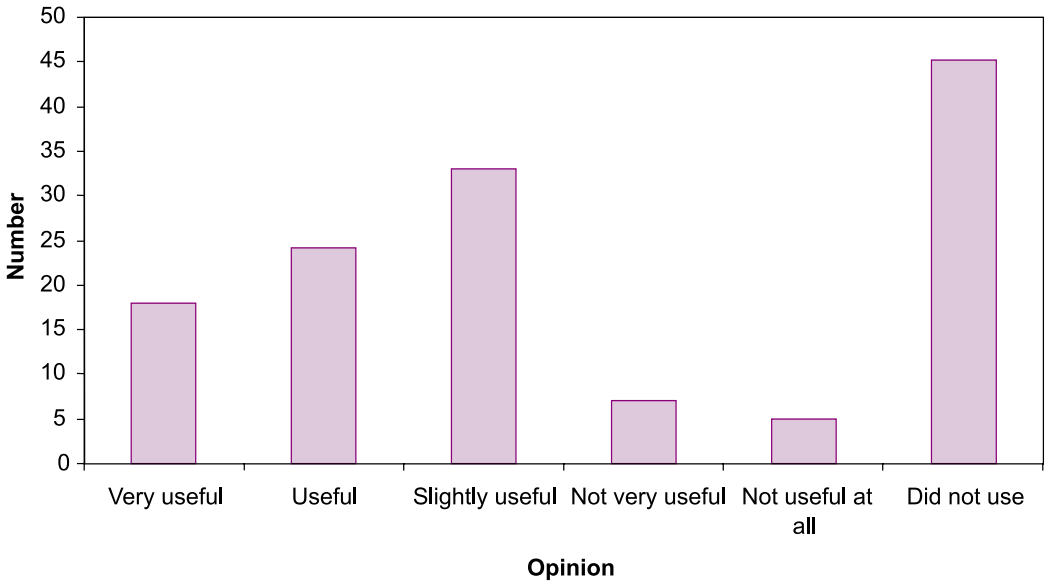


Figure 4.16 Usefulness of the pedometer

Table 4.18 Usefulness of walking incentives

| Incentive | Very useful | Useful | Slightly useful | Not very useful | Not useful at all | Did not Use | Total |
|---|---|---|---|---|---|---|---|
| Pedometer | 18 | 24 | 33 | 7 | 5 | 45 | 132 |
| | 14% | 18% | 25% | 5% | 4% | 34% | 100% |
| Health map | 10 | 22 | 33 | 8 | 8 | 51 | 132 |
| | 8% | 17% | 25% | 6% | 6% | 39% | 100% |

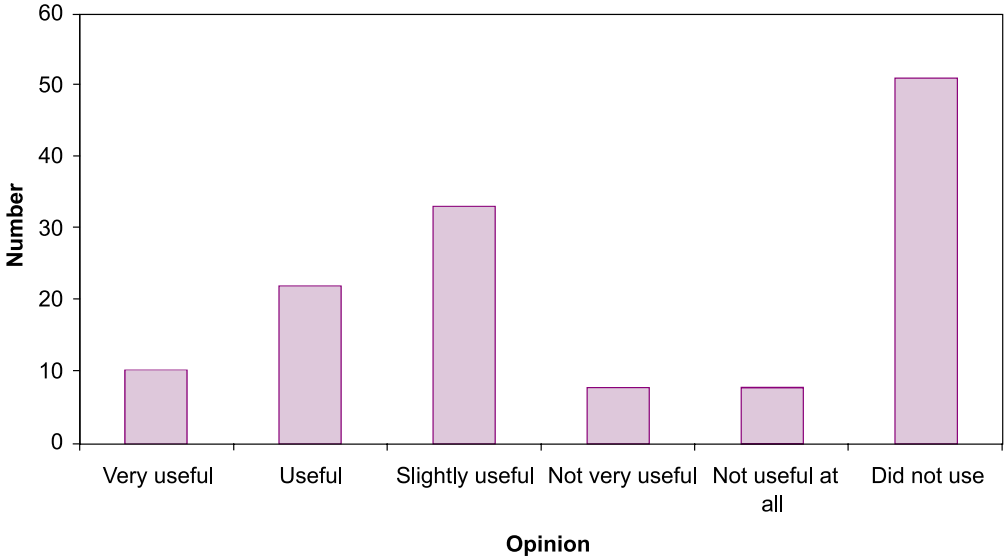


Figure 4.17 Usefulness of the health map

### 4.9.4 CAR SHARE

Participants were offered information explaining the notion behind car sharing and details of the York car share scheme together with a car share mouse mat. Of the participants, 5 per cent felt the information to be 'very useful', 'useful' (12 per cent), 'slightly useful' (3 per cent). The majority (68 per cent) of the participants did not use the incentive (see Figure 4.18 and Table 4.19).

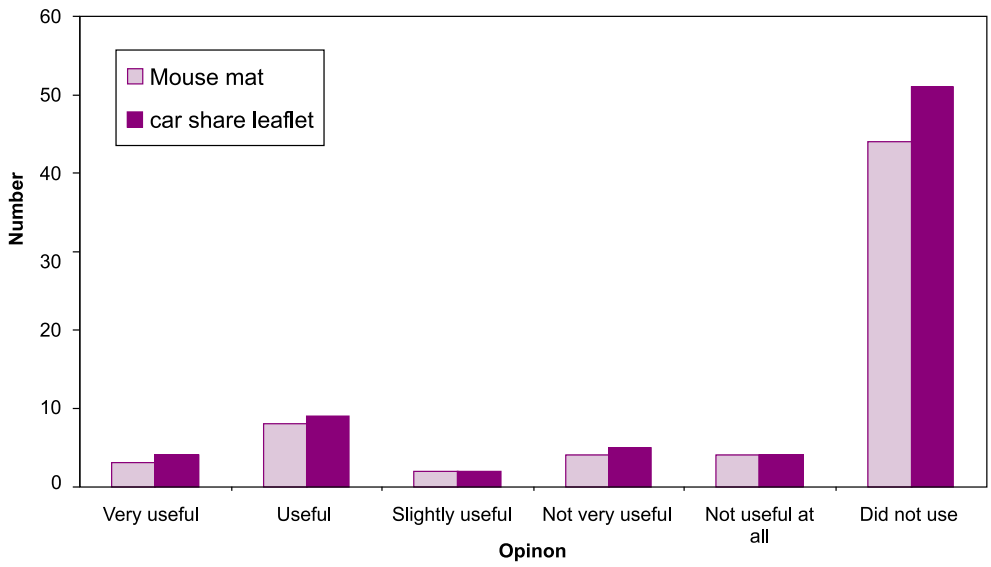


Figure 4.18 Usefulness of car share incentives

Table 4.19 Usefulness of car share incentives

| Incentive | Very useful | Useful | Slightly useful | Not very useful | Not useful at all | Did not use | Total |
|---|---|---|---|---|---|---|---|
| Mouse mat | 3 | 8 | 2 | 4 | 4 | 44 | 65 |
| | 5% | 12% | 3% | 6% | 6% | 68% | 100% |
| Car share leaflet | 4 | 9 | 2 | 5 | 4 | 51 | 75 |
| | 5% | 12% | 3% | 7% | 5% | 68% | 100% |

The majority of the participants (96 per cent) had not undertaken any car sharing before the project (see Table 4.20).

Table 4.20 Before this project did you car share at all?

| Incentive | Yes | No | Total |
|---|---|---|---|
| Mouse mat | 4 | 90 | 94 |
| | 4% | 96% | 100% |
| Car Share Leaflet | 5 | 102 | 107 |
| | 5% | 95% | 100% |

Fifteen per cent of the participants felt that their level of car sharing had increased to some extent as a result of taking part in the project. While the majority of the participants (81 per cent) felt their level had remained the same (see Table 4.21).

Table 4.21 To what extent has taking part in this project increased the amount of car sharing you do?

| Incentive | Increased a lot | Increased a little | Same | Reduced | Total |
|---|---|---|---|---|---|
| Mouse mat | 2 | 8 | 43 | 1 | 54 |
| | 4% | 15% | 80% | 2% | 100% |
| Car Share Leaflet | 3 | 8 | 50 | 1 | 62 |
| | 5% | 13% | 81% | 2% | 100% |

Although a high proportion of the incentives were not used by the participants, those that did use them felt they were useful and were obviously effective in encouraging the participants to trial different transport modes.

Table 4.22 presents the change in modal split as a result of the Intelligent Travel project and the percentage of the incentives which were actually used by the participants. The incentives which were used the most by the participants were those aimed at walking (64 per cent). This resulted in a 10 per cent increase in the number of walking trips. The bus incentives were used by 55 per cent of participants and resulted in a 5 per cent increase in trips. Cycling increased by 1 per cent and only 12 per cent of participants used the bicycle incentives. A 16 per cent reduction in car use was achieved while only 32 per cent of participants actually used the incentives aimed at car sharing. However, the other travel incentives would have also influenced trips undertaken by car.

The incentives have been effective directly or indirectly in encouraging a change in travel behaviour in the intervention group for those individuals who actually used them.

Table 4.22 Change in travel behaviour and use of incentives

| Mode | Change in trips | Total number of incentives * | Non-users | Percentage of incentives actually used |
|---|---|---|---|---|
| Car use | -16% | 140 | 95 | 32% |
| Bus | +5% | 129 | 58 | 55% |
| Bicycle | +1% | 185 | 162 | 12% |
| Walking | +10% | 264 | 96 | 64% |

* This number is based on the actual number of participants (167) who returned the second questionnaire rather than on the total number of incentives given to the original intervention group (242) at the start of the project.

# 5 Attitudes to Travel and Transport in York

## 5.1 Introduction

As part of the second questionnaire survey, the intervention group was asked to comment on their experience and perception of different transport modes and the future of transport in York. This chapter presents the qualitative element of the study and the comments received from the participants.

## 5.2 Bus Service

Comments regarding the bus service in York generated the largest amount of qualitative data in this survey (see Table 5.1). Figure 5.1 provides an overview of the range of comments made about the bus service.

A number of participants made positive comments about frequency, reliability and general quality of service:

- *'Bus always on time. Reliable frequent service'.*
- *"As a senior citizen, I have used buses more frequently and only twice found the service (route 10) defective'.*
- *"The buses outside my house ran every twenty minutes and overall were on time'.*
- *"Comfortable clean buses generally running on time (except in rush hours) courteous drivers – problems with acceptance of pass'.*

However, there were several reoccurring themes that emerged representing barriers to participants making full use of the bus service. The lack of bus timetables both at bus stops and availability to take away was an issue that deterred people from using the bus. People were unsure as to where they could pick up a timetable for their local service also several were unsure where their local bus actually stopped. This is a surprising finding as participants were given bus travel information on local routes together with a six-month free bus pass.

The lack of sheltered bus stops was also an issue that was mentioned, particularly with reference to bus stops in the city centre along with the lack of a central bus station.

