

CiViTAS
Cleaner and better transport in cities

ARCHIMEDES

AALBORG • BRIGHTON & HOVE • DONOSTIA-SAN SEBASTIÁN • IAȘI • MONZA • ÚSTÍ NAD LABEM

Brighton & Hove

R31.1 Study of Personalised Travel Planning for Brighton & Hove

Brighton & Hove

September 2010



THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION

Project no.	TREN/FP7TR/218940 ARCHIMEDES
Project Name	ARCHIMEDES (Achieving Real Change with Innovative Transport Measure Demonstrating Energy Savings)
Start date of the Project	15/09/2008
Duration:	48 months
Measure:	31: Personalised Travel Plans in Brighton & Hove
Task:	11.4.1 Personalised Travel Planning Study
Deliverable:	R31.1 Study of Personalised Travel Planning for Brighton & Hove
Due date of Deliverable:	14 th May 2010
Actual submission date:	30 th September 2010
Dissemination Level	Public
Organisation Responsible	Brighton & Hove City Council
Author	Peter Brett Associates- (BHCC review: David Parker)
Quality Control	
Version	1
Date last updated	15 th September 2010

Contents

1. INTRODUCTION.....	5
1.1 BACKGROUND CIVITAS.....	5
1.2 BACKGROUND ARCHIMEDES.....	6
1.3 PARTICIPANT CITIES.....	6
1.3.1 <i>Leading City Innovation Areas.....</i>	6
2. BRIGHTON & HOVE.....	6
3. BACKGROUND TO THE DELIVERABLE	7
3.1 SUMMARY DESCRIPTION OF THE TASK	7
4. DEVELOPMENT OF PTP BEST PRACTICE GUIDANCE.....	8
4.1 REVIEW OF PTP TO DATE.....	8
4.1.1 <i>Introduction to the Traditional PTP Approach.....</i>	8
4.1.2 <i>Past Interventions.....</i>	10
4.1.3 <i>Summary.....</i>	13
4.2 POTENTIAL IMPLEMENTATION ISSUES FOR PTP PROJECTS	14
4.2.1 <i>Introduction.....</i>	14
4.2.2 <i>Budget.....</i>	14
4.2.3 <i>Sample Selection and Size.....</i>	15
4.2.4 <i>Control Groups.....</i>	16
4.2.5 <i>Seasonality.....</i>	16
4.2.6 <i>Contact Methods.....</i>	17
4.2.7 <i>External Factors.....</i>	17
4.2.8 <i>Post – Project Reviews.....</i>	18
4.2.9 <i>Self Reporting.....</i>	18
4.2.10 <i>Comparability.....</i>	19
4.2.11 <i>Independent Evaluation.....</i>	19
4.2.12 <i>Summary.....</i>	19
4.3 REVIEW OF THEORETICAL CONCEPTS.....	20
4.3.1 <i>Introduction.....</i>	20
4.3.2 <i>Psychology of Behaviour.....</i>	20
4.3.3 <i>Behaviour Change in Travel.....</i>	21
4.3.4 <i>Summary.....</i>	27
4.4 LEARNING FROM OTHER SECTORS.....	27
4.4.1 <i>Introduction.....</i>	27
4.4.2 <i>Economics.....</i>	27
4.4.3 <i>Health and Physical Activities.....</i>	29
4.4.4 <i>Environment.....</i>	34
4.5 COMMUNICATION METHODS IN MARKETING	38
4.5.1 <i>Marketing.....</i>	38
4.5.2 <i>Information Technology.....</i>	38
4.5.3 <i>Application of Techniques.....</i>	39
5 DELIVERING FUTURE PTP IN BRIGHTON & HOVE.....	40
5.1 INTRODUCTION	40
5.2 BRIGHTON PTP APPROACH TO DATE.....	42
5.2.1 <i>Methodology.....</i>	42
5.2.2 <i>PTP Results (2006-2008).....</i>	43
5.3 2009-10 ENHANCED PTP.....	44
5.3.1 <i>Social Media Element.....</i>	44
5.3.2 <i>Community Participation Element.....</i>	45
5.3.3 <i>Peer Review.....</i>	46
5.3.4 <i>Evaluation and Monitoring.....</i>	46

5.4 KEY ISSUES.....	47
5.5 SUMMARY	48
5. BIBLIOGRAPHY	49

1. Introduction

1.1 Background CIVITAS

CIVITAS - cleaner and better transport in cities - stands for City-VITALity-Sustainability. With the CIVITAS Initiative, the EC aims to generate a decisive breakthrough by supporting and evaluating the implementation of ambitious integrated sustainable urban transport strategies that should make a real difference for the welfare of the European citizen.

CIVITAS I started in early 2002 (within the 5th Framework Research Programme);
CIVITAS II started in early 2005 (within the 6th Framework Research Programme) and
CIVITAS PLUS started in late 2008 (within the 7th Framework Research Programme).

The objective of CIVITAS-Plus is to test and increase the understanding of the frameworks, processes and packaging required to successfully introduce bold, integrated and innovative strategies for clean and sustainable urban transport that address concerns related to energy-efficiency, transport policy and road safety, alternative fuels and the environment.

Within CIVITAS I (2002-2006) there were 19 cities clustered in 4 demonstration projects, within CIVITAS II (2005-2009) 17 cities in 4 demonstration projects, whilst within CIVITAS PLUS (2008-2012) 25 cities in 5 demonstration projects are taking part. These demonstration cities all over Europe are funded by the European Commission.

Objectives:

- to promote and implement sustainable, clean and (energy) efficient urban transport measures
- to implement integrated packages of technology and policy measures in the field of energy and transport in 8 categories of measures
- to build up critical mass and markets for innovation

Horizontal projects support the CIVITAS demonstration projects & cities by:

- Cross-site evaluation and Europe wide dissemination in co-operation with the demonstration projects
- The organisation of the annual meeting of CIVITAS Forum members
- Providing the Secretariat for the Political Advisory Committee (PAC)
- Development of policy recommendations for a long-term multiplier effect of CIVITAS

Key elements of CIVITAS

- CIVITAS is co-ordinated by cities: it is a programme “of cities for cities”
- Cities are in the heart of local public private partnerships
- Political commitment is a basic requirement
- Cities are living ‘Laboratories’ for learning and evaluating

1.2 Background ARCHIMEDES

ARCHIMEDES is an integrating project, bringing together 6 European cities to address problems and opportunities for creating environmentally sustainable, safe and energy efficient transport systems in medium sized urban areas.

The objective of ARCHIMEDES is to introduce innovative, integrated and ambitious strategies for clean, energy-efficient, sustainable urban transport to achieve significant impacts in the policy fields of energy, transport, and environmental sustainability. An ambitious blend of policy tools and measures will increase energy-efficiency in transport, provide safer and more convenient travel for all, using a higher share of clean engine technology and fuels, resulting in an enhanced urban environment (including reduced noise and air pollution). Visible and measurable impacts will result from significantly sized measures in specific innovation areas. Demonstrations of innovative transport technologies, policy measures and partnership working, combined with targeted research, will verify the best frameworks, processes and packaging required to successfully transfer the strategies to other cities.

1.3 Participant Cities

The ARCHIMEDES project focuses on activities in specific innovation areas of each city, known as the ARCHIMEDES corridor or zone (depending on shape and geography). These innovation areas extend to the peri-urban fringe and the administrative boundaries of regional authorities and neighbouring administrations.

The two Learning cities, to which experience and best-practice will be transferred, are Monza (Italy) and Ústí nad Labem (Czech Republic). The strategy for the project is to ensure that the tools and measures developed have the widest application throughout Europe, tested via the Learning Cities' activities and interaction with the Lead City partners.

1.3.1 Leading City Innovation Areas

The four Leading cities in the ARCHIMEDES project are:

- Aalborg (Denmark);
- Brighton & Hove (UK);
- Donostia-San Sebastián (Spain); and
- Iasi (Romania).

Together the Lead Cities in ARCHIMEDES cover different geographic parts of Europe. They have the full support of the relevant political representatives for the project, and are well able to implement the innovative range of demonstration activities.

The Lead Cities are joined in their local projects by a small number of key partners that show a high level of commitment to the project objectives of energy-efficient urban transportation. In all cases the public transport company features as a partner in the proposed project.

2. Brighton & Hove

Brighton & Hove is an historic city, in the south-east of England, known internationally for its abundant Regency and Victorian architecture. It is also a seaside tourist destination, with over 11km of seafront attracting eight million visitors a year.

In addition, it is a leading European Conference destination; home to two leading universities, a major regional shopping centre, and home to some of the area's major employers. All of this, especially when set against the background of continuing economic growth, major developments across the city and a growing population, has led the city council to adopt a vision for the city as a place with a co-ordinated transport system that balances the needs of all users and minimises damage to the environment.

The sustainable transport strategy that will help deliver this vision has been developed within the framework of a Local Transport Plan, following national UK guidelines. The ARCHIMEDES measures also support the vision, which enables the city to propose innovative tools and approaches to increase the energy-efficiency and reduce the environmental impact of urban transport.

3. Background to the Deliverable

This Personalised Travel Planning (PTP) study (R31.1) has been written by Peter Brett Associates (PBA) on behalf of Brighton & Hove City Council (BHCC) as part of Task 11.4.1 of CIVITAS ARCHIMEDES. The objective of this report is to review and assess previous PTP interventions and theoretical concepts, and identify alternative applications of behavioural change which can be used to inform future PTP studies.

PBA has been working with BHCC on a large number of transport related projects, specifically in relation to sustainable transport provision, establishing how awareness of the alternatives to the car can be promoted. This report has been produced to complement and inform the work that is being undertaken by the BHCC PTP team in their efforts to personalise travel planning advice to residents throughout Brighton and Hove. This has fed into the BHCC PTP strategy document for 2009/10 (Peter Brett Associates, 2009), which in turn was the basis for the PTP implementation within ARCHIMEDES, as documented in Deliverable T31.2.

The focus of this review has been on the following:

- historical and recent PTP practices;
- key issues with PTP methodology;
- key criticisms from academia; and
- how current PTP projects can be enhanced through analysis of behavioural change theories and approaches in other fields.

The UK Department for Transport (DfT) has published several reports in recent years on the subject which discuss the effectiveness of PTP techniques, review PTP projects and offer a guide to implementing PTP projects. The aim of this report is not simply to repackage this and other information published on the subject but to look at previous and emerging approaches which can inform and add value to any future UK PTP projects.

3.1 Summary Description of the Task

This report initially looks at the broad range of PTP projects to date, how they have been delivered and what they have achieved in terms of modal shift and behavioural change. Section 4.2 focuses on issues in project methodology and how pitfalls can be avoided in

order to ensure robust analysis. Section 4.3 discusses theoretical concepts behind PTP and the views of transport and academic professionals. Section 4.4 explores the use of behavioural change techniques in other sectors which could be applicable in travel behaviour change. This is all brought together in Section 5 which relates the findings from this report to future PTP projects and suggests ways in which they could be implemented. This has formed the basis of the approach and methodology used in the BHCC PTP project throughout 2009 -10.

4. Development of PTP Best Practice Guidance

4.1 Review of PTP to Date

4.1.1 Introduction to the Traditional PTP Approach

Initial PTP studies began in Germany and Australia in the early 1990s with UK pilot projects following in the late 1990s. Its success in Australia, in particular in Perth, has seen it become a popular tool in travel planning activity, and early UK PTP trial projects reported significant modal shift away from single occupancy vehicle to more sustainable modes.

The DfT guidance *Making Personal Travel Planning Work* (2008) states that over 300,000 UK households have been involved in PTP projects to date and it is reported that these interventions resulted in an 11% reduction in car driver trips amongst the targeted population. Other benefits include:

- increases in walking, cycling and the use of public transport;
- increased profitability of local businesses;
- improved air quality;
- better working relationships between interested parties; and
- a shift in attitudes towards adopting more sustainable modes of transport.

PTP has been defined by the Department for Transport (DfT - 2005) as “a generic term given to a range of targeted marketing techniques which aim to encourage a switch from car based trips to more walking, cycling and public transport through a combination of tailored travel advice, information and incentives”.

PTP has a different name depending on its location and it is sometimes referred to as ‘Individualised Travel Marketing’ (or trade name “IndiMark”), “TravelSmart” or Travel Feedback Programs, and delivery of a PTP project can differ from place to place. Parker & Wilkinson (2008) identify the following main campaign characteristics:

- one to one interviews (telephone or doorstep discussions);
- information provision on sustainable travel modes (bus timetables, local cycle maps etc); and

- gifts or incentives to encourage use of sustainable transport.

Current PTP approaches are primarily based on techniques developed by Steer Davies Gleave (SDG) and Sustrans/Socialdata, both organisations having been involved in PTP since its inception. The techniques of both utilise the elements identified above; however, they differ in terms of how (and by whom) the informational items are chosen. SDG’s travel advisors chose items for participants based on their conversations with them, whereas in Sustrans/Socialdata campaigns it is the participants who chose the items they feel would be most appropriate for themselves. Later sections will explore further potential techniques which could be applied to future PTP campaigns.

Figure 4.1 shows Parker and Wilkinson’s view (reported in the DfT Guidance 2008) on how the PTP process interacts with individuals and how their behaviour changes as a result. Ultimately a voluntary, enduring change in travel behaviour is sought and the figure suggests that this can only be achieved with long term support and intervention.

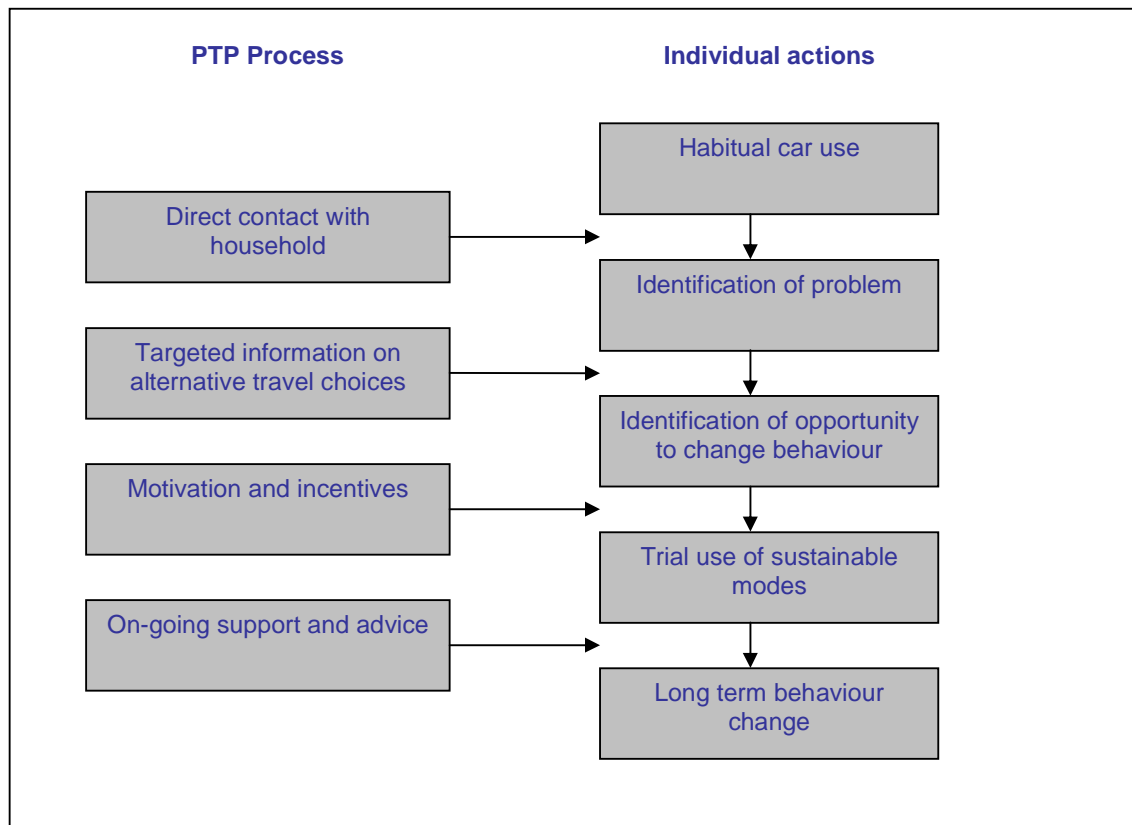


Figure 4.1 Interaction between the PTP process & personal decisions, Parker and Wilkinson (2008)

As this figure has been held up as an example of how to achieve long term voluntary travel behaviour change, it will be referred to in section 5 to assess how the approach to behavioural change in the enhanced PTP program compares against this model.

