DESIGNING A COMMUNITY ENGAGEMENT STRATEGY
FOR LIMERICK SMARTER TRAVEL
USING FOCUS GROUPS AND PRECEDENT STUDIES

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Thesis for the Degree of Master of Engineering in Civil Engineering

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ABSTRACT

Designing a Community Engagement Strategy for Limerick Smarter Travel Using Precedent Studies and Focus Groups

Kathleen Clair Cullinane

This research aims to create a rational basis for designing and implementing a plan for Limerick Smarter Travel. This plan will pay particular attention to community engagement. This research establishes a rationale for a community engagement strategy. Precedent studies also provide direct guidance for this rationale. The objective of the plan is to develop a local culture of Smarter Travel in Limerick communities using best international practice, and thereby achieving behavioural change in travel mode choice. This research looks at hard physical infrastructure and soft community based interventions, to promote lasting travel behaviour change in five pilot zones in Limerick.

The literature on Smarter Travel is reviewed. Results from a comprehensive study of six international exemplar Smarter Travel Cities is reported. Current travel modes, using census data, and traveller’s mode choice criteria, using focus groups, in Limerick City are investigated and reported. However, census data only provides information on trips to work, school, and college. Focus groups were employed to investigate beliefs, attitudes, and decision criteria relating to existing travel choices in Limerick and to Smarter Travel modes.

The analysis provides a rationale to allow proposals for an appropriate community engagement strategy to be formulated. Quantitative census data demonstrates significant local variation in travel behaviour in the five pilot zones. This same data allows spatial subdivision and grouping according to local travel behaviour. Qualitative focus group data show the factors motivating mode choice also vary significantly. From a travel standpoint target groups should be characterised by socio-economic, age or other status.

Therefore, influencing peoples travel behaviour and encouraging change requires not just the implementation of best practice measures, but must be preceded by a nuanced spatial and behavioural research program, incorporating community engagement. Thus a “one size fits all” Smarter Travel plan would not work.
DECLARATION

This thesis is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

The work was carried out under the guidance of Professor Tom Cosgrove at the Department of Civil Engineering and Materials Science, at the University of Limerick.

Kathleen Clair Cullinane
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I wish to thank my employer Malachy Walsh and Partners, in particular Ciarán O'Callaghan, who facilitated me in attending the University of Limerick for two years to complete this master’s degree. Their support is gratefully recognised.

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Chapter 1

Introduction
1 Introduction

1.1 Smarter Travel

‘Smarter Travel – A Sustainable Transport Future’ (Department of Transport 2009) the new transport policy for Ireland, published in February 2009, details how a sustainable travel and transport system can be achieved in Ireland by 2020. Smarter Travel policy aims to alter the way travel opportunities are perceived and responded to. The vision of the policy is outlined as follows:

Smarter Travel aims to:

- “Improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport;
- Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;
- Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions;
- Reduce overall travel demand and commuting distances travelled by the private car; and
- Improve security of energy supply by reducing dependency on imported fossil fuels.”

(Department of Transport 2009)

The overall target is to reduce journeys to work, school, and college (commuting journeys) by car from a current modal share of 65% to 45%. In addition, it is envisaged that total vehicle kilometres travelled by car will not increase substantially during the period from 2009 to 2020 (Department of Transport, 2009).

These aims will be achieved through 49 specific actions, which can be broadly grouped into four key areas:

- “Actions to reduce distance travelled by private car and encourage Smarter Travel, including focusing population growth in areas of employment and to encourage people to live in close proximity to places of employment and the use of pricing mechanisms or fiscal measures to encourage behavioural change;
• Actions aimed at ensuring that alternatives to the car are more widely available, mainly through a radically improved public transport service and through investment in cycling and walking;
• Actions aimed at improving the fuel efficiency of motorised transport through improved fleet structure, energy efficient driving and alternative technologies; and
• Actions aimed at strengthening institutional arrangements.”

(Department of Transport 2009)

Smarter Travel incorporates a range of proposed initiatives, as detailed above, including new technologies and fleet management. However, this thesis focuses on the Smarter Travel actions that aim to encourage walking, public transport use, and cycling, in particular, for local trips, such as trips to work and to the shop. Therefore, for the remainder of this thesis Smarter Travel refers to walking, public transport, and in particular cycling.

1.2 Research Context
Smarter Travel policy requires that Local Authorities deliver compact urban developments that reduce the need to travel, reduce the length of journeys, and provide safer and easier access for people to work, shopping, leisure facilities, and services by public transport, walking and cycling. The Smarter Travel targets are ambitious and emphasise the need for a robust response in terms of policy and investment. Therefore, one of the initiatives of Smarter Travel policy, and the context of this thesis, is the establishment of the Smarter Travel Areas competition among Local Authorities to deliver outstanding and innovative examples of sustainable travel in urban and rural areas throughout Ireland. The competition, run by the Department of Transport, was opened up to all Local Authorities throughout Ireland to submit proposals for developing Smarter Travel programs in rural, sub-urban, and urban areas across the country in September 2009. Through the initiative, the Department of Transport planned to invest €50 million over five years on the successful local authority bids.
The ‘Smarter Travel Area’ can be defined as a geographically based community categorised according to population. The initiative requires that Local Authorities prepare travel plans to retrofit areas towards creating sustainable ‘Smarter Travel Areas’. The retrofitted areas should achieve travel behaviour change by prioritising better mobility management of its population. The initiative requires a community driven approach. The plan should demonstrate a move away from car based transport so that walking and cycling would be the best options for local trips. The Smarter Travel Areas competition enables the development of pilot schemes to demonstrate a new approach to transport, one that manages travel demand, rather than continuing to supply for travel demand. The Smarter Travel Areas will give evidence on how sustainable travel can work in Ireland.

Limerick City Council, working in partnership with Limerick County Council and the University of Limerick submitted a detailed submission to the Department of Transport for funding to transform cycling and walking in Limerick. Stage one involved the submission of initial bids in the last quarter of 2009, and Limerick’s bid placed first nationally out of 39 bids. Stage two of the competition involved the preparation and submission of more detailed project applications from 11 shortlisted bids.

Limerick’s proposal ‘Limerick Smarter Travel,’ outlines typical hard and soft measures to promote lasting travel behaviour change in five pilot zones, known as hubs, in Limerick. Hard measures are actions designed to change travel behaviour. Actions include the following:

- Infrastructure – e.g. cycle lanes;
- Regulations – e.g. congestion charging; and
- Taxes – e.g. high fuel taxes.

(Gilbert 2004)

Soft measures are also actions designed to change travel behaviour. However, soft measures are associated with community-based interventions, education, provision of information, changing attitudes, persuasion, and linking travel behaviour with positive and negative outcomes.
Soft measures include the following:

- Factual information - such as provision of information about a new bus service to increase bus use;
- Positive association - such as portraying bicycle use as conducive to good physical health; and
- Negative association - such as portraying car use as a contributor to poor air quality.

(Gilbert 2004)

An announcement on the successful areas was expected in late 2010, however due to the deteriorating economic and political situation a decision was not advised until February 2012. Public and Commuter Transport Minister, Alan Kelly, announced the results of the Smarter Travel Areas competition on the 1st of February 2012. Limerick City, Dungarvan Town in County Waterford, and Westport Town in County Mayo, officially became Ireland’s Smarter Travel Demonstration Areas for the period 2012 to 2016. The three areas will receive a combined investment of €23 million over the five-year period. Limerick City will receive approximately €9 million (Department of Transport, Tourism, and Sport 2012).

1.3 Thesis Aims and Objectives

A detailed preliminary proposal for Limerick Smarter Travel has already been submitted as part of the national Smarter Travel Areas competition. This research aims to establish a rational basis for designing and implementing a plan for Limerick Smarter Travel with particular reference to a community engagement strategy. The main aim of this research is to find out how best to develop a community based local culture of Smarter Travel (walking and cycling in particular), in an urban and sub-urban environment using best practice behavioural change programmes.

A Smarter Travel program should be committed to effective and appropriate engagement, recognising that it is essential to listen to community needs, improve decisions, and then respond to community needs. It is envisaged a Smarter Travel program that works with communities, stakeholders and across government to deliver its outcomes should be successful.
Designing a community engagement strategy for Limerick Smarter Travel includes the following steps:

- To consider those areas internationally, (in the UK and in Europe) that have made exemplary progress in delivering Smarter Travel cities and to determine the underlying mechanisms contributing to their success;
- To discover the existing travel patterns in Limerick’s Smarter Travel study area;
- To identify the reasons behind this travel behaviour, particularly as the change Limerick Smarter Travel seeks is human behavioural change, therefore motivation is an important factor;
- To determine if Limerick Smarter Travel’s “hub approach” is an appropriate method for a travel behaviour change programme;
- To determine what a travel behaviour change program would look like; and
- To investigate how community engagement contributes to the success rate of travel behaviour change.

This thesis aims to answer the following research questions:

- What are the gaps in knowledge and what specific areas need to be targeted to further understand changing travel behaviour;
- Where are the examples of best practice and what can be learnt from them;
- How and why do people travel the way they do in Limerick City; and
- How can community engagement contribute to improving and sustaining the success of policy packages dealing with transportation issues such as travel behaviour change?

1.4 Methodology and Outline of this Thesis

Thus the central questions for this research, with each forming the basis of a discrete chapter, will follow a template based on four questions what, where, why and what now? Chapter 2 Literature Review will present ‘what’ is known and published about Smarter Travel and travel behaviour change to date.
Chapter 5 Precedent Study will ask ‘where’ we find cities internationally that have successfully implemented long lasting travel behaviour change. Chapter 6 Quantitative Census Data will also be defined by the questions ‘what?’ as in ‘what’ is the existing situation – how do people travel in Limerick presently using Census 2006 data, the most robust data available. Chapter 7 Qualitative Focus Groups will deal with ‘why’ people travel the way they do in Limerick through a series of focus groups. The final chapter’s will attempt to synthesize all these factors in terms of establishing a rational basis for designing and implementing a plan for Limerick Smarter Travel with particular reference to a community engagement strategy that is informed by the focus groups and that best embodies the successes, lessons learnt, and transferability of the precedent studies.

What follows is a summary of each chapter:

**Chapter 2  Literature Review**
Identify what is known about travel behaviour, car dependency, mode choice, how to change travel behaviour, etc.

**Chapter 3  Limerick and Smarter Travel**
Profile of Limerick City, policy, existing Limerick transport infrastructure, five pilot zones (hubs) profiles

**Chapter 4  Research Methodology**
Precedent Study, Quantitative data, Qualitative data

**Chapter 5  Precedent Study**
Copenhagen, Denmark Odense, Denmark Malmö, Sweden Cambridge, England London Borough of Sutton, England Glasgow, Scotland

**Chapter 6  Quantitative Census Data**
Limerick Smarter Travel study area existing travel patterns.
<table>
<thead>
<tr>
<th>Chapter 7</th>
<th>Qualitative Focus Groups</th>
<th>Qualitative data from the five hubs, existing travel behaviour, attitudes, and barriers to Smarter Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 8</td>
<td>Rationale for Designing a Community Engagement Strategy</td>
<td>Using Census data to answer what? Using focus group data to answer why? and the plan addresses what now?</td>
</tr>
<tr>
<td>Chapter 9</td>
<td>Recommendations and Conclusions</td>
<td>Recommendations, conclusions, and further study suggestions</td>
</tr>
</tbody>
</table>
2 Literature Review

2.1 Introduction

The purpose of this chapter is to provide an overview of the state of the art in Smarter Travel, to identify the gaps in knowledge, and to determine what specific areas need to be targeted to further understand changing travel behaviour.

This chapter firstly documents the threat that increasing car use poses to the environment, in particularly urban environments, and discusses how the issue of ‘sustainability’ originated. Smarter Travel is then defined, and existing travel patterns in Limerick are discussed briefly.

This provides the basis for the next part of the literature review, which deals with the extent of car use and urban commuting – the problem Smarter Travel aims to solve. This part of the literature review deals with what has been studied in relation to the reasons why private vehicles are the preferred choice for commuter trips, reviewing in detail the nature and significance of car dependence. The literature review then explores what is known about the fundamentals of individual travel decisions: the differences in daily travel behaviour, the factors that affect travel behaviour, in particular car ownership.

The second part of the literature investigates what has been documented on the solutions to unsustainable travel behaviour - how habit and travel behaviour can be changed. The latter part of the review focuses on the major areas of study and key ideas for achieving sustainable travel, reviewing strategic issues and solutions to unsustainable travel behaviour. These include planning for sustainable travel, the role of policy, and the elements required for a successful Smarter Travel programme (soft and hard measures, travel plans, marketing, community engagement, etc.).

This chapter aims to provide a review of travel behaviour research to date in order to shed a light on existing travel patterns in Limerick City, how they can be permanently altered, what travel behavioural change measures should be utilised and how to apply them to a community as part of a concerted programme.
2.2 Sustainability and Mobility

2.2.1 Environmental Impact of Urban Transport

Travel is an integral part of everyday life, which allows people to meet their needs by providing access to work, services and social gatherings. However, are our travel choices ‘smart’ choices? For example, transport related impacts, particularly pollution, are a grave threat for humans and the environment: transport is the second largest single source of greenhouse gas (GHG) emissions in Europe, and it continues to rise. According to the World Resources Institute (Baumert 2005) transport accounts for 14% of global greenhouse gas emissions, making it a major contributor to global climate change. This percentage is equivalent to 18% of CO2 emissions worldwide and 24% of CO2 emissions from energy related sources. The majority of these emissions are from road transport (76%), with lesser contributions from aviation (12%), water (10%), and rail (2%). Evidently, carbon emissions and other pollutants from motorised vehicles not only damage the environment by contributing to global warming, but they also reduce air quality, which must affect our health.

According to the World Resources Institute (Baumert et al 2005) Ireland ranked thirteenth in the world in emissions per capita in 2000, a high ranking for a state of its size, particularly as the UK ranked at 32. However, the report highlights the link between thriving economies and high GHG emissions. Therefore, it is not surprising that in Ireland between 1996 and 2006, during the Celtic Tiger era, energy consumed by transport doubled: transport sector emissions increased by 22%; car use increased; and walking and cycling levels were reduced. Between 2001 and 2006, car use by Irish commuters increased by 22% (Central Statistics Office 2007).

Urban mobility accounts for 40% of all CO2 emissions of road transport and up to 70% of other transport related pollutants (carbon monoxide, nitrogen oxides, sulphur oxides, etc.) (European Commission 2007). Among the total amount of trips that take place in any given city, those associated with commuting are easily identifiable as generators of traffic congestion and pollution (Gallent et al 1999).
2.2.2 Transport and Sustainability

The need for a sustainable solution for transport is becoming increasingly evident as global warming presents significant challenges for cities all over the world. However, sustainable development is not just about protecting the environment. The current most widely used definition for sustainability can attributed to the report ‘Our Common Future’ published by the World Commission on Environment and Development, a United Nations (UN) organisation headed by the then prime minister of Norway, Brundtland (1987). The report, more commonly known as ‘The Brundtland Report’, defined sustainable development as:

“...development that meets the needs of the present without compromising the ability of the future generations to meet their own needs...”

(Brundtland 1987)

Sustainability and sustainable development continue to be the main theme of international conferences since, such as the UN Rio de Janeiro Earth Summit in 1992, and the Kyoto Convention on Climate Change in 1997. There are three aspects to sustainability, as outlined in the report, as follows:

- Environmental;
- Social; and
- Economical.

Current global transport and travel can be defined as unsustainable on all three aspects as outlined in Table 2.1.

Table 2-1 Transportation Impacts (Unsustainable)

<table>
<thead>
<tr>
<th>Economic</th>
<th>Social</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Congestion</td>
<td>Equity/ fairness</td>
<td>Air pollution</td>
</tr>
<tr>
<td>Infrastructure costs</td>
<td>Mobility disadvantaged impacts</td>
<td>Climate change</td>
</tr>
<tr>
<td>Consumer costs</td>
<td>Human health</td>
<td>Noise and water pollution</td>
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<td>Mobility barriers</td>
<td>Community cohesion</td>
<td>Habitat loss</td>
</tr>
<tr>
<td>Accident damages</td>
<td>Community liveability</td>
<td>Hydrological impacts</td>
</tr>
<tr>
<td>Depletion of NRR*</td>
<td>Aesthetics</td>
<td>Depletion NRR*</td>
</tr>
</tbody>
</table>

*NRR – Non-Renewable Resources
2.2.3 Sustainable Mobility

The earliest publication introducing the term ‘sustainable mobility’ was the Commission of the European Communities Green Paper in 1992 (Commission of the European Communities 1992). The paper highlights the need for changes in the transport system to reduce the negative effects on the environment, and on the lives of European citizens. In Vancouver in 1997, a conference held by the Organisation of Economic Co-operation and Development (OCED 1997) provided another significant development in defining sustainable mobility. By adapting the existing definitions of sustainability (Brundtland, 1987), the conference developed nine criteria for a sustainable transport system. The nine criteria became known as the Vancouver Principles, and are outlined as follows:

• Access;
• Intra- and inter-generational equity;
• Individual and community responsibility;
• Protection of health and safety;
• Education and public participation;
• Integrated planning;
• Conservation of land and other resources;
• Prevention of pollution; and
• Economic well-being.

Sustainable travel can be defined as the adoption of travel behaviour, which supports the achievement of the sustainable principles as outlined above. Sustainable transport solutions should be consistent with the long-term ecological balance of the natural environment, economically viable, socially equitable, and ethically responsible. In addition, Greene and Wegner (1997) stated that most developed countries should lead a movement towards a more sustainable transport system, suggesting three areas of research and measures for a sustainable transport system: implementation of technology, pricing and financing, and integrated transport and land use planning.

2.2.4 Smarter Travel – A Sustainable Transport Future

‘Smarter Travel – A Sustainable Transport Future’ (Department of Transport, 2009) the new transport policy for Ireland, as detailed in Section 1.1, represents Ireland’s movement towards sustainable travel and transport.
Planning policy in urban areas in Ireland is now being geared towards more sustainable development, whereby a sustainable travel network is necessary to maintain the philosophy. Smarter Travel policy aims to alter the way travel opportunities are perceived and responded to. Behavioural change policies aimed at influencing motorist’s behaviour, other than by major investment or by physical or fiscal instruments represent a new method of transport planning in Ireland. In these times of economic uncertainty, Smarter Travel offers a low cost strategy for enabling communities to rediscover what can be done at a local level while also ensuring local government achieve real results for real people. Smarter Travel aims to reduce car modal share from 66% to 45%, this means that 500,000 commuters will switch to Smarter Travel modes (public transport, walking and cycling etc.) by 2020 (Department of Transport, 2009). Smarter Travel aims to reverse the dominance of the private car as the main transport mode choice by changing travel behaviour with little or no change to the transport system. However, Smarter Travel policy is in its infancy in Ireland and Irish cities, including Limerick City, require significant changes in existing travel behaviour in order to achieve a ‘sustainable transport future.’

2.2.5 Current Travel Patterns in Limerick

In Limerick City in 2006, the private car accounted for 65.1% of travel to work, school, and college (57.4% as a driver; 7.7% as a passenger) (Central Statistics Office 2007). This combined with the 3.6% that travelled by lorry or van, shows that almost seven out of every ten commutes were made by private vehicles in 2006. The 2006 modal split for commuters in Limerick City is shown in Figure 2-1. The 2006 Census of Population figures also show that public transport (bus and train) were used for less than one-in-ten commuter journeys in Limerick City.

If this dominance of the private car as the primary mode of transport continues to increase as it has done in recent years, Irish commuters such as those in Limerick City will spend increased time commuting, with less time for other activities thus reducing their quality of life.
2.3 The “Problem”
While the on-going recession has offered a lag in growth, increasing unsustainable travel trends are expected to resume along with economic recovery in Ireland. Increased car use would contribute towards less safe roads, and urban areas; energy supplies will become less secure; local air quality issues from traffic pollution will intensify; and it is projected that GHG emissions throughout Ireland will increase further by at least 31% by 2020, from 2009 levels (Department of Transport 2009).

2.3.1 The Beginnings of Unsustainable Travel
Unsustainable travel trends began to emerge in the 20th century as car-use progressed in the Western World, cities heavily invested in road infrastructure to accommodate the ever-increasing traffic. In 1963, the UK Ministry of Transport commissioned a report in a bid to improve the existing road network and to reduce congestion in UK cities and towns.
This report ‘Traffic and Towns’ (Buchanan, 1963) warned of the potential damage which car use would cause to our quality of life and health in the long term, and the problems associated with urban roads, such as safety, congestion, and loss of urban space, while paying particular attention to the environmental impact of the car.

The report stated that the ever-increasing car use:

"... would wreck our towns within a decade...the problems of traffic are crowding in upon us with desperate urgency. Unless steps are taken, the motor vehicle will defeat its own utility and bring about a disastrous degradation of the surrounding for living...Either the utility of vehicles in town will decline rapidly, or the pleasantness and safety of surroundings will deteriorate catastrophically – in all probability both will happen”

(Buchanan, 1963)

Over 50 years later and cars are everywhere in UK cities and towns and in so many other cities worldwide including Ireland. Figure 2-2 (Dargay et al 2007) highlights the 2002 global car ownership levels in vehicles per 1,000 people, with the USA (750 vehicles + per 1,000 people) and Australia (600 vehicles + per 1,000 people) showing the highest levels.
2.3.2 Car Dependency
Newman and Kenworthy (Newman and Kenworthy, 1999) carried out a comprehensive account and analysis into car-use in 32 major cities around the world (including New York, Sydney, London, Paris, and Tokyo). These cities face increasing problems such as congestion, noise, road accidents, pollution and social inequality, all of which are associated with traffic and transport problems. Despite this, these cities have become car-dependent.