Expense of fares was a recurring theme and was considered a barrier to participants, particularly those who owned cars. The price of fares were not an incentive for people to avoid driving into the city centre when they perceived that it would be cheaper to drive:

- *'At the end of this scheme, I shall most probably return to my car for journeys in and around York for the following reasons: Bus fares are too high – it's cheaper for 2 or more people to drive into York and park than it is to take the bus. So who in their right mind (if they have a car) is going to take the bus?'*

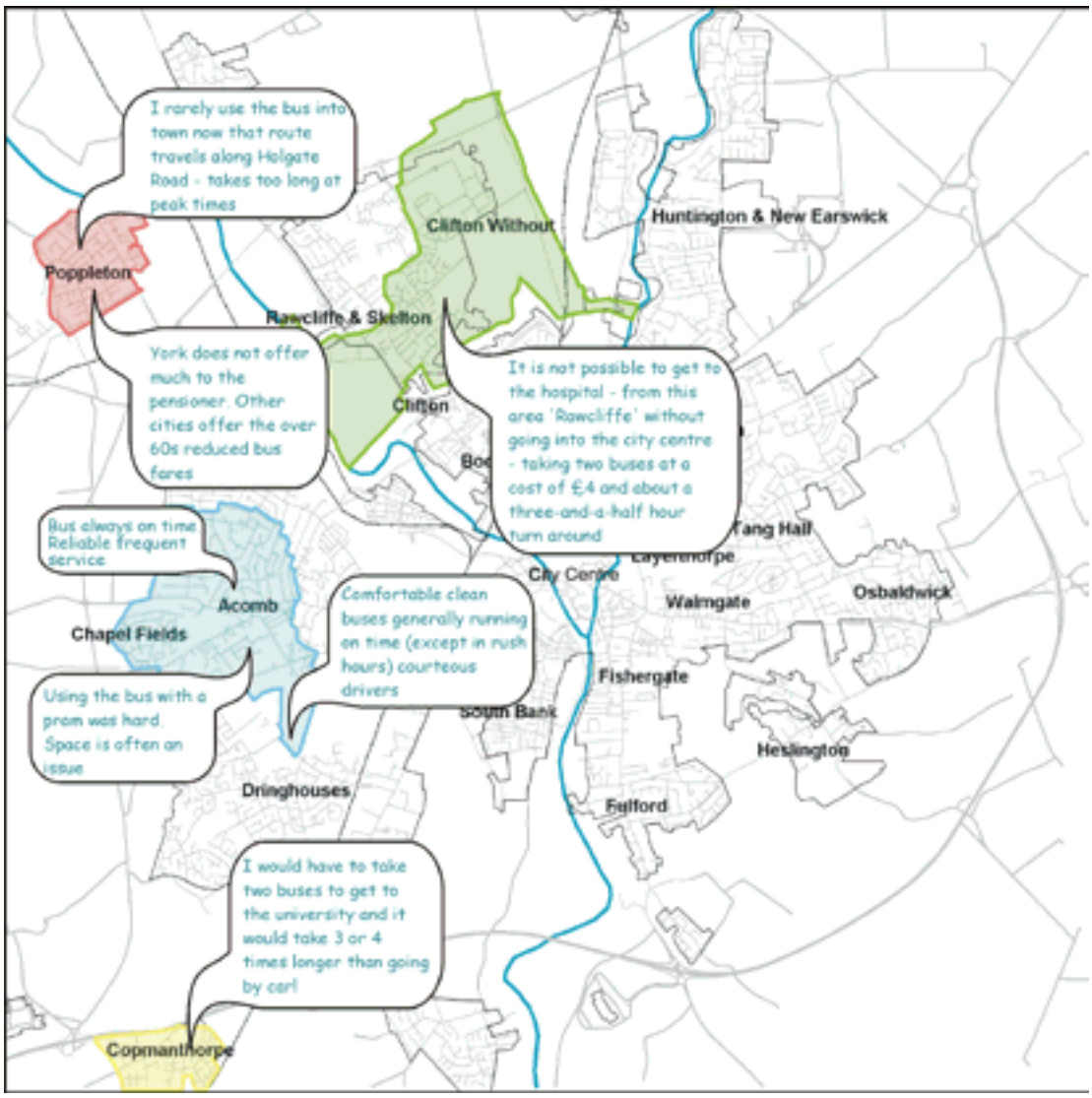




Figure 5.1 Overview of comments made about the bus service

Another price issue related to pensioner discounts. Some compared the incentives for pensioners in other areas outside of York:

- *'York does not offer much to the pensioner. Other cities offer the over 60s reduced bus fares with the issue of pensioners' bus passes. York offers £24 in vouchers a year. This has remained the same for over 10yrs. Bus fares have tripled if not more in the same period'.*

Convenience was another of the main issues, particularly for parents (predominantly mothers) travelling with young children. The problems that they experienced were getting on and off the bus with a pram or pushchair. Many of the passengers were aware that the bus has a facility that allows the driver to lower the bus to assist boarding. However, some passengers stated that the drivers seemed unwilling to use this facility. Some complained that other passengers were unhelpful. Once on the bus, participants with prams and pushchairs found difficulty with storage. It was perceived that each bus has very limited space for such needs. Some participants stated that they had waited sometimes for up to half-an-hour for a bus to arrive, only to find that they could not board due to lack of pushchair space available.

- *'Whilst First bus try to make their buses 'buggy friendly' there often isn't room on the bus to get more than three on'.*
- *'Using the bus with a pram was hard. Space is often an issue. My baby was poked by someone's umbrella twice – I no longer use the bus – it's just not worth the inconvenience. Bus drivers often parked away from the curb and then did not lower the bus to help. It is a lot easier to use the car'.*
- *'More buses running more frequently would be very effective with more buggy space. It is very annoying when I've waited 20 mins for a bus and then can't get on because there is already a buggy on'.*

Lack of convenient routes and recent changes of routes were a factor in how people choose to travel:

- *'I rarely use the bus into town now that route travels along Holgate Road – takes too long at peak times'.*
- *'The local bus services do not take me within walking distance of where I wish to go, e.g. the nearest bus stop to my GP and chemist is just over half-a-mile away'. [from Shelly Grove] 'It is not possible to get to the hospital – from this area 'Rawcliffe' without going into the city centre – taking two buses at a cost of £4 and about a three-and-a-half hour turn around'.*
- *'I would have to take two buses to get to the university and it would take 3 or 4 times longer than going by car!'*

Helpfulness and politeness of the driver was often an issue. Although some passengers did state that drivers were very polite and helpful there were more comments relating to impoliteness and unhelpfulness. This was sometimes as a result of issues with pram/pushchair space whilst others connected the problems with the free bus passes issued by the Intelligent Travel Project. Some participants claimed that drivers stated that they were not aware of the project whilst others suggested that the drivers resented them travelling for free. Other complaints of impoliteness were perceived as a more general problem:

- *'On the whole the bus service is quite good, although I do find the drivers quite rude'.*
- *'Drivers not very polite. Don't like me travelling for free!'*
- *'I have made a conscious effort to use public transport at weekends – but the experience on the whole has been poor. The frequency of buses, lack of bus shelters (Copmanthorpe and city centre) and the general attitude of most of the driving staff I encountered, mean that I will opt to use my car for most journeys. The Park and Ride schemes were also tried by the family. Unfortunately, again, the experience was disappointing – having to stand with a small child for the entire journey is not satisfactory'.*

Table 5.1 Comments on the Bus Service

| Bus Service | Y1 | Y2 | YC | Total |
|---|---|---|---|---|
| Number of participants mentioning bus service | 47 | 58 | 18 | 123 |
| Number of positive comments about quality of service | 9 | 10 | 2 | 21 |
| Number of times expense of fares mentioned | 9 | 13 | 3 | 25 |
| Number of times lack of frequency mentioned | 4 | 10 | 4 | 18 |
| Number of times lack of reliability mentioned | 6 | 5 | 5 | 16 |
| Number of times lack of convenient route mentioned | 9 | 12 | 5 | 26 |

## 5.3 Park and Ride

Amongst the comments regarding the bus service the Park and Ride facilities featured heavily with two main themes (see Figure 5.2 and Table 5.2). First, the quality of service provided by the Park and Ride scheme and secondly, the expense of the scheme particularly in relation to car parking fees when travelling as a family. Generally, participants felt very positive about the benefits of Park and Ride. Some thought that the scheme should be extended to other areas or should have links with other forms of transport. The possibility of a river link was one suggestion that reoccurred a number of times:

- *'Park and Ride Excellent – if expensive when paying full fare.'*
- *'Park and Ride service is very good'.*
- *'It reinforced how good Park and Ride is'.*

Also the possibility of a Park and Ride service to the hospital featured heavily amongst participants expressing the difficulty of travelling to the hospital by public transport with particular mention to travelling to the hospital on an evening:

- *'It is essential that everybody should have access to a regular and reliable bus service not only during the day but into the evening. I find it ridiculous that I cannot visit York Hospital during weekends or in the evening by using public transport'.*

Other themes that arose was that Park and Ride sites might be better located further out of town beyond the outer ring road due to the congestion that traffic trying to gain access to the Park and Ride parking areas caused to other traffic using the outer ring road:

- *'Park and Ride schemes are effective but the large connecting car parks should be further away from the ring road.'*

The main complaint regarding expense was that it was perceived to be cheaper to drive into York city centre and pay to park for up to three hours than pay for several vehicle occupants to use the Park and Ride facilities. Some participants stated that they chose Park and Ride when travelling into town alone or with one other person but opted to travel by car in order to save money when travelling with more people. Another issue raised was the price of a single ticket. Some participants stated that they often walked into town but took the Park and Ride home. Participants expressed a desire to see the price of a single ticket reduced to half the price of a return:

- *'We have two adults and one child aged 13, one aged 11 and one aged 4. We would have to pay for three adults which would cost £5.40 and although we like using Park*

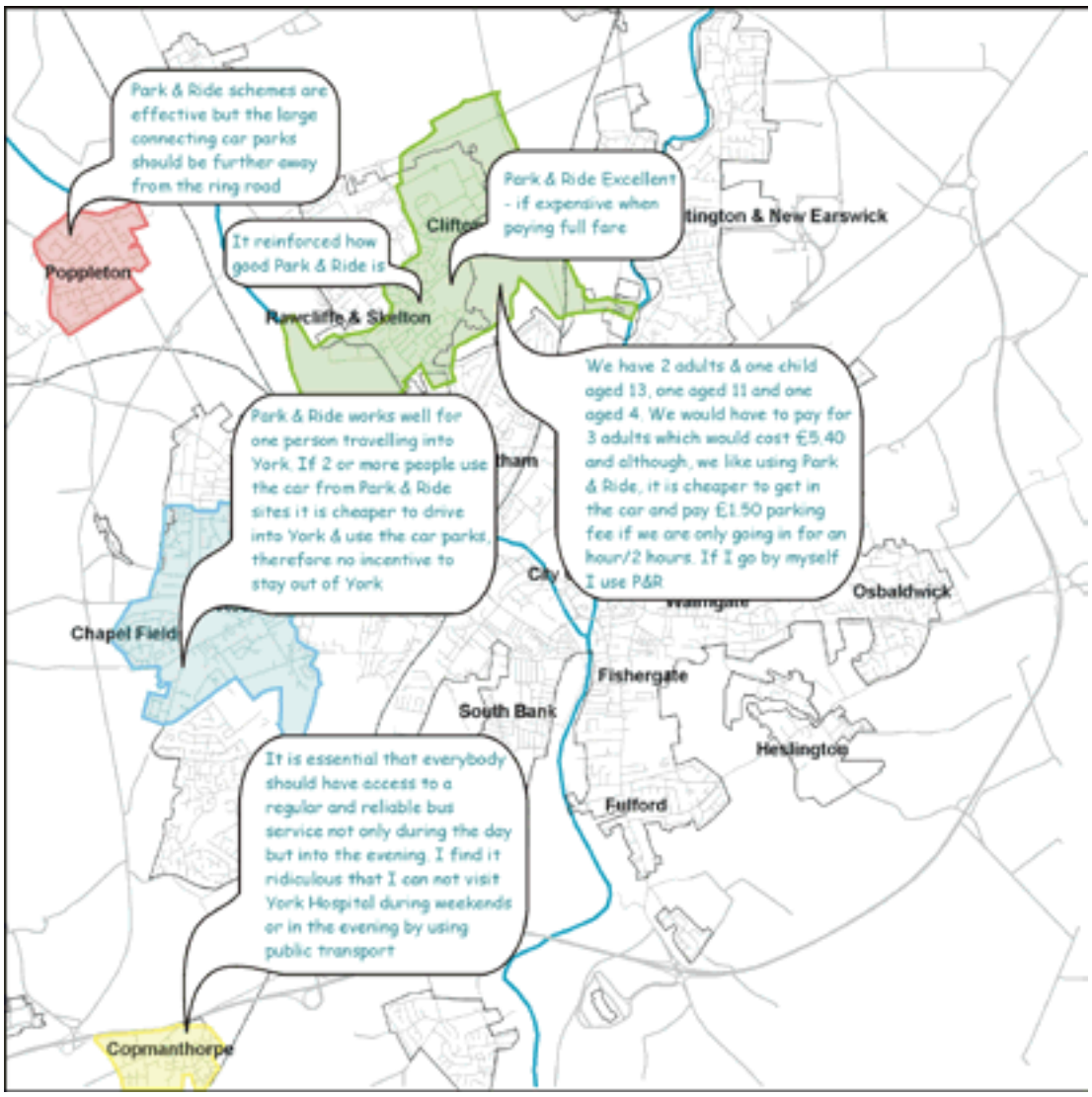




Figure 5.2 Overview of comments made about the Park and Ride

*and Ride, it is cheaper to get in the car and pay £1.50 parking fee if we are only going in for an hour/2 hours. If I go by myself I use Park and Ride'.*

- *'Park and Ride works well for one person travelling into York. If two or more people use the car from Park and Ride sites it is cheaper to drive into York and use the car parks, therefore no incentive to stay out of York'.*

Some passengers complained that the Park and Ride service was oversubscribed causing overcrowding in the car parks as well as on the buses, hence making it an unpleasant experience:

- *'Park and Ride Tadcaster Road is more than fully subscribed, bigger car park required. The pricing is too high, as to car parking!'*

Table 5.2 Comments on Park and Ride

| Park and Ride | Y1 | Y2 | YC | Total |
|---|---|---|---|---|
| Number of times Park and Ride theme mentioned | 11 | 38 | 11 | 60 |
| Participants positive about quality of Park and Ride Service | 4 | 11 | 5 | 20 |
| Number of times expense of Park and Ride mentioned | 4 | 9 | 3 | 16 |
| Number of times problems encountered or negative comments (other than expense) | 1 | 7 | 2 | 10 |

## 5.4 Walking

A significant number of comments about walking were from people who were already quite keen walkers and were interested in the pedometer (see Table 5.3 and Figure 5.3). Several stated that they were surprised how far they were walking already. The pedometer also was a significant factor in encouraging people to walk more:

- *'Helped to see how much exercise I was taking and how to increase this'.*
- *'It was good to find out that I was already in the healthy walking bracket and to see how far I actually do walk the dog'.*
- *'It does encourage me to walk. It helps me set targets to meet'.*

The weather was seen by a few as a barrier to walking but this was not as significant a factor as it was for cycling:

- *'Getting a bit cold to walk several miles. Only walk for short distances in the winter'.*
- *'Tend to walk less in the winter because of the children. Walk and take the bus a lot in the summer'.*

Age and health were also seen as a barrier. Some elderly people mentioned difficulty in walking for more than very short journeys and expressed a preference for bus and car use in these circumstances:

- *'Unable to walk for more than about 20 mins on the level'.*
- *'Unable to walk very far now due to MS'.*

However, some participants were encouraged to walk and saw walking as a healthy alternative to other modes of transport. Some felt that York in particular was conducive to walking as it is a pleasant place and felt that this should be promoted more. Transport to school was a reoccurring feature, many stated that children and parents should be encouraged to walk to school whenever possible instead of using the car.