4.1.2 Past Interventions

4.1.2.1 UK

As previously noted, PTP interventions in the UK didn't start until the late 1990s when populations of small residential areas were targeted. In 2003-4, the DfT funded 14 local authorities to run their own PTP projects in a variety of locations which included residential populations, workplaces and schools. Following analysis of the data from these pilot studies, it was found to be possible to reduce car use by between 7% and 15% in urban areas (Sloman, 2005). Walking was found to be the main beneficiary with a mean mode share increase of 4% (Parker et al, 2007).

Larger scale projects were initiated following on from the success of these pilot studies, and a number of cities participated including, Darlington, Peterborough and Worcester ("Sustainable Travel Towns"), Brighton & Hove, Bristol, Cambridge, Colchester (focusing on cycling), Lancashire and London. PTP projects are also currently underway in Coventry (focusing on specific bus corridors), Liverpool, throughout Scotland promoting the concept of 'Active Travel' so linking to the health agenda, and in Northern Ireland "Travelswitch"). Where findings have been published, they have reported significant results in reducing car use and achieving corresponding increases in the modal share of sustainable alternatives to private car trips. PTP is increasingly being included in packages of travel plan measures in workplaces and Universities (e.g. Cardiff, Liverpool and Falmouth).

The London Borough of Sutton's "Smarter Travel" campaign, funded by Transport for London (TfL), has been recognised as a leading example of how "softer measures" can be successful, having been voted the winner of the 'Outstanding Contribution to Local Transport' and 'Travel Information and Marketing' categories at the 2009 London Transport Awards.

PTP projects are being watched with interest by local authorities and transport practitioners around the country, mainly due to the positive outcomes that are being reported. However, this has also given rise to a number of concerns as to the authenticity of the results and a question over monitoring and evaluation. These are issues which will be explored more thoroughly later in the report.

4.1.2.2 European

Germany

From the early 1990s Socialdata has explored and developed the concept of Individualised Marketing to promote the use of public transport. As an example, following a pilot study in 1998 in Viernheim which proved "IndiMark®" to be successful, Socialdata proposed a large scale roll out of the project across the city to assess its potential for use in other German cities.

The project targeted 3800 households incorporating 9120 inhabitants; of which 92% of the target households were contacted. They were then segmented into groups depending on their use of sustainable modes and appropriate information and/or support was provided as a result of communications with the project representatives.

Following an "after" survey (the "before" data was taken from the 1998 intervention), of which the response rate was 76%, it was found that the number of trips taken as a car

driver decreased by 12%, walking went up by 7%, cycling increased by 10% and public transport use increased by 29% (Tapestry, 2003).

Sweden

Individualised Travel Marketing in Sweden is seen as one of the pioneering PTP projects. The methodology for the project specified that households in three areas of Gothenburg were to be contacted and, based on their dialogue, grouped depending on current use of sustainable transport modes, and whether or not they were interested in receiving more information about alternative modes (Gyldenlund Råby and Lassen, 2007). Those who had an interest in exploring alternatives to the car were seen as the target market and each group was given information specific to their circumstances with the intention that this would encourage trial and eventual habitual use of sustainable modes of travel.

Results in areas where the main objective had been to increase use of public transport found that market share increased by up to 2% when compared to control groups. Car trips neither increased nor decreased, although in the control group it increased by 1%.

In other locations where all modes were promoted, walking and the use of public transport increased by 4%, cycling grew by 45% and car use decreased by 14%.

4.1.2.3 Global

Australia

Socialdata have carried out many PTP projects throughout Australia, notably on a large scale in Perth, using a community based individualised marketing, or “IndiMark” approach as described in section 4.1.2.2. Evaluation has differed by project and therefore it is difficult to make direct comparisons (an issue which will be explored in more detail in section 4.2). However all projects listed in Gyldenlund Råby and Lassen’s research (2007) showed consistent decreases in car use and increases for walking, cycling and public transport. They also noted no change in the number of trips, activities per trip, distance travelled or reasons for travel. Further research was carried out in South Perth two and a half years after the intervention which showed very little loss of impact despite the fact that no additional campaigns were conducted.

SDG targeted new residents in the city of Canberra located through a variety of sources. The key thinking behind the campaign was that people were more open to changing their travel habits when they were in a new residential situation and having to adapt to different transport provisions compared to their previous homes. In addition, the campaign used the frustrations associated with car travel as a tool to motivate travel behaviour change.

In addition to the travel diaries that were issued at the start and at the end of the intervention, GPS trackers were also given out. When compared to the travel diaries, the GPS trackers showed that more trips were taken than were being recorded. However, the data from the GPS trackers still showed that car driver trips reduced by 13.6% and walking increased by 4.2%, with the caveat of the small sample sizes.

Travel Blending is a personalised journey planning (PJP) programme implemented by Steer Davies Gleave consultancy in Sydney and Adelaide in Australia (as well as Leeds and Nottingham in the UK and San Diego in Chile). Travel Blending was initially developed as part of a major public initiative called ‘Clean Air 2000’ which aimed to

reduce pollution caused by car travel in Sydney prior to the year 2000 Olympics. After the pilot study had been completed in Sydney, the Department of Transport in South Australia initiated a trial which took place in Adelaide.

Travel Blending consists of two, one week travel diaries completed by all members of participating households. Individual participants were recruited through the workplace; the individual then co-opted the rest of their household.

Travel Blending does not merely promote replacing motor vehicle travel with other modes or means of communication, it encourages “thinking about activities and travel in advance (i.e. in what order can activities be done, who should do them, where should they be done etc.), and then blending modes (i.e. sometimes car, sometimes walk, sometimes public transport etc.), or blending activities (i.e. doing as many things as possible in the same place, or on the same journey [i.e. trip chaining]), or finally blending over time (i.e. making small sustainable changes over time on a weekly or fortnightly basis)”.

PBA undertook several campaigns in Australia including PTP for households (“Way to Go” pilot in Canberra and Travelsmart, Melbourne), educational establishments (Monash University, Victoria) and the workplace (The Alfred Hospital, Victoria).

The “Way to Go” pilot study was commissioned to trial personalised marketing in three Canberra suburbs. Travel dairies were used to track travel behaviour change before, during, and after the intervention and compared with that of the control group. The findings were consistent with other Australian projects, although they were limited in their usefulness due to a number of reasons including sample size, seasonality of surveys, and sampling error (that the control group was not representative of the sample group). Nonetheless, it was valuable in terms of describing the process for implementing the project on the ground. Responses relating to the usefulness of gifts given out during the campaign indicated that commercial items were rated the least useful whereas complimentary bus passes were the most useful (Commonwealth of Australia, 2005).

Chile

Following on from successful Travel Blending projects undertaken by Steer Davies Gleave in Adelaide and Nottingham, the approach was tested in Santiago, Chile. Travel Blending focuses on the family and their trip activities over a period of a week. This information is analysed and suggestions are given to the family that aim to help reduce dependency on the private car. Vehicle kilometres travelled over time is measured using car odometers and a further travel diary completed some time after the intervention to establish behaviour change over time.

The intervention found that total car trips of participants reduced by 25% and total trip distance (km) reduced by 34% which was a more significant reduction than in comparable projects, such as in Adelaide (23% and 21%) or Nottingham (8% and 14% - Willumsen, 2002) which used the same approach.

Japan

Personalised travel planning is referred to in Japan as Travel Feedback Programs (TFP). These have been developed from Travel Blending projects in Adelaide with the necessary adaptations for local culture (Anon, 2006). The main difference of the Japanese approach is that at the end of the implementation, participants are given feedback in workshops so that they can understand their own travel behaviour instead of

simply being given individualised marketing. It is argued that this feedback and resulting understanding can induce “behavioural awareness – an essential element in modification” (Dahlstrand and Biel, cited in Fujii and Taniguchi, 2003).

An example of a TFP study was a project conducted in Sapporo. It was delivered between the months of August and December 2000, and focused on two local communities, and one primary school classroom and their families. The reason for the choice of target market was to raise awareness across a number of community levels (APEIS, 2004).

Initial meetings and lectures were held at the start of the project in order to ensure a consistent level of understanding between all participants, followed by a 7 day travel diary being issued. The information from the first travel diaries was used in order to gauge activity patterns, and graphical diagrams (“diagnostic checklists”) and 4 levels of comments were given to the participants based on their use of sustainable modes.

This process was repeated with the final diagnostic checklist for the two community groups reflecting any changes in CO₂ emissions, and the educational groups having the results explained to them in a third lecture and calculating CO₂ emissions for themselves.

The results showed that single occupancy vehicle trips reduced by 5% between diaries 1 and 2 and the use of public transport increased (buses up by 15% and rail use up by 4%). Accordingly, CO₂ emissions dropped by 16.3% and increased awareness of travel behaviour was reflected in comments from participants, either during the lectures or from the travel diaries.

USA

In 2004, IndiMark projects were carried out in 4 cities across America - Bellingham, Washington; Cleveland, Ohio; Durham, North Carolina; and Sacramento, California under the name of “Neighbourhood Smart Trips”. These cities were chosen because of the differences in demographics, culture, population and public transport usage trends.

Forms were sent to households and participants were asked to tick the boxes of the areas in which they were most interested including whether they wanted personal advice on sustainable transport modes. A follow up survey was conducted in 2007 suggested that the reductions detailed below had been maintained (Horst, 2008).

City	Car as Driver Trip Reduction	Mileage Reduction
Bellingham, Washington State	8%	4%
Cleveland, Ohio	4%	8%
Durham, North Carolina	7%	11%
Sacramento City, California	2%	4%

Table 4.1 Neighbourhood Smart Trips Results; Source: US Federal Transit Administration (2006).

4.1.3 Summary

This section has introduced the concept of PTP and the various ways in which it has been implemented to date. It has looked at projects conducted in the UK, Europe and

globally including the Americas, Asia and Australia, and has noted some of the issues that have been identified following project evaluations.

Across the board, projects have recorded positive outcomes of an increase in the use of sustainable transport modes and a reduction in the amount of kilometres travelled by car. However, questions have been raised relating to evaluation or implementation methodology for some of these past projects, which have led to scepticism from transport planners, academics and other professionals. Section 4.2 reviews these issues.

4.2 Potential Implementation Issues for PTP Projects

4.2.1 Introduction

As the previous section has shown, many of the published results of PTP have demonstrated encouraging modal shift away from the car, and in some areas projects were showing consistent reductions of vehicle kilometres travelled of up to 15% (Bonsall, 2007). However, the consistencies are attracting interest and scepticism in equal measures. This situation resulted in the following statement taken from one of the DfT's key PTP review publications:

“One of the key challenges for PTP in the UK will be not only to defend the level of improvement sustained by PTP projects to date, but also to demonstrate how the investment in PTP compares against other alternative transport investment options”
Parker et al (2007)

A large amount of the criticism of PTP is based on the relationship between the way projects have been carried out and how the resulting data have been collected and analysed. This section reviews a number of these criticisms.

4.2.2 Budget

In the planning stages of any PTP study it is important to know the available budget and then assess what can be done within that budget to reach the most people and achieve optimal cost effectiveness. The project cannot be properly scoped without first confirming the status of funding. Consideration needs to be given to many elements and figure 4.2 serves to show that the budget allowed needs to be considerably in excess of that required for field officers and contact alone.

A large budget does not necessarily mean that the message will reach a large number of people; for example, of 5 PTP projects conducted in Wales in 2004, which all had budgets of £50,000, only two managed to achieve a cost per participant of less than £100¹, whereas later DfT guidance states to generally allow between £20 and £30 per household (Parker et al., 2007).

In order to avoid this pitfall, and in addition to setting out clear project objectives, Parker et al (2007) advise the production of a comprehensive funding and project plan, allocating realistic sums of money to each element of the project. By doing this, progress can be measured on a regular basis, required funding can be accurately forecast and realistic targets can be set, as would be expected when following appropriate project management principles.

¹ The Welsh Assembly Government commissioned 5 pilot PTP studies targeting different sections of the community (Thompstone, 2006)

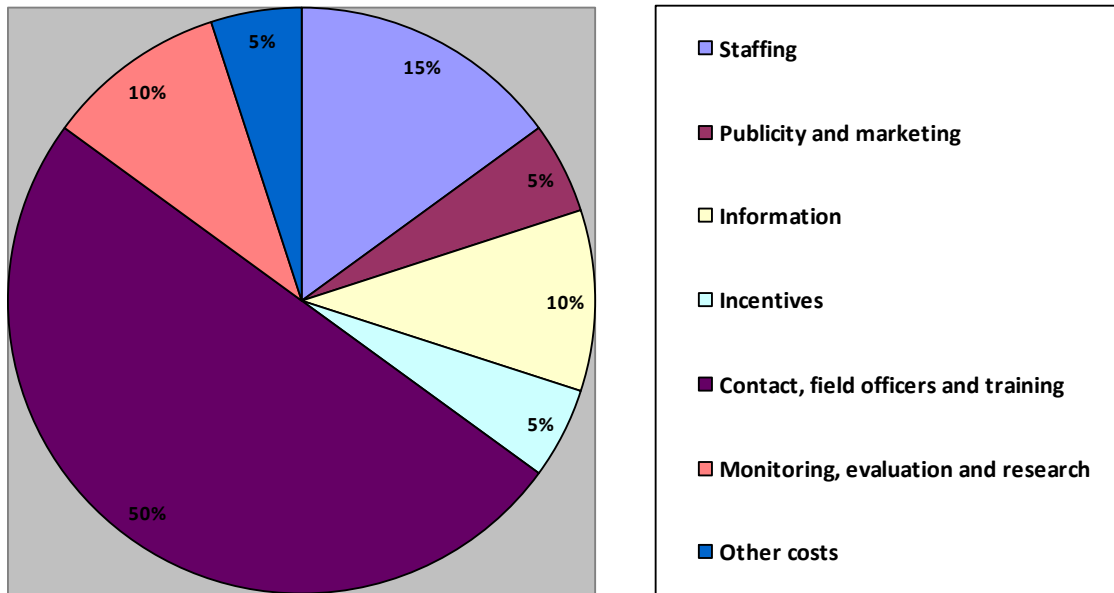


Figure 4.2 Indicative allocation of PTP Budget (Parker and Wilkinson, 2008)

Another key issue is the budget allocated to the evaluation of PTP. The recommended approach of before and after surveys and the use of control groups, all with statistically significant sample sizes can lead to a requirement for a sizeable evaluation budget – potentially significantly larger than that in figure 4.2 and often more than project sponsors are willing to fund. This is undoubtedly one of the reasons behind the choice of inadequate evaluation methods which have then dogged the project results that have eventually been published, leading to an ongoing vicious circle of confidence in the implementation and evaluation methods employed.