A car dependent city can be defined as a city which:
“...assumes automobile use as the dominant imperative in its decisions on transportation, infrastructure, and land use. Other modes thus become increasingly peripheral, marginal, or non-existent until there are no real options for passenger travel other than the automobile.”

(Newman and Kenworthy, 1999)

2.3.3 Car Culture – Advantages versus Negative Impacts
2.3.3.1 Advantages
One cannot deny the obvious advantages of possessing a car: offering flexibility and the luxury of not having to plan ahead; taking us places which would otherwise be difficult to get to via public transport; comfort; security; and privacy. Car use also possesses some ‘emotional’ advantages over alternative modes of transport, such as ‘getting a kick’ from car use, feelings of power, and feelings of superiority over others (Diekstra and Kroon 1994; and Slotegraaf et al 1997). The benefits of cars are immediate and obvious, and as such are “all about me” (Sloman, 2006). Sloman, states that:

“The car is an individualising technology, which encourages us to make self-interested choices and adopt self-centred values. Our car-orientated culture makes individuals feel that they have the right to enjoy the immediately obvious benefits of car-use, while ignoring or denying the longer-term disadvantages to themselves and other people.”

(Sloman, 2006)
Research carried out in the 1990’s further supports this statement, showing that car-dependent adults consider their car as a welcome addition to their life, improving its quality. In addition, this research shows that while these adults do comprehend the health-related arguments for traffic reduction, they refuse to commit to solving the problem (Hallsworth et al 1995). Adults believe they have ‘no time’ to walk, and have no economic incentives to do so and feel little personal responsibility for congestion or pollution (Van Mugt et al 1996). Inevitably, these adults pass on these messages to young adults, influencing them to become car dependent also.

2.3.3.2 Negative Impacts
Car culture has become one of the biggest challenges facing society today: congestion leads to long delays, unpredictable travel times, and significant pollution, combined with the fact that in most cities in the developed world, at least half of all trips made are less than five kilometres in length (Newman and Kenworthy 1999). Often the true costs, the economic, social, and environmental costs of driving are not as obvious.

While high-speed travel, offered by the private vehicle, has enabled us to come into contact with much more people and over a far greater area, we in turn tend to spend far less time in any given place (Adams 1999). Social isolation results - people are less involved in their communities than ever before. Research based on the breakdown of social ties among Americans dating back to the 1930’s supports this. Putman (2000) suggests that for each additional ten minutes spent in daily commuting time, the amount of time spent in involvement in community affairs (meeting, petitions, volunteering, etc.) is reduced by 10%.

Over time, the increase in car use has had an obvious association with the decreasing availability of non-car modes of transport (Goodwin et al 1995). Communities with higher levels of car ownership and car use have lower levels of non-car modes of transport availability. Consequently, within such communities fewer public transport and cycling services exist. Those that do exist are often poor quality services.
Car dependency also affects one’s health, as numerous studies such as the Honolulu Heart Programme (Cavill and Davis, 2003) found that the mortality rate in men who walked less than one mile a day was nearly twice that in men who walked more than two miles a day. In addition, a Copenhagen Heart Study (Cavill and Davis 2003) investigated the health of more than 30,000 citizens. Results showed that those who regularly cycled to work, cycling for approximately 30 minutes a day, had a 40% lower risk of dying during the period of the study, compared to those that did not cycle regularly. Similarly, in China an eight-year study (Bell et al 2002) was carried out gathering data from over 4,700 Chinese adults on car ownership and obesity. Results showed that among the 4,700 Chinese adults, the odds of being obese were 70% greater for men and 85% greater for women, if they owned a car. In addition, a UK Department of Health report (UK Department of Health 2004) on physical activity stated that:

“For most people, the easiest and most acceptable forms of physical activity are those that can be incorporated into everyday life. Examples include walking or cycling instead of driving, and taking up active hobbies and leisure pursuits such as gardening and social sporting activities.”

(UK Department of Transport, 2004)

In Ireland, physical activity guidelines suggest that adults should be at least moderately active for 30 minutes or more and children for 60 minutes or more 5 days per week for optimum health benefits. (Department of Health and Children 2009) However only half of all adults and children in Ireland meet these recommendations while around 10% of children and 20% of adults engage in no regular exercise at all (Nic Gabhaimh et al 2006; and Morgan et al 2008).

There is a need for transport planners to provide walking and cycling-friendly infrastructure and behaviour change programmes to help raise total physical activity levels and so contribute to overall public health.

2.3.4 Daily Travel and the Extent of Car Dependency

Illich (1974) discusses the concept of counter-productivity, and demonstrates that cars, instead of enabling us to do more, actually constrain us into doing less. Driving is stressful, takes up a lot of time, and costs a lot of money.
Illich calculated that the typical male in 1970’s America:
“...devotes more than 1,600 hours a year to his car. He sits in it while it goes and while it stands idling. He parks it and searches for it. He earns the money to put down on it and to meet the monthly instalments. He works to pay for gasoline, tolls, insurance, taxes, and tickets. He spends four of his sixteen waking hours on the road gathering his resources for it.......And this figure does not take into account the time consumed by other activities dictated by transport time spent in hospitals, traffic courts, and garages; time spent watching automobile commercials.”

(Illich, 1974)

Illich then divided the number of hours devoted to the car per year by the number of kilometres per year - 1,600 hours per year per American divided by 10,000 kilometres per year per person. This equates to 6 kilometres per hour - the real speed of a car. During morning and evening weekday peak periods across Irish towns and cities, commuters are driving single occupancy cars, travelling in the same direction, at the same time, and on limited road capacity. This clearly demonstrates significant inefficiencies in vehicles use, energy consumption, road space, and the personal time of these commuters. Yet cars dominate so much of our lives - how we get to work, how our children get to school, how we shop, and how we meet friends. Sloman (2006) had a similar observation to make; stating that given the advantages the car offers, people become accustomed to car use. In other words, people make a habit of using their car. Sloman’s research reveals that half of car journeys made in Britain in 2005 were less than two miles. More importantly, 80% of them could have been made by bicycle or by bus. Similarly, in Limerick City, 38.5% of commuters travel less than 5 kilometres, while 60.9% travel less than 10 kilometres to their place of work (Central Statistics Office 2007). Sloman highlights how the typical British car driver in 2005 dedicated three and a half of their sixteen waking hours to their car, shaping his/ her entire way of life around cars;

“The typical car owning Briton devotes nearly 1,300 hours a year to his or her car. It takes him over 500 hours to earn the money first to buy the car and then to pay for petrol, insurance, repairs and parking. He spends another 400 hours every year sitting in his car while it goes and while it waits in traffic jams”

(Sloman, 2006)
2.4 Choice and Behaviour

Increasing car ownership levels also tend to generate car reliance as shown in a recent Scottish study (Stradling 2003) which asked people who currently drove for four main activities (work, school, shopping town centre, and supermarket shopping trips) whether it would be practical to use an alternative mode of transport. Results indicated that car reliance determines people’s choices regarding their mode of travel.

The study demonstrated car reliance (i.e. the percentage of drivers for whom it would not be practical to use other non-car modes to undertake selected activities) in 28% of school trips, 31% of town centre shopping trips, 55% of work trips, and 57% supermarket shopping trips. Research shows that high car use, be it a product of car reliance or not, contributes to the development of car habit.

Studies show that much of people’s daily mode choices do not follow on from a consideration of all the alternatives available, instead, they are habitual (Bamberg et al 2003 and Gärling et al 2000). Car habit implies that the cars status as a mode ‘choice’ is no longer recognised (Verplanken et al 1994). Sloman (2006) states that:

“Driving has become the normal, habitual, expected means of transport, and other options are not even considered.”

(Sloman 2006)

2.4.1 Is Mode Really A Choice?

Clearly many car users are psychologically as well as customarily devoted to using their car. Much research concludes that travel behaviour is to a large extent habitual, and that daily travel patterns are repeated daily, weekly and even annually (Pendyala et al., 2001). The assumption that a travel mode used, for say a commute, is entirely based on respective costs of modes, time taken to travel etc., is quite clearly incorrect according to Heggie (1976). Heggie highlights the importance of human habit: one may commute by car because they have always commuted by car.

Heggie (1976) argues with Sloman’s (2006) view that alternative modes are not considered, and concludes that car habit has led to a large proportion of commuters, for example, being “unambiguously ignorant” of the choices actually available to them for the journey.
In addition, Heggie states that information on bus or train fares, times and services were making no apparent difference to the travel behaviours of some commuters. This is heavily supported by Williams (1977) and his research into mode choice in the urban environment. Williams agrees entirely with Heggie that certain car owners may be habitually using their cars, to the extent that other factors (time and cost) are ignored due to their predisposition to use their car.

Nonetheless, virtually nobody is entirely car dependent. Stradling’s (2003) study, mentioned previously, does however state that just 0.8% of car drivers conducted all their trips by car i.e. never choosing an alternative mode of transport. Mann (2005) reinforces this stating that:

“In practice every individual will be operating according to a complex personal set of relationships between beliefs, attitudes, and intentions.”

(Mann, 2005)

2.4.2 Perceived Advantages

As already discussed, cars offer some significant advantages over alternative means of transport. Some of these advantages are partly rational, such as speed, carrying capacity, and flexibility, while other advantages include the potential to impress, and people’s desire to feel superior to others. It is because of these perceived advantages that people become accustomed to car use – making a habit of using their car (Slotegraaf et al 1997). Further studies support this, concluding that the choice of travel mode is largely a reasoned decision related particularly to attitudes and perceived barriers to non-car modes of transport (Bamberg and Schmidt 1998 and Forward 1998).

Research also shows how people possess what is called a ‘choice-set’ of travel alternatives Mokhtarian and Salomon (1997). A ‘choice set’ comprises a number of one or more hypothetical alternatives, a car and a bus for example. The attributes of each alternative are mutually exclusive and independent i.e. speed, price, comfort, flexibility etc., offered by the car and the bus. One makes a choice based on which of the alternatives they prefer.
To understand travel behaviour, one needs to distinguish between people with different choice-sets (Wardman and Tyler 2000; and Fischer 1993). A person’s objective ‘choice set’ (Burnett and Hanson 1982) is determined by the location of activities, the travel alternatives available (e.g. public transport provision), and individuals ability to walk, cycle, use public transport or to drive a car.

A person’s subjective ‘choice set’ includes the alternatives the person is aware of and considers feasible and acceptable. However, Goodwin (1977) claimed that commuters only evaluate travel alternatives, as a response to a significant change of circumstance, like a change of work location for instance. As a result, people continue using the chosen alternative of travel, until such a major change occurs. This analysis reveals a classification to differentiate between people’s objective and subjective ‘choice sets’, as shown in Table 2-2 below. Using this information, the opportunities for travel behaviour change can be determined.

Table 2-2 Objective and Subjective ‘Choice Set’ of Travel Alternatives

<table>
<thead>
<tr>
<th>'Choice Set' of Travel Alternatives</th>
<th>Objective</th>
<th>Subjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of activities - e.g. work, school shops</td>
<td>Awareness of alternatives</td>
<td></td>
</tr>
<tr>
<td>Travel modes available - car, bus, train, walk etc.</td>
<td>Cost benefit</td>
<td></td>
</tr>
<tr>
<td>Ability to walk, cycle, or drive a car</td>
<td>Peer pressure</td>
<td></td>
</tr>
</tbody>
</table>

2.4.3 Car Ownership and the Influence of Land Use Patterns

Car ownership is a significant factor in travel behaviour, for example, in Ireland four out of every five households had at least one car in 2006 (Central Statistics Office 2007). In addition, it was found that car ownership was higher in rural areas (88.6%) than in urban areas (75.2%) (Central Statistics Office 2007). It has been estimated that 380,000 people living in rural areas in Ireland in 2005 did not have access to the transport services they required (McDonagh 2006).

Car ownership and land use are contributing factors to the level of use of non-car modes of transport - “The influence of land use patterns on commuting time remains an important issue for planners and policy makers” writes David Levinson (Levinson, 1998). This is still very much the case.
As Rastogi and Rao (2003) found in their research, examining land use is crucial to understanding travel patterns, and particularly so in urban areas. In Ireland, population and economic trends during the Celtic Tiger have changed the economic geography of the country, resulting in a number of adverse trends, including urban sprawl, the proliferation of one-off housing in rural areas, longer commuting distances and a car-dominated transport system (Browne et al 2007). As a result, there is increasing dislocation between where people live and work, which is caused by, value preferences for more detached housing in rural and suburban areas for example (Browne et al 2007).

2.4.3.1 Travel Demand and Land Use
At the European Transport Conference in 2003, Dargay and Hanly’s (2003) paper presented the results of a project that examined the role of land use characteristics in determining travel behaviour and mobility. Dargay and Hanly (2003) define land use characteristics as population density, level of rurality, urban size, and distance from urban centres and spatial distribution of housing, employment, and facilities for education, shopping services, leisure activities etc. The paper highlights how the number of trips made, the distance travelled, and mode choice are all related to land use patterns. The authors found that the influence of land use patterns on travel demand could not be examined on an aggregate level, but only by analysing the travel behaviour of individuals.

Because of the inter-relationships between the determinants of travel demand, it was considered necessary to base the analysis on a comprehensive model, which included the wide-range of factors, which influence the individual’s travel behaviour. Thus, socio-economic factors, such as income, employment, and household composition and the characteristics of transport supply, such as the availability of roads and parking facilities, access to cars and public transport, and prices of vehicles, fuel, and public transport were all considered. Dargay and Hanly (2003) investigated the relative importance of these factors on travel, and implications could then be drawn regarding the impacts of land-use patterns and alternative policy measures.

In addition, there are a number of land-use indicators of the area of residence: population density, distinction between rural/urban areas, and size (in terms of population) of the urban area.
There are also a number of variables concerning access to services: walk and bus time to shops, doctor and hospital; and access to public transport: walk time to bus, frequency of bus and walk and bus time to railway station.

In summary, the results confirmed that land use characteristics do play a significant role in travel demand and car use. This has clear implications for transport policy and sustainability. Well-considered land use planning that encourages local facilities, good-quality public transport and discourages widely outspread residential development can facilitate reducing travel demand and its negative external effects.

2.4.4 Differences in Travel Behaviour and Attitudes

When analysing travel behaviour Goodwin (1995) argues that there is one simple but important and obvious suggestion that arises from past research, that is simply that people differ in their attitudes, beliefs, and motivations towards travel mode choice. Policies designed for the average car driver are deemed pointless. Segmentation is increasingly recognised as an important tool in delivery of travel behaviour change away from car use. Some individuals, households, and groups are more adaptable to travel behaviour change than others are. Therefore, identifying distributions of differences among individuals with regards travel mode choice, and addressing how to classify significant subgroups in different ways would prove more beneficial (Raney et al 2000).

2.4.4.1 Mode Choice and Behaviour

Research on the travel behaviour of visitors to National Trust properties in North West England conducted by Anable (2005) revealed that the same behaviour can take place for different reasons and that the same attitudes (e.g. positive attitudes to the environment) can lead to different behaviour (e.g. a reduction or no reduction in car use.). Anable (2005) designed a conceptual model of mode choice based on an expanded version of psychological theory of attitude-behaviour relations (Theory of Planned Behaviour) and using focus groups. The model included behavioural and moral norms, perceived control, environmental worldview and knowledge, values and psychological attachment to the car. The model was then tested using a mail-back questionnaire incorporating over 100 attitudinal statements to approximately 1,000 National Trust visitors, of which 666 replied.
Scores on the factor analysed multi-dimensional attitude statements were then used to segment the population into potential ‘mode switchers’ using cluster analysis. Cluster analysis is the assignment of a set of observations into subsets, called clusters, so that observations in the same cluster are similar in some sense. Six distinct psychographic groups were extracted, four car-owning segments and two non-car owning segments, each with a unique combination of preferences, worldviews, attitudes, and different degrees of mode switching potential, as follows:

**Car-Owning Segments:**

1. Malcontent Motorists (30%) – perceive a high number of constraints to the use of public transport despite feeling increasingly frustrated and unhappy with car travel and believing that they have a moral responsibility to change their travel behaviour;

2. Complacent Car Addicts (26%) – admit that the use of alternatives is possible, but they do not feel any moral imperative or other incentive to alter their car use;

3. Die Hard Drivers (19%) – are fond of cars and car travel, believe in the right to drive cheaply and freely and have negative feelings towards all other travel modes;

4. Aspiring Environmentalists (18%) – have already substantially reduced their car use largely for environmental and health reasons but appreciate the practical advantages of car travel and are therefore reluctant to give up car ownership entirely;

**Non Car-Owning Segments:**

5. Car-less Crusaders (4%) – have sacrificed car ownership for environmental reasons and have positive evaluations for all other modes; and

6. Reluctant Riders (3%) – involuntary users of public transport due to health or financial reasons. They would prefer to travel by car and either aspire to owning a car in the future or accept lifts by car whenever possible.

The study revealed that even though socio-economic differences existed between the car-owning and non-car-owning groups; very little statistically significant differences existed between them.
The study showed that different behaviour and attitudes within segments with similar vehicle availability could not be determined by personal characteristics. Consequently, policy interventions need to be more responsive to the different motivations (e.g. health, cost, ‘save the planet’ etc.) and constraints (perceived barriers) of different travel behaviour segments (Anable, 2005).

2.4.4.2 Car Dependence

The Transport Studies Unit (1995) at Oxford University carried out a detailed study into car dependence for the RAC (Royal Automobile Club) Foundation for Motoring and the Environment. A variety of research techniques were employed, including in-depth interviews, opinion surveys, and activity/travel diaries. The study found a range of dependence on the car among the drivers interviewed, varying from those who strongly disliked driving (particularly in urban areas during peak periods) to those who regarded their car as a welcome convenience – with many of the latter viewing the car as providing independence rather than dependence.

There was a tendency for car dependence to grow over time, as households got used to the extra spatial and temporal opportunities it afforded them. Segments of the car owning population varied in their level of general dependence on the car, ranging from 20% to 80% for groups claiming a high degree of reliance.

Interestingly, those who reported being most reliant on their car had the least knowledge about current public transport alternatives (but perceived them more negatively than other groups) – and had least interest in acquiring that information. A detailed analysis of a selection of reported car trips from the study found that, on average, in only 15% of cases was there no realistic alternative to driving. Though often the alternative would involve an interchange and a doubling in average journey times; however, this figure was strongly affected by location, ranging from 5% of car trips with no alternative (traditional urban area) to 35% (rural area). Overall, the study found that between a quarter and a third of respondents reported that they would like to travel less by car, if circumstances allowed – this varied both by residential location and by trip purpose (school, work, shopping etc.). Thus, although car use may be regarded as essential in many situations, this does not necessarily mean that it always represents people’s preferred means of travel.
It is obvious that car ownership and use varies significantly, both geographically and between different socio-economic groups. In addition, car dependence within these different groups varies by trip purpose (work, leisure, school, etc.), journey length, and destination. Variance also occurs according to people’s attitudes and perceived barriers to the alternatives available, even for people travelling to the same destination.

Consequently, influencing peoples travel behaviour and encouraging change requires not just the provision of information about a particular issue, but it needs a developed and well-researched behaviour change program, incorporating the social sciences.

2.4.5 Barriers to Sustainable Transport in Ireland

Browne at al (2007) carried out an assessment of the barriers to sustainable transport in Ireland via local authority surveys and an extensive literature review. The purpose of this project was to identify and evaluate existing and potential barriers to the delivery of sustainable travel and transport in Ireland. The project concluded that the significant barriers are as follows:

- The legacy of urban sprawl and low-density residential development and the long-term difficulties in retrofitting residential neighbourhoods;
- Public acceptability of new fiscal measures and political resistance to introducing potentially contentious fiscal measures;
- Lack of reliable and efficient public transport and cycling facilities, particularly in low-density rural areas and residential neighbourhoods;
- Perceptions of safety and distance in relation to cycling and walking;
- The limited range of alternative fuels and vehicles currently available on the market; and
- Existing social norms and lack of awareness of the economic, health and environmental benefits of sustainable transport.

(Browne et al 2007)
In addition, Brown et al identified public perception, as another significant barrier to sustainable transport in Ireland. These included:

- Perceptions of public transport reliability and efficiency;
- Perceptions of safety and distance in relation to cycling and walking; and
- Resistance to new fiscal measures, which are perceived to create a disproportionate burden for rural dwellers for example.

(Browne et al 2007)

It was found from the local authority survey, that the most significant barriers in terms of delivering sustainable transport at a local level include, in order of response:

1. A lack of alternatives and, specifically, accessible and reliable public transport and adequate cycling and walking facilities;
2. Resource constraints on agencies and local authorities; and
3. Physical barriers, e.g. topography, distance, etc.

(Browne et al 2007)

In addition, it was found that 100% of respondents to the survey of local authorities felt that local public transport services were inadequate in their local areas. Eighty-six per cent of respondents considered that local cycling and walking facilities were inadequate.