Table 5.3 Comments on walking

| Walking | Y1 | Y2 | YC | Total |
|---|---|---|---|---|
| Number of general comments about walking (either positive or negative) | 28 | 46 | 0 | 74 |
| Number of positive comments about pedometer | 10 | 12 | N/A | 22 |
| Number of times weather mentioned as a barrier to walking | 4 | 4 | 0 | 8 |
| Number of times increased walking attributed to project | 8 | 8 | N/A | 16 |

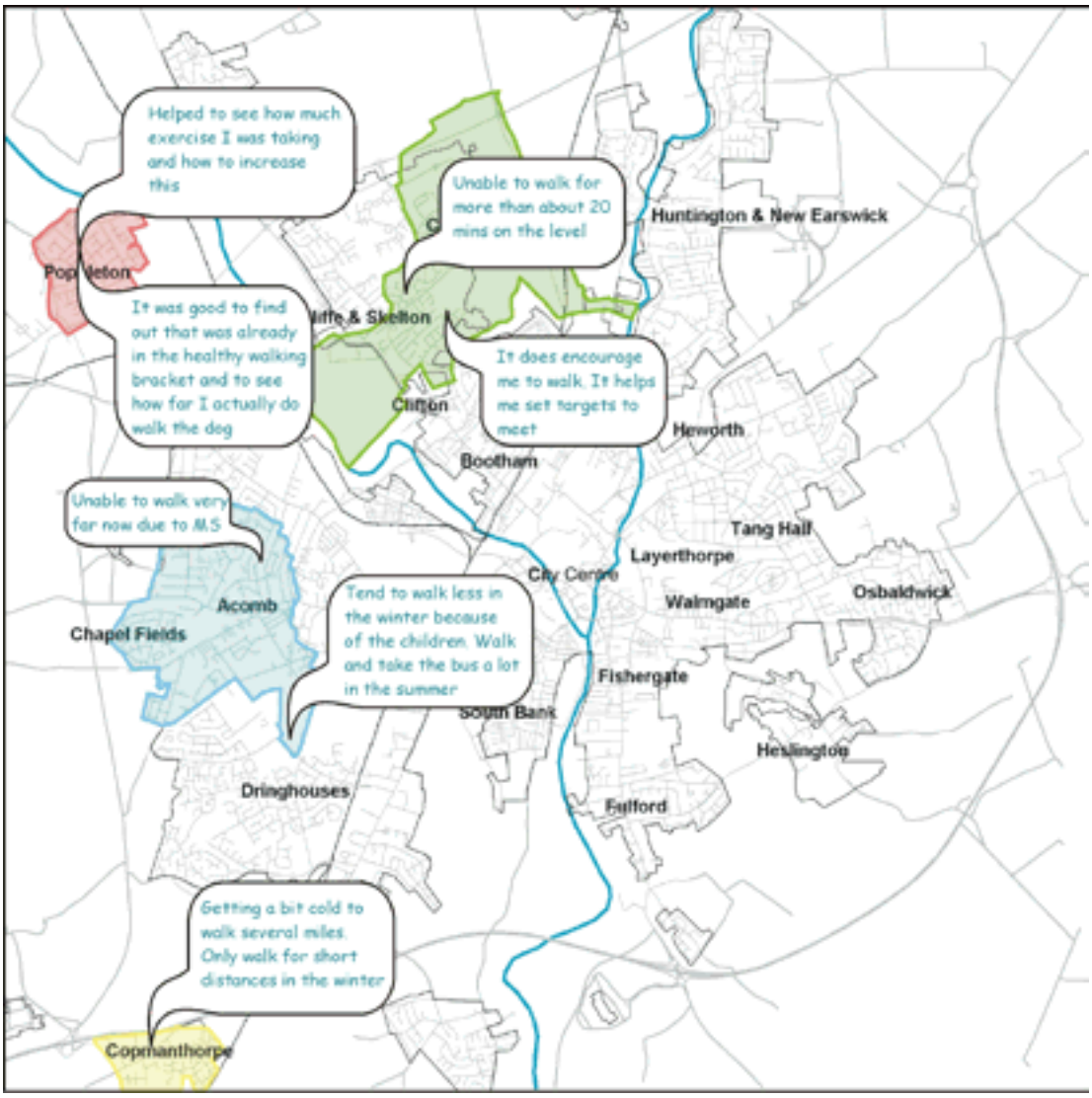




Figure 5.3 Overview of comments made about walking

## 5.5 Cycling

Issues around cycling centred mainly on the cycle network, the weather and seasonal problems, with light levels and road safety during the winter months (see Figure 5.4 and Table 5.4). Some participants were quite positive about cycling in the summer but admitted their reluctance when the autumn/winter arrived. Although weather was a major consideration, the cold or rain was

not significantly mentioned. A further major issue was general road safety with traffic volume and drivers' consideration for cyclists. Road safety was perceived as more of a problem during the autumn and winter months than it was during spring and summer:

- *'During summer/autumn biked into York everyday. Cycle path down by river is not well lit so didn't use as much during shorter days'.*
- *'I bought a cycle and have used it but do not consider I will use it for work until the weather is a lot warmer'.*

Several participants commented on the cycle network. The largest number of comments with regards to York cycle network were positive, citing cycle routes as an incentive to use a cycle rather than other forms of transport. However, some felt that the system was not extensive enough and that this was a disincentive to cycling due to concerns about road safety:

- *'Cycle tracks are very positive for reducing journeys'.*
- *'Cycle routes map was very useful and I used it to explore on my cycle with my son'.*

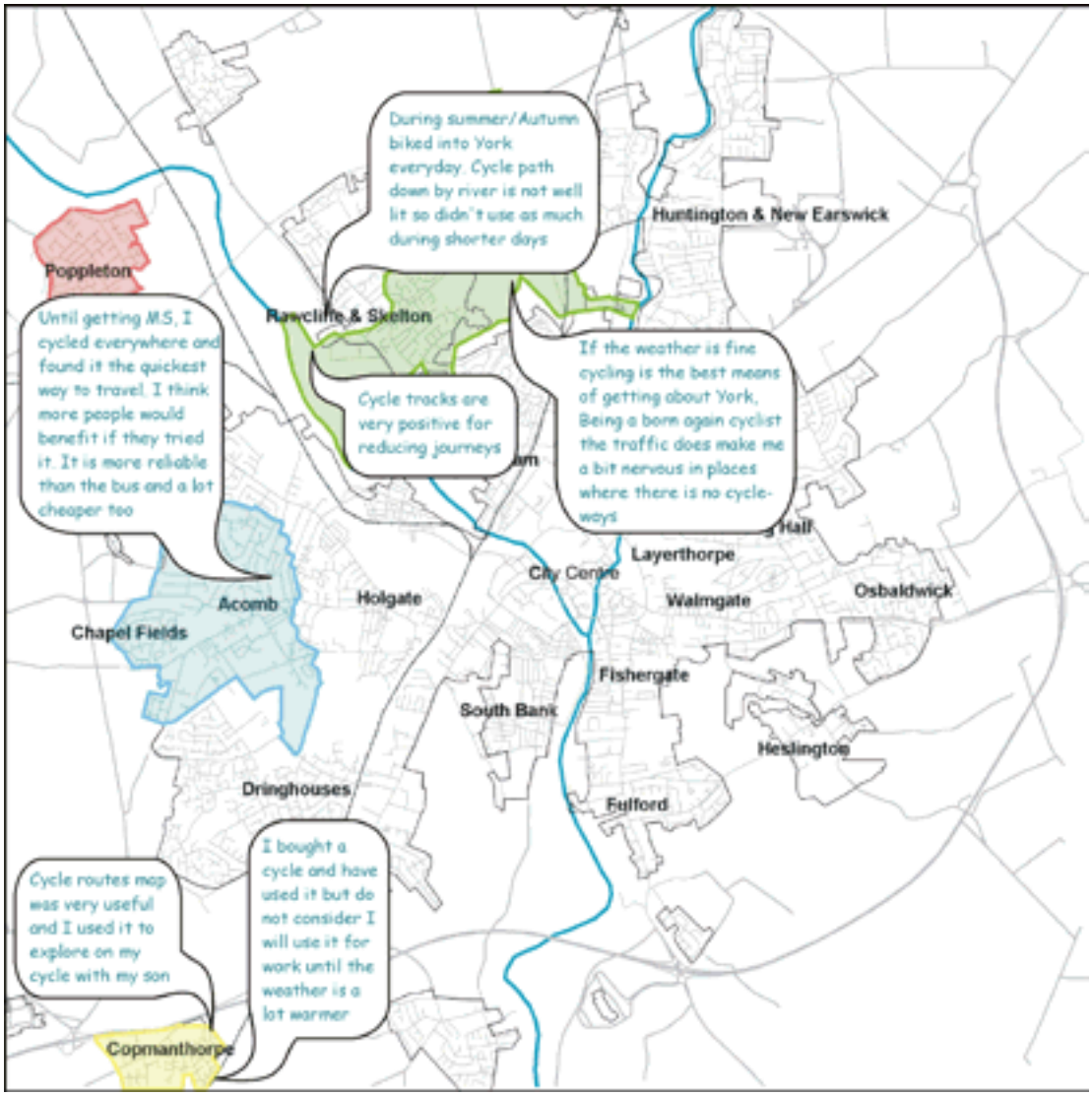




Figure 5.4 Overview of comments made about cycling

- *'If the weather is fine cycling is the best means of getting about York. Being a born again cyclist the traffic does make me a bit nervous in places where there is no cycle-ways'.*

Other participants mentioned the fact that they did not own a cycle and expressed no desire to purchase one. Another issue that arose was that age presented a barrier to cycling as well as either ill health and or injuries that would prevent people from taking up cycling:

- *'As a pensioner the use of a cycle is not really a practical means of transport'.*

Others were keen to point out the usefulness of cycling for local journeys, preferring cycling to either the bus service (reliability mentioned as a significant factor) or to walking (speed of journey compared with walking a positive factor):

- *'Until getting MS, I cycled everywhere and found it the quickest way to travel. I think more people would benefit if they tried it. It is more reliable than the bus and a lot cheaper too'.*

Of those preferring cycling several pointed out the benefits to health compared with driving and bus use and advocated the expansion of the cycle network to encourage a more healthy lifestyle as well as reducing traffic congestion.