4.2.3 Sample Selection and Size

In general, PTP studies have targeted areas where project teams consider they're able to make the most headway in order to make best use of available resources. Assuming all the rest of the project methodology is conducted without error, it would follow that similar results could only be expected in locations with comparable (i.e. favourable) conditions. Therefore this raises questions over the transferability of PTP interventions as less fruitful areas are targeted. Conversely, it could be expected that PTP techniques will improve over time allowing them to effectively target those areas considered as less likely to engage with the projects (Bonsall, 2007).

Sample size is a key consideration to take into account when choosing the approach, along with what areas to assess and how to reach the target population. Small sample sizes can also have an impact of project costs as economies of scale are not achieved and larger samples mean less chance of error. Issues such as drop-out rates have to be expected and allowed for and potential target areas adjusted accordingly.

Some PTP projects have been criticised because their sample size is too small to be representative of the rest of their population thus producing weaker results. However, this assumes that any such intervention is as much about gaining information about transferability as it is about actually changing travel behaviour in the target area. To emphasise this point Stopher (cited in Bonsall, 2007) suggests that a statistically significant sample is about 8000 people (both in before and after surveys) in order to

identify “a change of 2% at the 95% confidence level”, which leaves many of the PTP projects to date falling short primarily due to the budget requirements of both implementation and evaluation of such large samples.

Sample selection is important when considering which areas to target, but is also a key variable when designing the approach to monitoring and follow up surveys. In particular there is a trade off as to whether one should use participants only or both participants and non-participants to measure the results? If non participants are included, there is a danger of underestimating the effectiveness of PTP. But if only participants are included they could have been strongly influenced one way or the other by the initiative and therefore their views are no longer representative of the overall population. Clearly it depends on the content of the survey but regardless, consistency in terms of establishing a comparable pre- and post- implementation survey sample is paramount if results are to be robust and these issues must be allowed for in the analysis.

4.2.4 Control Groups

A further issue is the inclusion of control groups within the studies. Control Groups have been utilised in some projects but not others, and the sample selection has been made using many variables. A reduction in single occupancy car use was apparent across the board; however, there was often insufficient data to test that PTP (as opposed to other transport measures) was the catalyst for change. Having a robust control group would allow project leaders to make comparisons between targeted and un-targeted populations to demonstrate the effectiveness (or otherwise) of the intervention and pick up reasons for travel behaviour change. Sample selection should be undertaken specifically with reference to the objectives of the project, and take into account the characteristics of the population being targeted.

If other transport initiatives are being undertaken simultaneously to PTP, these could obscure the results. Bonsall (2007) reminds us that failing to allow for these additional transport measures in the control group can result in an overestimate of the effect of PTP measures. However, it has also been suggested that complimentary measures which validate the choice of sustainable transport mode provide the perfect opportunity to launch PTP in order that participants can experiment with new infrastructure (Parker et al, 2007). So as to qualify the results from a PTP intervention correctly, other factors that could affect the results and / or influence the control group, must be taken into account at the time of analysis. Questions over whether this has been done effectively in early PTP projects have arisen, affecting perceptions of the validity of the data. Future PTP initiatives need to state if any other interventions are taking place, and what effect these may have on PTP results. Specific questions should be built into the discussions to ascertain if these measures have impacted on the control group’s travel behaviour and compared with findings from the PTP participants’ responses.

4.2.5 Seasonality

The weather is bound to have an impact on how people choose to travel. It is no surprise that sustainable travel (particularly walk and cycling) is more prevalent during the summer months whereas wet or windy weather will result in higher levels of car use. Whichever time of year is chosen for a PTP intervention, it is important that further monitoring occurs during the same period of time with appropriate notes taken and allowances made for unusual weather. Traditional holiday periods should be avoided when people aren’t commuting as regularly.

4.2.6 Contact Methods

Most PTP studies have involved initial contact with households by letter or postcard advising the resident of the scheme and that a travel advisor would be contacting them shortly. Local posters and advertisements have also been used, as well as websites and other media, such as stories in local newspapers.

If the main contact is made face to face a great amount of engagement and participant satisfaction can be achieved (Parker et al, 2007); however some residents are understandably nervous of engaging with strangers on the doorstep, not least inviting them into their homes. Residents may be suspicious that the person on the doorstep is who they say they are, and even if this information is conveyed well, residents may still not be interested in being involved in the project. The person opening the door is effectively the gatekeeper and although others in the household may be interested further contact may not be made. It is important to read the situation carefully, act accordingly, and ask to speak to other members of the household if appropriate, to maximise the opportunity for engagement.

Problems have been encountered where contact with particular locations such as flats with secure entry systems is required, or where land has been recently redeveloped it can be difficult to secure comprehensive address details for new homes. If these difficulties are encountered, an alternative means of communicating should be exploited, where possible to avoid ruling out contact with a section of the population.

In some cases the telephone has been used as a way of contacting potential participants; however this can also be problematic where no answer is received or the line has been disconnected. In addition, depending on the sample selection, ex-directory numbers can hamper attempts to make contact, potentially making the remaining sample unrepresentative of the target community. Increasingly households do not have landlines and use mobile telephones as their main residential line, making telephone recruitment even more difficult due to the lack of mobile phone directories. The difficulties encountered in contacting potential participants in this way supports using face to face contact as the preferred method of communication.

Email has begun to be suggested as a method of communication for PTP initiatives; however email recipients can choose simply to ignore or delete the message without it being read. Therefore it has been deemed an inappropriate method of communication, certainly for the purpose of making initial contact (Parker et al, 2007), although it could prove a useful communication tool thereafter.

Vector Research, a leading consumer market research company, have regularly used all three of the main methods– post, telephone and face to face - for engaging with potential PTP participants and they have strong evidence based on their experience of the higher levels of participation that are possible with doorstep engagement. Typically a mailshot will achieve 10% participation, telephone 20% and face to face 50% in general marketing interventions. This provides a rule of thumb in terms of a hierarchy of communication methods, and, given the issues mentioned above, it is therefore not surprising that face to face is the preferred approach to participants for the majority of PTP projects.

4.2.7 External Factors

There could be any number of externalities that could occur during a PTP initiative that could encourage increased modal shift towards or away from sustainable modes of

transport. Increased cost of living could force people to look at their finances and decide to use the car less. A near miss with a car could make a new cyclist re-evaluate their journey to work. A spate of crime in an area which someone has to walk through could result in a return to the car. In addition, whether or not PTP is part of a package of wider measures may affect results, and failure to allow for these and other issues in the analysis may cause an over-or under-estimation of PTP effects. Awareness of contextual factors as much as is possible is therefore paramount for a thorough examination of the results.

4.2.8 Post – Project Reviews

PTP projects conducted to date have achieved success in varying degrees, creating significant interest from transport planners looking for cost effective interventions. On the one hand, PTP appears to consistently be achieving modal shift away from single occupancy car trips but on the other, the seemingly predictable results raise questions over the measurement process and validity of ensuing data.

One of the main issues of the previous studies was the lack of follow up monitoring either immediately after the intervention, or in following years to measure long term outcomes. Parker and Wilkinson (2008) in their Practitioners' Guide to PTP state that "before and after surveys will be required to measure changes in travel behaviour resulting from PTP". They advise that these surveys are undertaken at similar times of year to avoid seasonal behaviour skewing the results, and that to analyse project durability, a second "after" survey be conducted 12 months later.

For example, no after survey was undertaken for a project in North Wales which achieved a high number of participants and low cost per person. Therefore, although information packs were provided to large numbers of people at their request, there was no follow up to ascertain whether or not the budget had been well spent and if travel behaviour had changed as a result. If this information had been available it could enable the project to be replicated in other locations, or if unsuccessful, be ruled out or adapted for future projects.

It has also been suggested (Parker et al 2008) that only limited evidence exists from which to address the long term impacts of PTP interventions. Although there are decisions to be made over the sample to use for follow up surveys (as discussed in section 4.2.3), consideration must be given to the amount of post project review undertaken in order to measure the effectiveness of PTP, validate funding for the project and ensure funding for future interventions.

4.2.9 Self Reporting

The reliance of PTP results (at least in part) provided by participants in the form of travel diaries or surveys can present an issue of self reporting bias and a potential skewing of results. Donaldson and Grant-Vallone, (2002) identify that "In general, research participants want to respond in a way that makes them look as good as possible" which, in terms of sustainable travel may result in higher levels of walking, cycling or public transport use being reported. On the other hand it could also result in a deliberate mis-reporting of travel behaviour if the participant has a particularly strong stance on PTP.

Relying on participants to report their travel behaviour as part of the PTP process can present a number of issues; that travel diaries are completed retrospectively if at all; actual behaviour is rationalised depending on what people "normally" do if that particular week's travel is unusual for some reason and that the length of diaries can affect

responses. Generally, they should be kept fairly short (around 7 days) as a more lengthy survey can become onerous to complete.

4.2.10 Comparability

The choice of project implementation methodology should be tailored to the particular context in which it's being applied. For example, levels of car ownership or differences in culture may impact on the success of PTP techniques, and necessary adjustments will need to be made. Just because a scheme has been deemed successful in one area does not mean it can be directly applied elsewhere and achieve the same results.

Differences between PTP approaches can also affect perceived benefits of the initiative. Objectives can differ from project to project and, when considering pilot projects, what transport planners are looking for is proven consistency of results, and evidence that a similar scheme would be appropriate for the location in question. If the objectives of PTP projects vary, for example in terms of a transport mode or environmental concern identified as relevant to the implementation area, then it would follow that the project delivery and likely outcome would be skewed towards a certain result. For example, if the town doesn't have the budget for an extensive overhaul of cycling facilities, it may not look to increase cycling as much as a Cycling Demonstration Town.

When different methods of collecting data or choosing target markets, control groups, etc. are employed, the comparability of results can be undermined unless the methods and the reason for choosing them are explained clearly and in sufficient detail.

DfT (2005) addresses the difficulties in replicating PTP approaches in other areas; "by its nature, PTP is tailored to an individual. Therefore it's hard to say with any certainty what the effect of a particular intervention or method or approach would be on another individual or group of individuals". Previous schemes can, however, provide a useful tool for outlining a methodology and identifying the most relevant elements.

4.2.11 Independent Evaluation

One of the strongest criticisms has been of the way the results are published and who has undertaken the analysis. In many cases, those who have implemented the project and who have a vested interest in the results, have also carried out the analysis and produced the summary report. In order for results to be considered unbiased and accurate it is important that evaluation is undertaken by an un-interested third party who has no concern over whether or not the initiative has succeeded.

Where most PTP campaigns have reported positive modal shift, they have focused on this rather than also identifying problems or issues with delivery of the project so that those barriers can be overcome in other campaigns. A "warts and all" representation of the way the project has progressed is required so that interested parties can learn and develop the approach.

4.2.12 Summary

Essentially the main concerns are related to assessment of impacts; ensuring that there is enough data to measure against and that those doing the analysis are as independent as possible in order to provide confidence in the process. A number of projects have lacked sufficient 'before' or 'after' data, whereas some organisations have provided the post-implementation evaluation themselves leading to questions of validity.

There are many considerations to take into account when preparing a study to assess qualitative outcomes of behavioural change. Section 4.2 has addressed:

- Budgetary issues
- Sample selection and size
- Control groups
- Seasonality
- Contact methods
- External factors
- Monitoring
- Self-reporting
- Comparability
- Independent analysis

This list is not designed to be exhaustive but highlights those criticisms that have most often been voiced. It is important to cover these and other issues comprehensively in order to measure the results as explicitly as possible.

The following section looks at behavioural change generally and in travel specifically from a theoretical perspective to understand the thinking behind PTP as well as highlighting other theories which may inform PTP practices.

4.3 Review of Theoretical Concepts

4.3.1 Introduction

This section introduces the main approaches to the study of human behaviour, the concept of behavioural change and considers its application within travel planning and PTP. Having explored the fundamental issues in terms of methodology for PTP studies in section 4.2, this section will outline higher level thinking from academic research for consideration in future projects.

4.3.2 Psychology of Behaviour

According to Shehri, 2007 there are five basic approaches to understanding human behaviour. Table 4.2 lists them and identifies how this could be translated into an example of travel behaviour.

Behavioural Approach	Translation to Travel Behaviour
Biological (the study of the nervous system; particularly the brain can lead to an understanding of why people behave the way they do);	While choice of travel mode is not genetic or directly driven by biology there are links to maximising physical well being, so a delayed train or sitting in congestion is often accused of raising blood pressure, for example.
Psychodynamic (developed by Sigmund Freud which looks at emotional and motivational, mostly unconscious responses to situations that are learned during early childhood);	Our parents always travelled by car and looked down on those who used public transport. There was never any question of using an alternative mode of transport and therefore this naturally persists in our adult behaviour.
Behavioural (that behaviour is determined	We learn through continued use of a mode of transport what effect it could have on our

Behavioural Approach	Translation to Travel Behaviour
by learning experiences);	punctuality and re-evaluate our behaviour as necessary.
Cognitive (that thought processes affect our behaviour; for example being in a different mood can affect how we react in a given situation [Psychologist World, 2006-9]); and	A passenger waits at a bus stop but the waiting time increases and the next scheduled bus does not arrive. Their mood deteriorates due to factors such as stress, safety concerns and the weather in which they're waiting and they decide to give up and use their car instead.
Humanistic (takes into account issues such as the meaning of behaviour and the nature of healthy growth).	An individual chooses to swap transport mode in favour for something more active as the consequences of this are that they are able to improve their quality of life as well as reduce their impact on the environment. This makes them feel good about themselves and feels that their actions reflect positively to others.

Table 4.2 Five basic behavioural approaches

All the above approaches can be translated into travel behaviour change campaigns as it can be seen that behaviour can be related to one approach or another. However it could be argued that humans are likely to adopt all types of these behaviours throughout the course of the day, and therefore combination of approaches could also be valid. By pigeon-holing participants into particular behavioural categories, important indications as to their motivations may be missed. It is important to keep an open mind so as not to rule out what might be an important approach for future campaigns. This also enables project methodologies to adapt to the particular circumstances.