2.4.6 Changing Habit and Travel Behaviour

Browne’s report recommends that policy makers should consider localised measures to encourage sustainable transport, in particular walking and cycling in urban areas. However, the intrinsic, psychological motivations of car use are hardly recognised by policy makers. Therefore, non-deliberate choices make it extremely difficult to influence travel behaviour change. Policy strategies aimed at reducing car use should take these intrinsic motives for car use into account. Achieving behaviour change, in relation to travel in particular, and coming to an understanding of how best to achieve it, is according to Lawrence (2009) “notoriously difficult.” Lawrence (2009) believes this to be true partially because “there is a vast range of factors that can influence behaviour.”
In order to influence people’s behaviour, it is important to understand why people behave the way they do. When aiming to influence the travel behaviour of entire communities, apart from the habitual nature of travel behaviour as discussed previously, studies recognise a second major challenge: ‘the dilemma of the common pool’ (Gardner and Stern, 1996). The ‘dilemma of the common pool’ can be described as a situation where certain behaviour from an individual perspective makes sense, but when repeated by a large number of people, it can prove detrimental for communities.

Attempts to overcome the habitual nature of car use and ‘the dilemma of the common pool,’ can be seen in recent community travel behaviour change campaigns (Fujii and Kitamura, 2003). Such campaigns are principally based on the provision of information regarding the effects of mode choice and the availability and benefits of alternative modes to the car, rather than information solely on bus or train fares, times and services. The later information alone according to Heggie (1976) as outlined previously makes no significant difference to travel behaviour change.

With the incentive of a one-month free bus ticket, Fujii and Kitamura increased the bus use frequency and the positive attitudes towards bus of an experimental group of 43 car drivers in the Japanese city of Kyoto. The aim of this experiment was to investigate whether such a temporary measure could result in a sustained increase in drivers’ public transport use. Results showed that one month after the experimental phase, the car choices became less habitual. The study concluded that this temporary structural change may be an important travel demand management tool for converting car users to public transport users.

For changing habitual behaviour, Dahlstrand and Biel (1997) argue that additional measures are necessary. Current research reveals that information based campaigns including the use if incentives (in areas such as energy consumption, waste management, and public health), more often than not prove inadequate in encouraging behavioural change, especially change of lasting effect (Hines et al. 1987 and Hornik et al. 1995). The next part of the Literature Review further details polices and measures associated with travel behaviour change.
2.5 Policies and Measures

The World Health Organisation (WHO) has stressed the importance of developing urban transport policies that ensure active and sustainable alternatives to the private car are an easy choice for people to make.

The WHO states:
“In Europe, walking and cycling can replace many car trips. Traffic calming measures, infrastructure such as cycle lanes, tracks and paths and policy changes at the local level can increase pedestrian and bicycle travel.......More people will walk and cycle if the traffic speed is reduced and convenient and safe infrastructure is built such as cycle lanes, tracks and paths and polices are changed at the local level.”

(Edwards and Tsouros 2006)

2.5.1 The Role of Travel Policy in Enabling More Sustainable Travel

Sustrans is a UK charity, which enables people to travel by foot, bicycle, or public transport for more of the journeys made every day, working with families, communities, policy-makers, and partner organisations. Travel behaviour research carried out by Sustrans (2004) for the Department for Transport in England demonstrated that the overwhelming majority of people view past and predicted traffic growth as a negative trend. In addition, the research revealed that:

- Approximately 90% of those surveyed favour measures to improve conditions for walking, cycling, and public transport, even where these disadvantage car users; and
- On average 47% of car trips within the surveyed towns could be replaced by walking, cycling, and/ or public transport without the need to significantly change the existing infrastructure.

(Sustrans 2004)

Sustainable travel policies have a significant potential for change. However, Sloman (2006) states that UK politicians bear a heavy responsibility for society’s failure to deal with car dependence. Sloman states that the politicians who represent the UK citizens almost invariably view transport policy through the ‘windscreen’ thinking that the top priority is to enable car users to drive wherever they chose, as fast as they can with no impediment.
As a result, according to Sloman, politicians have misunderstood the nature of the problem, especially as it is entirely impossible to continuously meet the demands of the private car, and more importantly, this is not what most people actually want.

2.5.2 Can Community Engagement Make a Difference?

According to a 1990 study (Chavis and Wandersman, 1990), community participation is a major method for improving the quality of the physical environment, enhancing services, preventing crime, and improving social conditions. Chavis and Wandersman (1990) note that a sense of community is “the glue” that can hold together a community development effort. Chavis and Wandersman state that community programs (such as a Smarter Travel program, for example):

"...foster membership, increase influence, meet needs, and develops a shared emotional connection among community members...can serve as catalysts for change and for engaging individuals and the community”

(Chavis and Wandersman, 1990).

Putman et al. (1995) supports this, stating that researchers in education, health, and urban poverty for example, have realised that success is more likely when community engagement is utilised to deliver related outcomes such as improved health, and reduced crime. Putman (1995) also states that social scientists have:

"...unearthed a wide range of empirical evidence that the quality of public life and the performance of social institutions...are...powerfully influenced by norms and networks of civic engagement."

(Putman et al. 1995)

A British report (Gaventa and Barrett, 2010) focuses on the outcomes of the difference community engagement can make. The report based on 100 research studies of engagement with citizens in 20 countries worldwide provides a comprehensive set of examples of how community engagement has made a difference around the world. It concludes that 75% of the outcomes were positive.
The efforts contributed to a greater sense of citizenship, strengthened practices of participation, more responsive government, or broader inclusion of previously marginalised groups, enhancing social cohesion. The remaining 25% of the outcomes cited were considered negative, including disempowerment and a sense of meaningless or manipulated participation; and the use of new skills and alliances for corrupt or non-positive ends. Gaventa and Barrett (2010) identify that careful attention must be paid to the quality and direction of change (such as travel behaviour change), since “positive outcomes of community engagement can be mirrored by their opposite.” In addition, the authors’ note that it is critical to recognise and support informal governance processes, such as associations and social movements not created by the state as these can be important sources of positive change.

2.5.3 Soft Transport Policy Measures

2.5.3.1 Soft Measures

There has been a growing interest in a range of initiatives, which are now widely known as ‘soft’ transport policy measures (defined in Section 1.2). Soft measures are techniques for influencing people’s (individual and community) travel behaviour towards more sustainable options, such as encouraging school, workplace, and individual travel planning. Soft measures are used to attract people to use their cars less, by choice, rather than by compulsion (Sloman, 2006).

These measures seek to provide better information and opportunities, aimed at helping people to choose to reduce their car use, while enhancing the attractiveness of alternative non-car transport modes. As these measures are fairly new as part of mainstream transport policy, and proving quite popular, a Department for Transport (DfT) commissioned study (Cairns et al 2004) reviewed the literature, evidence and case studies associated with all soft measures implemented throughout the UK. These soft measures became known as ‘smarter choices’ following the study’s publication.

The study also comprises a series of more detailed before and after case studies, using a variety of surveys, operational data, and counts supported by qualitative interviews. This study portrays how ‘soft’ measures challenge the assumption that modal shift is only possible through ‘hard’ system-based measures (investment in physical infrastructure and transport services) or regulation (pricing).
The report draws on earlier studies on the impact of soft measures, new evidence from the UK and abroad, case study interviews relating to 24 specific initiatives, and the experiences of commercial, public and voluntary stakeholders involved in organising such schemes. The research report identified ten types of ‘smarter choices’ measures, detailed as follows:

1) Workplace travel plans – a package of measures (e.g. car sharing, teleworking and teleconferencing as detailed below) introduced by employers aimed at encouraging and enabling their employees to reduce their car mileage;

2) School travel plans – a package of measures introduced to a school to encourage children to travel to school more sustainably (most likely to include the promotion of walking and cycling);

3) Personalised (residential) travel planning – offers individuals (neighbourhoods) information that is carefully targeted to their personal and locational circumstances to encourage and enable them to travel more sustainably;

4) Public transport information and marketing – advertising campaigns, the provision of information in more accessible formats and simplified ticketing schemes;

5) Travel awareness campaigns – a range of media aimed at improving general public awareness of the implications of transport choices, and information about problem solving including changing travel behaviour;

6) Car sharing (or car-pooling) schemes – where individuals are encouraged to share their private vehicles for particular journeys;

7) Car Clubs – an alternative to private ownership where individuals are encouraged to join a club which allows them access to a number of vehicles parked in their neighbourhood on a ‘pay-as-you-go’ basis;

8) Teleworking – where employees are encouraged to adopt a range of working practices remote form their main workplaces, including working from home, for all or part of the time;

9) Teleconferencing – where telecommunication is used to facilitate contacts or meetings that would otherwise have involved business travel; and

10) Home shopping – where customers purchase goods which are then delivered to them rather than purchasing them and transporting them from the store.

(Cairns et al 2004)
2.5.3.2 The Impact of Soft Measures

Each soft measure was analysed separately, followed by an assessment of their combined potential impact. The report identifies that just two types, namely personalised travel planning and travel awareness schemes, depend on public authorities for their initiation and funding. The remainder can be and have been introduced throughout the UK by businesses and organisations as a commercial venture (public transport information, car clubs and home shopping for example) or to improve their own functioning (e.g. teleworking and teleconferencing). In addition, workplace, school, and even residential travel plans, although they may be promoted by public action, have been successfully initiated privately.

The assessment focuses on two different policy scenarios: a high-intensity scenario and a low-intensity scenario, over a ten-year period. The high-intensity scenario identifies the potential provided by a significant expansion of activity to a much more widespread implementation of existing good practice, but to a realistic level by recognising the constraints of money and other resources. The low-intensity scenario is broadly defined as a projection of the then existing (2003-4) levels of local and national activity on soft measures.

The main features of the high-intensity scenario concluded that large-scale programmes of soft measures, including school travel plans, could potentially deliver substantial decreases in car use. In summary, results of the report suggested that, smarter choice measures have the potential to reduce traffic levels across the UK by 11% via active implementation over 10 years, by 20% in peak period urban traffic and at a cost of 1.5 pence per vehicle kilometre taken off the road, but only if ‘high intensity’ implementation is incorporated. The conclusion of the study is that soft measures could play a very significant role in addressing traffic given the right support and policy context (Cairns et al 2004).

2.5.4 Behaviour Change Initiatives

A report, commissioned by the Scottish Government's, 'International Review of Behaviour Change Initiatives; (Southerton et al 2011), reviews a range of behaviour change initiatives that have attempted to reduce the carbon intensity of consumption practices.
The report details 30 cases of different combinations of mechanisms for behavioural change, and explores the potential transferability of initiatives to other regional, specifically Scottish, contexts. There are three specific lessons regarding behaviour change initiatives and four general conclusions that arise from the research. The three specific lessons were as follows

1) **Targeting multiple contexts, moments of lifestyle transition and institutional or infrastructural pressure points** - Behaviour change initiatives will be more effective if they go beyond targeting the individual context to include mechanisms, which intervene in the social and material contexts. Targeting moments of transition (moving home, having children, and so on) and pressure points in infrastructural systems represent opportunities for sustained behavioural change;

2) **Developing frameworks for coordinated initiatives across systems** - There appears to be significant, and yet untapped, potential to employ a set of mechanisms, within a coordinated framework, based on a coherent vision of the required changes in a specific sector or domain or consumption. This provides an opportunity for otherwise individual, 'single action' schemes to complement another towards a common goal - and to reduce the possibility that they might pull in opposite directions;

3) **Utilising 'less visible' mechanisms and non-pro-environmental messages to effect change** - Using non-pro-environmental issues related to health and fitness, diet or even concerns about time pressure (e.g. to encourage home working) can also be used to mobilise pro-environmental behaviours.

(Southerton et al 2011)

Beyond these three specific lessons for stimulating behaviour change, there are four more general conclusions that emerged from the international case study review as follows:

1) **The need for robust evaluation measures** - At present, the evidence base regarding behaviour change initiatives is very poor. There is a need for systematic monitoring and reporting of behaviour change initiatives so that robust measures of costs and outcomes can be reliably identified. There is also a need for methodological development to accurately conduct such evaluations given the complexity of behaviour change initiatives;
2) **Challenges for transfer and replication** - Simple imitation of an apparently successful initiative are unlikely to be effective. Attempts to transfer initiatives need to be sensitive to local factors: natural endowments, social norms, existing material infrastructure, and institutional arrangements. Seeking advice from those involved in previous initiatives from other locations will facilitate learning opportunities and provide access to the knowledge developed through the implementation process;

3) **Organisational leadership of initiatives** - The financial resources required for behaviour change initiatives can be provided by governments, firms or through community groups. However, there are a range of institutional innovations that can be employed to incentivise up-front investment or to spread the financial costs over longer periods of time. Who leads an initiative (government, firm, or community) is likely to influence how the initiative is perceived and has potential to affect outcomes;

4) **Radical versus Incremental Change** - Most initiatives reviewed tended to target rather modest improvements towards low carbon lifestyles. There remains a significant question about whether initiatives with this scale of ambition can deliver the GHG reduction targets set by governments. It is useful to consider the potential for wide-reaching system level changes, which radically transform what and the way we consume, to achieve much more significant GHG savings.

   (Southerton et al 2011)

2.5.5 **Hard Measures and the Coherent Package**

The ‘Smarter Choices – Changing the Way We Travel’ report (Cairns et al 2004) states that a high intensity implementation of soft measures only, could tend to attract more car use by other people offsetting the impact of those who reduce their car use. Therefore those interviewed for the report, who are experienced in the recent implementation of soft measures, emphasised that success depends on some or all of such supportive polices and hard (infrastructural) measures to lock in the benefits, in line with Smarter Travel policy.
Hard measures include the following:

1) Re-allocating road capacity – for example, installing high quality bus priority measures, increasing space for pedestrians and cyclists;

2) Re-phasing traffic lights - to give priority/ more time to pedestrians, cyclists, and buses;

3) Parking control - including low parking standards for new developments, charging, use of workplace parking levies, and re-development of parking space, for more productive uses;

4) Effective anti-congestion measures - such as congestion charging; and

5) Traffic calming - pedestrianisation, and stronger speed regulation and enforcement.

(Cairns et al 2004)

The low intensity scenario in which soft factors are not given increased policy priority compared with present practice, are estimated to be considerably less effective than those for the high intensity scenario. The low intensity scenario would reduce traffic across the UK by 2-3% via active implementation over 10 years, by just 5% in peak period urban. It should be noted that these figures also assume other supporting policies and hard measures are included. It appears that without these supporting measures, the effects would be much lower and perhaps invisible.

The research portrayed that soft measures could contribute greater traffic reduction then what was initially thought, but they need to be supported by ‘hard’ measures and part of a coherent package applied over a large area. By way of example, a research-based pilot project, carried out in the Greater Dublin Area (GDA) by the Dublin Transport Office (O’Driscoll 2005), examined the effectiveness of making infrastructural changes to the surrounding neighbourhood: as part of the GDA-based ‘Safer Routes to School’ pilot project, 2000 – 2002. The study focused primarily on improving footpaths and adding traffic calming measures, pedestrian crossings, and cycle lanes, in the vicinity of six primary schools, at a cost of almost €1.66 million. The main findings were that the provision of infrastructure alone did not change travel patterns. Only when schools were actively involved and encouraged did a shift in travel patterns occur. The participation of key community stakeholders, including An Garda Siochána, and having a local ‘champion’ for the cause were found to be essential.
Evidence from a new international review (Pucher et al 2010) supports this. The research identified a large volume of evidence on effective programmes, policies, and infrastructure to encourage and increase cycling. The 14 case studies from the USA, South America, Europe and Australia, showed that almost all cities adopting comprehensive packages of interventions including careful planning, on-going citizen input, experienced large increases in bicycle trip numbers and mode share. However, one conclusion is that most studies lack appropriate research design for evaluating such interventions.

Nonetheless, the review emphasises that a multifaceted and coordinated approach is more effective in providing significant growth in cycling levels, even in cities with low existing cycling levels. Much of the experiences of implementing Smarter Travel type policy are recent, and the evidence is of variable quality. Therefore, there are inevitably uncertainties in the results. However, travel behaviour change through soft measures according to the authors is a necessary but not sufficient transport policy, and has very little effect unless it is supported by hard measures and other consistent polices (parking, road pricing, congestion charging etc.), and monitoring is vital.

2.5.6 Individual Travel Planning

As outlined previously, travel behaviour change campaigns have in more recent times began to adopt elements of social marketing approaches. Anable (2003) has demonstrated that sub-groups in the target audience can be identified by attitudinal and behavioural variants relating to their car-use, which can be derived from focus groups as outlined in the previous section. This type of formative research forms a key part of the planning stage of a behavioural change campaign, and treating the public as consumers is necessary for understanding how to influence them to adopt sustainable behavioural change and understanding their lifestyles is equally important as their travel behaviour (Taylor and Ampt 2003). As already mentioned, people differ (Goodwin, 1995) significantly in their travel behaviour choices. Targeted information regarding non-car modes of transport can be generated to meet the needs of people travelling to and from work, for example, where a workplace travel plan is in operation. A more sophisticated concept is of personalised travel planning known as ‘Individualised Travel Marketing’ (ITM) pioneered in Germany and Australia.
2.5.6.1 Individualised Travel Marketing

Research by Brög et al. (2009) reviews the development of ‘Individualised Travel Marketing’ (ITM) - the ‘IndiMark’ method (developed by Brög and others for Socialdata, a German travel survey company) and the key features of its evaluation process using the ‘KONTIV’ (Continuous survey of travel behaviour) survey method (Socialdata’s travel survey methodology). The ‘IndiMark’ method is a method for conducting direct marketing of travel behaviour change. The ‘IndiMark’ process uses direct contact with households to identify and meet their individual needs for support, and to motivate people to think about their day-to-day travel choices. The process begins with personal contact (by telephone or at the doorstep) with households within the target area.

This initial contact enables the target population to be segmented into three main groups as follows:

- Existing regular users of sustainable travel modes;
- Non-regular users of sustainable travel modes, who are interested in receiving information on alternatives to the car; and
- Those who are not interested in taking part.

This technique seeks to establish a dialogue with individuals to determine whether the individual would be interested in exploring alternative travel behaviour and if so, discovering what options would suit them given their particular activity needs and their implications in terms of time, cost, and health for example. Most of the ITM campaign focuses on the household in the ‘interested’ group providing tailored travel information to suit each individual household. Households are invited to consider transport related issues of concern for them and a process of segmentation is applied. Different households then receive different information, travel incentives, and further forms of contact to suit each different circumstance.

Respondents are evaluated and monitored using the ‘KONTIV’ method. The methodology uses a self-administrated, mail-back questionnaire and one-day travel diary, coupled with motivation by post and telephone to encourage households to respond.
The travel diary technique being the most reliable method for collection of data concerning mobility behaviour as it best meets the requirement that the determination of mobility behaviour is as realistic as possible. Brög’s review looks at the ‘IndiMark’ experience from three continents (Europe, Australia, and North America).

The study also addresses the key challenges in the evaluation process of voluntary travel behaviour change initiatives, and identifies the common threads of an integrated approach. Brög’s evaluation strengthens the case for all soft measures, a major benefit claimed from ITM, as it is entirely defined by individuals whose needs and inclinations and significant positive reaction is achieved.

The paper also concludes that the consistency, repetition of results from successive applications and the cumulative sample size now achieved in all three continents, combined with consistently high survey response rates, have highlighted the effectiveness of ITM coupled with evaluation using KNOTIV in travel behaviour change programs.

2.5.6.2 Personal Travel Planning Successes in Ireland

Smarter Travel funding was awarded to the Chartered Institute of Highways and Transportation (CIHT) in 2009 to deliver a Personalised Travel Plan (PTP) in Midleton, County Cork. The aim of the project was to reduce car dependency, especially for short local trips, in light of increasing congestion and parking pressures in the town centre. Delivery of the PTP in Midleton, despite just a relatively small number of participants, was a success in terms of the objectives and targets set. Overall, a total of 72% of participants changed their mode of travel in some way. Walking (64%) and travel by train (31%) experienced the greatest increase, followed by car share (27%), cycling (17%) and travel by bus (4%) (Brick 2011).

There was a strong willingness among participants to change travel modes where distances permitted. In this regard, it is apparent that even minor investment in marketing and travel awareness activities can serve as a useful reminder to communities to make the ‘shift’. This was especially the case with regards promoting the health and economic benefits presented by Smarter Travel modes.
2.6 Monitoring and Evaluation

The ‘Smarter Choices – Changing the Way We Travel’ (Cairns et al. 2004) report highlights that there is a distinct lack of evidence on the impact of teleconferencing, car sharing schemes, travel awareness campaigns and home shopping schemes in terms of their impact on traffic. In the case of the travel awareness campaigns there appears to be a lack of evidence in terms of behaviour change, not just attitude change. The report recommends that travel behaviour change projects with careful monitoring and evaluation could help to reduce the lack of data about some of the less well understood soft measures. Monitoring and evaluation should be performed using both qualitative (attitudes, expressed needs, behavioural change, perceived barriers) and quantitative measures (data facts, parameters of mobility, measurable behaviour) to obtain data on daily travel behaviour and patterns.