Table 5.4 Comments on cycling

| Cycling | Y1 | Y2 | YC | Total |
|---|---|---|---|---|
| Number of positive comments about cycle network | 3 | 9 | 2 | 14 |
| Number of negative comments about cycle network | 1 | 7 | 2 | 10 |
| Season & weather barriers to cycling | 2 | 6 | 1 | 9 |
| Negative road safety & personal safety & cycle security Issues | 4 | 6 | 2 | 12 |

## 5.6 Car Share

The York Car Share Scheme did not appear to have had any impact on participants' attitudes to car sharing (see Figure 5.5 and Table 5.5). Whilst a few expressed safety concerns of sharing with strangers others saw formal car sharing schemes as inconvenient, meaning that they spent time waiting around for people when they could have made the journey on their own, thus saving time:

- *'I am aware of possible safety issues in making car journeys with strangers, if using the incentive site'.*
- *'Did car sharing in the past but prefer to go on my own steam as I found I was waiting around for people'.*

Many thought that car sharing was irrelevant to them as they perceived that irregular working hours or working outside of the immediate York area was a barrier to finding a person suitable to car share with:

- *'I work irregular hours so hard to fit in with another person.'*
- *'Car sharing is fine in principle but I live in York and work in Leeds. I work shifts and no one travels my way'.*

However, despite the negative perception of formal car-sharing initiatives, many stated that they car shared on an informal basis with family, friends and colleagues. Some suggested that the project had given them the idea of car sharing when they might not have considered it in the past:

- *'Although I did not use the car sharing information, it gave me the idea of sharing with someone from work – cutting car use in half'.*
- *'I do car share with friends down the street who go to the same group as I do'.*

A recurring theme amongst the car-sharing comments was parents stating their willingness to car share for school runs and other social outings involving their own and friends/neighbours children:

- *'I would not find sharing practical in any way. What I do do, is share lifts for many of the journeys involved with my children; with my children say being taken by someone else and me picking up my own and their children,'*
- *'I try to share lifts when taking children to parties, swimming lessons etc. as much as possible'*

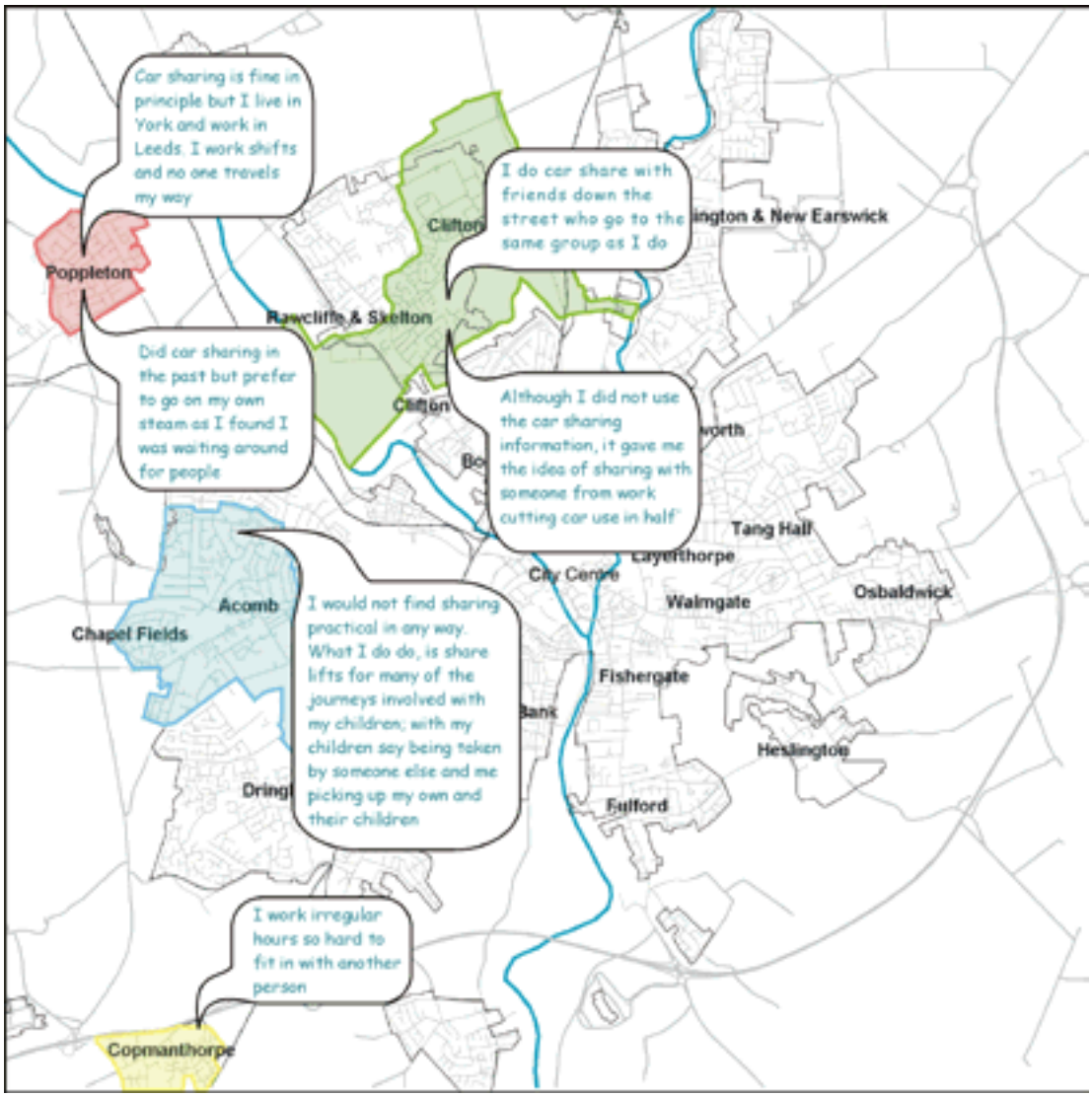




Figure 5.5 Overview of comments made about car sharing

Table 5.5 Comments on car sharing

| Car Sharing | Y1 | Y2 | YC | Total |
|---|---|---|---|---|
| Number of times car sharing mentioned | 21 | 41 | 0 | 62 |
| Number of positive comments | 10 | 11 | 0 | 21 |
| Number of negative comments | 13 | 24 | 0 | 37 |

## 5.7 Attitudes to Intelligent Travel Project

Amongst the incentives given out to participants of the Intelligent Travel project the bus pass and other related information proved popular along with the pedometers:

- *'The bus information was one of the best bits of the pack and I have passed some of the timetables onto my friends in different areas of York. People don't seem to know where to pick up timetables in York. I think dropping the info off in relevant areas would be a good idea. Once the weather improves we will do more walking, we are definitely fair weather walkers'.*
- *'The bus pass has really changed my attitude to using the bus. I would rather pay £2.10 for an all day ticket than drive and pay for parking – it's even less hassle than queuing in the traffic and walking to the car park'.*
- *'We had a family competition during the summer to see who walked the most in one day'.*

The cycling incentives seemed to have little impact on the attitude of people who were non-cyclists before the project started. Several thought that the incentives were irrelevant to them as they did not own as cycle despite the fact that one of the cycling incentives provided a discount on new cycles as well as cycling equipment. This may have been due to the lack of clarity of the Halfords' vouchers or the information passed to participants by the study team:

- *'Do not have a bicycle'.*
- *'Do not own a cycle'.*
- *'Not applicable. Do not cycle'.*

Of the few positive comment regarding the cycling incentives the majority seem to come from people who already own and used a cycle prior to the project beginning. Those participants therefore felt that the cycle safety check and the cycle training were irrelevant:

- *'Thanks for the clips'.*
- *'Liked the trouser clips'.*

The project as a whole has generated some significant comments with regards to attitudes to transport issues. Whilst some participants have been negative about the project, this seems to have been largely borne out of some practical barriers to changing modal choice, illness and age being the most significant, and distance and time being two others. However, several people have made very positive comments about their involvement in the project. The incentive of the bus pass has been a significant factor in participants enjoying taking part. Other participants stated that being involved in the project has made them more aware of their modal choice

for each journey, even if for some particular journeys they feel that they have been unable to switch their mode of travel. It appears to have acted as an awareness raising exercise:

- *'The project highlighted to me what journeys I made – I feel guilty about using my car to make the short journeys which I do, however, with having two small children to take playgroup/childminder unable to do it any other way. The reason we travel to Skelton is because there was no other childminder available nearer home when I returned to work.'.*
- *'I enjoyed the project very much, it made me more aware of the environment and the possible alternative methods of travel. A car is necessary for my work commitments in Leeds and for taking the children to and from school. I am walking everywhere that I can but occasionally I do need to use public transport. I never take the car into York'.*
- *'Well done with the scheme. Although I personally did not utilise the free bus pass much I still look forward to using the bus much more significantly in addition to cycling and walking when I return to full-time working outside of York. York's network of buses, cycle paths and footpaths is a significant factor in the city's attractiveness for residents'.*
- *'Travel project is a really good idea. Lots of people at work have been asking about the project and how it works!'*
- *'This study has made me look at how I travel and you will be pleased to know that I never get out the car now for just short journeys to the local shops. Also if going into the city centre I try very hard to use either the bus, from the village, or the Park and Ride from Rawcliffe Bar. I think Park and Ride is an excellent idea and look forward to the new one opening on the A59'.*

## 5.8 Intelligent Travel Case Studies

### 5.8.1 VICKY THE MUM-TO-BE

#### Before Intelligent Travel

When the project started Vicky was four months pregnant with her first child. She had a full time job and chose to drive the eight miles each way to work. In the first survey (week commencing 12 May 2003), Vicky made ten journeys to work, seven to the shops, twelve social and leisure journeys, and four to her antenatal class. All of these journeys were made as a car driver with the exception of four of the social and leisure trips in which she was a car passenger for two of those trips and walked for the other two. Vicky did not cycle and never used the bus service.

#### After Intelligent Travel

Vicky was surveyed a second time in the week commencing 19 November 2003. During the project, Vicky had used the bus service and found the bus pass the most useful of the incentives. Obviously, Vicky's lifestyle has changed during the course of the project due to the birth of her baby. This had made it difficult for her to take up cycling. In the second survey week, Vicky had increased her car usage, but this was as a result of her change in lifestyle. However,

this car usage was less of an increase than it might have been without her participation on the Intelligent Travel Project. In the second survey Vicky had used the bus for three of her journeys, one to work and two to the shops. Vicky had also walked for three of her journeys. Having just returned to work from maternity leave, Vicky was now a convert to the bus service and expressed her intention to use the bus for some of her journeys to work. She stated that having the bus pass had saved her lots of money by replacing her car trips with bus journeys.

### 5.8.2 GREG THE DRIVER

#### Before Intelligent Travel

Greg was first surveyed in the week commencing 26 May 2003. During that week he had made ten car journeys to work and six to the shops, all by car. Greg never used the bus service but was an occasional walker and occasional train user.

#### After Intelligent Travel

Greg was surveyed for a second time in the week commencing 5 January 2004. In that week he had made 22 journeys of which fourteen were by car. However, despite the increase in car journeys in that particular week, Greg had made two journeys by train, he had walked for five of his journeys and had used the bus once. Overall his car usage, which had constituted 100 per cent of his journeys in his first survey, was now just over 50 per cent of his travelling patterns. Greg stated that he had enjoyed the project very much and that it had made him more aware of environmental issues. Although Greg felt that he was unable to decrease his car usage for his work journeys, he did state that he is ‘walking everywhere that I can’ and ‘never takes the car into York’. He was particularly pleased with the pedometer which he says ‘made it great fun to see exactly the amount of miles covered’ and also mentioned that the health map had encouraged his walking trips. He said that his bus use had increased as a result of taking part in the project. Overall, Greg was very positive about the project.

### 5.8.3 MAUREEN THE HOUSEWIFE

#### Before Intelligent Travel

Maureen was surveyed in the week commencing the 26 May 2003. During that week, she made 12 trips in total, six by car and six walking. All of her journeys were either to the shops or for social and leisure purposes. She never used the bus service and made no trips by bike.

#### After Intelligent Travel

Maureen was surveyed for a second time in the week commencing 10 November 2003. In that week she had again made 12 journeys. These journeys were to school, calling at the shops en-route. However, out of the recent journeys only two of them were by car and eight of them were walking trips, so her walking has increased significantly in place or car trips. There was also one bus journey. Out of the incentives, Maureen stated that she found the bus pass useful and managed to increase her bus use a little. She also found the pedometer to be slightly useful.

### 5.8.4 FELICITY THE WORKING MOTHER

#### Before Intelligent Travel

Felicity was surveyed in the week commencing 12 May 2003. In this week she made 40 journeys, all by car. Although the family possess four cycles she does not cycle at all and she is not a bus user and so qualified for the bus pass. Felicity did state that she walked occasionally.

#### After Intelligent Travel

Felicity was again surveyed in the week commencing 17 November 2003 and appears to have made quite radical changes to her travelling behaviour. She made 37 journeys in that week of which only 13 were car journeys. Five of her journeys were by Park and Ride (car to site) and one by regular bus service. The biggest change was an increase in walking where she made a total of 12 trips. The remainder of the trips were made by train. Although Felicity did not use the pedometer or use the incentives to take up cycling, she did make some use of the bus pass and found it useful. Felicity did not provide much qualitative data in her follow up survey, however, the facts in this case appear to speak for themselves. Felicity has undoubtedly been a major success for Intelligent Travel.