The next section looks at how behavioural methods have been adapted for use within the context of travel behaviour change.

4.3.3 Behaviour Change in Travel

Behavioural change techniques seek to alter habits or routine behaviour which results in less than positive outcomes for the individual or wider society. They are often used in relation to health, for example smoking cessation, drug addiction or reducing obesity but can also be applied to environmental concerns such as conservation of water, encouraging recycling or reducing CO₂ emissions.

The Theory of Planned Behaviour (TPB) was introduced by Azjen in 1991, and describes the link between attitude and behaviour. This theory assumes that most actions can be viewed as “deliberate, planned behaviours”, and that in terms of transport mode, through a “systematic analysis of the alternatives” (Mulberry Research, 2003). The behaviour takes place following consideration of three factors:

- Attitude to the behaviour
- Subjective norm

- Perceived behavioural control

This consideration leads to a behavioural intention and the behaviour is then implemented. This theory provides a high degree of accuracy when used to predict behavioural intentions, although actual behaviour can vary (Ajzen, 1991).

Triandis' Theory of Interpersonal Behaviour (1977) explores similar concepts; however, it includes cultural, social and moral factors in the environment as influencing factors to the realisation of given behaviours (Gagnon et al, 2006). As transport mode choice and any restrictions of car use are increasingly becoming a particularly emotive issue (Anable, 2005), it follows that these additional factors will be present when considering transport mode choice and therefore should form part of PTP studies.

The research conducted with relation to transport mode choice by Mulberry Research on behalf of the DfT in 2003, found that habit was the “most influential predictor of transport mode decisions”, and that moral and environmental factors have, at best, an indirect impact on mode choice intentions. These motivational factors should be explored as fully as possible during PTP interviews as findings could provide insight as to what interventions might be successful in achieving modals shift away from single occupancy car journeys.

Anable (2005) suggests that one way of identifying predispositions to a change in travel behaviour is to use “cluster analysis” – to identify groups of people with similar attitudes and assess their resulting behaviour. Her study led to the identification of six travel behaviour segments:

1. Malcontented Motorists
2. Complacent Car Addicts
3. Die Hard Drivers
4. Aspiring Environmentalists
5. Car-less Crusaders
6. Reluctant Riders.

It was found that although some of these groups demonstrated similar behaviours, their attitudes to transport mode choice to start with was very different, meaning that their propensity to change also varied depending on their awareness of issues and moral stance, for example. This supports the use of attitudinal studies within a PTP initiative as it provides an opportunity to introduce relevant pieces of information on the doorstep which might influence future use of sustainable modes by that individual.

Voluntary behaviour change is defined by Ampt (2003) as “a change that occurs when individuals make choices for personal reward without a top-down mechanism, regulation of any sort, or a feeling of external compulsion”. With regards to PTP it is thought that behaviour change coming about as a result of choosing a particular course of action, after considering all of the alternatives and selecting the most beneficial is more likely to result in long term behaviour change. In addition, Ampt states that if this behaviour has a positive impact on the individual they are likely to tell friends and family, who, if they trust

the source of the information may also adopt the action, therefore “diffusing” the message whilst also reinforcing their own behaviour.

Ampt recognises, however, that there are a number of stages that lead to behaviour change and that these stages are not always rational or predictable, and vary from person to person. She suggests that providing information or offering financial incentives (although used regularly in traditional PTP) does not have the effect on motivation that one would expect and in fact sometimes the opposite outcome is the case.

So what elements ensure behavioural change can be delivered? A number of academics argue that simply giving people the information about a new course of action is not enough. Incentives often go hand in hand with PTP techniques but their effectiveness in achieving behavioural change has been questioned. Although Gyldenlund Råby and Lassen (2007) argue that “Information that helps people make decisions, plan and act seems to be better received and have a larger influence of changes in travel behaviour than gifts”, there is another school of thought which says that offering free bus tickets (for example) to people who would ordinarily have bought them anyway can result in the “cannibalism effect” (Tapestry, 2003). If incentives are to be used it is important that they are targeted at the right people, i.e. those who are on the cusp of making a change in their usual travel habits already and who need a nudge in the right direction. Incentives should not be provided to those already travelling sustainably; however, ways of validating their behaviour should be sought if possible. The way to achieve this is to ensure effective market segmentation.

In 1955, George Kelly developed Personal Construct Psychology (PCP) as a response to the need to understand how and why people might change their behaviour throughout a course of counselling or therapy. This has since been used in the marketing of new products and in designing a broad range of interventions to encourage Smarter Choices by addressing psychological barriers or structures (TAPESTRY, 2005). In terms of transport this approach is only valid where there is a credible alternative in existence as realistically people are unlikely to change their travel behaviour where no suitable alternative is available. Of course, the perception of a suitable alternative can vary immensely and can be used to avoid making sustainable travel choices for personal rather than practical reasons.

The technique is based on “Man the Scientist”, who develops hypotheses, and then tests and modifies behaviour depending on the outcomes, leading to values that define the individual. This might be considered to come under the heading of the “cognitive behaviour” model which is described in Table 4.2. PCP states that psychological processes are influenced by the ways in which we anticipate events, and affects our judgement of:

- Elements (things); and
- Constructs (relationship between elements).

Our constructs (as illustrated in figure 4.3) always have two contrasting poles; preferred and non-preferred (for example, happy or sad) and we place elements at either end of the scale or somewhere in-between depending upon our feelings towards them. Everyone has *core constructs* which have been validated throughout life and represent our strong and unchanging beliefs. We experience anxiety or fear when faced with a situation which threatens to affect our core constructs. This approach has been used in marketing and can similarly be applied to travel behaviour change as it can be used to

ascertain an individual's constructs, giving an indication of how to either change or add a construct to influence thinking about an element, product or mode of transport for example.

Incentives such as free bus tickets are often used in PTP to allow people to try out public transport at a reduced price. This provides the user an opportunity to test out their perceptions of public transport. A cheaper ticket allows more value for money per mile travelled (construct) for that particular journey (element) than if they were to purchase the ticket without the incentive.

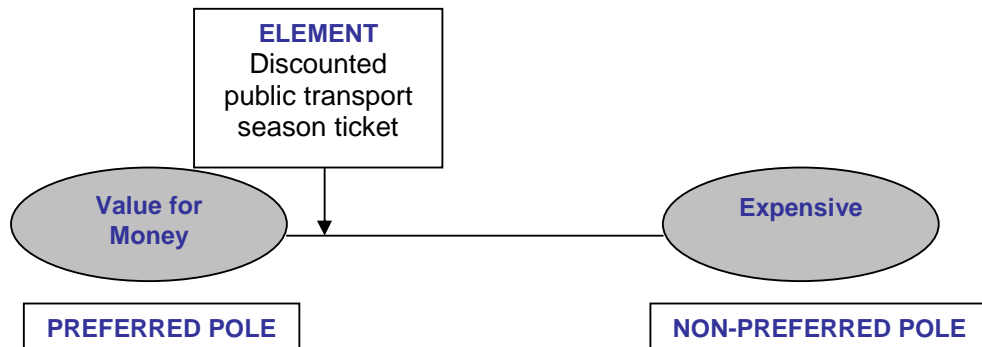


Figure 4.3 Elements, preferred and non-preferred poles

When the individual takes up the offer of discounted season ticket it is important that the experience be positively validating in order that the expectation is met or exceeded and therefore that behaviour is continued i.e. a discounted season ticket is used and the service is found to be punctual and reliable resulting in a positive experience and continued patronage. This ensures that the element remains at the “value for money” end of the pole spectrum. If the ticket is used but the bus fails to arrive or the driver is rude then this behaviour is invalidated resulting in a return to the previous behaviour as well as the element sliding down the scale and away from the preferred pole of “value for money”.

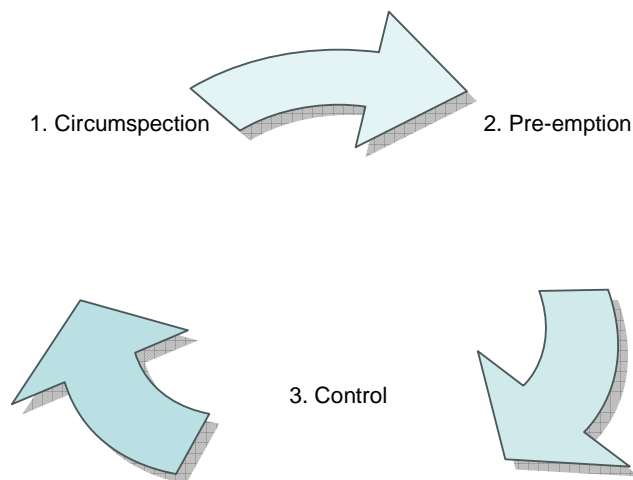


Figure 4.4 Circumspection, Pre-emption, Control (PCP) Model (TAPESTRY, 2005)

The Tapestry report identifies the “Circumspection, Pre-emption, Control” cycle (CPC) as the most useful mechanism for promoting Smarter Travel Choices. It also drives the steps between the seven stages described in figure 4.5.

The input is a new idea at the stage of *circumspection* at which point an idea is explored in more detail as to what it actually means for the individual. Following on from this is *pre-emption* which anticipates the consequences of taking the action. Once the decision is taken to put the idea into practice, new psychological structures are built in order to introduce an element of *control* and the output is a new behaviour. This behaviour is constantly re-evaluated and behaviour adjusted accordingly. The important thing to note is that in order to achieve a change that persists, actions must always result in a personal advantage for the individual and this is the case in PTP.

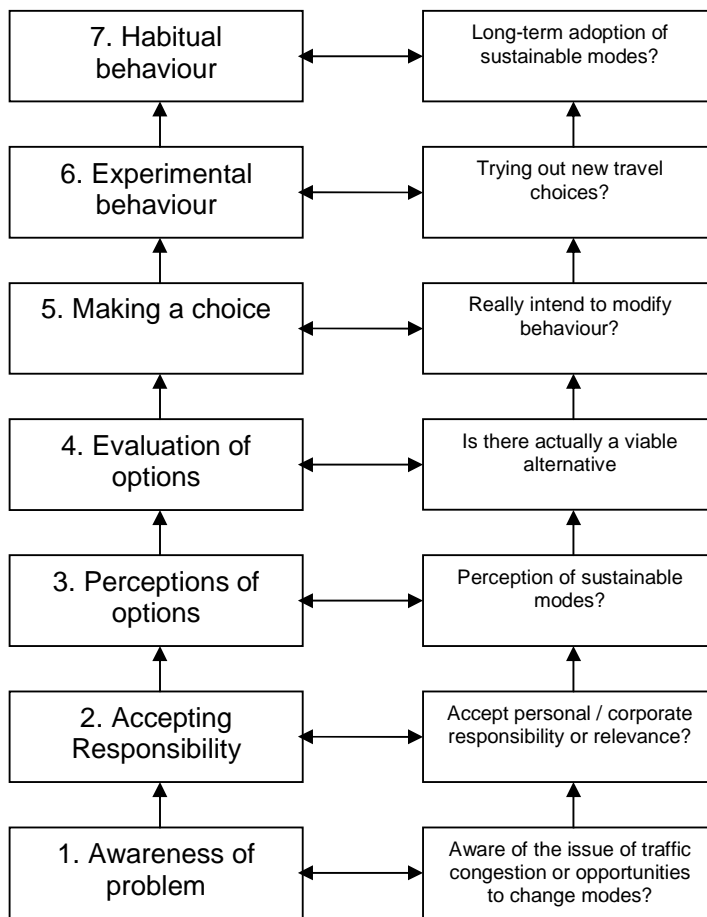


Figure 4.5 Seven Stages of Behaviour Change (Tapestry, 2005)

In Japan, Travel Feedback Programs (TFPs – as described in section 4.1.2.3) sought to take PTP to the next level of engagement by providing participants with feedback on their travel diaries rather than simply leaving them with information that is felt to be relevant. This feedback is designed to have an affect on future travel behaviour by inducing awareness of the impacts of that previously demonstrated.

Fujii and Taniguchi, (2003) conducted an experiment which demonstrated how this might be achieved by urging participants to make behavioural plans showing their intended behaviour. The plans were to set out how they expected to implement their actions, and the experiment compared the outcome of modal shift following the use of behavioural plans with that of people just provided with personalised travel information.

The results of their study found that households which made behavioural plans based on identifying ways to reduce car trips significantly reduced their estimated and actual total trip durations and frequency of trips longer than 45 minutes compared with the group who received only personalised travel information. They also state that using behavioural plans “had a significantly greater behaviour-changing effect than a travel feedback program without a behavioural plan” (Fujii and Taniguchi on their research, cited in their article of 2006), and can be more cost effective as it negates the need for, and resulting analysis of travel diaries. Gollwitzer and Brandstätter (1997) argue that behavioural plans are “necessary to the development of *implementation intention* which is, in turn, necessary for the implementation of new behaviour”.

Once people have made a decision on future travel behaviour, most importantly, they need to then act upon it. Gollwitzer & Brandstätter (1997) state that “having set a goal is considered to be just a first step toward goal attainment, one that is followed by a host of implementation problems that need to be solved successfully”. Their study found that aims were more likely to be acted upon if coupled with “Implementation intentions”; specifying when a certain course of action will be put into practice - “I intend to ride to the shops to buy my paper if the sun is shining”. By making a link to a certain situation in which an individual commits to behaving in a certain way, this connection can be made whenever the two elements coincide in the future. This implementation intention could also be advertised within circles of friends and family as the new behaviour is tried out and the anticipated personal advantage is realised.

Gärling and Fujii (2002, cited in Fujii and Taniguchi, 2003) bring the two elements of behavioural plans and implementation intentions together thus - “Implementation intention is an intention that includes information on when, where, and how the behaviour will be implemented. A behavioural plan made prior to actual implementation of the behaviour is more effective in increasing the implementation intention, as well as increasing the probability that the behavioural intention will actually be implemented”. In relation to traditional PTP practices, the next step after finding willing participants could be to get them to think about the next time they can try out an alternative mode of transport. This type of intervention is not commonly used in UK PTP studies, however the positive results demonstrated in the case study described show that it may have a place in future schemes.

Perkins (2002) raises the issue of post – intervention surveys; “clearly, it is important to understand what individuals gain from involvement in travel behaviour change programs. At the same time it is clear that as people’s awareness of the issues increase, part of the motivation is their contribution to a better society”. Evaluating what the campaign has achieved and how participants have changed their behaviour will provide lessons learnt and inform future campaigns. Each time a behaviour (achieved through behavioural plans and implementation intentions) is validated through feedback and personal advantage, it results in a further step towards being a *core construct* with the possibility that the message is *diffused* further to, and by peers. This type of reflection should be encouraged in post-PTP surveys to further increase the possibility of behaviour becoming habit.