2.6.1 Qualitative Methods

Focus groups are a qualitative method, which provide a rich source of diverse attitudes and unstructured data. Focus groups have a long history in market research and more recently in medical research; however, focus groups are under-utilised in social research (Powell and Single 1996). A research paper carried out by Clifton and Handy (2001), ‘Qualitative Methods in Travel Behaviour Research’, discusses the relatively recent use of focus groups in the field of transportation. The paper shows how academic researchers have used focus groups to comprehend the factors that lie behind observed travel behaviour and the effects of travel choices for households. These researchers firstly conducted a survey of residents travel choices within six neighbourhoods and then followed with focus group discussions. In general, the focus groups portrayed factors not included in the initial survey that explained travel choices. The focus groups revealed factors influencing choice such as:

- Where and how frequently to shop;
- Whether to walk or not;
- What local businesses to become customers of; and
- Where to live

(Clifton and Handy 2001).
In addition, the focus groups showed connections between choices – the choice of where to live and the frequency of walking to a local shop for example. Another example highlighted in the paper shows how focus groups can be an effective method in understanding the travel choices of certain segments of a given population.

The focus group methodology was adopted by Goodwin (1989) to identify the impacts of changing transit service on women. The paper quotes Goodwin on his use of focus groups:

“...discussions of this sort are not intended to provide statistically significant analyses of public opinion; rather, they are much more effective at going outside the constraints of a conventional questionnaire, giving an understanding of possible cause and effect processes, and providing an important safety net in case important questions have not been asked, or asked in the wrong way.”

(Clifton and Handy 2001).

Interestingly the paper identifies how different qualitative techniques (e.g. personal one-to-one interviews) used by different researchers can be combined with focus groups in different ways. One researcher used this technique in order to establish the reasons why people did not cycle and to simultaneously design successful strategies to encourage more cycling. Techniques such as word association, prompt boards, and image response were adopted to remove inhibitions, encourage discussion and to generate creative thinking and ideas. The facilitators of the focus groups subsequently proposed strategies designed to attract cycling and encouraged focus group participants to give their reactions. The strategies potentials were also tested using a series of stated preferences exercises (Clifton and Handy 2001).

In conclusion, the integrated approach allowed the researchers to identify the complexity and variation in cycling attitudes and in turn, the researchers were able to link them with other choices such as car use, lifestyle, and life stage. Focus groups offer explanations for the quantitative data obtained from travel surveys (Clifton and Handy 2001).
2.6.2 Quantitative Methods

Conventional quantitative data on daily travel patterns is generally captured utilising travel surveys. A travel survey is a survey of individual travel behaviour and it is one of the most important methods of obtaining the information required for transportation planning and decision-making. Travel survey methods collect information about an individual (socioeconomic and demographic), their household (size, structure, relationships, etc.), their vehicle, and a diary of their journeys on a given day.

The diary should incorporate start and end location, start and end time, mode of travel, accompaniment, and purpose of journey (Griffiths et al 2000). Travel surveys comprise self-reported information obtained from a written diary and telephone retrieval (or mail back of diary forms). These enable a further understating of travel choice, trip locations, and daily travel patterns. However, this self-reporting technique does present its difficulties. Activity reporting can be a burdensome procedure for respondents and the self-reporting nature tends to restrict the quality of the data – the tendency to round up journey times for example to 10, 15, and 30 minute intervals (Kitamura, 1995). Therefore, one of the biggest challenges for travel surveys is the provision of a method which minimises the burden on respondents and protects their privacy, while not adversely impacting the quality and quantity of the data.

A project undertaken in Kentucky, USA (Murakami and Wagner 1999) utilised a combination of Global Positioning Systems (GPS) and Geographical Information Systems (GIS) technology with small hand held computers called Personal Digital Assistants (PDAs) to collect data on personal travel. The paper on the project highlights the reasons for the experiment stating that the problems associated with self-reported methods of travel data collection include lack of reporting of short trips, poor data quality on travel start and end times, total trip times, and destination locations. This data collection method offered two specific benefits – improved quality of data and decreased burden on respondents. The results of the six day survey which comprised 100 households (selected drivers were chosen from each household based on age, gender and presence of under 16 year olds), offered a complete 24 hour report of trips made by the selected driver of the household by all modes (respondents were asked to recall all travel for one 24 hour period). In addition, the results provided a six-day report of trips made by all drivers and passengers of the selected household vehicle.
Not only is route choice easily available by including a GPS component, but because the survey period covered six days, variability by day, by day of the week and by departure times could be analysed. While this method increases privacy concerns, it does offer an improved survey data quality for travel behaviour studies.

2.7 Conclusion

The literature highlights that car dependence grows over time as households, individuals or groups become accustomed to them. The literature has shown that increased car use, and its dominant position as a mode of transport, has meant that its extent in urban and suburban areas, such as Limerick City, has resulted in increased accommodation for the car at the expense of other modes of transport.

The literature raises the notion that learning how to influence travel behaviour is equally as important as knowing how people actually behave. The literature suggests that by identifying distributions of differences among individuals, with regards their travel mode choice, by incorporating the social sciences and addressing how to classify subgroups in different ways equates to a well-researched and well-designed behaviour change programme. A ‘one size fits all’ programme is less likely to be effective as a targeted behavioural change programme. In order to influence people’s behaviour it is important to understand why people behave the way they do, individual’s habits and communities common dilemma pool.

The literature points out the significant role policy plays in enabling Smarter Travel to shift the balance of advantage away from the private car towards non-car modes of transport. Policy interventions need to be responsive to the different motivations and constraints of various groups. However, much of the literature on implementing Smarter Travel policy, in particular in Ireland, is recent, and the evidence is of variable quality. This research aims to identify cities that are considered experts in the field of travel behaviour change, and will identify these cities successful measures, and their transferability to Limerick Smarter Travel.
The literature suggests that soft Smarter Travel measures can play a significant role in addressing travel behaviour change, given the right support and policy context. The literature also suggests that without hard Smarter Travel measures the effects of soft measures would be much lower and even invisible. As already mentioned, the literature concludes that a Smarter Travel ‘one size fits all’ programme would be unlikely to succeed. Yet, there is no evidence to support the variations of hard and soft measures that are required. People differ, so therefore are some more likely to respond to soft measures alone, while others may require a combination of hard and soft measures? This research will identify the measures necessary to achieve travel behaviour change, with reference to a study of best practice cities, and by identifying the preferences and potential for change of the Limerick Smarter Travel study area population.

The Smarter Travel targets are challenging, and highlight the need for a robust response in terms of designing a strategy for Limerick Smarter Travel. Smarter Travel policy envisages that by 2020, for example, 10% of all trips in Ireland will be by the bicycle (Department of Transport 2009). In relation to commuting, the Smarter Travel policy envisages that by 2020 cycle trips to work will have increased to 160,000 from a 2006 baseline of 35,000 (Department of Transport 2009).

In recognition of the challenges identified in planning and designing a strategy for Limerick Smarter Travel, the following research aims to establish the factors, which influence existing travel patterns and choice, and how these factors vary within the Limerick Smarter Travel study area. The literature clearly conveys that a strategy designed for the average car driver in Limerick would be deemed pointless. The research will conclude on how the identified choice preferences affect the strategy design, and ultimately change travel behaviour within the Limerick Smarter Travel study area.
Designing a Community Engagement Strategy for Limerick Smarter Travel
Using Precedent Studies and Focus Groups

Kathleen Clair Cullinane
May 2012
Chapter 3  Limerick and Smarter Travel
3 Limerick and Smarter Travel

3.1 Introduction

Limerick City and its environs is the third largest urban area in the State of Ireland, and the capital of the Mid-West Region. The Mid-West Region comprises County Limerick and Limerick City, County Clare and North County Tipperary. The purpose of this chapter is to provide a profile of Limerick City and its greater urban area. The chapter commences with an overview of the current policies relevant to Limerick Smarter Travel in its national, regional, and local context. The chapter details existing transport provision in Limerick, and takes a look at the physical geography of the City as well as identifying a number of key emerging issues in the city’s development as a Smarter Travel city. The chapter then provides a detailed insight into the proposed Limerick Smarter Travel study area, as selected as part of Limericks Smarter Travel bid including details of the proposed initiatives for the study area.

3.2 National, Regional, and Local Policy - Smarter Travel Context

Limerick Smarter Travel is subject to national, regional, and local planning policy guidance with respect to transport and its impact upon the local environment and surrounding infrastructure. A review of the relevant transport planning policy was undertaken and is summarised in this section. Limerick Smarter Travel will encourage sustainable travel and aims for compliance with the plans and policies outlined below.

3.2.1 National Spatial Strategy and the National Development Plan

Limerick and Shannon have Gateway status under the 2002 National Spatial Strategy (NSS) for Ireland (Government of Ireland 2002). In this Strategy, Limerick is identified as one of five national ‘gateways’. In the NSS, gateways are defined as “strategic locations, nationally and relative to their surrounding areas….providing national scale social, economic infrastructure and support services.”

This Gateway status means that Limerick and Shannon should act as an economic dynamo for the whole Mid-West region. Consequently, Limerick City plays a crucial role in the development of national competitiveness and the general economic performance of the Country as a whole.
The National Development Plan (Government of Ireland 2007) lists “the significant upgrading of the public areas and streets in Limerick City centre and re-imaging of Limerick through a major urban renewal initiative” among its priority investment for the Limerick-Shannon Gateway.

3.2.2 National and Regional Climate Change Strategies

The National Climate Change Strategy (Department of Environment, Heritage, and Local Government 2007) aims to reduce energy consumption and ensure Ireland reaches its target under the Kyoto Protocol to limit GHG emissions to 13% above 1990 levels by 2012. The Mid-West Regional Authority took the decision in November 2006 to complete an assessment of energy related CO2 emissions in the region, which in turn lead to the completion of a Climate Change Strategy (Hoyne and Pardos 2007) in February 2008. The Strategy is a collaborative effort with the four local authorities in the Mid-West region and the Energy Agencies, namely Tipperary Energy Agency and Limerick/Clare Energy Agency.

The strategy outlines the following options for reducing transport energy use and CO2 emissions:

- Modal Shift – creating viable alternatives to the single car journey
- Integrated Bus/Rail services
- Walking
- Cycling
- More efficient use of vehicles
- Car pooling
- Car Sharing
- Economic Driving (optimising the use of the car by driving in a safer, more environmentally friendly, more economical way);
- Eliminating Car Use
- Workplace Travel Planning;
- Financial Incentives/Penalties

(Hoyne and Pardos 2007)
The strategy also suggests the following actions:

- Local authorities complete on-going works on mobility management plans;
- Local authorities participate in Regional Integrated Transport Working Group to
- Investigate Local Transport Plans as required under the National Sustainable Transport Policy; and
- Assess training and resource needs on sustainable transport

(Hoyne and Pardos 2007)

### 3.2.3 Mid-Western Area Strategic Plan (MWASP)

The Mid-West Regional Authority is one of eight statutory authorities of Ireland and comprises the local governments of Limerick City Council, Limerick County Council, Clare County Council, and Tipperary North County Council. A Mid-Western Area Strategic Plan (MWASP) is currently (March 2012) at a public consultation stage.

The strategic plan represents a 30-year long-term infrastructure development plan for the Mid-West Region, which will provide a framework for the integration of land use and transport provision, with an emphasis on mode shift towards non-car modes of transport, for the region into the future. This planning framework is designed to achieve a better balance of social, economic, physical development and population growth within the Mid-West region. Its focus is on people, on places and on building communities. Over the next 30 years the people, organisations, and communities of the Mid-West Region intend to create a region of excellence for working, learning, leisure, and living.

The MWASP is a planning, land use & transportation strategy that will aim to:

- Strengthen and enhance the functionality of the Limerick-Shannon Gateway as identified in the National Spatial Strategy 2002-2020;
- Provide guidelines for the promotion of a more balanced regional settlement pattern through a more structured dispersal of population;
- Identify Limerick and the Mid-West strategic requirements for the next 30 years;
- Inform future social, physical, educational, and economic infrastructural spending programs;
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- Inform the current and future National Development Plans, Regional Planning Guidelines and National Spatial Strategy areas; and
- Aid in securing National funding.

(Limerick City Council 2012)

The bus will be at the heart of the Smarter Travel public transport initiative for the Mid-Western Area. The frequency of buses will also be increased. More buses will be provided in rural areas thus enabling the population to commute to work and to service centres. It is the intention of the Mid-Western Regional Authority to provide assistance in the implementation of the Government’s Smarter Travel policy (Limerick City Council 2012).

3.2.4 Limerick City and County Development Planning Policies

As mentioned previously, Limerick City and its greater urban area incorporate the local authorities of Limerick City and Limerick County. The current City Development Plan (Limerick City Council 2010) sets out an overall strategy for the proper planning and sustainable development of the City for the period 2010 to 2016.

The following outlines the main policy goals:

- To promote and provide for the sustainable development of Limerick City enabling it to fulfil its role as a National Gateway City;
- To promote social inclusion and to facilitate equality of access to employment, education, transport, suitable housing, social and cultural activities, whether by direct provision (e.g. social housing) or by facilitating others to provide the service (e.g. education); and
- To provide for a high quality natural and built environment and improved quality of life for those living and working in Limerick City and also for those visiting the City.

(Limerick City Council 2010)

The current County Development Plan (Limerick County Council, 2010) provides a framework to facilitate the proper planning and sustainable development of County Limerick from the period 2010 to 2016.
The plans vision statement is outlined as follows:

“Limerick County Council will adopt a positive and sustainable approach to balanced development thereby enhancing the lives of people who live in, work in and visit the County, whilst protecting the natural and built environment.”

(Limerick County Council 2010)

It is the policy of Limerick City Council to:

“Implement the objectives and strategies of the National Development Plan, Transport 21, Smarter Travel and any other transport plans that may arise during the lifetime of this development plan including the proposals contained in Mid-West Area Strategic Plan and Public Transport Feasibility study.”

(Limerick City Council 2010)

Similarly, it is policy of the Limerick County Council to:

“Seek to implement in a positive manner, in cooperation with other Authorities and agencies, the policies of the Midwestern Regional Planning Guidelines, and the Department of Transport Policy ‘Smarter Travel, A Sustainable Transport Future 2009-2020’ to encourage more sustainable patterns of travel, and greater use of sustainable forms of transport, including public transport, cycling, and walking.”

(Limerick County Council 2010)

Limerick City and Council’s current (2010) development policies for the future equally reflect and support the roll of Smarter Travel across both administrative areas.

3.2.5 Limerick Regeneration

In 2007, following the publication of the ‘Fitzgerald Report’ (Fitzgerald 2007) the Irish government launched a multi-million euro project for the regeneration of the most disadvantaged neighbourhoods in Limerick. Regeneration of these areas included provision of greater accessibility for all.
The Limerick Regeneration Programme (Limerick Regeneration Agency 2008) outlines the following aims for the period 2009 to 2018:

- To provide new and improved connections
  “New and improved connections are proposed both within the new neighbourhoods themselves and between the neighbourhoods and the city centre. The objective is to create a well-connected neighbourhood, based on a network of streets that encourages people to move around on foot, by bicycle, and on public transport”;

- To provide a safer and more attractive neighbourhood
  “The Proposals will deliver an inclusive, diverse, and safe public realm and landscape that complements the quality of the buildings. Provision of well-designed and safe streets and squares, including a range of local and neighbourhood play spaces for children of all ages, will help to improve the residents’ physical environment and quality of life”; and

- To improve access to quality green spaces and countryside
  “It is important to improve the quality and quantity of open spaces that are safe, popular, well maintained, and accessible to all. In the case of Southill, in particular, a key objective is to provide access to the adjacent countryside, by providing a range of routes and amenities in the surrounding green spaces.”

(Limerick Regeneration Agency 2008)

3.2.6 Green Schools

‘Green Schools’ is an international environmental education programme and award scheme, run in Ireland by An Taisce aimed at making schools greener. In Ireland Green Schools is operated in partnership with Local Authorities. Since 2001, Green Schools have been a national programme, with all 34 County and City Councils involved (Green Schools Ireland 2012). The scheme has a number of strands, including a travel strand.

The scheme involves seven steps to having a greener travel school and achieving a green travel flag.

- Green School Committee - a dedicated group within the school that oversees the green schools project. Ideally it will involve students, teachers, and parents.
- Environmental Review - an essential part that lays out targets for the school.
- Action Plan - it gives achievable goals in a certain timed period.
- Monitoring and Evaluation - progress is chartered all the way so that new targets can be set and successes celebrated.
- Curriculum work - environmental issues should be integrated into lessons.
- Informing and involving - a marketing drive keeps the pupils, teachers and general community informed on progress.
- Green Code - this is the school’s commitment to good green habits.

(Green Schools Ireland 2012)

The An Taisce Green Flag programme is currently in place in approximately 84% of schools in Limerick with 20% in the process of implementing or has already been awarded the travel flag (Green Schools 2010). Research indicates that within one year of implementing the programme approximately 74,000 pupils in 265 schools around the country achieved a 12.6% modal shift from car use to other modes of transport on the journey to school (Green Schools 2010). This represents a shift of over 9,300 people per day from the private car, and equates and a reduction of almost 20,000 car related trips to school per day or nearly 100,000 trips per week (Green Schools 2010). The results indicate that the travel programme is not only achieving its targets in terms of reducing the modal share of the private car in favour of more sustainable modes of transport on the school run, but it is also putting in place an effective school travel management plan which will ensure the long term sustainability of the schools’ efforts.

3.3 A Profile of Limerick City and its Greater Urban Area

The preliminary results of the Census of Population 2011 (Central Statistics Office 2012) show that the total population of Ireland increased by 5.8% since 2006. However, Limerick City recorded the largest population decline in the country from 2006 to 2011. The population of Limerick City fell by 5.0% between 2006 and 2011. However the population of Limerick County, which includes Limerick City’s suburbs, increased by 8.3%. The decline may be due to the outward migration following the collapse of the local and national economy from 2008 onwards. Limerick City experienced the highest net migration outflow over the five-year period of 17.2 per thousand of its population (Central Statistics Office 2012).
The most recent and comprehensive census data is available from the Census of Population 2006 (Central Statistics Office 2007) and has been used for the remainder of this analysis.

3.3.1 Limerick City and its Greater Urban Area

A study commissioned by Limerick City Development Board ‘Limerick – Profile of a Changing City’ (McCafferty 2005) concludes that ‘Limerick is a significantly under-bounded city, in that the administrative limits come nowhere close to encompassing all of the city's population or built up areas’.

Limerick City’s greater urban area falls under three local authorities’ boundaries of Limerick City, Limerick County, and Clare County Councils. A series of recommendations on reforming local Government structures in Limerick and Clare have been made in a report published by the Limerick Local Government Committee (2010).

The Department of Environment, Community, and Local Government announced in June 2011, that Limerick City will get a boundary extension and will become the third largest city in Ireland. Limerick County and City Council will also unify (Hurley 2011). While the population of Limerick City in 2006 was 52,539, the total population of the greater Limerick urban area, which includes the main suburbs, or continuous built-up areas within the direct environs of the city was 86,736 (Central Statistics Office 2007). The contiguous urban areas of Limerick within an expanded city area will be incorporated bringing the city population to almost 90,000.

According to the Census of Population 2006, 39.4% of the total population of Limerick City and its greater urban area live in suburban areas outside of the City boundaries (Central Statistics Office 2007). This represented a decrease of population in Limerick City of 2.7% since 2002. However, this represented a significant increase of 17.4% in suburban areas from 2002 to 2006. During this time, the population of the electoral division of Limerick South Rural increased by 48.5% (McCafferty 2005).

The greater urban area includes the electoral divisions (EDs) of Ballycummin, Ballysimon, Limerick North Rural, Limerick South Rural, Roxborough, and Ballyvara, as shown in Figure 3-1.
3.3.2 Physical Geography of Limerick City

Limerick City, in contrast to some other Irish cities, has excellent potential for improving its infrastructure to provide for Smarter Travel, in particular cycling, without great difficulty. Limerick City Centre Cycle Audit (Dawson et al 2010) prepared by Limerick Cycling (a not-for-profit membership-based organisation giving voice to cyclists in Limerick) at the request of Limerick City and County Councils, details the finding of an audit of Limerick City Centre and access between the City Centre and several identified hubs around the city.

Figure 3-1 Limerick City Electoral Divisions
The study notes the main advantages Limerick possesses for providing Smarter Travel infrastructure, in particular cycling, are:

- The city is largely flat (see Figure 3-2 which shows Limerick City Centre in red);
- Most of the city is relatively modern, laid out in the conventional grid structure;
- The streets are relatively wide, by Irish standards, with some potential for cycle and bus lanes;
- The scarcity of legacy cycling facilities leaves a “clean slate” for future improvements; and
- There are a moderate number of multi-lane one-way systems, urban roundabouts, and other features identified as significant hazards for cyclists.

(Dawson et al 2010)

![Figure 3-2 Topography of Limerick City](image)

(Source: World Weather Forecast 2012)

3.3.3 Climate

The following description has been adapted from a 30 year average report (1961-1990) issued by the Irish Meteorological Service (Met Éireann 2012). This data refers to the meteorological station at Shannon Airport, thus, it describes quite accurately the climate of Limerick City.
The weather in Limerick is quite mild through all seasons and the climate is temperate. The average daily maximum in July was 19.4 °C and the average daily minimum in January was 2.6 °C. The highest temperature recorded was 31.6 °C and the lowest −11.2 °C.

Rainfall is moderate and spread throughout the year with rain showers possible in any season. More than half of the days throughout the year experience rainfall. However, monthly rainfall is approximately two and four inches. Typical ‘rainy days’ represent less than a quarter an inch of rainfall. In the spring and autumn months the sun shines on at least three days out of four. Only in December and January, when the duration of daylight is short, is there a chance of no sunshine during a day. On average, less than one day per month experiences gales.