### 5.8.5 JANE THE NURSE

#### Before Intelligent Travel

Jane is a staff nurse at York District Hospital and is aware and concerned about the effects of pollution levels on health. When contacted Jane was expecting her first baby in October 2003. Jane was first surveyed in the week commencing the 12 May 2003. In that week she made a total of 14 journeys all by car. Ten of her journeys were to work and four were for social and leisure purposes. Jane owned a cycle but she did not use it, although she did walk occasionally. She was not a bus user and so qualified for a bus pass.

#### After Intelligent Travel

Jane was surveyed for the second time in the week commencing 5 January 2004. In this week she made 18 journeys. Of those journeys eight were by car and the remaining ten were walking trips. Therefore, more than half of her journeys had been switched from car trips to walking trip. Jane was enthusiastic about the project, however, because of her pregnancy, she was unable to travel on the bus due to sickness. She had stated that although she had been unable to use the bus pass during project, she would have used it a lot had she been given it after the birth of her child. She also stated that she found the pedometer very useful and this is reflected in her increased walking trips.

### 5.8.6 ARNOLD THE PENSIONER

#### Before Intelligent Travel

Arnold was originally surveyed in the week commencing 12 May 2003 where he had made a total of 18 journeys, all of which were by car. Four of the trips were to the shops and fourteen were for social and leisure

purposes. His only means of transport before participating in Intelligent Travel was his car use, he did not walk, cycle or use the bus service at all.

### After Intelligent Travel

Arnold was again surveyed six months later where he had made a total of ten journeys of which only two were car trips (to the shops). Arthur had made six bus journeys in the week of the survey and had made two walking trips. He stated that the bus pass incentive had been very useful and had helped him to increase his bus usage. He was pleased with the bus service and mentioned that he found the buses to be 'on time' and that the bus stop was 'just around the corner'.

## 5.9 Future of Transport in York

The second questionnaire was used to determine the opinion of the respondents on the effectiveness of a number of measures that could be used to address traffic congestion in and around the City of York.

### 5.9.1 CAR-FREE CITY CENTRE

A total of 36 per cent of respondents felt that a more extensive car-free city centre would be an 'effective' measure in reducing traffic congestion in and around York. While 21 per cent of participants felt that this measure would be 'slightly effective' and 17 per cent felt it would be 'not very effective' (see Figure 5.6 and Table 5.6.)

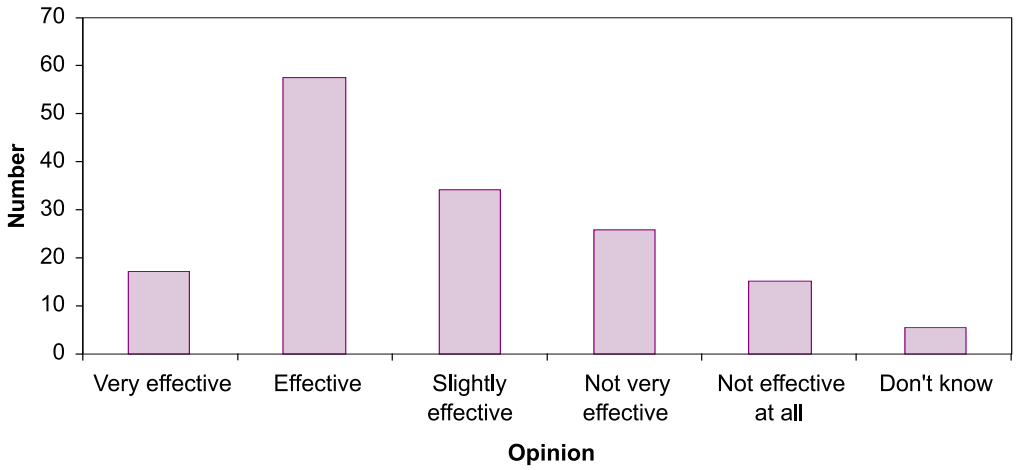


Figure 5.6 A more extensive car-free city centre area e.g. using raising bollards to restrict access

Table 5.6 A more extensive car-free city centre area

| | Very effective | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 19 | 58 | 35 | 27 | 17 | 7 | 163 |
| Percentage | 12% | 36% | 21% | 17% | 10% | 4% | 100% |

York has already an extensive car-free city centre area that operates during the day. The respondents are clearly in favour of a car-free city centre, with the majority of them feeling that would be effective in reducing traffic congestion in and around York.

### 5.9.2 HIGH QUALITY CYCLE NETWORK

A total of 40 per cent of respondents felt that a Scandinavian-style cycle network would be an 'effective' measure and 25 per cent thought it would be a 'very effective' measure to reduce traffic congestion in and around York. While 19 per cent of participants felt that this measure would be 'slightly effective' and 2 per cent felt it would be 'not very effective' (see Figure 5.7 and Table 5.7)

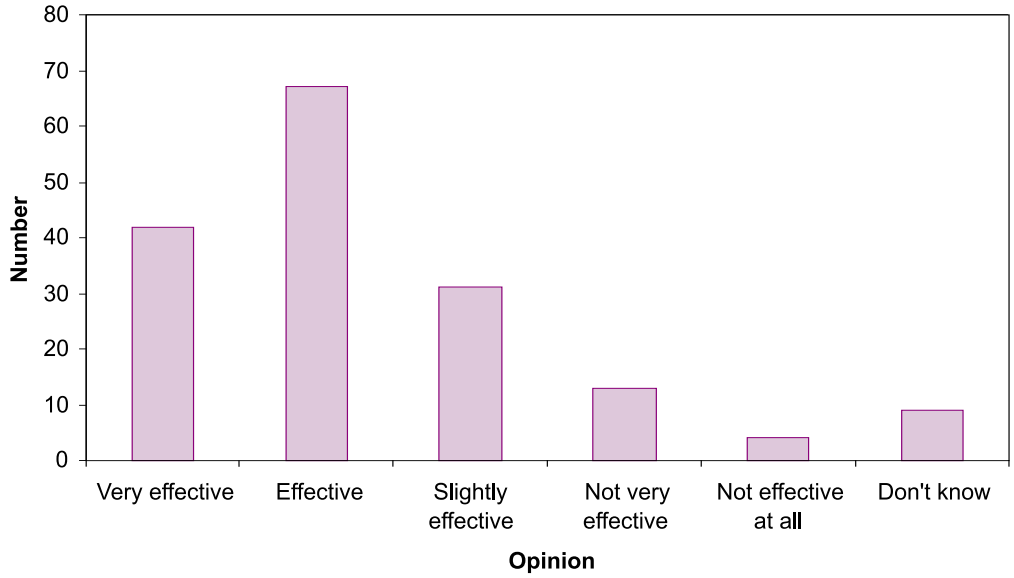


Figure 5.7 Scandinavian-style high quality cycle network with more safe routes

Table 5.7 Scandinavian-style high quality cycle network with more safe routes

| | Very effective | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 42 | 67 | 31 | 13 | 4 | 9 | 166 |
| Percentage | 25% | 40% | 19% | 8% | 2% | 5% | 100% |

York has a cycle network of over 100 kilometres. The majority of the respondents felt that a Scandinavian-style cycle network with segregated and safe routes would be an effective measure in addressing traffic congestion in York.

### 5.9.3 REDUCED SPEED LIMIT

A total of 23 per cent of respondents considered a reduction in the speed limit from 30 to 20 mph in certain areas as 'not very effective' to address traffic congestion in York. A total of 20.9 per cent of respondents felt the measures would be 'effective' and another 21.5 per cent considered the measure as 'not effective at all' (see Figure 5.8 and Table 5.8).

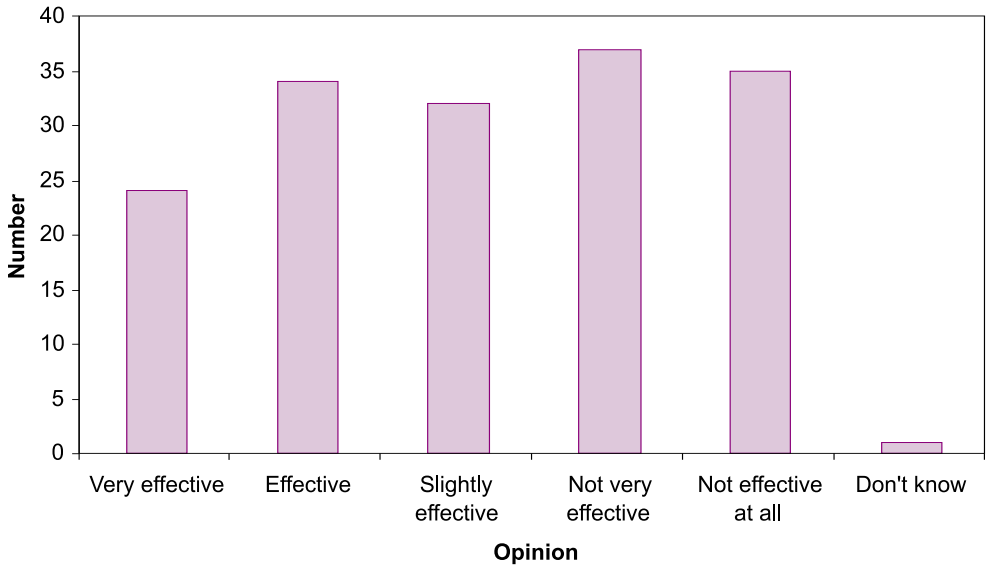


Figure 5.8 Reducing the 30 mph speed limit to 20 mph in some areas

Table 5.8 Reducing the 30 mph speed limit to 20 mph in some areas

| | Very | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 24 | 34 | 32 | 37 | 35 | 1 | 163 |
| Percentage | 15% | 20.9% | 20% | 23% | 21.5% | 1% | 100% |

The respondents were split on the effectiveness of a speed reduction with a small percentage difference in those who felt it was an effective and non-effective measure in reducing traffic congestion in York.

### 5.9.4 LORRY BAN

A total of 35 per cent of respondents considered a lorry ban would be a 'very effective' measure to reduce traffic congestion in York. A total of 25 per cent of respondents felt the measures would be 'effective' while 19 per cent considered the measure would be 'slightly effective' (see Figure 5.9 and Table 5.9).

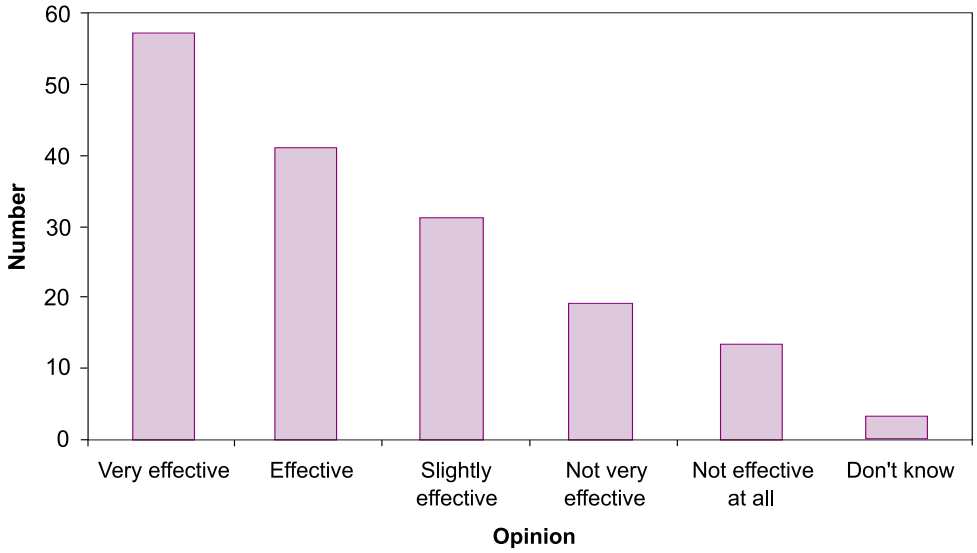


Figure 5.9 A lorry ban with deliveries made by smaller vehicles from a depot outside of York

Table 5.9 Lorry ban

| | Very effective | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 57 | 41 | 31 | 19 | 13 | 3 | 164 |
| Percentage | 35% | 25% | 19% | 12% | 8% | 2% | 100% |

A lorry ban in the city received a positive response from respondents with the majority seeing it as an effective measure to address traffic congestion.