4.3.4 Summary

This section of the report has established that most travel behaviour programmes operate within the broad framework of behavioural psychology theories and methods, but vary considerably in how the approach is applied. Beyond the five basic behavioural approaches described herein, a consensus has begun to appear that travel behaviour is not influenced (in a rational manner at least) by provision of information only, or purely by incentivising change. Questions about interventions and implementation plans beyond the initial recognition of the need for change have also been highlighted. An issue worthy of consideration is whether other industries, sectors or markets are more effective in using behavioural change techniques to achieve their objectives, and if so, are the methods transferable? The following section explores this in more detail.

4.4 Learning from Other Sectors

4.4.1 Introduction

Behaviour change techniques are utilised in many other areas besides travel. This section provides examples of behaviour change thinking in economics, health, the environment, marketing and information technology and how they relate to the theories presented in table 4.2 that have been applied in the field of travel behaviour. Innovations and different approaches to behavioural change in these areas could be used to inform strategies for achieving voluntary travel behaviour change.

4.4.2 Economics

Jeremy Bentham argued in the 18th Century that human actions should be analysed on how much “happiness” is created for others in the selection of a particular choice. Each decision is reached by assessing the scenario for potential returns of both pleasure and pain, and taking the path which leads to maximum utility (or happiness) for the maximum number of people. This theory makes 3 assumptions about social action (Scott [2000] and Zey [1992] cited in Jackson, 2005):

1. that choice is rational;
2. that the individual is the appropriate unit of analysis in social action; and
3. that choices are made in the pursuit of individual self interest.

Jackson (2005) uses transport choice for commuting to work as an example: “I choose to go by car, because the journey is (generally) shorter, the marginal cost is (usually) lower and I like listening to the radio. Or alternatively, perhaps, I choose public transport because it is (generally) more environmentally friendly, (often) less stressful, and I enjoy the company of strangers”. This shows that a rational choice can be made against a set of personal criteria after having taking into consideration the amount of time, money and enjoyment he gets from each activity as well as any bearing it has on wider society.

This economic model has been widely accepted and embedded into modern institutions and policy making. Economic theories of consumer preference are based on “rational choice” and the assumption that an assessment of available income, price, and personal preference equals a positive outcome (or maximum utility) for the individual or an infinite number of individuals. Simply because the theory is widely applied does not mean that it does not have its sceptics, however. Other behavioural economic models take into account human nature and the fact that we make decisions based on relativity. The rational choice methodology does not reflect context, peer to peer relationships and

other external factors that may affect behaviour. For example, an individual might know that driving a 4x4 car is more expensive than taking the bus, and that the normal driving conditions don't validate its use, but reasons such as social standing or protests against pro-environmental thinking can cause behaviour to prevail in spite of any "rational" arguments against it.

This can also be demonstrated in the growth of sales in ethical products (Collins et al, 2003). According to a report in the Independent (Demetriou, 2003), the cost of consumers switching to alternative brands for ethical reasons in 2002 was £2.6bn in lost business. It is well known, for example, that organic food is more costly, but due to health and environmental associations, and to a greater or lesser extent, kudos; increasing numbers of consumers have been willing to stretch their weekly shopping budgets. It is not simply a case of making the numbers add up, as traditional economists would argue; the decision making process takes into account an array of contextual factors.

Principle	Transport Decisions
1. Other people's behaviour matters	"How are my friends / family members / colleagues travelling? I don't feel confident enough to make a statement about "excessive" car use."
2. Habits are important	"I drive my car every day – I fit my routine around the trips that I need to make and this makes me feel secure."
3. People are motivated to "do the right thing"	"I am aware that the choices I make about how to travel have an impact on the environment and I'd like to consider alternatives which fit in with my other sustainable lifestyle choices."
4. People's self expectations influence how they behave	"As a senior member of my organisation I am expected to drive a car to meetings and if I were to take another form of transport I may be late or may feel inadequate compared to others."
5. People are loss averse	"I need my car so that I know I can get home quickly and easily in an emergency."
6. People are bad at computation	"If I start riding a bicycle on the roads I will be increasing my risk of having an accident. I know this as I saw a report of it happening to someone in the news last week."
7. People need to feel involved and effective to make a change	"I know that driving isn't the most sustainable transport mode but I don't see how cutting out just one or two journeys here and there can make a significant difference."

Table 4.3 Seven principles for policy makers in behavioural economics

The New Economic Foundation (Dawnay and Shah, 2005) expands this theory, arguing that there are seven principles which should be taken into account when contemplating consumer behaviour. These are set out in the table above which shows how these principles can relate to transport decisions.

Because people do not have access to all of the information that they need in order to make a truly rational choice, they have to go with what is available to them at the time

and can be heavily influenced by those values listed above. The difficulty with traditional behavioural economics is that qualitative factors such as emotions and habits are hard to measure and therefore do not fit well with established theories.

Ariely, in his 2008 book “Predictably Irrational”, suggests that the move from a rational model does not preclude patterns being identified which can help us identify future behavioural patterns. In travel choice decisions we are often faced with individual behaviours which fit well within a group’s social norm, but otherwise are almost inexplicable. Ariely suggests that “we are pawns in a game whose forces we largely fail to comprehend”, such as emotions, relativity, social norms and that new models for understanding their impact must be developed.

The “Nudge Theory” of Thaler and Sunstein (2008) approaches behavioural economics from the opposite direction; the perspective that people make predictable mistakes in decision making and that, knowing this, it should be possible to predict those mistakes and factor them out. Their most cited example is that of pension contributions. They suggest that, since people tend not to like making decisions, particularly those concerning personal finances, all new employees are automatically enrolled into the company’s pension plan (possibly providing a default investment preference based on age) with the option of opting out of the scheme if they wish. This removes the hard work and anxiety associated with making financial decisions but ultimately people will still benefit as a result of their employers “nudging” them onto the right path.

In terms of PTP, this could have particular benefits as transport planners attempt to encourage people on the basis that small changes make big differences and moreover, expect the adoption of a particular mode of sustainable transport following the initial experience. One limitation of the Nudge theory however, is that it still depends on intervention from a higher source rather than the message being carried within and between communities which raises questions of trust and authenticity; that this type of intervention is “paternalism” – the interference of a state or an individual with another individual, against their will, and justified by a claim that the person interfered with will be better off as a result. John Stuart Mill (cited in Reeves, 2005) argued against paternalism; “the only purpose for which power can be rightfully exercised over any member of a civilised community, against his will, is to prevent harm to others. His own good, either physical or moral, is not a sufficient warrant”.

Introducing an element of paternalism could be explored in transport policy and travel behaviour change for the “greater good” of society (for example including a cycle training element as part of the driving test in order to increase awareness of other road users, or allocating workplace parking based on distances travelled or access to sustainable modes). However the benefits of doing so would need to be clearly defined in order to silence potential critics of the so-called “Nanny State”.

4.4.3 Health and Physical Activities

Behaviour change in the health sector

Much of the cost of medical treatment can be attributed to illnesses caused by people making unhealthy lifestyle choices. The World Health Organisation (2008) states that “behavioural risk factors are the leading cause of morbidity and mortality”.

Behavioural change initiatives have long been associated with health campaigns such as anti smoking, AIDS awareness, and drug rehabilitation. As with PTP however, health

behaviour change campaigns focused on awareness-raising through information provision. Lilian (2008), discussing AIDS campaigns recognised the need to address attitudes first since these predetermined behaviour; “attitude deals with how one feels, thinks and what mindset is developed by this. Behaviour involves actions. How one feels and thinks therefore translates to behaviour”. Much of the thinking behind TAPESTRY originated in the health sector, showing that this could easily be incorporated into the design of sustainable transport campaigns.

The Parliamentary Office for Science and Technology (2007) describes some of the priorities the government had in terms of health behaviour; reducing smoking, obesity and alcohol intake, increasing physical activity and improving sexual health. Clearly all the objectives require behavioural change on the part of the target group and one such approach is to utilise the psychological tools of self-efficacy; “the belief that one has the capacity to undertake the actions to bring about particular outcomes” and self regulation; “processes which aid implementation of the behaviour”. As with PTP, it has been found that simply giving people appropriate information does not necessarily equip them with the skills to implement their new found knowledge. To apply the aforementioned tools in sustainable travel campaigns such as PTP, there would be a need to ensure that discussions with participants continually reinforced their abilities to make a change to more positive transport choices, and provided them with opportunities to validate this belief as is achieved by using the “Circumspection, Pre-emption, Control” cycle described within section 4.3.4.

Some documentation also picks up on health behaviour occurring in geographical clusters, particularly in socially deprived areas. Potentially this way of thinking could apply to travel behaviour; that certain travel related behaviours are indicative of the geographical location. One could assume that in those areas for example, people are less likely to engage in physical activity; it is common to believe that having a car is a status symbol, or that it is not safe to walk or cycle. (However this document will also show that this is not necessarily a robust method of segmentation – see section 4.4.5). By defining the issues in PTP areas before implementing the initiative and personalising the approach even further, greater conversion rates are possible.

Also important in public health behaviour change, and can equally be applied in PTP, is the inclusion of community members in the design of the intervention; “interactive engagement strategies and the development of coalition approaches to change should be part of all behaviour change interventions” (WHO, 2008). Similarly, WHO suggest that strategies are more likely to be successful if there is a combined effort between agencies, however this is hard to achieve since these agencies run independently of the others; “behaviour change often requires an inter-sectoral approach, in which the health system has neither the mandate nor the resources to be the key player because the actions for health will be taken by sectors whose primary purpose is not to produce health – for example, the education system or local authorities”. This is also the situation in travel planning since it is not only transport planners who have a vested interest. A combined multi-disciplinary approach to PTP would result in positive results, “funneling” communities into the desired behaviours. Achieving this collaboration can be challenging, but has been achieved, for example in the recent PTP projects in Scotland which have focused on encouraging ‘Active Travel’.

Figure 4.5 shows how the health sector is continually assessing how to improve their behavioural change techniques and ensuring that these programs are contributing towards strategic objectives. As with other behavioural change approaches it is possible to interchange the word “health” with transport planning related words and still come up

with the desired outcomes. By employing a model such as this at the planning stages of a PTP program it may help eliminate any doubts of achieving project objectives.

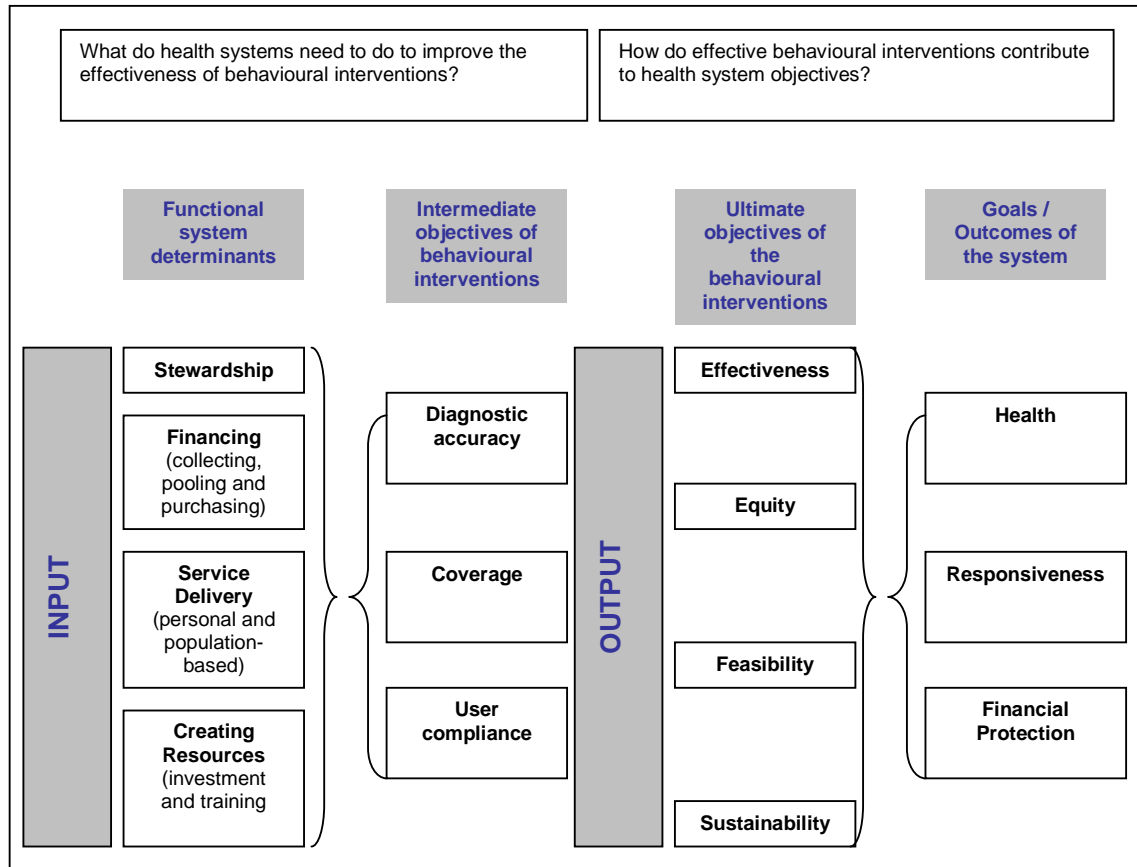


Figure 4.5 Addressing behaviour change through health systems

It is important to recognise the link between health and sustainable travel as it potentially meets several important objectives at once; reducing obesity by increasing physical activity, cutting car use by walking or cycling (or to a lesser extent, the use of public transport depending on the location of transport hubs), and improving air quality.

The Department of Health, (cited in SUSTRANS 2008) reinforced this message; “people who are active have significantly lower risk of heart disease and stroke, many types of cancer, non-insulin-dependent diabetes, depression and other mental illnesses, osteoporosis and falls in later life”. For the relatively low cost of implementing active travel campaigns, a potentially huge saving can be made in terms of curative medicine or long term disease management. Not only does active travel represent a potential saving in terms of medical costs but it can also have positive financial effects for the individual concerned if they’ve change their mode away from the car. The challenge is in achieving increased physical activities in the first instance and understanding real or perceived barriers to exercise.

Barriers to exercise come in many forms, changing throughout the course of a lifetime, differing from person to person, but also between sex and race or culture. This is important when designing interventions to target particular groups within the wider population. For example, in their study, Bezner et al (2006) found that one of the main

barriers for postmenopausal African American women to embark on a walking program for improved health was a lack of time. They also felt that exercise was too difficult or tiring, especially given that they generally had family responsibilities which took priority. The research found that African American women tended to have a more positive body image when they had curves rather than being thin. In addition, perspiration from exercising was a perceived problem for their appearance in terms of hair care and make up.

Generally, a lack of time is cited as the main barrier to undertaking an exercise programme, but if this activity was built into an existing routine such as the journey to work, additional time is not necessarily a factor. Perhaps this is a wider indicator of the lack of desire rather than an actual lack of time and therefore the stated barrier may not necessarily be a reflection of the real issue which is more representative of an individual's core values.

Another example of this is in South Pacific Island communities such as Tonga, cultural beliefs assign “aesthetic value” and social status to larger body weights (WHO, 2000). Initiatives to encourage healthy diet and active lifestyles have had limited success and it too described a need for a multi-sectoral approach.