Winter days are short, with just approximately nine hours of daylight, and summer days stretch out to nineteen hours long. In June, it becomes light at about 04:00 and stays bright until 23:00 (11:00pm). At the end of March the clocks "go forward" one hour, so that Limerick people rise one hour earlier during the summer. The clocks then "go back" one hour at the end of October. Wintertime is called Greenwich Mean Time (GMT) and summer time is known as British Standard Time (BST).

3.4 Existing Transport Infrastructure in Limerick

3.4.1 Roads

Transport21 (2005) which was launched in 2005, provided the blueprint for the development of Ireland’s transport infrastructure. It is the capital investment framework through which the transport system in Ireland will be developed over the period from 2006 to 2015. The key road developments contained in Transport21 for Limerick included the upgrading of the N7 Dublin to Limerick route, and the upgrading of the N18 from Limerick to Galway. Limerick is now well connected to both cities. The other major road infrastructure project in Transport 21 for Limerick is the Limerick Tunnel Project in October 2006. This project comprised approximately10 kilometres of dual carriageway and 900 metres of Shannon tunnel completed in July 2010. The Limerick Tunnel creates a bypass of Limerick and links the Dublin Road to the Ennis Road and is capable of removing considerable traffic volumes from Limerick City centre.
3.4.2 Public Transport

Ireland's national rail operator, Irish Rail, provides rail services to Limerick City. Under the Western Rail Corridor (Transport21, 2005) proposal, there will be a phased re-opening of the sections of the Western Rail Corridor from Ennis to Claremorris and the upgrade for commuter services, of the Athenry to Galway line. The completion of the project will provide for a strong rail link between Limerick and Galway, with an onward connection to Claremorris on the Dublin-Westport line. This project is due to be completed by 2014.

Ireland's national bus operator, Bus Éireann, provides Limerick City’s bus services. The existing bus routes throughout Limerick City are shown in Figure 3-3. Figure 3-3 shows that all bus routes across the city operate from and merge at the city centre main bus terminal only. There are no orbital bus routes, or bus routes connecting different suburbs or areas.

![Figure 3-3 Bus Routes in Limerick](Source: TaxSaver 2012)

3.4.3 Walking and Cycling

Limerick City currently has few facilities for cyclists. However, as outlined by Limerick Cycle Campaign in there Limerick City Cycle Audit (Dawson et al 2010), detailed in Section 3.3.2, in contrast to some other Irish cities, Limerick City Centre has good potential for improvement without great difficulty.
Limerick City Council in partnership with Limerick County Council has developed a Walking and Cycling Strategy (Limerick City Council 2011) for the Limerick urban and suburban area. The purpose of the strategy is to outline the strategic direction for walking and cycling in Limerick, primarily as a transport mode but also as a means of facilitating leisure activity. The strategy is not an implementation plan, but a strategic framework to guide local investment and policy.

The strategy outlines five goals:

- To increase the number of people walking and cycling;
- To provide a safe and secure walking and cycling environment;
- To maximise integration of public transport with walking and cycling;
- To ensure all road infrastructure is designed/retrofitted so as to be pedestrian and cyclist friendly; and
- To promote and enhance the walking and cycling culture.

(Limerick City Council 2011)

3.5 Limerick Smarter Travel Study Area

As discussed previously, a preliminary proposal for Limerick Smarter Travel has already been established as part of the National Smarter Travel Areas Competition. Limericks Smarter Travel study area has been defined by Limerick City and County Councils Smarter Travel study team as a “sensibly defined location for taking forward and testing our approach to smarter travel” (Limerick Smarter Travel 2010). The initial Stage 1 submission study area comprised five hubs: the City Centre, Castletroy, UL and the NTP, Corbally and Southill. The Stage 2 submission incorporated the same areas as in the Stage 1 submission but the areas covered by the City Centre and the regeneration hub of Southill was increased. In addition, Castletroy, UL, and the NTP became known collectively as a super-hub. The reason the Limerick Smarter Travel study team had for creating the super-hub, hence only having four hubs, was due to the way census data is collected by local electoral districts, and it was considered impossible to separate UL from Castletroy.
The study area now comprises four key hubs, Limerick City Centre in the west, the Castletroy area that includes the UL and the NTP to the east, Corbally to the north, and the regeneration areas of Southill, Singland, and Ballysimon to the south. The hub approach was adopted as the Limerick Smarter Travel study team believed the approach ensured that “we will target each segment of the population with the right measures and funds aren’t wasted in non-target-group-specific measures” (Limerick Smarter Travel 2010). The four hubs were considered as being key local trip attractors and generators. The hubs are shown in Figure 3-4, and are discussed in detail in the following sections.

![Figure 3-4 Limerick Smarter Travel Hubs](source: Limerick Smarter Travel 2010)

### 3.5.1 City Centre Hub

Limerick City Centre is dissected by the River Shannon and is located at the lowest crossing point of the River Shannon. All public and private transport systems for the Mid-West region converge at Limerick City Centre, and the area represents the most accessible point of the region. The City Centre is the focus of city’s main tourist and retail attractions. The City Centre has a working population of 16,787 (Central Statistics Office 2007), and represents the largest employment centre in the Mid-West region. In addition, there is a significant residential population of 37,800 (Central Statistics Office 2007).
The main aims of Limerick Smarter Travel for the City Centre hub, as outlined in Limericks Stage 2 submission, as part of the National Smarter Travel Areas competition, is to create a safer environment for cyclists and to increase cycling modal share. The following hard infrastructure and soft behavioural change measures are proposed:

- **Hard Infrastructure Measures:**
  - Canal cycle and pedestrian route;
  - Station public transport interface;
  - Traffic management interventions; and
  - Cycle parking

- **Soft Behaviour Change Measures**
  - Workplace travel planning and City Centre Travel Plan Network;
  - School travel planning;
  - Rail station travel plan;
  - Cycle hire and training; and
  - Car clubs

(Limerick Smarter Travel 2010)

All the above proposals are subject to revision, which is subject to relevant funds becoming available to facilitate the required research.
3.5.2 Castletroy, UL and NTP Hub

The Castletroy hub breaks down in three sub hubs. The sub hubs comprise education at the University of Limerick, residential in Castletroy and employment focused at the National Technology Park. The Castletroy hub has a residential population of 9,742, an employment population of 3,400 and an education population of 1,058 at primary level, 800 at secondary level, and 11,859 at third level (Central Statistics Office 2007).

Castletroy is a comparatively affluent residential area in Limerick and is located southeast of UL and the NTP. The NTP is located in the northeast of the study area approximately 5 kilometres from Limerick City Centre.

![University of Limerick](image)

Figure 3-6 University of Limerick

Castletroy is a rapidly growing and predominantly middle-class suburb of Limerick City. Historically, the area was entirely separate from Limerick City, and consisted of little development aside from the villages of Annacotty and Monaleen.

With the creation of the University of Limerick, as well as the growth of Limerick itself, the area now extends to these villages. The main aims of Limerick Smarter Travel for the Castletroy super-hub, as outlined in Limericks Stage 2 submission as part of the National Smarter Travel Areas competition, is to reduce the proportion of car trips made in Castletroy and UL, and to increase walking modal share from 14% to 30% and cycling from 1% to 11% in the NTP (Limerick Smarter Travel 2010).
The following hard infrastructure and soft behavioural change measures are proposed:

- **Hard Infrastructure Measures**:
  - River cycle and pedestrian route;
  - Further cycle lanes;
  - Junction and campus improvements;
  - Bike racks on buses; and
  - Public transport

- **Soft Behaviour Change Measures**
  - Workplace travel planning and NTP Travel Plan Network;
  - Student travel planning;
  - School engagement;
  - E-working; and
  - Cycle training.

(Limerick Smarter Travel 2010)

### 3.5.3 Corbally Hub

Corbally is a major residential suburb of Limerick City and from the greater southeast County Clare area. Corbally has a population of 9,995 (Central Statistics Office 2007), and is located north of the City Centre. Car ownership levels in Corbally are also high as 86% of household own one or more cars (Central Statistics Office 2007).

*Figure 3-7 Corbally*
The new Corbally Link Road opened in November 2007, to improve links with the City Centre and the Dublin Road. The road also opens up land for future development and will act as a catalyst for development of Park Road and the canal areas.

The main aims of Limerick Smarter Travel for the Castletroy super-hub, as outlined in Limericks Stage 2 submission as part of the National Smarter Travel Areas competition, is to reduce the number of short distance car trips and to encourage people to walk and cycle these distances, and to reduce car mode share from 44% to 28% by 2015 (Limerick Smarter Travel 2010).

The following hard infrastructure and soft behavioural change measures are proposed:

- **Hard Infrastructure Measures:**
  - River cycle and pedestrian route;
  - Two-directional cycle lanes to the City Centre; and
  - Traffic management interventions.

- **Soft Behaviour Change Measures**
  - Residential travel planning; and
  - School engagement.

  (Limerick Smarter Travel 2010)

### 3.5.4 Southill Regeneration Hub

Southill is the focus of this hub. Southill has a residential population of 11,547 (Central Statistics Office 2007) and consists of four housing estates, namely O’Malley Park, Keyes Park, Kincora Park, and Carew Park. The four housing estates comprise approximately 1,100 houses (Limerick Southside Regeneration Agency 2007). This hub also incorporates Singland and Ballysimon as the proposed infrastructure, aimed at improving connections to Southill, will traverse these areas.

In the media, Southill is known for its crime rate, which is contributed to by gangland feuds, turf wars, and poverty in the area. However, efforts are currently being made to rejuvenate the area, as discussed previously.
The main aims of Limerick Smarter Travel for the City Centre hub, as outlined in Limericks Stage 2 submission as part of the National Smarter Travel Areas competition, is to dissuade people from becoming aspiring car owners and showing that Smarter Travel is a cheap, comfortable and healthy alternative to the car, and to ensure 74% of mode share will be sustainable modes (Limerick Smarter Travel 2010).

The following hard infrastructure and soft behavioural change measures are proposed:

- **Hard Infrastructure Measures**
  - Cycle lanes connecting Southill to the rest of the study area; and
  - Community owned measures (e.g. cycle maintenance workshops).

- **Soft Behaviour Change Measures**
  - Community owned measures (e.g. cycle training);
  - Residential travel planning; and
  - School engagement.

  (Limerick Smarter Travel 2010)
Chapter 4 Research Methodology
4 Research Methodology

4.1 Introduction

The purpose of this chapter is to present the research methodology chosen for this thesis and the different techniques applied. It details the steps taken to answer the research questions:

- Where are the examples of best practice and what can be learnt from them; and
- How and why do people travel the way they do in Limerick City.

The chapter also defines the scope and limitations of the research methodology. The chapter is divided into three sections. In the first, the precedent study approach, to establish what has worked elsewhere and in similar circumstances is detailed. The reasons for selecting cities, data sources and data collection, are described. The next section examines the most robust available quantitative data for determining existing travel patterns in the Limerick Smarter Travel study area. Qualitative data is required as the change Limerick Smarter Travel seeks is human behaviour, therefore, motivation is essential. Section three describes the qualitative approach adopted to determine why people the Limerick Smarter Travel study area travel the way they do. Figure 4-1 shows the research methodology sequence.

![Figure 4-1 Research Methodology](image-url)
4.2 Precedent Study Methodology

A best practice Precedent Study offers a useful tool for investigating what has worked elsewhere and what can be transferred to Limerick Smarter Travel. Successful travel behaviour change has been implemented in European cities, and more recently in UK cities, to reverse the effects of unsustainable travel. This shows the potential that exists for achieving Limerick Smarter Travel with the associated benefits, which are well documented.

The purpose of the Precedent Study is to ascertain best practice levels of activity and support for Smarter Travel internationally, in particular cycling, as well as their Smarter Travel policies, recent technical and innovative developments, and trends.

Three UK cities and three European cities were chosen as follows:

- Copenhagen, Denmark;
- Odense, Denmark;
- Malmö, Sweden;
- Cambridge, England;
- Sutton, England; and
- Glasgow’s East End, Scotland.

Figure 4-2 shows the six exemplar city locations.
The criteria for selecting the six precedent study cities fell under two categories. Firstly, the six cities were chosen on the basis that each city had a well-established high modal share of Smarter Travel modes and/or had implemented successful travel behaviour change programs. Figure 4-3 details the commuting (travel to work, school and college) mode share for Limerick and each of the six chosen cities. Secondly, the cities were chosen based on the ability to visit each city during the course of this research.

![Figure 4-3 Commuting Mode Share Comparisons](Sources: Limerick – Central Statistics Office 2007; Copenhagen – City of Copenhagen 2011; Odense – Odense Municipality 2009, Malmö - Malmö City, 2009; Cambridge – Cambridge Travel for Work Partnership 2010; London Borough of Sutton – Civitas 2010a; Glasgow – Civitas 2010b;)}
The objective of the Precedent Study is to develop an information base of international best practice Smarter Travel measures that can be applied to the Limerick Smarter Travel study areas’ own local issues and problems, and from which policy makers and planners can learn. Information for the study has been collected during visits to the six ‘Smarter Travel’ cities, from meetings with Smarter Travel experts from these cities, and a literature search of materials that could be collected (during visits and elsewhere) are reviewed.

The findings of the Precedent Study are detailed in Chapter 5.

4.3 Quantitative Data Methodology

The existing situation in Limerick reveals that the private car is the dominant mode choice as described in Section 2.2.5. The existing modal split in the study area has been obtained from the Census of Population 2006, and has been detailed previously, in Chapter 2, Figure 2-1., and again in Figure 4-3 above. However, this modal split represents trips to work, school, and college only.

The Central Statistics Office released (August 2011) the results from Ireland’s first National Travel Survey (NTS), which was carried out in 2009. Information was collected from 7,245 households nationwide and represents one of the most detailed household studies of travel patterns ever undertaken in the state (Central Statistics Office 2011). In total, 7,221 adults completed a 24-hour diary and included information on the following:

- Number of journeys made, not just commutes;
- Reason for making each journey;
- Mode(s) of transport used;
- Time each journey commenced and ended;
- Duration of each journey and
- Distance travelled

(Central Statistics Office 2011).

However, the NTS collected travel data for a specific day while the Census data collected for the ‘usual’ journey to work, school, or college.
In addition, the NTS results do not provide individual town or city results. Instead, the results provide total urban, total rural and overall state findings. The results did show that the most common reason for making a journey was work related at 25%, followed by shopping/food/drink at 23%. Visiting family and friends accounted for a further 17% of all journeys (Central Statistics Office 2011).

Therefore, the available Census of Population 2006 data remains the most robust data available for determining existing travel patterns in Limerick Smarter Travel study area. The available data had been analysed and the findings of the Census 2006 data are detailed in Chapter 6.

4.4 Qualitative Data Methodology

4.4.1 Introduction

The literature review details how a strategy targeted at specific population segments for travel behaviour change is likely to be more effective than a ‘one size fits all’. Designing a community engagement strategy for a specific project such as Limerick Smarter Travel requires locally specific information on the underlying factors influencing local travel behaviour. For example, census data reveals that in the hubs of Corbally, Castletroy, UL and the National Technology Park car use is extremely high, by comparison, Southill hub has quite high levels of walking, as detailed in Chapter 3. Consequently, where the car modal share is very high the focus will be on reducing car use, whereas in Southill there will be a focus on preventing people from aspiring to become car owners.

It is clear that different people need to be treated in different ways as they are motivated by different underlying factors, experience different barriers, and are effected in different ways by travel behaviour change. Therefore, attention needs to be paid to collecting qualitative (i.e. motivations and attitudes) travel data to determine the reasons and motivations for existing travel behaviour to facilitate the design of a behaviour change programme. Qualitative data helps to reveal the factors that underlie the quantitative data (i.e. travel survey data, census data etc.). One of the most efficient ways of doing this is via focus groups, a relatively recent method in the field of transportation, as outlined in the literature review. Focus groups provide empirical data that leads to important insights about human behaviour (Krueger 1988).
Focus groups reveal not just the facts (i.e. that 50% of the group drive to work by car), but also the factors that influence behaviour (i.e. group members drive to work as there is no alternative, security reasons, the trip includes a school drop off, etc.). A focus group report should feature themes and perspectives formed by words spoken during the focus group sessions.

4.4.2 Focus Group Methodology Design

Merton and Kendall (1946) describe the essential components of focus group methodology. Firstly, ensure the investigation incorporates specific opinions about the focus group topic. Secondly, the interviewer should use an unambiguous interview guide, and finally explore the individual experiences of participants in relation to the predetermined research questions of the focus group.

4.4.2.1 Sampling Frame and Participant Recruitment

People need to feel comfortable and at ease in order to obtain good results. If a group is too varied, in terms of class for example, the differences may have significant impacts on contributions to the focus group. Therefore, composing a homogeneous rather than a diverse group increases the quality of the data (Stewart and Shamdasani 1990). Individuals tend to refrain from voicing their ideas in the presence of people who differ greatly from them in power, status, employment, income level, education, or personal characteristics (Morgan 1988). A successful homogeneous group requires the gathering of members who think of themselves as possessing similar characteristics or travel patterns (e.g. all members use their car for journeys to work, school, or college) (Morgan and Krueger 1993). The key to deciding which criteria are important depends on the type of community and the topic of the focus group (Merton et al 1990). Multiple focus groups are necessary in order to retrieve a cross section of views from a diverse population (Morgan 1988).

Participants should be reasonably homogeneous. However, participants should also be unfamiliar with each other (Morgan 1988). Locating strangers within small communities can prove difficult. In this case, homogeneity was broadly defined as adults who live in the Limerick Smarter Travel study area community and travel within the community. The groups varied in age, gender, occupation, but members had the commonality of being adults, residents, and car users or non-car users.
The focus group sample size did not depend on the population size of the Limerick Smarter Travel study area, but instead was chosen to represent the number of variables within the study area.

Recruitment was carried using the following as criteria:

1. Household types;
2. Different hubs; and
3. Different modes of travel

These criteria were used to recruit focus group members in each of the Limerick Smarter Travel hubs. Focus groups do not permit statistical analysis of the results, but the survey sample does allow participants to be chosen by characteristics relevant to the research.

### 4.4.2.1.1 Household Types

Focus group participants were recruited from different household types. The focus groups included a variety of individuals from all household types outlined as follows:

- **Families**
  - Couples
  - Working;
  - Unemployed; and
  - Elderly
- **Parents**
  - With school/college going children; and
  - With non-school going children;
- **Single**
  - Working;
  - Unemployed; and
  - Elderly (over 65).
- **Unrelated adults**
  - Students; and
  - Working.
4.4.2.1.2 Different Hubs

Focus group members were recruited from the five hubs:

- Castletroy;
- City Centre;
- Corbally;
- UL and the National Technology Park; and
- Southill.

4.4.2.1.3 Different Modes of Travel

As participants need to feel comfortable to voice their ideas in the presence of people who differ greatly from them, it was necessary to separate the exclusive car users from alternative mode users to ensure both feel free to express their reasons, attitudes etc. for their chosen mode of travel.

Therefore, focus group members were recruited as follows:

- Those who use their cars exclusively; and
- Those who use alternative modes of transport.

When the participant recruitment criteria was finalised, the next step was their recruitment. A number of methods were used for recruitment; resident committees proved an effective way of obtaining focus groups. However, focus groups should not be confined to resident committees only. Other methods included - word of mouth using key informers, advertising (local radio Spin Southwest, local clubs, community centres, sports clubs etc.) and through existing social networks (boards.ie, forums, Facebook etc.). An incentive, in this case entry into a draw for concert tickets, was also used to entice participants. The methods used for recruitment of focus group participants' for each hub are detailed in Table 4-1 below.
**Table 4-1 Focus Group Recruitment Methods**

<table>
<thead>
<tr>
<th>Method/ Hub</th>
<th>Castletroy</th>
<th>City Centre</th>
<th>Corbally</th>
<th>UL &amp; NTP</th>
<th>Southill</th>
</tr>
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<td></td>
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<td>Local Clubs</td>
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</table>

4.4.2.2 *The Discussion Guide*

A focus group should produce natural features of conversation as well as a focused discussion, which relies on the interaction within the group based on the topic(s) supplied by the researcher, and not simply a series of questions and answers (Krueger 1988). The freedom to speak and engage in conversation is a distinguished feature that allows data collection that questionnaires cannot capture. Standardised questions tend to condition data according to the researchers expectation. According to Krueger (Krueger 1988) the researcher achieves this by using a well-designed interview guide to assist members to “relax, open up, think deeply, and to consider alternatives.” The discussion guide should contain questions that begin as general and become more specific. Before the focus group, during the recruitment process, background information on the group members (e.g. age, mode of travel, employment status, etc.) was gathered, thus allowing more time for the research topic to be discussed.

The discussion guide (provided in Appendix A) sets out key areas of discussion to be covered and ensures consistency across groups when multiple focus groups are carried out. The following outlines the three main areas on which discussions were focused:

- Current activities necessitating travelling (work, school, shops, recreation) and the mode in which travel is undertaken;
- Consideration of alternative modes of transport in particular, walking and cycling; and
- Consideration of and recommendations for encouraging more use of Smarter Travel modes of transport.
A more detailed discussion guide, which expands each of the above areas of discussion, is provided in Appendix A. The list of questions provided in Appendix A acted as a guide only, as it is crucial that the researcher does not follow each question mechanically and in a list like manner, as one would when conducting a telephone interview, for example. This ensured the session was not overloaded with questions, as the role of the researcher is to promote debate, by asking open questions. The detailed discussion guide is flexible and not standardised, allowing for spontaneous, unexpected elements.