### 5.9.5 FREE PUBLIC TRANSPORT FOR THE ELDERLY

A total of 48 per cent of respondents considered free public transport for the elderly as a 'very effective' measure to reduce traffic congestion in York. A total of 30 per cent of respondents felt the measures would be 'effective' while 13 per cent considered the measure as 'slightly effective' (see Figure 5.10 and Table 5.10).

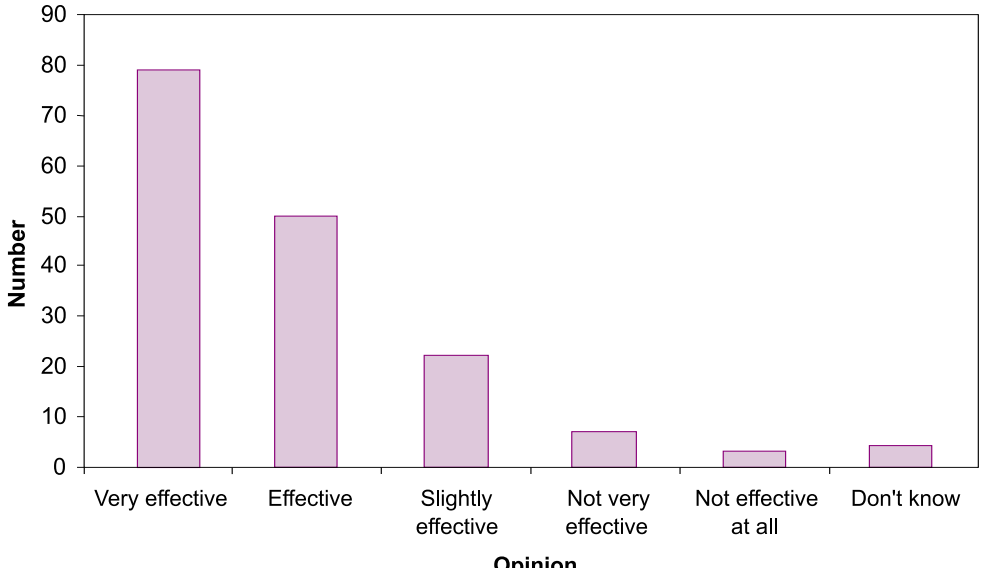


Figure 5.10 Free public transport for older people

Table 5.10 Free public transport for older people

| | Very effective | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 79 | 50 | 22 | 7 | 3 | 4 | 165 |
| Percentage | 48% | 30% | 13% | 4% | 2% | 2% | 100% |

Free public transport for the elderly received a positive response with the majority (48 per cent) seeing it as very effective in addressing the problem of traffic congestion in and around York.

### 5.9.6 EXTENSION OF INTELLIGENT TRAVEL

A total of 34 per cent of respondents considered the extension of the Intelligent Travel project to all York's residents as an 'effective' measure to reduce traffic congestion in York. While 26 per cent felt it would be 'slightly effective' and 23 per cent as 'very effective' (see Figure 5.11 and Table 5.11).

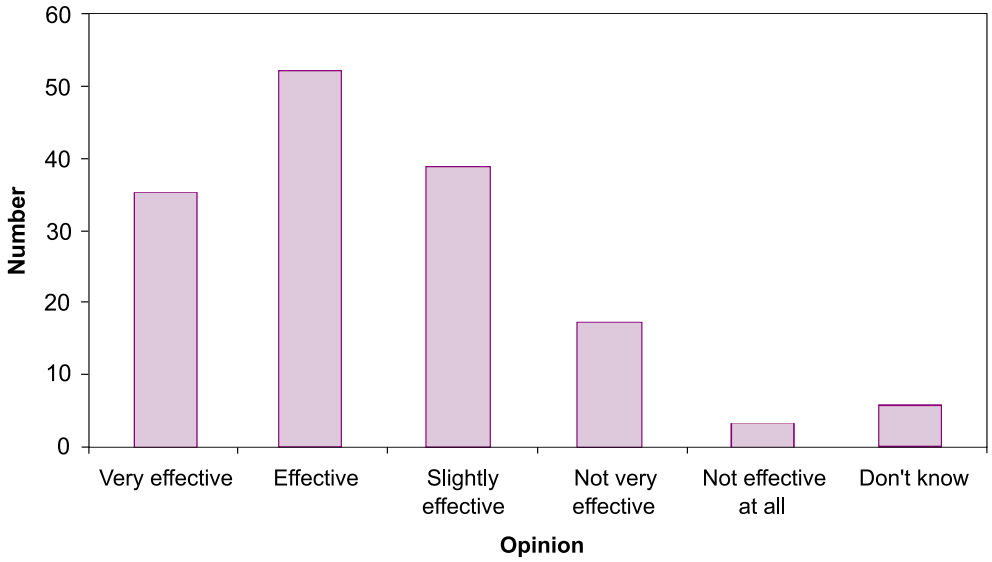


Figure 5.11 'Intelligent Travel Project' extended to all of York's residents with much greater personal travel information delivered to every household

Table 5.11 Extension of Intelligent Travel

| | Very effective | Effective | Slightly effective | Not very effective | Not effective at all | Don't know | Total |
|---|---|---|---|---|---|---|---|
| Number | 35 | 52 | 39 | 17 | 3 | 5 | 151 |
| Percentage | 23% | 34% | 26% | 11% | 2% | 3% | 100% |

Overall the respondents considered the extension of the Intelligent Travel across York as an effective measure to address traffic congestion in the city.

### 5.9.10 RESPONSIVENESS OF THE PARTICIPANTS TO DEMAND MANAGEMENT MEASURES

The questions on the future of transport in York were included in the second questionnaire to determine the receptiveness of the participants to a range of measures that directly or indirectly affect transport demand and promote a change in modal shift.

The overall views of the respondents to these measures were positive, with a high proportion believing such measures would be effective in reducing traffic congestion in York.

The results demonstrate that a latent support exists for the introduction of a range of transport demand management measures throughout the city. This support is positive for any future extension of the Intelligent Travel project as individuals would be receptive to exploring different ways to reduce traffic congestion in the city – including their own travel choices.

# 6 Cost-effectiveness of Personalised Travel Planning

## 6.1 Introduction

Mobility is expensive. In 2002 (the latest figures that are available) UK residents travelled 746 billion passenger kilometres. 85 per cent of this was by car, van and taxi. Each household spent £64.50 per week on travel, which is 16.7 per cent of all household expenditure. In addition £3.6 billion was spent on road transport infrastructure and £44.1 billion on road vehicles. Rail expenditure including both rolling stock and infrastructure was £4.6 billion.

The Ten Year Transport Plan anticipates that £181.9 billion public and private expenditure combined will be required over the plan period.

Another way of examining the high costs is to focus on the costs per mile of travel by car and public transport. These are summarised in 'Focus on personal travel' (DTLR, 2001)[6]. Expenditure per mile of car travel in Yorkshire and Humberside is £0.32 and of travel by public transport, £0.13. This is probably one of the most important and least known aspects of transport. Public transport is much cheaper than the private car and is even cheaper than the marginal cost of the car (James, 1998)[7]. This means that it is financially advantageous to leave the car at home and to take the bus even when the car insurance and other 'sunk' costs have been paid.

If personalised transport planning produces a reduction in miles travelled by car there is an immediate gain of 32 pence per mile. If these trips transfer to public transport there is a gain of 19 pence per mile (32-13).

None of these different ways of examining the cost of mobility takes into account the externalities of mobility. Externalities are the costs of mobility not borne by the person who makes the journey and include climate change costs, fatalities and injuries, the costs of policing and the courts, noise, ill health and congestion. In the UK these costs were estimated to be in the range £45.9–52.9 billion in the mid-1990s (Maddison et al., 1996).[8] These costs are in excess of taxation income from all sources, including road fund tax, fuel tax and VAT. After all the different taxes on car ownership and use are taken into account the car user is still subsidised.

A successful personalised travel planning exercise resulting in a reduction in distance travelled by car, an increase in walking and cycling and a transfer of journeys away from the car to these more sustainable alternatives will:

- benefit the consumer by 19 pence per mile for a journey transferred to public transport and by 32 pence per mile for one that has transferred to walking or cycling;

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6 DTLR (2001) *Focus on Personal Travel*, Department of Transport, Local Government and the Regions, The Stationery Office, London

7 James, A. (1998) Exploding myths about the cost of car transport, *World Transport Policy and Practic*e, 4, 4, 10-15

8 Maddison, D., Pearce, D., Johansson, O. et al. (1996) *The True Costs of Transport,* Earthscan, London

- reduce the externalities by an amount that is directly proportional to the amount of car travel, which in its turn reduces other costs (e.g. the costs of dealing with climate change); and
- reduce the demands made on the £47.8 billion expenditure on roads and vehicles.

## 6.2 Benefit-Cost Analysis

Personalised travel planning has been subjected to a rigorous benefit-cost analysis in the case of Perth (Western Australia). The major benefits of the Perth project are presented in Table 6.1. The Perth project involved 35,000 individuals and produced a benefit-cost ratio of 59:1.[9] A review of the cost benefit calculations in the study 'Hard Choices-Soft Options' concluded that (James, n.d.):[10]

> *"A socio-economic evaluation of the South Perth large scale project showed a 59:1 benefit to cost ratio and a Net Present Value of A$72 million (discounted at 8 per cent over 15 years)"*

Table 6.1 Major benefits of the Perth personalised travel planning project

| Item | Value in million Australian Dollars | Value in million £ Sterling |
|---|---|---|
| Net savings in car running costs (including public transport fares) | 43.9 | 16.81 |
| Air pollution and greenhouse gas impacts | 15.6 | 5.97 |
| Health and road trauma benefits | 8.4 | 3.21 |
| Reduction in road congestion | 7.0 | 2.68 |
| **Total** | **74.9 (Note 1)** | **28.67** |

Note 1 The discrepancy between the tabulated total of A$74.9 million and the total in the text of A$72 million is not explained in the original publication

Source: James (n.d.)[10]

The South Perth project (35,000) cost A$1.3 million. Discussions are now underway to extend the project to 46 per cent of Perth's 1.6 million residents (736,000) by 2006 at a cost of A$26 million. This cost will be recovered in 98 week days through marginal savings in vehicle running costs alone (James, n.d.).[10]

Perkins (2002)[11] has reviewed benefit cost calculations for the South Perth individualised marketing project and for the 329-household Adelaide travel-blending projects. The reported benefit-cost ratio of the Adelaide travel-blending project is presented in Table 6.2.

9 The Perth individualised marketing project designed by Werner Broeg (SocialData, Munich) is described on the State Government web site:http://www.dpi.wa.gov.au/travelsmart/documents/Cost_Benefit.pdf

10 The cost benefit calculations are reviewed by the Bruce James on the State Government of Queensland web site:http://www.transport.qld.gov.au/qt/IRTPSign.nsf/files/images/$file/Hard%20choices%20-%20soft%20options.pdf. Page 7 of "Hard choices-Soft Options" by Bruce James on the state of Queens land web site, accessed on 29th June 2004

11 Perkins, A. (2002) Household-focused travel behaviour change initiatives. Critical tools in Travel Demand Management, *World Transport Policy and Practice*, 8,4,31-38

Table 6.2 Benefit-cost ratio of the Adelaide travel blending project

| Benefit-cost ratio over 30 years at a 40% take up rate | Changes sustained without further intervention | Changes maintained by annual awareness and education campaigns | Annual awareness campaigns and 5 yearly interventions to sustain change |
|---|---|---|---|
| Without network benefits | 17 | 12 | 5 |
| With network benefits | 29 | 20 | 8 |

Source: Perkins (2002) page 37

These benefit-cost results show the importance of building in future investments to maintain the changes in travel behaviour. This still produces a very respectable 12:1 result without network benefits and 20:1 with network benefits.

Perkins also reviews information on costs per household of a travel change project. He quotes the Australian national government (National Transport Secretariat, 2001) figure of A$50 per household (£19.12) when such techniques are "applied on a large scale".

Sloman (2003) addresses the same question in the UK context and concludes:

> *"The cost of large scale initiatives is expected to be about £13 per head or £35 per household, although recent TfL work suggests that it may be possible to reduce costs to as low as £4 per head. Pilot work tends to be more expensive, with a typical upper end of the range being in the order of £70 per head, partly because the monitoring exercise has constituted a greater proportion of the target group"*

## 6.3 Benefit-Cost Analysis and the York Intelligent Travel Project

A complete benefit-cost analysis (BCA) of the York Intelligent Travel project was not part of the remit of the pilot study. However, the evidence discussed so far from other individualised marketing projects shows unequivocally favourable ratios and ratios which are considerably in excess of those routinely accepted for road building projects. The Lancaster Western Bypass is a typical road scheme intended to reduce congestion. It has a BCA of 3.6 and is intended to "relieve conditions in the centre of Lancaster in order to permit the continued development of alternative travel modes, particularly buses and cycle"[12]. This objective is very close indeed to the objectives of individualised marketing and the BCA is considerably worse than individualised marketing.