As with PTP, the health sector shows that there are many barriers to behavioural change. In some cases these may be easy to address but often these values are entrenched and very difficult to change. Those in close contact with project participants ought to be properly trained to deal with these issues and how to encourage in-depth discussion around the issues to establish what the barriers are and how they can be overcome.

The table below shows the classic stages of behaviour change model which is regularly used in relation to health behaviour change and demonstrates how this has been applied to exercise (Matsumoto and Takenaka, 2004), as well as how it can be applied to sustainable travel. If, from initial PTP discussions, it can be established at what stage of “readiness” the participant is in choosing more sustainable modes, the approach can be tailored accordingly. This has formed the basis of the way in which the TravelWise Merseyside campaign elements have been developed and targeted to support the Merseyside Local transport Plan 2006-2011.

Stages of Behaviour Change	Exercise	Sustainable Travel
Pre-contemplation	“I currently do not exercise and do not intend to exercise in future”	“I currently travel by car and do not intend changing my behaviour in future”
Contemplation	“I currently do not exercise but I intend to exercise in the near future (in six months)”	“I currently travel by car but am considering car sharing in the near future”
Preparation	“I currently get some exercise, but not regularly”	“I walk from time to time but not regularly”
Action	“I currently exercise regularly, but have only begun doing so within the past six months”	“I take public transport regularly but have only just started doing so”
Maintenance	“I currently exercise regularly and have been doing so for longer than six months”	“I cycle regularly and have been doing so for longer than six months”

Table 4.4 Stages of Behaviour Change (Prochaska and DiClemente (1983)

Matsumoto and Takenaka (2004), state that many people start to exercise because of external pressures to do so, which could take them as far as the stage of *action*. However it is unlikely to result in *maintenance* due to, what is referred to as, the “non self-determination motivational profile”, i.e. where individuals begin exercise regimes due to external pressures, for example due to a doctor’s advice rather than for their own reasons. The same can be expected of travel behaviour change; “intrinsic motivation and the autonomous motivation are imperative to maintain preferable [health] behaviours in the long term” Dunn and Rollnick (2003) cited in Matsumoto and Takenaka (2004).

A seven stage approach (see Fig 4.6) has been adopted from a number of health campaigns such as reducing drug addiction and smoking cessation, and used within smarter travel choice programmes, including PTP, potentially reducing the “addiction” to the car. As with the Prochaska and DiClemente model above, the stage of behaviour dictates the strategies needed in order to reach that group of people; however the additional two stages allow a more accurate interpretation of behaviour, splitting *preparation* and *contemplation* into several sub-headings allowing for slightly different interventions in each stage.

In their study relating to healthy eating, physical activity and obesity prevention in families, Hesketh et al (2005) highlighted a number of issues which could have resulted in families, and children in particular having a more positive association with healthy and more active lifestyles. They identify that numerous programmes are designed in collaboration with families and those affected, and that parents believe that more progress is made when strategies target parents as well as children.

Reflecting the direction of the psychodynamic approach to behavioural sciences described in section 4.3.1, the paper stated that parents recognised behaviour as being shaped early in life and that it was “largely already entrenched by the time children reached school age”. Again, contributions by other sectors were cited as being necessary to raise awareness of issues associated with healthy lifestyles, a theme which runs throughout many campaigns that have been detailed in this document. In particular schools have been identified as having a large role to play in children’s perceptions of healthy lifestyles and that their strategies can result in a change of behaviour over time.

A successful example of sectors working together to achieve a common goal is in the “Food Dudes” (2009) intervention. Children between the ages of 5 and 7 were given rewards following healthy eating which is modelled in a video by older children who are shown eating and enjoying fruit and vegetables POST (2007). Initially set up as a pilot scheme in 150 schools in Ireland in 2005, Bangor University who run the scheme were given the World Health Organization Best Practice Award in 2006 out of 202 applications from 35 countries.

Both the previous examples could apply within travel behaviour and provide arguments for including discussions on the issue in an educational setting, as was shown within several of the TAPESTRY case studies.

One area where travel behaviour change projects could learn more from health psychology is in the field of epidemics (Pinkett et al, 2008). The most successful marketing campaigns in recent years, often labelled “viral”, are achieved through creating a social epidemic, where a thought, idea or product is promoted within a community. A greater understanding of the theory of epidemics (as suggested by Gladwell (2000) in his book “Tipping Point”) would enable travel planners to develop projects where ideas get traction and get widely accepted in communities.

4.4.4 Environment

It could be argued that individuals feel different about their environmental behaviour than they do about their health or economic behaviour – the affect of the their pro- or anti-environmental behaviour can be felt by everyone (indirectly) whereas the perception is that if they improve their own health really the only person that benefits is themselves.

Pro-environmental behaviour is an area in which the Government is particularly active. The DfT, in their 2008 study to define attitudes and perceptions of the impact of transport on the climate found that the issue has risen as a public policy priority over the course of three surveys between 2006 and 2008. Around three quarters of those surveyed indicated that they would be prepared to change their behaviour in some way to help limit their personal impact on the environment. But, as previously demonstrated, an intention to act does not necessarily result in behaviour (the so-called “value-action gap”, Barr and Shaw, 2008). In addition, evidence exists which suggests that encouraging behaviour change on pro-environmental grounds can be less effective than using triggers which result in a more personal gain. This can be seen in sustainable transport campaigns when travel plans are sometimes seen as “anti-car” and achieve the opposite of the desired effect in terms of modal shift by some participants.

DEFRA (2008) set out a framework (Figure 4.7) for its work to foster change in this area and the figure below indicates the behaviours that DEFRA intend to target (based on carbon savings).



Figure 4.7 Headline Behaviour Goals (DEFRA, 2008)

These goals were identified following a process of stakeholder engagement which led on to further analysis of the behaviours demonstrated within each. This work allowed DEFRA to segment the public into seven population clusters:

- 1 Positive Greens
- 2 Waste Watchers
- 3 Concerned Consumers
- 4 Sideline Supporters
- 5 Cautious Participants

6 Stalled Starters

7 Honestly Disengaged

They were then plotted onto a graph which indicated their willingness and ability to implement pro-environmental behaviour. How willing and able to act they are informs the strategy for engaging with them and the framework is designed to help with future possible interventions. These are most likely to require a package of measures implemented by a number of stakeholder partners.

Once the public is split into target markets and assessed in terms of how willing and able they are to act, it is necessary to understand what behaviour they might display, and what issues affect that behaviour. Barr and Shaw (2009) highlighted three sets of variables which influence people and that could act as either barriers or motivators for change:

- Social and environmental values;
- Situational variables (geographical and personal situation); and
- Psychological variables (e.g. peer relationships and fear).

They argue that lifestyle groups are an important factor to consider when analysing behaviour and should be used as part of policy making processes. They concluded that further research was needed into the viability of, and potential gains that can be made by using “community champions”, by branding campaigns to key market segments, and by using incentives to encourage positive lifestyle changes in particular segments.

Lifestyle is cited as an important factor in making travel choices and therefore context in terms of PTP is equally important. If participants’ situations are treated in a way similar to that described above, practitioners may achieve a clearer insight into barriers and motivators to change.

Green Consumerism

The importance of brand in green consumerism has been highlighted by Gordon (2002). She reminds us of the emotional relationship that one has with a brand and discusses reasons why so called “green” brands have not been as successful in entering the marketplace. She argues that in order to make environmentally friendly brands competitive, marketing managers need to find ways to “connect issues to the everyday lives of ordinary people”.

As has been demonstrated in behaviour change in other fields, people say they feel a certain way but often act in another, and this is no less the case than in making green consumer choices. Gordon cites the “30:3 ratio”; that 30% of people state they are concerned about green issues when making decisions about purchases and lifestyle choices yet only 3% actually demonstrate this in their behaviour. She points out that our actions communicate our identities at a given moment in time and that these actions are fleeting and may differ depending on the situation. She uses the example of a man choosing a low calorie sandwich for lunch but not having any qualms about having a lager in the pub with friends in the evening. In travel this may equate to taking the train to work on a weekday, but driving to an out of town retail centre on the weekend.

In addition, and making the issue much more complicated, is that *green* or *sustainable* means different things to different people (Hinton and Goodman, 2009). It also has an image problem; where many people feel that acting in an ethical way is all too serious and depressing. Gordon suggests that more artistic and fun elements are introduced into the green movement which will only encourage participation.

When thinking about campaigns for green goods or services, Gordon's comment on messages contained within them can be applied to transport; "nowadays an altruistic or rational message is not, on its own, sufficiently motivating for the majority of people to change their consumption habits". This supports the view that information on its own is not enough to make people change their behaviour. It has to be related to issues that affect their day to day experiences; bringing the issue closer to home and creating a "relationship", which is also the case with transport mode choice.

The problem with information or marketing messages is the source and whether the recipient of the information finds that source to be trustworthy. This is why word of mouth marketing is so effective, as the message comes from friends, family and people that are known to us and their actions can have an impact on the way that we see things. This supports Barr and Shaw's view that community champions should be more engaged in behavioural change campaigns, certainly for environmental initiatives but also in other areas such as transport.

The current recession can provide both a steer towards or away from sustainable consumption. Hinton and Goodman (2009) point out that "restricted funds could provide greater incentives for the purchase of more durable and less disposable commodities". On the other hand however, green items tend to be more expensive, and in times of financial hardship people are looking to limit their spending therefore opting to choose cheaper, less sustainable alternatives. They also argue that this could exacerbate the problem by economic growth relying "upon a failure to include so-called 'environmental externalities' in the price of products and other consumables such as energy, where these artificially low prices have encouraged increased consumption and disposal".

Values placed on transport costs are also in need of clarification in order that users understand better what each transport mode actually costs them in terms of each particular journey. Drivers may think that a journey is cheaper by car, whereas in reality they are not taking the purchase price of the car or running costs into account. Rather they just consider the fact that that journey is not costing the money at the point of departure. The car may not only be the less sustainable alternative but neither is it necessarily the cheapest option.

Water Conservation

In Australia, the scarcity of water has been an issue for several years due to recent drought conditions. Behavioural change programmes have become increasingly important in raising awareness in both residential and agricultural settings as described by Hassell and Cary (2007). As with all campaigns which aim to achieve a voluntary shift in behaviour, there is a section of the target market who are resistant to change. One study in Victoria undertook to find out consumer attitudes to water as a resource and the results showed that although the majority of people valued water highly, 25% saw it simply as a "consumer item" to be available whenever required. Furthermore, 12% of respondents did not see water as being "in any way significant in their lives".

Many of the case studies presented in Hassell and Cary's report employ techniques used in other areas with some degree of success. Where they found significant change was where participants were able to see the results of their behaviour and apply it to their impact on the environment. Tools such as timers to indicate shower durations, or Smart Shower Meters which provided visual and audio prompts successfully raised awareness and conservation of water.

This suggests that the application of tools such as GPS, cycle computers or pedometers could have a considerable impact on travel behaviour change as participants are able to view the results of their actions in measureable, tangible units.

Energy

Denmark has long been associated with being energy conscious with the abundance of wind farms which many families have a financial stake in (Saastamoinen, 2007). It was partly this tradition of community ownership and civic engagement that led the Island of Samsø to win a competition to become 'Denmark's Renewable Energy Island' which challenged inhabitants to convert all energy supplies to 100% renewable sources within 10 years.

The project achieved this objective 2 years earlier than required and electricity produced by the wind farms was more than required, the surplus of which was used to offset that used in transportation. In terms of behavioural change it was less successful despite several campaigns in the area of consumption where levels either failed to meet targets of reduction or increased. It was however interesting on a level of consumer engagement as most if not all of the islands 4,100 inhabitants participated in achieving the primary objective.

At the start of the project, island inhabitants were invited to participate in initial working groups to assist with planning and development. Initially take up was slow but when the "island's opinion leaders" were engaged, more and more inhabitants became active in the project. Participation rose to such levels where it was considered the norm. There was even an unofficial element of competition between inhabitants to see who could be the most environmentally friendly, especially when the project began to get international recognition. As the project progressed, inhabitants were involved in selecting technologies to be used for the project and eventually even invested personal finances into the infrastructure.

Numerous possible reasons for the lack of behaviour change in consumption of energy were suggested in Saastamoinen's report. The amount of success that was achieved in other areas may have caused island residents to find other ways to use the generated energy such as buying additional electrical appliances or increasing the temperatures within their homes, as a reward for the commitment they'd given to the project. Additionally energy savings are not as easy to quantify or visualise as tangible objects such as wind turbines.

This example indicated the impact that involving the community in marketing campaigns can have and there is evidence from Merseyside PTP that such an approach can work in PTP.

4.5 Communication Methods in Marketing

4.5.1 Marketing

Marketing is defined as *"the management process responsible for identifying, anticipating and satisfying customer requirements profitably."* (Chartered Institute of Marketing) and is constantly evolving. From a classic mass marketing advertising approach much has been made in recent years of customised and individualised product marketing, achieved through the advance of technology and strong market segmentation tools. Travel planning has increasingly followed the same development path, moving from broad travel awareness campaigns to localised, personalised travel planning.

While recognising the importance of "word of mouth" (WOM) and particularly the difference between endogenous and exogenous WOM, marketing professionals are seeking to understand how these new techniques can be utilised for a range of products. They seek to generate endogenous (within the community) impacts rather than exogenous (externally generated) WOM, which is seen as disingenuous and ultimately less effective in the long term.

Following his work on "permission marketing" (i.e. selling to people who are interested in your product) Seth Godin, in his book "Ideavirus" (2001) explored how to attract attention in the first place and outlined the "viral" approach. It suggests that "interruption marketing" – such as traditional TV advertising is ineffective and by promoting ideas customers market to each other. Other early advocates for the "conversational marketing" approach include Doc Searls in his influential "Cluetrain Manifesto" (1999).

"Buzz" and "viral" marketing therefore focuses on ideas being transmitted through groups and communities in non-traditional methods, on a one to one basis where interest is raised sufficiently to encourage the passing on of information. This clearly has an application to promoting travel and transport.

To link this with the consideration of economic and sociological theories on rational choice it is worth considering the approach of the marketing industry. They are seeking to sell products to "rational consumers", and they use as much semiotics and discourse analysis as psychology and rational choice theory in approaching consumers. Increasingly they are also utilising ethnography, because understanding people's lived lives (and the individual's perceptions of how they live their lives) will frame their choices much more significantly than abstract rationality.

The new theme developing in marketing is very well illustrated by Earl's comment in his 2007 book, "Herd":

"We have to admit that we cannot make anyone or any group do anything. We cannot communicate with them in isolation or hope to "persuade them" (as the old advertising models would have it); they influence each other. Only by getting individuals and groups to choose to do something for their own reasons – often largely social – will change in behaviour come about."

4.5.2 Information Technology

The Internet and specifically the emergence of "Web 2.0" offers a number of analogous approaches to informing, incentivising and influencing individuals and groups (see What is Web 2.0 by Tim O'Reilly, 2005 at <http://oreilly.com/web2/archive/what-is-web-20.html>.)