However, at times participants needed to be drawn out to obtain a diverse range of meanings on the issue under discussion. On the other hand, when conversation begins to drift to keep the session focused, the researcher needs to intervene. In addition, participants can raise a topic or respond in a way the researcher did not anticipate.

Such occurrences were encouraged in the focus groups and responses from others were noted. The researcher needed to be a good listener, non-judgemental, and giving personal opinion was avoided at all costs, keeping in mind the purpose of the focus groups: to bring to light motivations, beliefs and travel related experiences, as well as gather raw facts, and not to promote Smarter Travel. This ensured the participants trust and increased the success of each session, ensuring open conversation and good interaction.

### 4.4.3 Focus Group Implementation

Ten focus group were individually convened, two per hub, one car exclusive group, and one non-car exclusive group during April and May 2011. In total, 81 people across the five hubs were involved, as detailed in Table 4-2. As recommended by Krueger (Krueger 1988) 12-20 participants were invited to each single session in order to fill a room with a minimum of six participants that are similar.
Table 4.2 Focus Group Structure

<table>
<thead>
<tr>
<th>Hub</th>
<th>Car-Exclusive</th>
<th>Non-Car Exclusive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castletroy</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>City Centre</td>
<td>9</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Corbally</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>UL &amp; National Technology Park</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Southill</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>42</strong></td>
<td><strong>39</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

The focus groups lasted 90 minutes, on average, and were conducted in a variety of places including hotels, meeting rooms, or where participants held regular meetings (e.g. community centre). The neutral locations were selected in order to eliminate any negative or positive associations with a particular venue. A non-threatening environment ensures participants who share common characteristics can share ideas and opinions freely and openly. The role of the researcher becomes increasingly important when the meeting commences. The researcher provides clear explanations of the purpose of the focus group, ensuring participants feel at ease, and facilitating interaction between participants. Conversation is at the heart of a focus group.

Before commencing the session the aims of the study were explained, how the findings would be reported, and how anonymity and confidentiality would be protected (Krueger 1988). Participants were informed that one person at a time could speak and also that the discussion would be digitally audio-recorded and the reasons for this explained – i.e. to transcribe verbatim for full analysis, as shown in the discussion guide provided in Appendix A. Interaction is the crucial element of a focus group enabling participants to reveal their views, values, and beliefs about a situation (Kitzinger 1994). Interaction also allows participants to ask questions of each other, as well as to re-evaluate and reconsider their own understanding of their individual experiences.

**4.4.4 Analysis of Focus Group Data**

Quantitative data analysis consists of the transformation of numbers into statistics, at minimum calculating percentages, resulting in a final report including graphs and tables of the results.
In contrast, the words spoken by participants represent the results of a focus group – focus group results cannot be represented by numerical means such as percentages. If focus group results are presented as percentages then the results will be perceived as representing the wider population. A focus group report should feature themes and perspectives formed by words spoken during the focus group sessions. Creswell (Creswell 1998) states, “the focus on language earns focus group methodology the label qualitative.” Focus group reports of results are not intended to present generalisations, nor can they do so. Instead, a focus group report comprises lists of quoted statements used to support conclusions drawn from the quantitative data and to explain quantitative data.

The literature on focus group analysis, detailed in Section 2.6.1., outlines a fundamental difference in the approaches used by market researchers and social scientists. Market researchers tend to use an interpretative approach. Market researchers aim to gather consumer perceptions and opinions on product characteristics and advertising. Focus group interviews enable the producers, manufacturers, and sellers to understand the thinking of consumers (Kreuger 1988). Merton, however, feels that this application of focus group research is being misused, in that plausible interpretations are taken from group interviews and are treated as being reliably valid (Merton et al 1990). Morgan (1988) suggests that qualitative market researchers are so keen to position themselves from their quantitative counterparts in the eyes of their clients that they deliberately avoid anything to do with numbers and counting.

Social scientists that employ focus groups have a much more positive attitude to coding, cutting, and pasting data, counting words or text segments, and using computers to assist with analysis (Kelle 1995). Cutting and pasting of text segments and content analysis, both qualitative and quantitative, are advocated by the social scientist Morgan (Morgan 1988). Kelle (1995) recognises that these computer programs cannot replace the analyst's core role, which is to understand the meaning of the text, a role which cannot be computerised because it is not a mechanical one.
For focus group data analysis, even those researchers who are most enthusiastic about the use of computer programs to assist in qualitative data analysis, have recognised that process elements in the data, (i.e. linking participants discussions to questions asked) can be lost in the coding and retrieval functions that are a key feature of program architecture (Agar 1991, and Weitzman and Miles 1995). According to Morgan (1988), the “large-sheet-of-paper” approach is the equivalent of “manual cut and paste” and involves breaking the transcripts down into text segments and allocating these under themes and headings identified deductively and/or inductively (Morgan, 1988).

The focus group sessions were manually transcribed from the digital audio-recordings taken during each focus group. The large-sheet-of-paper approach has been adopted for analysing these Smarter Travel focus groups. The benefits of this approach are that the transcripts have been considered as a whole, rather than as a set of discrete responses and it has also allowed for the re-experience of the group’s discussions. In addition, the advantage of this approach is that it provides a clear series of steps, which helps first-time researchers to manage the large amount and complex nature of qualitative data.

Krueger (1988) outlines the process of data analysis adopted which begins, according to Krueger, during the data collection. By skilfully facilitating the discussion, the researcher can generate rich focus group data, complemented with the observational notes and transcribing the recorded discussion. This stage is followed by further acquaintance with the data, which has been achieved by listening to the tapes, reading the entire transcripts numerous times, and reading the observational notes taken during the focus group and summary notes written immediately after the discussions. The aim is to become immersed in the details and get a sense of the focus group as a whole before breaking the transcripts into parts using the large-sheet-of-paper approach.

During this process the major themes begin to emerge. The next stage involves identifying a thematic framework, by writing notes in the margins of the text in the form of short phrases, ideas, or concepts arising from the texts and beginning to develop categories. The third stage comprises sifting the data, highlighting and sorting out quotes, and making comparisons both within and between different focus groups. The fourth stage, involves lifting the quotes from their original context and re-arranging them under the newly developed appropriate thematic content.
One of the most important aspects of this task is data reduction, which is achieved by comparing and contrasting data and cutting and pasting similar quotes together. The data are now ready for the final stage of analysis, i.e. mapping and interpreting. One of the tasks here is not only to make sense of the individual quotes, but also to be analytical enough to see the relationship between the quotes, and the links between the data as a whole (Krueger, 1988). An example of a large-sheet-of-paper is provided in Appendix B, to illustrate the process used.

The findings of the Focus Groups are detailed in Chapter 7.
Chapter 5  Precedent Study
5 Precedent Study

5.1 Introduction

Successful travel behaviour change has been implemented in European and UK cities, to reverse the effects of unsustainable travel. This shows the potential that exists for achieving a Limerick Smarter Travel with the associated benefits that are well documented. This chapter details the findings from six study trips to European and UK cities that have successfully implemented Smarter Travel measures. The purpose of this chapter is to ascertain best practice levels of activity and support for Smarter Travel internationally, in particular cycling, and determine their transferability to Limerick Smarter Travel.

5.2 Copenhagen

5.2.1 Overview of Copenhagen

Copenhagen is the largest and capital city of Denmark, with a city population of 520,784, and a greater metropolitan area population of 1,224,892 (Statistics Denmark 2012). Copenhagen features an historical city centre and a coastal location. Cycling has become a key aspect of Copenhagen’s image around the world and the city actively markets itself as the ‘City of Cyclists’.

Figure 5-1 Bicycle Parking at Copenhagen Central Train Station
Every day in Copenhagen, people cycle 1.2 million kilometres around their city (City of Copenhagen 2009). In Copenhagen, it is clear that the bicycle is a socially acceptable mode of transport. Figure 5-2 shows the 2010 commuting modal split in Copenhagen, which highlights the extent of cycling in the city.

![Figure 5-2 Copenhagen Commuting Modal Split](Source: City of Copenhagen 2011)

The Danes value modesty and do not appreciate displays of wealth and therefore, cycling is seen as a modest mode of transport. In Copenhagen, there are more bicycles than cars particularly during peak periods such as the morning and evening rush hours.

### 5.2.2 Transforming Limerick into a ‘City of Cyclists’ – Making the Case

It is obvious that cycling and walking in Copenhagen benefit from the city’s flat topography and its moderate climate. Limerick City is relatively flat also, yet less than 3% of its population cycle (Central Statistics Office 2007). In Copenhagen 30% of all trips are made by bicycle, and 35% of all commuting trips are made by bicycle (City of Copenhagen 2011). The weather in Copenhagen is quite mild through all seasons and the climate is temperate, made mild by mostly west winds and by the sea surrounding the city. Rainfall is moderate in Copenhagen, spread throughout the year with rain showers possible in any season, similar to Limerick (Danish Meteorological Institute 2012).
Grey skies are the norm in Copenhagen, with an average of 168 rainy days in the year (Danish Meteorological Institute 2012). Summer temperatures average at 20°C in Copenhagen and Limerick, minimum winter temperatures average at -2°C in Copenhagen compared to minimum temperatures of 4°C in Limerick City (Danish Meteorological Institute 2012 and Met Éireann 2012).

In addition, due to its northerly location, Copenhagen experiences shorter days in winter than Limerick, with sunrise at 8:00 a.m. and sunset at 3:30 p.m. (Danish Meteorological Institute 2012). Yet, approximately 80% of summertime cyclists continue to cycle during the winter months in Copenhagen (City of Copenhagen 2011). One lesson from Copenhagen is that people cycle in all conditions in this city.

However, it should be noted that the unending flow of cyclists in Copenhagen, has been forty years in the making (Nelson and Scholar 2006). In the 1960s, during the global economic boom, car traffic increased significantly in Copenhagen, as it did in Limerick and many other cities worldwide. Copenhageners from every age and wage bracket cycle, with an estimated 85% of the city’s population owning a bicycle, and 60% considering the bicycle as their main means of transport (City of Copenhagen 2011).
The following precedent study details how a city with similar climate and topography to the Limerick Smarter Travel study area, and with similar evidence of disappearing cyclists in the 1960s, became a ‘City of Cyclists’ where the bicycle is a standard, acceptable, and more often preferred mode of transport today.

Information has been gathered for this precedent study by the following methods:

- A one week trip to Copenhagen (2\textsuperscript{nd} – 9\textsuperscript{th} March, 2011);
- Cycling and observing others cycling in the city;
- Visit to Copenhagen’s City Council Department of Traffic; and

5.2.3 Smarter Travel Solutions from Copenhagen

The following Smarter Travel solutions from Copenhagen are detailed in this section:

- Prioritise Cyclists and Pedestrians;
- Provide Continuous and Consistently Good Quality Infrastructure;
- Ensure a Diversified Transport Network;
- Connect People and Places;
- Publicly Count and Evaluate; and
- Encourage, Inform and Educate.

5.2.3.1 Prioritise Cyclists and Pedestrians

Copenhagen is not a natural ‘City of Cyclists’. In the 1960s, it was a city renowned for cars, traffic jams, and associated pollution. By the early 1970s, construction of new cycle infrastructure was eliminated and cycling was no longer encouraged (Jagielska 2011). Copenhagen was just as car clogged as any other city in the Western World at this time. However, Copenhageners continued to cycle, albeit at decreased rates.

However, the car boom, energy crisis, worldwide recession, and the increased levels of traffic congestion, of the 1960s and early 1970s, collectively initiated a consciousness about alternatives to the car among Copenhageners. By the late 1970s and early 1980s, Copenhageners began holding massive annual cycle demonstrations in the city centre in front of the Danish Parliament and Copenhagen City Hall (Jagielska 2011).
The demonstrations were held by a large section of the public who wanted to cycle or continue to cycle, but had become concerned with the ever-deteriorating condition of the city’s cycling conditions. These demonstrations, led by thousands, put pressure on Copenhagen’s politicians, planners and traffic engineers to make visionary decisions to improve conditions for cyclists and pedestrians. All parties recognised the benefits of prioritising cyclists and pedestrians, outlined as follows:

- Less congestion in the city;
- Provision of a better city environment;
- Improved health for Copenhageners;
- Improved urban life for citizens and visitors;
- A cycling project could be implemented during one election period; and
- The effects were cheap and visible.

(City of Copenhagen 2011)

The result of the demonstrations meant increased investment and focus on the construction of cycle tracks and provision of cycle facilities. The continued cycle priorities that were being pushed, led to cycling becoming the mainstream within Copenhagen’s transport planning that it is today. Vehicular traffic, by contrast, is increasingly being controlled via expensive parking strategies, low emission zones, road pricing proposals, and high taxes on cars and car fuels (Jagielska 2011).

Pedestrians also receive priority over vehicular traffic. The pedestrianisation of Copenhagen’s historic city centre started over 40 years ago, when car parks became public open places, and a network of pedestrian streets has been in existence ever since (Jagielska 2011). Copenhagen has the longest pedestrianised street in the World, Strøget. This street is one mile long and Copenhagen’s main shopping street. Pedestrianisation of Strøget occurred in the mid-1960s, following some controversy. Only after the construction of an inner city distributor road to divert vehicular traffic, had pedestrianisation been introduced in other European cities. Copenhageners’ city planners argued that such a replacement road was unnecessary. The traffic effectively disappeared following pedestrianisation of Strøget, proving the city planners right. Today it is one of the most successful shopping streets in Europe (Jagielska 2011).
Copenhagen’s City Council makes a continued push to remove traffic discreetly. On a yearly basis, reductions in on-street parking in the city centre are made to provide more space for cyclists and pedestrians who they believe should be the ones with the greatest access to the city centre. The Copenhagen City Council progressively cuts the amount of parking spaces by 3% each year, enough to make a difference over time but not enough to create too much opposition and this has provided space for cycle lanes as well as wider pavements on the main streets, and some shared surfaces on minor streets (Jagielska 2011).

5.2.3.2 *Provide Continuous and Consistently Good Quality Infrastructure*

As already noted, 25 to 30 years ago, the level of cycling investment increased, and concerted efforts to improve conditions for Copenhagen’s cyclists were made. When polled for the 2008 Bicycle Account, Copenhageners reasons for cycling, in order of preference, were as follows:

- Cycling is easy and fast/ convenient (69%);
- Cycling provides good exercise (23%);
- Cycling is cheap (7%); and
- Cycling is good for the environment (1%).

(City of Copenhagen 2009)

It appears that the masses of cyclists in Copenhagen do not wish to consider themselves as environmentalists, as just 1% say they cycle in Copenhagen for environmental reasons (City of Copenhagen 2009). Evidently, the city’s extensive network of safe, segregated and continuous cycle paths, and lanes, which dissect the entire city, have encouraged those who cycle. Copenhagen now has 350 kilometres of cycle paths (separated from vehicular traffic via kerbs), and 20 kilometres of cycle lanes (on road lanes separated by a painted strip), and continues to grow (City of Copenhagen 2011). The integrated network of routes, with a focus on key destinations such as shopping centres, residential areas, schools, and workplaces, across the city centre and suburbs ensures an effective cycle network. Copenhagen continuously works on connecting its cycle routes, ensuring no area or element of the city is overlooked. Throughout the city, there is continuous new construction of cycle paths and improvements to existing cycle infrastructure.
The ‘City of Cyclists’ owes its creation to its multi-faceted quality of infrastructure. Copenhagen’s planners continuously focus on the provision of a city where cycling is always the quickest, most convenient and safest mode of transport to use.

Provision of cycling facilities is part of the overall design of Copenhagen’s streets, not as an afterthought, or only where space is surplus or not required for parked cars. Providing cycling infrastructure is part of the city’s objective and direction to discourage the use and growth of the private car. Consequently, the cycle infrastructure needs to be of excellent quality including well-maintained cycle path surfaces, and of sufficient widths. In addition, there are no roundabouts present in the city. In Copenhagen typical cycle paths are separated from vehicular traffic by a kerb and elevated by 70-120 millimetres above the level of the street (i.e. between the footpath level and street level), as shown in Figure 5-4. The majority of cycle lanes are 2.2 metres wide, but on busier commuter routes, they increase to 3.0 metres to accommodate the higher levels of bicycle traffic (Nelson and Scholar 2006).

Cycle paths and cycle lanes painted a bright, highly visible blue colour alert vehicular traffic to the presence of cyclists also crossing at intersections and other road crossings. Restructured intersections allow priority to cyclists, in order to reduce the risk of accidents. Stop lines for cars (advanced stop lines) are located 5.0 metres behind the stop line for cyclists (Nelson and Scholar 2006).
Some intersections have separate traffic signals for cyclists that allow the cyclist a green light for four to twelve seconds ahead of the vehicular traffic. Previous signalised junctions favoured cars, but this has changed in favour of cyclists along the main arteries of the city. As a result, the introduction of a ‘green wave’ enables cyclists, travelling at a constant speed of 20 km/h during rush hour, to ride through a wave of synchronised green lights through the city without having to stop (Jagielska 2011). These initiatives ensure the cyclist is more visible, given priority over vehicular traffic, and enables the cyclist to get to their destination quicker.

Copenhagen strives to increase cyclist priority in the city. The city has commenced construction of a series of ‘green routes’, which incorporate cycle paths through parks, along waterfrotns (e.g. the city’s canals), across the harbour and link residential areas (Jagielska 2011). These routes connect routes outside the city centre and immediate suburbs, to encourage longer distance cycling commutes. The ‘green routes’ provide quick routes through the provision of wide cycle paths and minimal contact with vehicular traffic. Recreational activities also take place on these routes outside rush hours. Currently, 41 kilometres of 100 kilometres of planned ‘green routes’ have been constructed (Jagielska 2011).

Copenhagen’s first established bicycle and pedestrian only bridge, Bryggebroen, which traverses the harbour opened in September 2006. Since then, 6,000 cyclists per day cross the harbour via this bridge (City of Copenhagen 2009).
5.2.3.3 Ensure a Diversified Transport Network

In Copenhagen, cars have been restricted within the inner city and city centre (Nelson and Scholar 2006). Public transport, walking and cycling have become easier at the same time. As a result, transport planning in Copenhagen is a balanced approach, which supports all modes. All taxis in Copenhagen are required to have two bicycle racks attached (Jagielska 2011). Cyclists can carry their bicycles onto trains and the Metro at certain times of the day. Train and Metro stations across the city provide extensive bicycle parking. Copenhagen’s cycle network provides access for all users: green routes link schools, parks and residential areas, and are particularly suited to children, the elderly and for recreational purposes. By contrast, Copenhagen’s urban network through the City Centre is best suited to daily commuters and connects residential areas to the city centre and workplaces.

5.2.3.4 Connect People and Places

Copenhagen has only recently (2007) permitted cyclists to cycle along the many lakes in the city centre (Jagielska 2011). Pedestrians previously only accessed these routes. These routes separate cyclists and pedestrians entirely from vehicular traffic. This initiative has been hugely successful with approximately 4,500 Copenhageners (City of Copenhagen 2009) choosing to cycle along the lakes of the city every day.
The Abuen Bridge, which opened in 2008, traverses one of the busiest roads in Copenhagen, where 56,000 vehicles pass every day (City of Copenhagen 2009). This road separates two municipalities, Copenhagen City, and the greater Copenhagen metropolitan area of Frederiksberg. The bridge project resulted in the co-operation between the two municipalities. The bridge connects two established green routes at both ends.
5.2.3.5 Publicly Count and Evaluate

Copenhagen City Council carries out a ‘Bicycle Account’ bi-annually at a cost of approximately €50,000 (including publishing costs) (Jagielska 2011). The first bicycle account, published in 1992, established figures about cycling and cyclists in Copenhagen. This account is an assessment of cycling development in the city, dealing with cycling conditions, results of new initiatives, as well as discovering how Copenhageners perceive cycling facilities. The results show citizens the status of Copenhagen as a ‘City of Cyclists’, while it also acts as an important planning tool for the city’s government. More importantly, the bicycle account puts cycling in the public and political debate, providing the necessary information for convincing and consulting an audience about cycling. The most recent account, based on 2010 statistics, includes telephone interviews with over 1,000 randomly selected Copenhagen residents (City of Copenhagen 2011).

5.2.3.6 Encourage, Inform and Educate

In Copenhagen, campaigns and education provide bicycle planners with essential, inexpensive tools, which enable new people to cycle. Today 35% of Copenhagen’s commuters’ cycle to work or education (City of Copenhagen 2011), but by 2015 the city aims to raise this to 50% (Jagielska 2011). The city is committed to further improving bicycle infrastructure and developing campaigns to promote urban development in ways that consistently incorporate and give high priority to cycling.
While in the past Copenhagen has focused on physical infrastructure and designing to encourage people to cycle, the city’s planners are increasingly moving towards a dual strategy of promoting cycling via campaigns and education, in addition to providing infrastructure (soft and hard measures). Bicycle counters in the Town Hall Square, located in the city centre, as shown in Figure 5-10, provide a gimmick and a source of information for the planners. This piece of cycling infrastructure acts as the communicator to create interest as well as gathering and providing information.