The York Intelligent Travel Project cost £100,000. This resource funded:

- staff time at SEI to develop the methodology, produce the literature, implement the surveys, pay the call-centre staff and analyse the results;
- staff time involved in recruiting and training call centre staff;
- staff time at the City of York Council to assist with the project;
- printing and postage costs; and
- travel and subsistence for staff visiting participants in their homes.

12 Lancashire County Council, Local Transport Plan, 2001/02-2005/06, page 127, Preston, Lancashire

It did not cover the cost of:

- the call-centre itself, which was provided by Norwich Union as part of their environmental and community involvement strategy;
- free and discounted bus passes provided by the First bus, the local bus operator;
- free pedometers.

The total in-kind contribution from partners equalled approximately £40,640 (see Table 6.3).

Table 6.3 In-kind contributions from partner organisations

| | Number | Cost | Months | Total Cost |
|---|---|---|---|---|
| **First Bus** | | | | |
| Bus pass | 57 | £40 | 6 | £13,680 |
| Bus voucher | 16 | £20 | 6 | £19,200 |
| | | | | £32,880 |
| **Walking you way to Health Initiative/York Local Agenda 21** | | | | |
| Pedometer | 132 | £5 | | £660 |
| **Norwich Call Centre Facilities*** | | | | |
| Call centre office space | 10 | £660 | 1 | £6,600 |
| Telephone | 10 | £50 | 1 | £500 |
| **Total in-kind contribution** | | | | **£40,640** |

* Based on discussions with Regus, the estimated cost of this facility for a similar office in Leeds would be £7,100.

In terms of calculating the cost per head, this depends on which sample size is used (see Table 6.4). If the total sample size is used, including the non-intervention group, the cost per head is £17.54. However, if the size of the actual group who agreed to participate in the project (242) is used, the cost per head is higher at £413.42. If the group size of only those individuals who returned the questionnaire is used (167), offering a before and after comparison, the cost per head is even higher (£598.80). If the cost is taken purely on those car users who reduced their car trips (158), the cost per head is £632.91.

Intelligent Travel was a pilot and a number of lessons on the implementation and evaluation of the project were learnt. It is expected that the final cost/head will be significantly lower when rolled out on a large scale due to efficiency costs.

Table 6.4 Estimated cost per head of the York Intelligent Travel Project

| | Sample | Cost/head |
|---|---|---|
| Total sample contacted | 5,701 | £17.54 |
| Agreed to participate | 242 | £413.22 |
| Returned second questionnaire travel survey | 167 | £598.80 |
| Car uses which reduced their car trips | 158 | £632.91 |

These special characteristics and the pilot nature of the project, involving a great deal of methodological discussion and original survey design, means that cost estimates per person or per household are not a reliable guide to future projects. Future projects will benefit from the existence of a developed methodology, a clear procedure for contacting people, literature and

maps already designed and a pool of trained staff ready to run a call centre and/or visit people in their homes.

The cost figures for the York Intelligent Travel project are comparable to those quoted in other studies (see Table 6.5). The costs of Intelligent Travel are within the "comfort zone" in terms of delivering a cost-effective transport intervention. In line with other project reports, these costs will fall significantly once rolled out across large populations.

More importantly, the reductions in car travel that have been reported (16 per cent) in the project are more than enough to produce a favourable BCA, one that is considerably better than a road-building scheme.

Table 6.5 Cost estimates for a range of personalised travel planning projects

| | Numbers involved | Cost | Cost per household | Cost per person |
|---|---|---|---|---|
| South Perth | 35,000 individuals | A$1.3 million | | A$37.14 |
| | | | | £14,21 |
| Roll-out in Perth | 736,000 individuals | A$26 million | | A$35.32 |
| | | | | £13.52 |
| Adelaide Roll Out | 410,000 households | A$4 million | A$9.75 | |
| | | | £3.72 | |
| Australian National Transport Secretariat | | | US$50 | |
| | | | £27.46 | |
| Sloman (2003) | | | £35 | £13 |
| Nottingham (Bruce James) | 161,800 individuals<br>66,000 households | £2.31 million | £35 | £14.2 |
| Gloucester (Quedgley) Pilot | 500 individuals | £30,000 | | £60 |
| Gloucester (large scale) | 10,000 individuals | £168,000 | | £16.80 |
| York Pilot | 5,701 | 100,000 | | £17.54 |

# 7 Discussion

## 7.1 Introduction

The aim of the Intelligent Travel project was to examine the potential for changing travel behaviour by reducing car use and encouraging walking, cycling and public transport use which promote health, fitness and a better environment. It tested personalised travel planning on a random sample of 5,701 households living in three wards of the City of York, using before and after questionnaire surveys to measure the effect on personal travel behaviour.

The pilot project has used two different approaches in order to determine which approach is the most effective in recruiting participants and achieving a change in travel behaviour. This chapter discusses in detail the lessons learnt from the pilot project and what improvements and additional actions might be required to expand the project to a wider section of the population.

## 7.2 Intelligent Travel Approach

The Intelligent Travel project compared two approaches to recruiting participants. The first approach (Y1) was a form of 'cold calling' and involved telephoning individuals, determining their suitability for the project by asking them how they travel and offering them a home visit. The launch of the project was publicised in the local media with the intention that individuals would be aware of the project when contacted by telephone. The 'cold calling' approach received a mixed response from individuals. There was also a difference between the four areas – some people were more receptive and willing to discuss their travel behaviour in certain areas compared to others. The appointment for the home visit was made over the phone and a confirmation postcard was sent out. Some individuals were unwilling to allow 'strangers' into their home. Although 105 appointments were made only 91 home visits were conducted. A total of 14 individuals were not at home when the TPA called.

The second approach involved sending out a questionnaire and offering entry into a prize draw for its return. Individuals who were interested in receiving additional information, and included a telephone number, were then contacted by phone. This group were more receptive to the idea of participating in the study and receiving the incentives. However, this group did not receive a home visit.

In terms of returning the second questionnaire, the participants recruited using the Y2 approach were less likely to return the questionnaire – a total of 50 people dropped out of the project compared to 25 who were recruited using the Y1 approach. The Y2 group was also given the added incentive of being entered into another prize draw for the return of the second questionnaire.

The return rate for the second questionnaire for the Y1 group was 72.52 per cent compared to a 66.88 per cent for the Y2 group. Both groups were given a 'booster call' halfway through the project period. The call was useful as it encouraged those individuals who were actively taking

part in the project. The booster call also discovered that some Y2 individuals did not realise that they were part of project while others claimed that they had not received the incentives by post.

Those individuals who failed to return the second questionnaire were contacted by phone again to remind them of the deadline. Some individuals claimed they did not receive the questionnaire while others had thrown it away. A copy of the questionnaire was re-sent.

The high response rate received by Y1 might have been due to the face-to-face interview conducted in the home visit. The home visit provided a personal touch to the project. It had the advantage of personally collecting travel information and assisting the participant to complete the questionnaire as well as delivering the incentives by hand.

Another approach which may guarantee personal interaction but which is more cost-effective is to undertake the interviews at a local venue over a number of days. Participants would be invited to make an appointment and to come to the venue to be interviewed. This would place the emphasis on the participant to attend and would avoid the problem of nobody being at home during visits. An additional incentive may be offered to encourage them to attend the interview. It would also have the added advantage of targeting a specific area and concentrating staff time. A home visit could also be offered if the participant were unable to attend due to family commitments.

During the home visit and on the telephone, participants offered a substantial amount of information on their perception of transport and barriers to behavioural change. The first questionnaire was not designed to sufficiently capture this qualitative data. However, the second provided opportunities for more qualitative comments. Individuals wanted to talk about why they could not use different transport modes as well as local transport issues. Future questionnaire surveys should be designed to sufficiently capture this information before and after the project period.

Based on the experience in the pilot project, any future approach to recruit individuals should involve the following stages:

1. A letter to each individual announcing the project and informing them they will be contacted by telephone.
2. Telephoning the individual asking them about their travel behaviour, determining their suitability for the project and inviting them to participate in the project. Individuals could be given the option of receiving the questionnaire by post, attending an interview at a local venue or receiving a home visit. This would encourage those individuals who do not like the idea of 'strangers' visiting them in their homes participating in the study.
3. Telephoning the individual on the day of the home visit to ensure they are at home. Conducting a home visit, interviews at a local venue, completing the baseline information questionnaire and offering the incentives. Telephoning those who have opted for the questionnaire by post to clarify any response given in the questionnaire and discussing the incentives offered and sending incentives by post or delivering them in person. To encourage return of posted questionnaires entry to a prize draw may be necessary.
4. Contacting individuals halfway through the project to boost their moral and ensure they continue to participate.

5. Sending out a second questionnaire and offering entry into a prize draw for the completion and return of the questionnaire by a specific date.

## 7.3 Incentives

The Intelligent Travel project was successful in offering a range of generous incentives compared to similar travel behaviour projects. However, results from the second questionnaire suggest that a high proportion of the incentives were not used by the participants. The incentives which seemed to have had the greatest impact were the six-month bus pass for free travel on First buses and the pedometer and health map. Their use is reflected in the increase in bus and walking trips. The cycling and car share incentives were less popular.

Future studies might include non-transport related incentives such as a free pass for use of local sports centre, discount shopping cards or theatre tickets.

## 7.4 Change in Travel Behaviour

The Intelligent Travel project achieved a:

- 16 per cent reduction in car trips
- 5 per cent increase in bus use
- 10 per cent increase in walking trips
- 1 per cent increase in cycling trips

The greatest change occurred in urban areas (Acomb/Chapelfields, Rawcliffe/Clifton). There seemed to be high car dependency in rural areas and a perception that these areas were not serviced sufficiently by public transport.

Participants were asked to complete a questionnaire on the travel over a seven-day period and return it by a specific date. The first questionnaire survey was sent out in spring/summer and the second questionnaire was sent out in autumn/winter. There were seasonal variations in the travel behaviour with individuals doing less walking and cycling in the autumn/winter months. During the questionnaire period there was also a Bank Holiday, which influenced the participants normal travel behaviour. Future questionnaire surveys will need to be designed to sufficiently capture seasonal/holiday variations in travel behaviour.

The Intelligent Travel project focused on individuals and households in different areas of York. Another approach that could be taken in future studies would be to target groups of individuals such as teachers, civil servants and employees of large organisations (e.g. Nestle).

## 7.5 Monitoring and Evaluation

Personalised travel planning/individualised marketing projects have been subjected to far more monitoring and evaluation than orthodox demand restraint measures such as investment in physical infrastructure. Behavioural change projects tend to be scrutinised more closely while traditional approaches to transport planning are accepted as the norm. This has led to a proliferation of results, which are sometimes difficult to interpret. Sloman (2004)[13] has drawn attention to this problem:

"For reasons which are not entirely clear, interpretation of the impacts of these approaches has been the specific focus of some technical controversy on issues of measurement and impact assessment that in principle apply also to other soft measures, and indeed to policy assessment in general. It is not our view that these arguments raise greater doubts about personalised journey planning than should be applied generally … the most critical interpretations have tended to suggest effects about half those of the most supportive".

Part of the problem with personalised travel planning projects is the confusion that is present in a number of projects around some key data and variables. This in its turn is a function of the lack of a standardised methodology. Table 7.1 summarises the key data, impacts and outcomes of personalised travel planning projects where results are in the public domain.

One of the most interesting parameters from Table 7.1 is the wide variation in the size of the "Interested" group. This varies from South Perth at 40 per cent to Viernheim in Germany at 9 per cent. York has the lowest at 5 per cent. This variation could be the result of geographical and socio-economic variations. The response rate (in terms of taking a full part in a behavioural change intervention group) is likely to be greater in areas characterised by higher socio-economic groups and adults in full time work than it is in areas characterised by large numbers of retired people, lower socio-economic groups and/or large numbers of people experiencing long term illness.

Another source of variation is likely to be variable definitions of "Interested". In the summary report of the Gloucester (Quedgley) project there is a reference to "Interested" as including those who have requested further information. If this definition were applied across other projects it would artificially raise the numbers in this group. In the York Intelligent Travel project 5 per cent of the total sample size (242) were considered as "interested" based on the following strict definition:

- car-dependent (use the car for all or majority of trips) and are not regular users of EFM;
- willing to receive a home visit and discuss travel change option in more detail;
- willing to take part in a base-line survey and six months later take part in a follow-up survey.