It is shorthand for describing the increased interconnectivity and peer to peer relationships that have developed, both in computing technology and in individual's use of the web. The emphasis on openness and sharing, with user generated content such as blogs, YouTube and collaborative software provide a different community ethic. Much has been made of social networks, such as Facebook and Twitter, and clearly the value given to information provided through such groups moves us away from the trusted broadcaster model.

For travel behaviour change programmes we believe there can be technology and social influencing idea transfer from Web 2.0. As we now move inexorably to Web 3.0 (or the Semantic Web) transport planners need to be aware of the way communities of interest will develop in the future, so that these tools and techniques can be utilised to promote sustainable transport.

4.5.3 Application of Techniques

There needs to be some circumspection as not all methods or techniques can be transferred effectively from one activity to another. The World Health Organisation warns:

“the more rigorously designed and tested a programme is, the more difficult it is to generalise, or replicate, its impact in other social, economic and environmental settings” WHO (2008).

However, traditional transport and travel planning do appear particularly insular in not recognising that some, if not all, of that which is learnt in the fields of economics, health, the environment, marketing and information technology, can be a beneficial influence. The research and demonstration elements demonstrated as part of the TAPESTRY project (2000-2003) were clearly designed in this context and have shown how this can work. From this research and evidence from other sectors presented in section 4.4 we have concluded that behavioural change techniques across the board are most likely to be successful when they include the following elements:

- Careful and robust market segmentation according to the project objectives and target population
- Target community involvement in the campaign design and development
- Multiple sectors such as the health industry and policy makers are engaged in the process where appropriate
- Different platforms of communication are employed
- Independent third parties are appointed to conduct project reviews.

5 Delivering Future PTP in Brighton & Hove

5.1 Introduction

In the preceding chapters, PTP programmes have been described and in general it has been found that there is a track record of reported successful modal shift in a variety of different areas, both in cities and rural areas. The benefits of the personalised element of the intervention include:

- longer lasting behaviour change as a direct result of the face to face contact and
- personalised, targeted information provision.

However, whilst recognising the value – and successful outcomes – of previous PTP projects, this report has questioned the essentially individualistic ‘rational’ approach of ‘conventional’ PTP. By following this method, a risk develops that PTP may increasingly become a ‘process’ driven approach that measures success by simple numerical outcomes, whilst itself missing opportunities for wider and deeper engagement.

This ‘conventional’ approach achieves measurable modal shift, but does not encompass much that is now known about the importance of habitual behaviour and of social connections in spreading behaviour change. In effect, the conventional approach (if not specifically designed to cover these points);

- largely ignores the physical context of the feasibility of using different modes; i.e. if those modes have good supporting infrastructure in the target areas;
- does not directly address the attitudes and actions of the ‘trip end’ destinations of journeys (superstores, schools, etc), unless it is integrated into a wider behavioural change programme;
- does not seriously target those who are not already minded towards behaviour change, unless combined with an initial process to target participants;
- ignores the personal motivational context that may underpin change.

In addition to health improvements, there is now much greater awareness of the need for sustainability, and an (albeit occasionally grudging) acknowledgement of a need to change personal behaviour in response to this.

Within the context of behavioural sciences, whereas much previous PTP work has been based on the Theory of Planned Behaviour this may now be seen as overly limited whereas the earlier Theory of Interpersonal Behaviour (both theories described in section 4.3.4), has a wider and more satisfactory alignment with current understanding of how human behaviour may best be influenced. Therefore, whilst traditional PTP projects have reported successful results, transport planners should be developing enhanced measures to increase the success rates, which could involve “embedding change” into the community by empowering individuals.

Some client agencies are now adopting an approach of setting PTP within a coherent wider programme of sustainability interventions, and in particular establishing intensive marketing programmes as well as appointing community champions, which accords with the emerging thinking on PTP and travel behaviour change. A wider approach could encompass both ‘social marketing’ and community-based approaches, for example. Such an approach is being developed by PBA for implementation in Brighton & Hove through EU CIVITAS project support and funding. Further detail on how this will be implemented is available from BHCC in its PTP 2009-10 strategy document produced by Peter Brett Associates.

One of the key issues facing local authorities in adopting personalised travel planning is the need to be clear about the objectives and the level of mode shift that realistically can be achieved. As noted in previous sections there is evidence from Australia and the UK that up to 10% reduction in car trips (but only in the participating group) can be delivered through a PTP intervention based broadly on providing information and some incentives to households. However, until recently, many of the projects were one off trials, and therefore were of limited scope and scale. More recent projects have targeted larger numbers of households and this reflects the need for participation rates to be high to provide greater certainty that the benefits could be achieved more widely if rolled out to the whole population of a town or city.

Therefore working with the research undertaken for this study, it is possible to develop an enhanced PTP product. This builds on best practice as identified by the DfT and academic research discussed in earlier chapters, but adds new process and project elements which seek to improve the likelihood of making long term impact on both individual and household behaviours – and to gain self-reinforcing behaviour changes across a whole community.

In previous PTP projects, PBA has challenged existing methodologies by focusing on their “4 I’s” approach to measure selection within travel planning: To achieve sustained behavioural change the transport *infrastructure* must be in place, then relevant *information* can be provided and *incentives* (financial or other) offered. In many traditional PTP projects that is the limit of the intervention, but without a fourth element – *innovation* – there is unlikely to be lasting influence on behaviour.

For innovation, PBA suggest creating a buzz or excitement about the objectives of increasing sustainable travel and tailoring that innovation through appropriate channels, to reach the widest audience. As noted above this is driven by experience of other sectors, where influencing personal behaviours is well established and successful – in health, pro environmental behaviours such as recycling and energy use, the new science of behavioural economics and product marketing.

‘Enhanced PTP’ is therefore a method of placing more emphasis on understanding the communities that are engaged with and tailoring messages to specifically suit the community. The market segmentation serves one main purpose – to reach as many people as possible and engage with them in natural conversations, through trusted media. It removes the potential cynicism about the objectives of the project (and a perceived “nanny state” which seeks to dictate when, where and if we can drive, for example). The goal is two fold – to significantly increase the size of the participating group and secondly to have a long lasting impact on individual behaviours, not as a one off or because of a short term incentive, but because it fits the person’s social context and is therefore right for them.

By segmenting in this way, whilst also taking into account the likely predominant attitudes and behaviours of the group, the cost of the project is kept down as it targets smaller groups of people, rather than the more costly approach of treating each person in a different way. A campaign aimed at the general population is less effective as there is a need to segment in some meaningful way. The suggested approach addresses this need, and creates the opportunity for a viral campaign to emerge, as individuals communicate their feelings towards the use of sustainable transport. As the message spreads, the cost effectiveness of the campaign increases.

This report has provided a review of PTP projects to date and how they have developed, as well as explored how behavioural change techniques have been applied in other sectors with the aim of coming up with an innovative new direction for the PTP project currently underway in Brighton. This chapter details how the project has progressed thus far, and the enhanced approach which has been agreed with BHCC and which has been rolled out in the 2009-10 PTP project.

5.2 Brighton PTP Approach to Date

5.2.1 Methodology

To identify suitable areas for PTP, social profiling methods such as MOSAIC analysis were conducted, and ACORN groups (marketing tools which were previously used to analyse consumer groups), combined with census based profiling, were examined. This analysis identified groups within communities which demonstrated specific characteristics suggesting that individuals in the area may be more susceptible to PTP interventions and messages about adopting sustainable transport options. By categorising communities in geographic areas into their relevant lifestyle classifications it is possible to identify suitable tools for use within a PTP project.

Prior to the implementation of PTP, Social Research Associates (SRA) was commissioned by the Council to undertake baseline surveys in the selected area. Travel Advisors were then recruited to begin making visits to potential participants, referred to as “door knocking”. This process involved engaging in conversations with residents regarding their current travel habits and attitudes to various travel choices. Emphasis was also placed on identifying economic (time/cost savings), social and environmental benefits for both the individual and society as a whole.

Those households which expressed an interest in participating within the project were offered a range of promotional materials and incentives, which included existing published material and bespoke information:

- The Community Guide;
- Travel Contacts Leaflet;
- Travel Options Folder;
- Cycle Maps;
- Pocket Bus Times;
- 20% discount on cycle purchase;

- Free three monthly passes (10 donated by Brighton & Hove Bus and Coach Company); and
- 1,500 day tickets and 750 one week tickets (sold by the bus company to the Council at a discount).

Incentives were not offered to residents that already travelled sustainably since priority was on encouraging behaviour change amongst existing car drivers. This reflects standard PTP practice as established by the Travelsmart approach in Australia, but does miss the opportunity to encourage occasional use of more sustainable modes even if the main commuting mode is car, for example.

For the 2007 and 2008 PTP projects (i.e. before CIVITAS ARCHIMEDES), in addition to offering a PTP package to all residents, a total of 75 people were selected at the doorstep to form part of an intensive group that received a tailored package of incentives to the value of £210 each to encourage cycling. This was subject to the completion of seven day travel dairies. To enable comparisons with the baseline surveys, travel dairies used the same questions.

5.2.2 PTP Results (2006-2008)

It can be seen from Figure 4.8 that the existing approach has achieved some degree of success in reducing the proportion of residents in PTP Areas 1 (North Portslade) and 2 (South Portslade), travelling as single occupancy car drivers for all journey purposes.

This has led to corresponding increases in the proportion travelling using sustainable modes, most notably in PTP 1, when following the intervention, walking rose by 5.2%.

Due to problems with accessing the ‘before’ and ‘after’ survey data for the intensive group, it has not been possible to establish the effect on travel behaviour of offering greater financial incentives to a selected number of participants. General monitoring information however has been produced for each PTP year and is available to track trends over time.

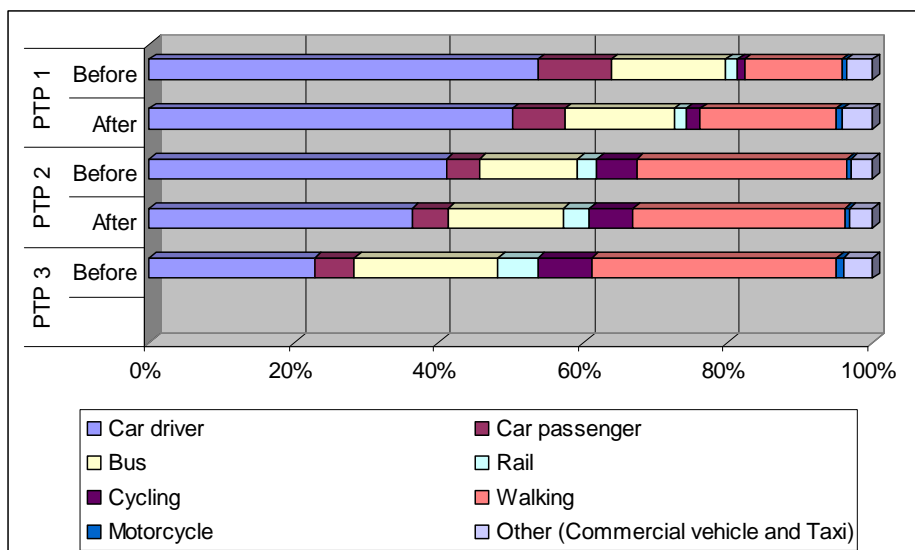


Figure 4.8 Modal shift following PTP interventions (SRA)

Clearly the results contained within figure 4.8 demonstrate the success of the early Brighton PTP campaign; however, taking into account the issues with pre- and post-project monitoring described above it is very important that the next campaign has a robust monitoring strategy in order to in still confidence in these and future results, especially given the CIVITAS funding.

5.3 2009-10 Enhanced PTP

This section provides information about the new elements included in the PTP projects that were implemented in Brighton as a result of the preceding research as documented in ARCHIMEDES Deliverable T31.2.

5.3.1 Social Media Element

Social Media such as blogs, Facebook and Twitter have been used in social marketing campaigns to help raise awareness and prompt behavioural change in areas such as health and recycling. It can help social marketing by engaging with individuals online in a conversational way with an authentic voice and maintain the trust which is generated by the fostering of relationships.

The extent to which messages and information can be relayed using social media depends upon interactions between people as the discussion and integration of words to build shared meaning, using technology as a conduit, for example:

- Website traffic and user behaviour
- Conversion and sales tracking
- Page views and exposure
- Growing a brand awareness
- Creating a positive brand association and keeping it there
- Business development and a broader customer reach

Source: Rognerud (2008)

Collins (2003) states that “social learning theory helps show us how public education campaigns can help to alter public behaviour – if and when it is integrated into social networks”. Bird (2008) goes further suggesting that “the more interactive, collaborative and experimental a communication is, the more successful it will be”.

In terms of PTP, a successful social media campaign will have an impact in two key areas;

- the recruitment of individuals to participate in the scheme; and
- in spreading a positive message about sustainable transport in Brighton and Hove generally, which results in active change.

This supports the introduction of a social media element into the PTP project as, with the correct strategy, it is possible to achieve long term and sustained change. Specialist agencies will need to be appointed in order to define the strategy but essentially it should be along the following lines:

Element	Task
Recruitment	<p>Locate sample demographic</p> <p>Select appropriate online social media resources</p> <p>Select online identity/brand/logo</p> <p>Identify and recruit interested parties or “influencers”</p>
Delivery	<p>Provide “influencers” with well designed resources to carry the campaign to its followers</p> <p>Create a “buzz” around the campaign (blogs, RSS feeds, Facebook/Twitter accounts etc)</p>
Monitoring	<p>Measure visitor numbers to online resources</p> <p>Assess the impact of the campaign on behaviour through qualitative analysis</p> <p>Snapshot travel surveys</p> <p>Analysis of control group behaviour</p>

Table 4.5 Social Media Approach

5.3.2 Community Participation Element

The underlying principles for developing a community-led approach to promote travel behaviour change have been derived from the discipline of psychology, particularly in respect to theories on social learning, social proof, social identity theory and key influencers.

In contrast to using traditional rational choice models to explain individual behaviour, emphasis has now switched to understanding the dynamic nature of attitudes, emotions, social norms (i.e. expectations of others) and values.

More specifically by understanding the complex role of group dynamics which are composed of individuals with similar values, it is possible to spread effective messages regarding the use of sustainable travel modes through endogenous word-of-mouth. This is effective since individuals are more likely to trust and act on information from friends and members of the family as opposed to ‘top down’ council branded campaigns, for example.

As with the social media element of the project, specialist agencies with experience in community participation methods will need to be recruited to devise the strategy but we envisage the following approach:

Element	Task
Recruitment	Identify community groups Develop engagement strategy Undertake focus groups/workshops Identify “connectors”
Delivery	Discussions with and define supportive role for community champions to implement the campaign Community champions to drive a short intensive campaign (with support of specialist agency) Review activities with the community champions and provide feedback to them and the participants
Monitoring	Qualitative evaluations of focus groups, semi structured interviews etc before and after the campaign Snapshot surveys Analysis of control group behaviour

Table 4.6 Community Participation Approach

5.3.3 Peer Review

A new element is recommended to Brighton and Hove City Council in the form of an independent peer review of their PTP project, which has not been undertaken thus far. As part of the CIVITAS project monitoring requirements it is important to demonstrate the mode shift and cost effectiveness of the interventions. It is also important to demonstrate innovation and that any lessons learnt can be transferred to other cities in Europe. Because we are recommending innovative techniques utilising online social marketing and community participation we believe that third party peer review would be particularly valuable.