A second example of utilising cycling infrastructure to communicate with citizens is via a covered cargo bicycle stand, which fits four cargo bicycles, as shown in Figure 5-11. Designed in the shape of a typical car and painted bright colours, the covered stand attracts attention and informs citizens that four cargo bikes can fit in the same space as just one car. The City of Copenhagen has designed and established racks to improve the comfort of cyclists (Jagielska 2011). The cyclists can rest their foot (or hand) on the rack, as shown in Figure 5-12, when waiting for traffic lights without having to get off the bike when traffic lights are red. There are five free air pumps placed at different locations around the city, offering a free service for the cyclists of Copenhagen also (Jagielska 2011).
5.2.4 Lessons Learnt and Transferability to Limerick Smarter Travel

While a strong tradition of bicycle culture makes an excellent starting point for creating a ‘City of Cyclists’, Copenhagen’s consistent prioritisation of cycling in the city’s planning has maintained, and more importantly increased the city’s level of cycling. It has taken 40 years for Copenhagen to become the ‘City of Cyclists’ and the city councillors themselves acknowledge that if all the measures had been done overnight, the people of the city would have revolted. Prioritising cyclists should be a task taken seriously and pursued with great dedication. Over ten years, kilometres cycled have increased by twice as much as kilometres driven (City of Copenhagen 2011).
A combination of measures, including extensive cycle lanes, removal of roundabouts, providing cycle parking at train stations, and promotions and campaigns has achieved this. Copenhagen has made undesirable travel behaviours inconvenient and expensive. Copenhagen operates following the idea of thinking mobility rather than traffic control, prioritising bicycles over cars. It is clear that efficient, reliable, safe cycling can entice people to reduce car use. One of the city’s concepts is of a five-minute city where everything you might regularly want is nearby (Jagielska 2011). This is being achieved as cyclists and pedestrians have the shortest and most direct access to the city centre. Copenhageners are cycling even more in recent years. Consequently, everyone regardless of age, gender, and social status cycles in Copenhagen. Copenhagen proves that through a combination of strong political will, provision of appropriate cycling facilities, which potential cyclists want, there will be growth in the number of cyclists on Limericks streets.

5.3 Odense

5.3.1 Overview of Odense

Odense is the third largest city in Denmark and the main city of the island of Funen. The population of Odense Municipality is 187,929 (Statistics Denmark 2012). A quarter of Odense’s citizens choose the bicycle as their mode of transport for getting to work or their place of study and for other errands. In addition, 80% of Odense’s children walk or ride a bicycle to school; there are 500 kilometres of cycling routes (Odense Municipality 2009). Figure 5-13 below shows the 2009 commuting modal split in Odense.

![Figure 5-13 Odense Commuting Modal Split](Source: Odense Municipality 2009)
5.3.2 Successful Smarter Travel Programme for Limerick

Odense carried out an ambitious Smarter Travel type programme between 1999 and 2002, aimed at further increasing its modal share of cycling and improving safety. The project was supported by the Ministry of Transport, the Road Directorate, and the Odense Municipality. At this time, The Danish Ministry of Transport named Odense as ‘Denmark’s National Cycle City’, because it had been promoting cycling extensively for many years prior to this programme. Since the 1980s, Odense has created an extensive cycling network comprising in excess of 350 kilometres of cycle route (Cycle City Odense 2012). In the 1990s, attention focused on improvement of safety and comfort, and bicycle use promotion. Consequently, Odense experienced a growth in bicycle trips of approximately 50%, with a simultaneous drop in accidents of approximately 20% in the 1990s (Cycle City Odense 2012).

Information has been gathered for this precedent study by the following methods:

- A one day trip to Odense (3rd March, 2011);
- Cycling and observing others cycling in the city; and

The following precedent study details how Odense conducts continuous cycling promotion in parts of the city, evaluates projects, and then pending success, rolls them out across the entire city. Troels Andersen, also a resident and cyclist in Odense, spoke in detail about how it is much better to make a part of a city ‘The Cycling City’, to achieve a good starting point, which can then, be modifier and enlarged, ‘copied and pasted’ as such.

5.3.3 Smarter Travel Solutions from Odense

The following Smarter Travel solutions from Odense are detailed in this section:

- Create a Traffic Plan and Build a Cycle Network;
- Carry Out an Ambitious Programme;
- Campaign and Engage;
- Provide the Highest Quality for Cyclists; and
- Engage With and Encourage Children.
5.3.3.1 Create a Traffic Plan and Build a Cycle Network

In 1976, Odense Municipality set out a coordinated traffic and recreation plan for constructing a cycle network (Road Directorate and Ministry of Transport 1989). The main aim of the plan was to connect all town areas of the municipality with Odense and to provide access to all schools and green spaces by bicycle. Odense entered into this comprehensive traffic plan to transform the city centre. A continuous ring road (created by adding to existing roads) diverted through traffic from the city centre. Available space accommodated the construction of the first cycle tracks. However, the city centre, where the cyclists encountered most difficulties with vehicular traffic, had to wait. It was considered difficult to make room for tracks at the time, at least if the vehicular traffic should not suffer from it (Jensen and Larsen, 1989).

The attitude towards cars and bicycles changed with time so that it became more acceptable to take room from cars for cycle tracks and introduce restrictions on cars in the town centre. Today the majority of Odense’s 500 kilometres of cycle tracks are situated along roads, to both sides of the carriageway (Cycle City Odense 2012). Some routes are separated from vehicular traffic, located along streams or on disused railways. The cycle network is also signposted.

The City Centre cycle network is defined by two main routes, one East West, and a second North South, with a connecting stretch in the City Centre main square.
Four basic principles were used to establish these routes:

- Ordinary paths should be located on both sides of the road in the few places where this was possible;
- A bicycle path should run contra-flow on one-way streets;
- Bicycle paths should be provided in pedestrian areas; and
- Bicycle paths should be provided in areas reserved for city buses.

(Cycle City Odense 2012)

Vehicular traffic has been discouraged from entering the City Centre by a complicated network of one-way streets and pedestrian/bus streets with no access to private cars. The construction of a number of car parks outside the City Centre connects to the ring road, providing access for cars.

After-studies of the bicycle routes showed that half of cyclists found it easier to get from one place to another, and 42% found it safer (Jacobsen 1989). The overall impression of citizens of Odense was that the new traffic plan had proved to be a success. In addition, it was felt that careful planning and provision of information to the public, are necessary to obtain satisfactory results (Jacobsen 1989).
5.3.3.2 Carry Out an Ambitious Programme

With a budget of €3.5 million, Odense’s four-year programme comprising more than 60 demonstration projects was drawn up (Cycle City Odense 2012). The action plan concerned with not only building more cycle infrastructure, but also safety, leisure cycling, legal issues, accessibility, service, maintenance, and quality. It was envisaged that these measures would lead to improvements throughout Denmark and further afield, with Odense acting as a cycling laboratory and a model city (Anderson 2011).

5.3.3.3 Campaign and Engage

While Odense has a long history of campaigning for cycling, during its ambitious four-year programme campaigning intensified significantly. Awareness-raising campaigns, with particular emphasis on new types of campaigns with personal contact with citizens were designed and implemented. Andersen (Anderson 2011) advises that citizens should not feel that these campaigns are selling something rather that they are encouraging improvement in their lives, with no “second agenda” as such. It became apparent that brochures, while required, were solely not enough to change daily transportation habits. Instead, campaign staff confronted the people of Odense directly with the issue of cycling, establishing close contact with the public and in particular with employers and employees. They needed to interfere into people’s lives without causing conflict, and ‘Action Planning’ became the key words for Odense’s strategy - a strategy to engage participants physically in order to reach them mentally (Anderson 2011).
Focus was placed on action, social experiences, and person-to-person contact between campaign staff and participants. In particular rewarding (e.g. lotteries, prizes, pins, vouchers, etc.) those that chose to cycle, triggered others to do so also (Anderson 2011).

As previously mentioned, the project consisted of 60 different sub-projects, conducted between 1999 and 2002 (Troelsen et al 2004). The programme staff tested each project before launching it on a large scale. The main target group were commuters and children. These projects involved a combination of means, such as top priority to bicycles in town planning, regulation of motor traffic, technical initiatives, and campaigns. Quality in the construction and maintenance of cycling areas was emphasised, as well as how to motivate people to use their bicycles. Campaigns played a crucial part of the strategy of Odense Cycle City (Troelsen et al 2004).

Experiences in Odense clearly showed that it was crucial to continuously accompany investments in physical improvements for cycle traffic with campaigns, in order to promote, motivate, and secure cycling. Many of the campaigns were directed towards children and young people (students) - the philosophy was that “it is easier to establish good, than to change bad, traffic habits” (Anderson 2011).

Campaigns included the following:

1. Cycle to Work Campaign
   - Aimed at companies via direct mail to 200 workplaces;
   - Advertisements for the campaign;
   - Postcards;
   - Handing out 3,000 ice-creams as part of the campaign;
   - Pins for all participants;
   - Pin patrol awarding prizes for pin holders; and
   - In 2002 – 10,000 participants.

2. Test a Cycle Trailer Campaign
   - Trailers were offered free of charge for one week;
   - 10 trailers and 6,000 parents got the offer;
   - 45% of the users normally travelled by car.
3. Cycle Duckie Campaign
   - Cycle Duckie (Odense is the birthplace of the author of the Ugly Duckling – Hans Christian Anderson) became the mascot for one of Odense Cycle City's campaigns;
   - Used to motivate new young cyclists; and
   - More than 3,000 children and their parents competed in cycling the most to and from day care centres for 2 weeks.

4. Permanent Cycle Lights
   - Attached via magnets to the wheel, no batteries, fixed at the cycle;
   - 16,000 signed up, 2,000 got free lights;
   - 98% happy cyclists; and
   - -32% accidents as a result.

5. Get Rid of the Sack
   - Aimed at males;
   - Advertisements, bus ends, people dressed up as a ‘sack of potatoes’ promoting the campaign;
   - Go-cards (multi travel discount cards) to 84,000 households; and
   - 75% remember the campaign.

6. Cycle Route Planners and Cycle Counters and Scanners
   - Allowing citizens to plan their cycle routes online;
   - Cycle computer model allows cyclists to draw their preferred route;
   - Counters – cycle traffic information comes from the cyclists;
   - Barometers counting cycle traffic have been exported to other European cities; and
   - Cycle detectors – include cycle lotteries and monthly rewards.

7. Cycle Simulator
   - Cycle training for 12 year old children;
   - Linked to the national practical cyclist exam; and
   - Based on attitude not rules.
Odense continues to campaign for increased cycling in the city, even after completion of the four-year programme. Odense works with the principle of “*How much attention can I get, with the least money*” according to Anderson (Anderson 2011).

A more recent campaign, outlined as follows:

8. **Cycle Helmets**
   - €25,000 budget;
   - 1,700 were handed out for free;
   - Helmets had logo and website information;
   - Receivers signed up to a website;
   - Contact with a panel of 1,700 was established, for information and data purposes;
   - Photos of 1,400 receivers wearing their helmets were displayed in the Town Hall for two days;
   - Voting system online for best picture;
   - Facebook page received 46,000 hits;
   - Six month panel were evaluated; and
   - The project reached out to and influenced 10,000 people.

(Troelsen et al 2004)

5.3.3.4  *Provide the Highest Quality for Cyclists*

On arrival in Odense, Odense Central Station provides an underground parking facility for bicycles. The parking facility features video surveillance, music, special locking arrangements, and lockers. This parking lot expresses a standard that even the finest car parking lots can hardly meet.

Quality also extends to the upkeep of all bicycle paths in Odense. This means that tasks like putting down even surfaces, keeping the paths free from dirt, garbage, broken glass etc., and snow clearing receive high priority, the same high level as on the largest roads in the municipality (Anderson 2011). The municipal road inspectors must inspect all bike paths regularly on bike. Air pumps, similar to those in Copenhagen, have been installed at various locations around the city for cyclists who need to top up their air.
It is also possible to arrive at a green light every time at a specific traffic light in Odense. Odense was the first to establish this green wave (Cycle City Odense 2012), which has now been implemented in Copenhagen, as detailed previously. To guide the cyclists, Odense has developed a 'running light' that makes a green wave. The idea behind the green wave is to give the cyclist some priority in traffic and to make travelling more comfortable. Cyclists' traffic experiences can be improved by the green wave: “The light signals are usually put up for the sake of cars. Therefore, many cyclists have to stop a lot of time. If a cyclist adjusts the speed to the green wave, the ride will be more comfortable,” states Anderson (Anderson 2011). The running light also creates a debate on which role cyclists should have in urban areas: "Physically cyclists take up much less space than cars on the street. Moreover, that means that the high technological solutions that car drivers have, are often not seen in the cyclists context. It has been important to us to demonstrate that new technology also can be used in connection with cycling," according to Andersen (Andersen 2011).

5.3.3.5 Engage With and Encourage Children
A ‘Safe Routes to School’ project in Odense started in 1979 and included all 45 schools of the municipality (Appleyard 2003). The study was created to combat a child fatality rate that was the highest in Western Europe, at the time. The study included routes to and from organised activities. In every school, the creation of maps highlighted the movements of the children and the places that they considered dangerous. Each child's routes were mapped utilising aerial photography.
The study established proposals to improve the traffic environment for children. Since 1981 there has been approximately 200 projects implemented. Odense has assigned approximately €130,000 for improvement of children's safety annually since (Andersen 2011). The most common measures have been slow-speed areas, and separate foot and bicycle paths. Speed registration on twelve 30-km/h roads showed a decrease in speeds from 45 to 31 km/h. The effect on the total number of accidents has been a reduction of 82 % (Appleyard 2003). Furthermore, the accidents are now less serious.

Trailers for children are well known in Denmark, and they were particularly evident in Copenhagen and Odense. Trailers give good training for the parents and show a good role model for the children to become cyclists too. An extra advantage is that you can carry two children plus some luggage without major problems. Parents with children in kindergartens, during the four-year programme, were able to borrow a trailer free of charge, for one week. This campaign involved in total 7,500 parents (Troelsen et al 2004). Ten trailers were sponsored by the manufacturers, and each trailer went to a kindergarten for 2-3 months in turn. All work concerning moving the trailers from one kindergarten to another and repairs were taken care of by a team of young people from a job creation project. Parents were also given the option of buying a trailer afterwards (Troelsen et al 2004).
5.3.4 Transferability to Limerick Smarter Travel

Cycle programmes in Odense are lead to make people sensitive and interested in the daily use of the bicycle, and because of this, the modal split for all travel changed during a 10-year period in favour of cycling: cyclists increased by 50% from 1990 to 2000 (Cycle City Odense 2012).

The four-year promotion programme (1999-2002) in Odense was assessed in detail in ‘Evaluering af Odense – Danmarks Nationale Cykelby’ (Troelsen et al 2004). The assessment also proved that development in traffic safety had been positive during the four years the programme lasted, with 20% fewer cycling victims in four years. To illustrate the success of the four-year programme, the number of cyclists in Odense rose by 20% in three years. During the same period, the number of accidents declined by 20% (Troelsen et al 2004).

While the establishment of a comprehensive traffic plan, including the construction of a sufficient cycle network is required, the key lesson learnt from Odense is to find an area where there are cyclists, or cycling potential (e.g. at schools), then engage with these communities to outline the missing links, and provide solutions.

5.4 Malmö

5.4.1 Overview of Malmö

Malmö is Sweden’s third largest city with a population of 302,835 (Malmö City 2012). Malmö is the seat of Malmö Municipality and the capital of Skåne County in southern Sweden. During the 1980s and 1990s, Malmö underwent a period of economic recession and high unemployment. In just three years during the late 1980’s 30,000 jobs were lost in Malmö city (Persson 2005). However, since then Malmö has consciously reinvented itself as a sustainable multi-cultural European city of the future with major developments such as the opening of Malmö University in 1998. The city has been transformed from a manufacturing dependent city to a city of knowledge. There are 143,000 jobs in Malmö city today and 55,000 people commute daily into the city to work (Malmö City 2012). Figure 5-19 below shows the 2009 commuting modal split in Malmö.
Malmö actively works to facilitate the city's public transport and non-motorised transport, especially the bicycle. Since the 1980s, the city of Malmö has been committed to creating a safe, comfortable and bicycle friendly city. Today, Malmö has approximately 420 kilometres of cycle paths, and 30% of all trips within the city are made by bicycle and more impressively, 40% of all journeys to and from work are made by bicycle (Malmö City 2009).

Figure 5-19 Malmö Commuting Modal Split
(Source: Malmö City 2009)
5.4.2 Limerick City, a Smarter City

With some 30% of the workforce losing their jobs in the 1980s, and 22% unemployment, the city of Malmö had to rethink the its economic role and spatial structure (Persson 2005). With the City Council also owning approximately 40% of the city’s area and the City Council owning some 20,000 homes, this provided a major force for the City Council to be innovative in regenerating its urban structure (Persson 2005). Malmö’s decline, and the environmental, social and economic issues that came with it, stimulated proactive thinking about the vision for the city’s future, led by the City Council (Malmö Stad) and Malmö’s Mayor. This led to a huge programme to regenerate the City Centre, with a strong commitment to sustainability, and to developing the city’s role in the knowledge economy. The concept of economic, social, and ecological sustainability began to support city planning, including its traffic and transportation planning (Persson 2005).

Malmö is a success story in terms of sustainable urban planning, as a smarter city. The development of a sustainable transport system has been one of the key elements in achieving this. Therefore, the following precedent study details how a city with high levels of unemployment and a large proportion of social housing (similar to Limerick today) has transformed its city and created a sustainable transport system with a cycling culture comparable to Copenhagen. Malmö’s sustainable transport system is one that demands behaviour change at the individual level, but also urban planning that creates the right preconditions for sustainable mobility.

Information has been gathered for this precedent study by the following methods:

- A one day trip to Malmö (8th March, 2011);
- A guided cycling tour of the city; and
- Meeting with Leif Jönsson (Jönsson 2011), Cycling Officer from the Department of Traffic in Malmö’s Office of Public Work;
5.4.3 Smarter Travel Solutions from Malmö

The following Smarter Travel solutions from Malmö are detailed in this section:

- Ensure Bicycle Friendly Urban Planning;
- Provide Safe Cycle Routes;
- Implement Innovative Marketing to Promote Smarter Travel;
- Engage With Schools, Workplaces and Residents; and
- Merge Public Transport Authorities.

5.4.3.1 Ensure Bicycle Friendly Urban Planning

Malmö has and continues to produce a range of Smarter Travel programmes, targets, and plans for works, in order to create a better traffic environment, including in recent times, the ‘Traffic Environment Programme 2005-2010’, and the ‘City of Malmö Environmental Programme 2003-2008’ (Malmö City 2009). The ‘Traffic Environment Programme’ had four focus areas: a healthier, cleaner, quieter, and more efficient transport system. The ‘City of Malmö’s Environmental Programme’ stated that an integrated environmentally friendly transport must form a natural part of city planning and traffic planning, considering sustainable solutions at an early stage. Malmö’s continuous improvement of and investment in its well-connected and integrated cycle routes attribute to its high cycling rates.

Malmö has an extensive cycling network exceeding Copenhagen in terms of kilometres of route provided. The map of Malmö in Figure 5-21 highlights the density of the existing (in red) and proposed (in blue) cycle network of city. The red dots signify cycle bridges and cycle tunnels. In general, cycle paths are separated from major traffic in Malmö. This is particularly obvious in the suburbs, where there are a lot of off street cycleway which were constructed in the 1950s and 1960s (Jönsson 2011).

With a resurgence of cycling during the mid-1970s, it became necessary to connect the suburbs with the City Centre. Single two-way cycle lanes are provided on one side of the carriageway in the City Centre instead of two separate lanes on either side of the carriageway (Jönsson 2011).
Two-way tracks saved space and were chosen because citizens had become used to two-way tracks in the suburban areas. In the City Centre, cycle lanes run through car-free streets or cut through parks (Jönsson 2011).

Figure 5-21 Malmö Cycle Network
(Source: Malmö City 2009)

Figure 5-22 Typical Suburban Off-Road Cycle Tracks
Air pumps similar to those in Copenhagen and Odense have been installed at six locations around the city for cyclists who need to top up their air. The pumps can also be used for prams and wheelchairs. In addition, tools have been added to three air pumps turning them into mini-service stations where cyclists can carry out basic repairs (Malmö City 2009). Malmö also has bicycle counters at different locations in the city, which automatically count, and display for passing cyclists providing a visual indication of cycling levels in Malmö; showing how many people cycle in Malmö, and encouraging and reminding cyclists that they are appreciated.
Furthermore, radar sensors have been fitted at 28 intersections in Malmö to detect approaching cyclists and automatically give them a green light at intersections, which are not already crowded by car traffic (Malmö City 2009). At the junctions, the lights turn green quickly in favour of the oncoming cyclists allowing cyclists to flow more smoothly in traffic.

A free map is also available which portrays all of Malmö’s cycle paths. The map is updated every year to show new cycle paths. The latest version is always available from the town hall and tourist information offices. Skånetrafiken’s (regional public transportation authority) website includes an online bicycle journey planner, which suggests the best route to take when cycling in Malmö (Malmö City 2009). A time comparison for the same journey by bike, bus, and car, is also provided, with cycling often coming out on top. Malmö has also decided that many cycle paths should be given names so that they can be plotted into GPS gadgets. It does not apply to cycle lanes that run along streets (those streets have names already) but the city has named a long list of cycle paths that are separated from traffic (Jönsson 2011).