The number requesting additional information is a different matter and should be reported separately. The inclusion of EFM in this group is not helpful. Those who are already using EFM have made the psychological "leap" away from car dependency. They do have potential to increase the use made of EFM modes but the larger problem and the more important policy issue lies in exploring the potential for the car dependent to change behaviour.

13 Sloman, L (2004) *The influence of soft factor interventions on travel demand*. Report to the Department for Transport

Table 7.1 Results of selected personalised travel planning projects

| | South Perth | Viernheim | Gloucester (Quedgley) | Bristol (Hartcliffe) | York |
|---|---|---|---|---|---|
| | **Australia** | **Germany** | **UK** | **UK** | **UK** |
| **Source of information** | Perkins (2002) | EU Tapestry Project report[14] | DfT (2004)[15] | DfT (2004) | SEI (2004) |
| **Sample size** | 15,267 households | 3,800 households | 515 | 1,192 households | 5,101 (Note 4) |
| **Not contactable** | 6% (916) | 5.8% (222) | 10% (51) | No data | 9% (462) |
| **Refused** | 6% (916) | 21.5% (819) | 10% (51) | No data | 53% (2,706) |
| **Potential** | 88% (13,434) | 86.3% (3,281) | 445 (Note 1) | 72.7% (867) | 91% (4,664) (Note 5) |
| **Regular users of Environmentally Friendly Modes** | 16% (2,442) | No data | 102 | 19.5% (233) | 19% (966) |
| **Interested** | 40% (6,106) | 9% (344) | 34% (177) (Note 3) | 20% (240) | 5% (242) |
| **Not interested** | 32% (4,885) | 21.5% (819) | 166 | 33% (394) | 14% (711) |
| **Reduction in car trips** | -14% | -12% | -9% (Note 2) | -5% | -16% |
| **Reduction in car kms** | -14% | No data | -9% | No data | -49% |

**Notes**

1. There are arithmetical errors in the report on Quedgley.
2. T
   the project authors report as a 9 per cent reduction
3. This is the interested group but the report says this group "requested further information". This is different to the Intelligent Travel project definition of "Interested" which is non-users of EFM who have expressed an interest in joining the project.
4. This sample size excludes 300 individuals who were contacted to act as the non-intervention group. Total individuals contacted was 5701
5. The potential sample includes the 1664 from Y1 and 3000 from Y2 approaches. The total sample size in Y2 was considered as potential participants as they were contacted by post. A number of the Y1 were not contactable.

Compared to the other studies the Intelligent Travel project has achieved the highest reduction in car trips and car kilometres travelled. It has the lowest percentage of people who were 'not interested'. A high 19 per cent of the sample was already regular EFM users which is similar to the result achieved in Bristol. However, it is difficult to make direct comparisons due to the different methodological approaches used in the other studies and the transparency of such approaches.

In addition, behavioural modification never takes place in a fully supportive environment. Policies that reduce the cost of motoring, increase road space and parking space numbers or increase the cost of public transport encourages a shift to cars regardless of the effort put into personalised travel planning. These external factors need to be taken into consideration in interpreting the results and developing future actions to achieve better response and participation rates.

14 http://www.eu-tapestry.org/

15 Cairns, S., Sloman, L., Newson, C., Anable, J., Kirkbride, A. and Goodwin, P. (2004) *Smarter Choices – Changing the Way We Travel*, Department of Transport, London. See: http://www.dft.gov.uk/stellent/groups/dft_control/documents/contentservertemplate/dft_index.hcst?n=10689&l=1

## 7.6 Key Lessons Learnt

The key lessons learnt from the pilot project can be summarised under the following headings:

### Co-operation with partners

The project benefited enormously from the support and input of the bus company (First) and Norwich Union. This brought expertise and insight as well as contributions in-kind but more importantly it brought a culture shift in the sense that transport problems were being discussed by a group consisting of council staff, university researchers, a large insurance company and a bus company. This group worked very well indeed and established a high level of joined-up thinking and ownership of these problems that will continue to have spin-off benefits.

### Cost-effectiveness

The project was, in our view, very cost-effective indeed and has demonstrated the utility of a highly efficient way of delivering demand management. If this result is to bear fruit and play its full part in national and local transport policy it will be necessary to designate/re-categorise expenditure on projects of this kind as capital in funding allocations. If this is not done this approach will wither on the vine.

### Contribution to public participation

Projects of this kind deliver a much richer and more convincing kind of public participation than is normally the case. Members of the public are directly involved in receiving information and incentives, discussing options and making change in personal behaviour as a result. This heightens the sense of a collective approach to solving problems and enriches local democracy

### Pitfalls

The major pitfall is the lack of willingness of residents to join in with projects of this kind. Filling in questionnaires and co-operating with researchers can be seen as onerous and unwelcome and we need to find better ways of raising response rates and avoiding losing people over the course of the project. This will require a different approach to incentivisation.

### Local factors

York has a relatively high level of walking, cycling and public transport and this has influenced the response rates in our project. Many contacts were excluded from participation in the target groups because they were already practising “intelligent transport”. Future projects could avoid this problem by either (a) targeting those who are already using sustainable modes for some of the time and seek to increase the amount of use and/or (b) target areas that are characterised by higher socio-economic groups, higher car ownership and higher involvement in the workforce.

### Scalability and replication

It is envisaged that there would be no difficulty in scaling up by at least one order of magnitude. Australian experience shows that this reduces unit costs and we are confident that our management structure, monitoring and reporting mechanisms can handle this step change.

# 8 Conclusion

The York Intelligent Travel project achieved a 16 percentage point reduction in car trips and a 28 per cent reduction in car distances driven. Walking and public transport increased by 10 and 5 percentage points respectively. In the context of national and international transport planning and policy this is remarkable result. It shows that it is possible to influence travel choices away from the car and away from short trips by car. It has been achieved in a constructive and co-operative manner simply through close working with local residents.

The York result is consistent with results in other parts of the world from the application of so-called "soft factors". The results were actually better than the much quoted Perth (Western Australia) results. The results are also consistent with the conclusions of the "Smarter Choices " report, which was published by DfT in July 2004. This report identifies a potential reduction of 11 per cent nationally in all traffic from the application of soft factors (e.g. travel plans, personalised travel planning and individualised marketing etc). The results are also consistent with general theories of travel choice and behavioural change (Broeg, 2004). Broeg argues that 34 per cent of the population is likely to change travel choice away from the car and towards sustainable alternatives. This is the group that has only subjective reasons against walking, cycling and public transport [17]:

> *"For these trips, if a behavioural approach to mode change is applied, changes are possible without the need for system improvements, pricing or changes in land use policy. This group has the greatest potential for change and is the focus for the travel behaviour change programme"*

The implications of this for local and national transport planning are significant. There is a large reservoir of potential for reducing car use and for increasing the use of sustainable modes. This in its turn reduces congestion, greenhouse gases and pollution and improves the conditions for walking and cycling through reduced vehicular activity. The achievement of traffic reductions through entirely voluntary mechanisms is cost-effective, delivers best value and out-performs the introduction of trams, new roads or so-called intelligent transport solutions.

Achieving a switch away from the car towards more sustainable modes through personalised travel planning/individualised marketing is not an end in itself. Nor is it a substitute for carefully selected road pricing and charging policies and land use planning to minimise the demand for motorised transport. In any local authority area there will be a continuing need for fiscal policies, land use planning policies, car parking management and other policies that progressively improve the quality of sustainable transport options.

The significance of personalised travel planning lies in its ability to produce relatively quick results at relatively low cost in a way that meets with widespread support amongst the public. This is a win-win situation that should be part of any integrated set of transport measures and part of any Local Transport Plan (LTP).

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17 Broeg, W. (2004) Present situation: between Scylla and Charybdis, in *Communicating Environmentally Sustainable Transport: the role of soft measures*, OECD, Paris, 80-97

There will be a debate about what is 'low cost' and how cost-effectiveness should be measured. This debate is wider than personalised travel planning and wider than the York Intelligent Travel project and has to embrace a much more rigorous evaluation of all transport interventions (hard and soft) so that a fair comparison can be made. Transport science is still weak on the true costs associated with removing one car trip or one car kilometre. Much more is known about the costs associated with personalised travel planning than the costs of removing one car trip or one car km through park and ride sites, tram projects or bypasses. The question surrounding cost-effectiveness cannot be answered within the narrow world of soft factors or personalised travel planning. The time has come to apply the same rigour of monitoring and evaluation and cost-effectiveness across all types of transport intervention and measures.

Clarification on the policy context within which soft factors will operate is also needed. The York Intelligent Transport project has demonstrated that car trips can be reduced through a behavioural change programme. It is also the case that any behavioural change programme will still need to operate within a broader context of parking management, highway space reallocation, footstreets, cycling facility enhancements and improvement in the quality and quantity of bus and rail provision. Soft factors are not a substitute for other measures. They will work best in combination with other measures. This view is reflected in the conclusion to an 2003 OECD seminar in Berlin on soft factors[18]:

> *"Soft measures complement hard measures such as taxes, regulations and the provision of infrastructure and public transport services. Soft measures can be used to facilitate the acceptance of hard measures, and to enhance their effectiveness. Use of soft and hard measures should be carefully co-ordinated and integrated"*

The York Intelligent Travel project was a pilot project and its results are based on a relatively small sample of people. This requires some caution in drawing inferences about impacts at larger levels of participation. The Australian experience of roll-out, however, gives us confidence that at these larger scales (35,000 participants and more) the results "hold" in the sense that similar percentages reductions on car trips and increases in the use of sustainable modes can be found. Also, at this larger level the unit costs of the projects falls.

The main difficulty experienced with the York project was recruitment and retention of subjects for the intervention group. This will require further discussion and modification of the methodology to design a cost-effective method of translating initial contacts into full participants in the project. This is not an insurmountable obstacle and there are lessons to be learnt from the field of marketing and from the different success rates of incentivisation regimes.

Personalised travel planning and individualised marketing also bring with them significant additional benefits in the area of public participation and public-private co-operation. The York Intelligent Travel project involved over 5,000 people in some kind of discussion about travel choices and the why and how of bringing about reductions in congestion and pollution through behavioural change. It also involved the significant practical, financial and intellectual involvement of Norwich Union, First bus, Halfords and others. This has been associated with media coverage and has sown the seed of collective ownership of transport problems and the potential for collective solutions based on individual actions. This is a major step forward in

18 OECD (2004) *Communicating Environmentally Sustainable Transport: the role of soft measures,* OECD, Paris

the change of culture that will be necessary to provide fundamental and long lasting solutions to transport problems. It is also a major step forward in public participation.

There is enthusiasm and support amongst all the partners for roll-out and closer integration of soft factors with other measures. If this is to happen it will require funding under the local transport plan and this will require modification of the capital/revenue allocations to permit personalised travel planning to benefit from capital spending. If this is not done there will be no roll-out and the opportunity to make a step change towards the full development of sustainable transport will be lost.

This same point was emphasised by the 2003 OECD seminar in Berlin:

> *"It is usually cost-effective to dedicate a portion of the budgets of transport projects to the strategic deployment of soft measures. The cost-effectiveness of such dedication should be assessed in relation to the cost-effectiveness of all spending on transport projects".*

A solid foundation now exists in York for future work on achieving a change in travel behaviour, which reduces car use, encourages walking and cycling, and which promotes health, fitness and a better quality of life for all residents.

# The Stockholm Environment Institute (SEI)

SEI is an independent, international research institute specializing in sustainable development and environment issues. It works at local, national, regional and global policy levels. The SEI research programmes aim to clarify the requirements, strategies and policies for a transition to sustainability. These goals are linked to the principles advocated in Agenda 21 and the Conventions such as Climate Change, Ozone Layer Protection and Biological Diversity. SEI along with its predecessor, the Beijer Institute, has been engaged in major environment and development issues for a quarter of a century.

## *Mission*

*SEI's mission is to support decision-making and induce change towards sustainable development around the world by providing integrative knowledge that bridges science and policy in the field of environment and development.*

The SEI mission developed from the insights gained at the 1972 UN Conference on the Human Environment in Stockholm (after which the Institute derives its name), the work of the (Brundtland) World Commission for Environment and Development and the 1992 UN Conference on Environment and Development. The Institute was established in 1989 following an initiative by the Swedish Government to develop an international environment/development research organisation.

## Sustainable Development Studies Programme

The Sustainable Development Studies programme conducts research on sustainable society, development and planning. The programme expands upon ongoing and previous work on integrated future assessment studies at national and regional level, the concepts of urban and regional sustainability, socio-economic analysis, gender issues and environmental ethics. The tools and methods used in the programme include PoleStar, GIS, Global Scenario Group, participatory techniques, strategic and sustainability impact assessment and indicators.


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