An approach will be made to experts within the field who will be asked to assess the process on the part of both new elements of the PTP project, as well as provide BHCC with a report on the outcomes. This will provide the project with a transparent assessment of the methodology which will ensure a solid platform from which to assess its success.

5.3.4 Evaluation and Monitoring

Accurate evaluation and independent monitoring of the project will be key to its success and will require a lot of thought in order to provide a true reflection of project methodology. The following elements need to be considered in any monitoring strategy:

- Control group
- Pre- and post- intervention surveys/travel diaries
- Qualitative analysis of interviews, focus groups or online activity

- Quantitative analysis of online and community activity
- Measurement of how online activity is translating into actual travel behaviour
- Measurement of how community activity is translating into actual travel behaviour
- Traditional travel surveys.

The appointed agency for each of the elements was asked to define a robust strategy to monitor project impacts. A report on monitoring techniques will be provided following project completion along with the evaluation results to assist in lessons learnt and to inform future PTP projects.

5.4 Key Issues

Due to the new elements that are being introduced into the BHCC PTP project (i.e. social media and community engagement campaigns, a peer review, and improved evaluation and monitoring techniques), there are a number of key issues to consider throughout the course of the interventions which could have an effect on the results.

Both the social media and the community participation elements of the project rely on individuals taking the message and passing it on through word of mouth. This introduces a potential lack of control once the message is out as it could be affected by rhetoric, inductive and deductive logic etc. However with the increased risk of such an outcome there is also a higher potential level of impact when the message is conveyed effectively. These aspects will be tested and reported as part of the implementation and evaluation of the ARCHIMEDES PTP measure.

Messages must be seen to be authentic and as coming from a valued and trusted source of information. It is expected that PTP messages will not be formally linked to council activities but if they were would this have an impact on how the messages are received? The authenticity of information is important is diffusion of the message is to occur.

The communication platform must be carefully chosen, ideally with the input of the target community to ensure that the right rhetoric is employed and the message is given the greatest possibility of circulation; “authentic propositions, created with the audience and using channels that connect with their lives, can cut through the thousands of messages we receive every day and move us to action” (Bird, 2008).

It is important to understand the competing messages that clamour for people’s online time. The message of sustainable transport has to have impact, and be strong and persuasive in order to capture people’s attention instead of background “noise” for marketing of consumer goods or social opportunities.

Especially in terms of the community participation element, the use of “persuasion” or influence must be calculated. People must feel empathy with the cause rather than feel pressured into action by an over-enthusiastic individual. It is also important that their choice is validated into repeat behaviour, although if this isn’t the case and they revert back to their original behaviour, the community champion must be equipped with the tools to understand the “rebound effect” and other behavioural elements. Their understanding of the campaign and the theories behind it is what will lead to positive outcomes upon project completion.

5.5 Summary

This section sets out the methodology behind a new strategy for the implementation of PTP in BHCC by adding a social media and a community participation element. This is documented further within the BHCC PTP strategy document for 2009/10 (Peter Brett Associates, 2009). A thorough and independent peer review will allow the new methodologies to be tested and evaluated demonstrating their application for PTP projects.

By incorporating these elements into the BHCC PTP scheme, and understanding any issues associated with their use, it is expected that higher levels of travel behaviour change will be achieved, and these will be sustained over a longer period of time.

5. Bibliography

- Ampt, E. (2003) Understanding Voluntary Behaviour Change” *European Transport Conference, Strasbourg 3-5th October 2003*, Association for European Transport
- Anable, J. (2005) “‘Complacent Car Addicts’ or ‘Aspiring Environmentalists’? Identifying travel behaviour segments using attitude theory”, *Transport Policy*, 12 pp65-78
- Anon (2006) *SPO for “Using a travel awareness initiative for wise use of automobiles”*. Institute for Global Environmental Strategies,
http://www.iges.or.jp/APEIS/RISPO/spo/pdf/bgp/4209_BGP_II9_WiseUse_BG.pdf
[Accessed 21st May 2009]
- Ariely, D. (2009) *What is behavioural economics and where are the free lunches?* YouTube, <http://www.youtube.com/watch?v=Fa-mlosWOK8> [Accessed 11th June 2009]
- Ariely, D (2008) *Predictably Irrational*, Harper Collins
- Asia-Pacific Environmental Innovation Strategies (APEIS, 2004) *Awareness Raising for Wise Use of Automobiles by the Travel Feedback Programme in Sapporo*. Institute for Global Environmental Strategies,
<http://www.iges.or.jp/APEIS/RISPO/inventory/db/pdf/0070.pdf> [Accessed 21st May 2009]
- Azjen, I. (1991) The Theory of Planned Behaviour, *Organizational Behavior and Human Decision Process*, 50, pp179-211
- Barr, S. and Shaw, G. (2008) ‘Understanding and promoting behaviour change using lifestyle groups’ in S. Reddy (Ed.) *Green Consumerism: approaches and country experiences* (Icfai University Press, Hyderabad) pp. 108-128.
- Baslington, H. (2007) *Travel Socialization: A Social Theory of Travel Mode Behaviour*. Association for European Transport and Contributors
- Bezner, J et al (2006) The effect of a walking program on perceived benefits and barriers to exercise in postmenopausal African American women. *Journal of Geriatric Physical Therapy*, 29; 2:06 pp43-49
- Bird (2008) *Strategic communication and behaviour change: lessons from domestic policy*. Foreign and Commonwealth Office, <http://www.fco.gov.uk/en/about-the-fco/publications/pd-publication/behaviour-change> [Accessed 26th November 2008]
- Bonsall, P. (2007) *Does Individualised travel marketing really work?* Institute for Transport Studies, University of Leeds
- Brogan, C. and Smith, J. (2008) Trust Economies: Investigations into the New ROI of the web. *Change This*, No. 44
- Carreno, M., Stardling, S. and Rye, T. (2009) Mode, Mood and Trip Management: A qualitative analysis of the effects of RTP1 on bus user behaviour and attitudes. 4^{1st} *Annual Conference of Universities Transport Study Group*. London, University College London 5th-7th January 2009. Transport Research Institute, Napier University: Edinburgh

- Collins, J. et al (2003) *Carrots, Sticks and Sermons: Influencing Public Behaviour for environmental goals*, Defra
- Commonwealth of Australia (2005) *Evaluation of Australian TravelSmart Projects in the ACT, South Australia, Queensland, Victoria and Western Australia 2001-2005*. Australian Greenhouse Office
- Dawney, E. and Shah, H. (2005) *Behavioural economics: seven principles for policy-makers*. New Economics Foundation
- DEFRA (2008) *A Framework for Pro-Environmental Behaviours*, DEFRA Behaviours Unit, London
- Demetriou, D (2003) Consumers embrace ethical sales, costing firms £2.6bn a year. *The Independent*, 9th December
- Department for Transport (2001) *A review of the effectiveness of personalised journey planning techniques*. DfT Publications
- Department for Transport (2005) *Personalised Travel Planning: evaluation of 14 pilots part funded by DfT*. Operational Research Unit
- Department for Transport (2008) *Attitudes to climate change and the impact of transport (2006 and 2007)*. Transport Statistics, DfT Publications
- Department for Transport (2008) *Making Personal Travel Planning Work: Practitioners' Guide*. DfT Publications
- Dishman, R., Sallis, J. and Orenstein, D. (1985) The Determinants of Physical Activity and Exercise. *Public Health Reports*. Volume 100 (2) pp158-171
- Donaldson, S. and Grant-Vallone, E. (2002) Understanding self-report bias in organizational behaviour research. *Journal of Business and Psychology*, Volume 17 (2) pp245-260.
- Earls, M (2007) *Herd: How to Change Mass Behaviour by Harnessing Our True Nature* John Wiley & Sons
- Food Dudes (2009) *The Food Dudes Healthy Eating Programme Increasing children's consumption of fruit and vegetables*. [Online] (Updated 2009) Available at <http://www.fooddudes.co.uk/> [Accessed 10th August 2009]
- Fujii, S. & Taniguchi, A. (2003) *Reducing Family Car Use by Providing Travel Advice or by Requesting Behavioural Plans: An Experimental Analysis of Travel Feedback Programs*. Paper presented at the 10th International Conference on Travel Behaviour Research, Lucerne.
- Fujii, S. & Taniguchi, A. (2006) Determinants of the effectiveness of travel feedback programs – a review of communicative mobility management measures for changing travel behaviour in Japan. *Transport Policy* 13, pp339-348

- Gagnon, M., Sanchez, E., & Pons, J. (2006) From recommendation to action: psychosocial factors influencing physician intention to use Health Technology Assessment (HTA) recommendations, *Implementation Science* 1:8
- Gladwell, M (2000) *The Tipping Point: How Little Things Can Make a Big Difference* Little Brown
- Gordon, M. (2002) *Brand Green: Mainstream of Forever Niche?* Green Alliance, London
- Greenbang (2009) *Scotland aims for fewer car rides, more walking, cycling.* Greenbang, <http://www.greenbang.com/scotland-aims-for-fewer-car-rides-more-walking-cycling/> [Accessed 13th July 2009]
- Godin, Seth (2001). *Unleashing the Ideavirus.* New York: Hyperion.
- Griffiths, M. (1994) Social Marketing: Achieving changes in nutrition behaviour, from household practices to national policies. *Food Nutrition Bulletin* 15 (1) pp25-31
- Gyldenlund Råby, D. and Lassen, C. (2007) *International Review of Projects Concerning Changes in Travel Behaviour to More Environmentally Friendly Modes.* European Commission
- Hassell, T, Cary, J. (2007) *Promoting Behaviour Change in Household Water Consumption: Literature Review.* URS Australia for Smart Water.
- Hesketh, K. et al (2005) Healthy eating, activity and obesity prevention: a qualitative study of parent and child perceptions in Australia. *Health Promotion International*, Vol. 20 No. 1, pp19-26
- Hinton, E. and Goodman, M. (2009) *Sustainable Consumption: Developments, considerations and new directions.* Department of Geography, Kings College London. <http://www.kcl.ac.uk/content/1/c6/03/95/42/mike4.pdf> [Accessed 12th August 2009]
- Horst, S. (2008) *Neighborhood Smart Trips: Program Summary.* Whatcom Council of Governments, www.whatcomsmarttrips.org/news/implement.aspx [Accessed 8/5/2009]
- Jackson, T (2005) *Motivating Sustainable Consumption – a review of evidence on consumer behaviour and behavioural change.* A report to the Sustainable Development Research Network
- Lilian, L (2008) Not just behaviour change but attitude change is needed for improving HIV responses. Healthdev, <http://healthdev.net/site/post.php?s=1581> [Accessed 5/8/2009]
- Matsumoto, H. and Takenaka, K. (2004) Motivational Profiles and Stages of Exercise Behaviour Change. *International Journal of Sport and Health Science*, Vol. 2, pp89-96
- Mulberry Research and Consulting (2003) *Psychological Factors Affecting Transport Mode Choice.* DfT Publications
- O'Reilly, T (2005) *What Is Web 2.0 - Design Patterns and Business Models for the Next Generation of Software* <http://oreilly.com/web2/archive/what-is-web-20.html>

- Parker, J. et al (2007) *Making Personal Travel Planning Work: Research Report*. DfT Publications
- Parker, J. and Wilkinson, J. (2008) *Making Personal Travel Planning Work: Practitioners Guide*. DfT Publications
- Perkins, A. (2002) Household-focused travel behaviour change initiatives – Critical new tools in Travel Demand Management. *World Transport Policy & Practice*, Vol. 8 (4) pp31-38
- Peter Brett Associates (2009) *Personalised Travel Planning: Strategy 2009/10*. A report for Brighton and Hove City Council
- Pinkett, B., Wylie, D. and Wares, T. (2008) “*Creating Social Epidemic and Curing Car Addiction – A New Model for Achieving Travel Behaviour Change*”. European Transport Conference 2008
- POST (2007) *Postnote Number 283: Health Behaviour*, London, Parliamentary Office of Science and Technology
- Prochaska, J.O. and DiClemente, C.O. (1983) Stages and [processes of self-change of smoking: Towards and integrative model of change. *Journal of Consulting and Clinical Psychology*, 51, pp390-395
- Psychologist World (2006-2009), Cognitive Approach (Psychology). *Psychologist World*, <http://www.psychologistworld.com/cognitive/> [Accessed 7th August 2009]
- Reeves, R. (2005) Even in a truly liberal society, paternalism must sometimes prevail, *New Statesman*, 1st January
- Rognerud, J. (2008) *Social Media Marketing Beginner's Guide*. Marketing Pilgrim <http://www.marketingpilgrim.com/2008/04/social-media-marketing-beginners-guide.html> [Accessed 27th November 2008]
- Saastamoinen, M. (2009) *Case Study 18: Samsø - renewable energy island programme. Changing Behaviour*. <http://www.energychange.info/casestudies/175-samsø-renewable-energy-island> [Accessed 12th August 2009]
- Scottish Government (2008) “*Smarter Choices, Smarter Places*” <http://www.scotland.gov.uk/Topics/Transport/sustainable-transport/home-zones> [Accessed 13th July 2009]
- Shehri, H. (2007) Introduction to models and methods of understanding human behaviour. *Scribd*, <http://www.scribd.com/doc/512772/Introduction-to-Models-and-Methods-of-Understanding-Human-Behaviour> [Accessed 7th August 2009]
- Slovan, L. (2005) *Making Smarter Choices Work*. DfT Publications
- Steedman, P. (2005) *Desperately Seeking Sustainability? Summary of NCC research into information and advice on sustainable lifestyles*. National Consumer Council
- Sustrans (2008) *Take Action on Active Travel*. Association of Directors of Public Health

Tapestry (2003) *Viernheim Household Transport*. Germany, http://www.max-success.eu/tapestry/www.eu-tapestry.org/p_dwl/csr/csr_c6_germany.pdf [Accessed 26/5/2009]

Tapestry (2005) *Making Campaigning for Smarter Choices Work: Guidelines for Local Authorities*, Tapestry Project and Department for Transport

Thompstone, L (2006) *Personalised Travel Planning in Wales: The Way Forward for Mode Shift*. Association for European Transport and Contributors

US Federal Transit Administration (2006) *Individualized Marketing in U.S. Cities*. Victoria Transport Policy Institute, www.vtpi.org/tadm/tadm23.htm [Accessed 8/5/2009]

Willumsen, L. (2002) *European Transport Policy: Ideas for Emerging Countries*. Paper presented at the XII Pan American Traffic and Transport Engineering Conference, Quito

World Health Organisation (2000) Report: Workshop on Obesity Prevention and Control Strategies in the Pacific. *Held in Apia, Samoa 26-29 September*, Apia, Samoa

World Health Organisation (WHO, 2008) Behavioural changes strategies and health: the role of health systems. *In: Regional Committee for Europe – Fifty Eighth Session held in Tbilisi, Georgia*. European Public Health Alliance