5.4.3.2 Provide Safe Cycle Routes

Malmö continuously invests in improving its cycle routes and its already impressive percentage of bicycle mode share, with particular attention paid towards safety. Malmö’s aim is to make cycling faster, safer, and more enjoyable with well-connected origins and destinations. At present, a variety of solutions are being tested along a particular stretch of cycle network, which runs through Malmö from the southern part of the inner city to the suburbs and University in the north. The innovations introduced along this route, include the placement of large mirrors at crossings to allow cyclists to see around corners where visibility would otherwise be poor (Malmö City 2009).

One particular example of the efforts made to ensure the safest of routes, is a cycle tunnel built to bypass crossing a busy road for safety. The tunnel, shown in Figure 5-25, cost approximately €3,700,000 and has been constructed in order to maximise visibility through the tunnel where cyclists feel safer cycling through the tunnel especially at nighttime (Jönsson 2011).
The tunnel is hourglass-shaped. Sufficient lighting, including curb plates through the tunnel and headlights that light up in front of the tunnel entrances, create a safe feeling. A shaft of light in the middle of the 30-meter-long tunnel releases daylight, which further increases the sense of security.

Different types of lighting are also being trialled along the route to improve visibility in the dark. Most recently, an installation placed on a dimly lit cycle path, which was having its use dramatically reduced due to crime, has improved visibility and safety (Jönsson 2011). The scarcity of people in the area had led to a developing downward spiral with more crimes being committed. Malmö undertook decisive action to aid regeneration of the area and increase usage of the path. The installation of solar lights as embedded studs in conjunction with fitting an increased number of light points on the path achieved this. The brightly lit solar stud means that cyclists can see their route ahead stretching out before them for potentially up to one kilometre. Cyclists are significantly more aware of the hazards they may face such as kerbs, gateways, junctions with roads, surface undulations and numerous other hazards that occur in the urban environment. Just a few hours of clear daylight ensure enough battery power for up to 10 days, more than enough to ensure that the system keeps working even with the short hours of Swedish winter daylight. Innovations such as this and the above-mentioned tunnel design dramatically increase visibility on the cycle path and regenerate public confidence in the area due to reduction in crime.
5.4.3.3 Implement Innovative Marketing to Promote Smarter Travel

Malmö’s Smarter Travel solutions are based on a vision that all its citizens should have access to their city. Life styling campaigns to help create engaging messages that stand out from all the other words and images Malmö’s citizens are surrounded by, has been the main aim. Campaigns have been designed keeping in mind the following key ideas: life styling, visibility, and accessibility (Malmö City 2009). It was noted during the visit to Malmö that all cycling related information, signs, advertising etc., by Malmö Stad was in a noticeable bright orange colour. Since 2001, the City Council has been working continuously on changing travel attitudes and behaviours. The ultimate goal is for more people to choose to walk, cycle, or use public transport, instead of using their cars.

![Figure 5-26 Cycle Parking Sign in Typical Orange Colour](image)

![Figure 5-27 Saddle Cover in Typical Orange Colour](image)
In 2003, an advertising campaign promoted the benefits of cycling in conjunction with a competition asking the citizens of Malmö to submit ideas, via focus groups, that increase the number of bike users. One such idea was the production of a book that incorporated the use of local celebrities. The book ‘Berömda Människor Som Cyklat I Malmö’ (Famous People Who Have Gone by Bike in Malmö) is an inspirational bicycle anthology, which presents stories of more than 50 celebrities (Jönsson 2011). The book contained a diverse mix of biking experiences, thoughts, stories, secrets, memories, commissioned essays, and reflections. The aim was to create something for everybody. The book communicated messages of freedom, fun, ease, and flexibility and that cycling improves the quality of life for everyone, while putting people in touch with their communities. A stylish and contemporary layout and an attractive format that could be easily distributed and noticed when delivered by mail further enhanced the positive cycling message.

A one-day cycling campaign took place on April 23, 2005, a week after the distribution of the book (Jönsson 2011). The message and theme of the event was in keeping with the overall aims of the book. The event was a tool for promoting the book. In addition, politicians, decision makers, and relevant stakeholders, publicly represented themselves in a positive context via this important platform. The cycling event took place on a Saturday and was located in the City Centre.

Following the distribution of the book, Malmö carried out a customised telephone survey to 300 households (Jönsson 2011). As a result, the city was able to evaluate some of the impacts that the book’s distribution had on the local community. The results from the survey are as follows:

- 90% of the target audience noticed the book;
- 53% read the book;
- 15% of the target group felt that the book gave them a positive image of cycling;
- 16% of the target group believed that the book personally would contribute to an increased amount of cycling; and
- 30% of households were aware of the cycling event

(Jönsson 2011)
5.4.3.4 Engage With Schools, Workplaces and Residents

The fact that so many parents regularly drive their children to school became a major problem in Malmö. Therefore, a project called ‘Friendly Road to School’ aimed to encourage parents of children attending the first few years of school to walk or cycle to school with them instead of driving them by car, was established (Malmö City 2009). Each metre walked by pupils on their way to school is converted into a footprint on a giant map of Europe at each of the participating schools. In this way, the project is integrated into teaching and the children learn about the cities and countries that they “pass through” (Malmö City 2009).

Persuading companies to take more responsibility for business travel and employees’ journeys to and from work is part of the work involved in changing travelling habits in Malmö. Having held seminars and breakfast meetings on the subject, Malmö started to work with companies by offering help and advice in drawing up mobility plans including measures to change travelling habits. ‘Businesses on Bikes’ project resulted in 53 companies replacing short car journeys with bicycle journeys (Malmö City 2009).

‘No more ridiculous car trips’ was an event based information and behaviour change campaign, which aimed to convince people to switch to cycling for shorter trips (Malmö City 2009). Surveys carried out by Malmö City Council showed that almost half of car trips made in the city were shorter than five kilometres and a third of them were shorter than three kilometres, therefore these trips which were being made by car were considered as ridiculously short car trips.

Apart from the provision of general information, like cycle maps and brochures, an unexpected means of advertising was also utilised whereby a real cyclist in front of a large billboard was placed at a City Centre location to create attention and interest in the campaign. One initiative was a competition to win a bike by providing details of a ridiculous car journey made by either the competition entrant or a friend. When the campaign was launched in May 2007, half of all those living in Malmö were aware of it, and many people now choose to cycle instead of driving when they would previously have made a ridiculously short car journey (Malmö City 2009). ‘No more ridiculous car trips’ has gained widespread attention, both internationally and in other Swedish cities. The campaign is repeated every spring.
5.4.3.5 Merge Public Transport Authorities

Skånetrafiken is the regional public transportation authority and operator in Skåne. Skånetrafiken was founded in 1999 when two counties, Kristianstads län and Malmöhus län, were merged into one region (Malmö City 2009). During this merger, the two respective transport authorities were amalgamated. Presently, Skånetrafiken is a part of the regional government of Region Skåne. Following amalgamation, within the city, Skånetrafiken’s green city buses run frequently along lines that are entirely powered by biogas. A focus on modern, environmentally-friendly public transport means that passengers can find out departure times using their mobile phones and public transport is given priority at crossings, ensuring green, clean travel (Malmö City 2009).
5.4.4 Lessons Learnt and Transferability to Limerick Smarter Travel

This precedent study details how Malmö has developed a cycling culture due to continual improvement of its infrastructure complemented by soft measures and mobility management. Jönsson (2011) says, “Changing attitudes and behaviour towards cycling, and more generally about personal transportation, is almost always linked to rational information, such as costs, environment, and health.” Information, education, and advice are at the core of Malmö’s mobility management for the city. Engaging campaigns to raise public awareness have been essential in changing travel behaviour and encouraging cycling. Creating an engaging message that has the ability of standing out in a world over-saturated with words and images have proved successful.

Promotion and marketing are therefore crucial to gaining additional cyclists, re-inspiring and motivating existing cyclists and encouraging them to make more bicycle trips. Jönsson (2011) also states, “The main work with developing bicycle-friendly systems comes at the early urban planning stage in connection with the local plans.”

It is therefore extremely important to have an adopted cycle plan to refer to when there is debate and discussions on the positioning of cycle paths for example. Lessons learnt from Malmö show that if bicycle access is not ensured at the local plan level, then it is nearly impossible to reconstruct a functional bicycle network afterwards.

5.5 Cambridge

5.5.1 Overview of Cambridge

Cambridge is located in the County of Cambridgeshire in the east of the England and has a population of 125,717 (including 22,153 students) (Office for National Statistics 2010). Cambridge is home to the well-known Cambridge University. Cycling has a great presence in Cambridge: its flat terrain, green urban space, and compact City Centre creates ideal conditions for bike travel. Cambridge enjoys the highest levels of cycling in any town and city in the UK. The Department for Transport in 2008 chose Cambridge as a Cycling Town, with central government funding an expansion of cycling facilities in the city and its surrounding villages (Cycling England 2008). Figure 5-30 below shows the 2010 commuting modal split in Cambridge.
5.5.2 Cambridge a Best Practice Demonstration City - Making the Case

Cambridge is a University City with a density of high-tech businesses and technology incubators that have developed on science parks around the city, similar to UL and the National Technology Park. The city does have an existing cycling culture, which has been maintained by the University. However, in more recent times progress has been made in improving the attractiveness of cycling as a mode of transport particularly in the last three years (2008-2010), due to the availability of funding from the Department for Transport (DfT) as part of their Cycling Demonstration Towns (Cycling England 2012). The Cycling Demonstration Town programme has seen a high focus on high quality infrastructure and much-needed on-road improvement schemes. Cycle links to and between surrounding villages have been achieved.
Cycle training has improved, with the introduction of ‘Bikeability’ cycle training (as well as adult cycle training), more promotion of cycling has been achieved, and the problem of widespread shortage of cycle parking around the city is starting to be addressed (Cambridge Cycling Campaign 2012).

The results from the three years (2008-2010) were as follows:

- 12% increase in number of cycle trips in Cambridge;
- 21% of all journeys in Cambridge are made by bike;
- Eight new cycle routes installed, with improvements carried out on a further eight routes;
5.6% increase in cycling at Cambridge Science Park;
Over 2,500 people have had Bikeability cycle training (adults and children);
900 secure cycle parking spaces installed at 21 schools;
600 cycle parking spaces installed including Addenbrooke’s Hospital, Cambridge United Football Club and the city centre;
‘Bike It’ operating in 11 schools with 12% increase in levels of cycling to school;
Reduced speed limits on four routes; and
Four new crossings installed.

(Cycling England 2012)

Therefore, the following precedent study details how Cambridge, a city with comparable features to the super hub of UL, the National Technology Park, and Castletroy, has increased cycling significantly in recent years. This case study details the key players involved and the measures, both hard and soft, that have been utilised in Cambridge.

Information has been gathered for this precedent study by the following methods:

- A one day trip to Cambridge (March 2010);
- Cycling and observing others cycling in the city; and
- Meetings with Clare Rankin Cambridge City Councils cycle officer (Rankin 2010), Andrew Rawlings of Mott MacDonald, Cambridge (Rawlings 2010), and Tony Clayton from the Cambridge Travel to Work Network (Clayton 2010).

### 5.5.3 Smarter Travel Solutions from Cambridge

The following Smarter Travel solutions from Cambridge are detailed in this section:

- Create a Cycle City Programme;
- Educate, Market and Promote; and
- Ensure Successful Workplace Travel Plans.
5.5.3.1 Create a Cycle City Programme

An ambitious programme of new and improved cycling infrastructure has been carried out in Cambridge since 2008. The project, ‘Cycle Cambridge,’ funded by Cycling England (Cycle Demonstration Towns), has been a great success by increasing levels of cycling by 12% (Rankin 2010).

In the centre of Cambridge, traffic lanes have been redesigned to provide wide and continuous cycle lanes. The new lanes help make the journey safer for those existing users as well as attracting more people to cycle the route. Cycle lanes and facilities were also improved on key roads around the city and a 20mph zones was introduced in the centre. Upgraded and new routes were also established outside the city in the South Cambridgeshire district to help increase the number of village-to-village journeys that are cycled, as well as improve links to the city (Rankin 2010).

![Advanced Stop Lines for Cyclists](image)

Figure 5-34 Advanced Stop Lines for Cyclists

5.5.3.2 Educate, Market and Promote

Education, marketing, and promotion have also been key elements in the project’s success and will continue to be a focus for the team in the future, in encouraging use of, promoting and publicising the newly built cycle routes. Advertising campaigns on buses have focussed on commuting, families cycling together and young women cycling in particular (Rawlings 2010). Cycle training through ‘Bikeability,’ designed to help boost cycling confidence and improve cycle safety, has also been introduced.
‘Bikeability’ is the national standard in cycle training for children and adults. It has been a great success since its launch in 2009 - 423 adults and 2,206 school children have been trained (Cambridge Cycling Campaign 2012).

A ‘Bike It’ campaign among schools increased the numbers of pupils, parents, and staff cycling to school by working closely with each school to create a ‘Bike It ‘crew (Rankin 2010). The crew helped arrange events, bike rides, cycle skills sessions, maintenance classes, curriculum based lessons and assemblies to help encourage the school community to get on their bikes. Eleven schools in and around Cambridge have taken part in ‘Bike It’, organised by Sustrans (a UK sustainable transport charity organisation) and Cycle Cambridge. These schools have seen an increase in the number of children regularly cycling to school from 23% to 40% (Cambridge Cycling Campaign 2012).

5.5.3.3 Ensure Successful Workplace Travel Plans
Cambridgeshire's work on workplace travel plans has taken place in partnership with Cambridge City and South Cambridgeshire district councils (Rawlings2010). It has also involved Cambridge University, Addenbrooke's Hospital, and Cambridge City National Health Service (NHS) Primary Care Trust as funding partners. There are also four key non-funding partners - Cambridge Cycling Campaign, Cambridge Chamber of Commerce, the Campaign for the Protection of Rural England, and the Government Office for the East of England. Cambridge Cycling Campaign was formed in 1995 to provide a voice for cyclists in the area (Rawlings 2010). Cambridge Cycling Campaign is not a cycling club, but an organisation of volunteers campaigning for the rights of cyclists and promoting cycling in and around Cambridge. The organisation lobbies for better and more convenient conditions for cycling, safer roads, and more people on bikes.

The work on Cambridge workplace travel plans is led independently by what is known as the ‘Travel for Work Partnership’ (TfW) which is funded and supported by the above steering group of partners. TfW provides travel solutions for Cambridgeshire employers and developers, preparing and implementing effective travel initiatives that ease transport and access problems associated with existing sites or new business developments (Cambridge Travel for Work Partnership 2010).
TfW is a not-for-profit partnership dedicated to working with employers to deliver and promote sustainable and healthy travel to work. Cambridgeshire County Council’s approach to travel plans incorporates the following:

- Involvement of the transport strategy department, to provide an overview and to integrate the different elements of the work;
- Involvement of the planning division, to require travel plans for new developments;
- Provision of funding to the independent Travel for Work Partnership; and
- A personalised journey planning initiative aimed at the journey to work.

(Clayton 2010).

Cambridgeshire County Council’s planning division has been requiring travel plans for new developments, where appropriate, since 2000 (Clayton 2010). It uses a variety of approaches depending on the nature of the development, including simply requiring that developers have a travel plan, requiring developers to put in place particular measures, and requiring developers to aim at certain outcomes. It is working closely with all the district councils to try to achieve a consistent countywide approach to travel plans.

A pilot scheme funded by the Department for Transport, Cambridgeshire County Council and Addenbrooke’s NHS Trust (hospital located three miles south of Cambridge City Centre), involved a personalised journey planning initiative aimed at new employees (Clayton 2010). Both organisations, Cambridgeshire County Council and Addenbrooke’s NHS Trust, already had their own travel plans, but suffered problems of staff recruitment and retention. In addition, both organisations are reasonably large and both are located within close proximity to Cambridge City Centre.

Results from the Partnership as a whole suggest that, between 1998 and 2003, drive alone trips fell by 12% (from 57% to 45%), whilst car sharing remained unchanged (Cambridge Travel for Work Partnership 2010). It must be noted that there were also numerous hard measures put in place in Cambridge during the same period, all of which are seen to have made an important contribution to the success of this travel plan.
These hard measures included:

- New park and ride site;
- New bus station at Addenbrooke's Hospital;
- Relaunch and remodelling of the Cambridge City bus services;
- 21 kilometres of cycle routes were built;
- Stages one and two of the ‘Cambridge City core scheme’ (which has involved the closure of vehicular routes through Cambridge City Centre); and
- Controlled parking zone and pedestrianisation in central Cambridge.

(Clayton 2010)

In addition, other soft measures were also introduced during this time and are continuing to be implemented by Cambridgeshire County Council. These include the school travel plan work, which involves 47 schools, which was mainly focused on private schools, and run by a bursary post holder (Clayton 2010). There have been some synergies for example, schools located on a bus routes that feed Addenbrooke's Hospital have benefited. Other soft measures which are considered to have contributed to the workplace travel plan initiative include the development of a cycle route map, and improvements in public transport information.

Figure 5-35 Cycle Route on Pedestrian and Cyclist only Bridge
5.5.4 Lessons Learnt and Transferability to Limerick Smarter Travel

The success of this travel plan can also be attributed to the following factors in Cambridge:

- Existing lobby organisations, e.g. Cambridge Cycle Campaign;
- The presence of the University and its strong culture of civic public debate;
- The prioritisation of sustainability in the Local Transport Plan;
- The history of cycling (partly due to the student culture); and
- The flat nature of the terrain.

Limerick Smarter Travels study area has a relatively flat terrain and a history of cycling, albeit a lost history and a University, which could create an internal cycling culture, particularly with new students. Limerick also has a cycling campaign organisation, which should become more vocal in lobbying for a Limerick Smarter Travel that chooses to cycle more often and has a local transport plan that prioritises sustainable transport. The Cambridge Cycling Campaign, in particular is keeping the pressure on their local County Council by calling for strategic investment in new cycling infrastructure as a cost effective way to reduce congestion in and around Cambridge, irrespective of fuel prices.

5.6 London Borough of Sutton

5.6.1 Overview of Sutton and Smarter Travel Sutton

Sutton is an outer borough of London, located approximately 20 kilometres southwest of Central London. The borough of Sutton has a population of 183,745 (2011 est.) (London Borough of Sutton 2009). Figure 5-36 below shows the 2010 commuting modal split in Sutton, which shows that almost one out of every two commutes where made by Smarter Travel modes (i.e. not by the private car alone).

Smarter Travel Sutton was the first ‘Sustainable Travel Town’ programme of its kind in London launched in September 2006 (delivery commenced in April 2007) in line with the Mayor of London’s policy objectives and those of national Government at the time (Smarter Travel Sutton 2012). There was a bidding round to put forward a case, and Sutton was selected because of the borough’s credentials in environmental sustainability.
Sutton’s sustainable approach to transport goes back to the mid-1990s with the implementation of the ‘hail and ride’ bus known as the Hopper. Transport for London (TfL), the local government body responsible for most aspects of the transport system in Greater London, has now adopted this scheme. The continuing pursuit of green policies led to the cross party supported bid for Smarter Travel funding from TfL (Smarter Travel Sutton 2012).

Figure 5-36 Sutton Commuting Modal Split
(Source: Civitas, 2010a)

5.6.2 Changing Limericks Suburban Car Culture - Making the Case
TfL launched Smarter Travel Sutton (STS) to demonstrate whether it was possible to influence the travel habits of a given population via social marketing and travel planning techniques alone. TfL wanted to carry out a pilot programme in an outer London borough. The £5 million three-year pilot programme was a partnership between TfL Smarter Travel Unit (STU), the London Borough of Sutton (LBS), and a number of private and public stakeholders throughout LBS. The STS programme proved hugely successful with a 75% increase in cycling, 16% increase in bus patronage, and a 6% decrease in car trips in the borough over the three-year period (Smarter Travel Sutton 2012). STS is an on-going legacy as a result, and TfL are continuing to help disseminate the results and encourage other boroughs to develop programmes similar utilising lessons learnt from STS.

The following precedent study details how Sutton has promoted and encouraged Smarter Travel, enabling travel behaviour change, and creating a best practice Smarter Travel programme.
Information has been gathered for this precedent study by the following methods:

- A one day trip to Sutton (6th October, 2011); and
- Meeting with Lee Parker (Parker 2011), Project Manager of Smarter Travel Sutton.

5.6.3 Smarter Travel Solutions from Sutton

The following Smarter Travel solutions from Sutton are detailed in this section:

- Set Out Clear Objectives and Targets;
- Segment the Target Audience;
- Create Partnerships;
- Create a Methodology Cycle;
- Monitor and Evaluate Behaviour Change;
- Create A Legacy;
- Engage with Schools and the Community; and
- Provide Hard Measures Too (e.g. cycle parking).

5.6.3.1 Set Out Clear Objectives and Targets

The STS programmes primary objectives were to:

- Encourage Sutton residents to switch to cycling, walking or public transport for some of their trips; and
- Reduce congestion and delay across Sutton.

(Smarter Travel Sutton 2009)

What started, as a congestion relief programme, influenced by Sutton’s commitment to reducing its carbon footprint, became a much bigger policy issue for other areas (e.g. health, levels of inactivity, and obesity) as the programme gathered more political and community support (Parker 2011). As a result, the STS programmes secondary objectives were to:

- Contribute to reducing CO₂ and reducing the impact of climate change;
- Improving health and wellbeing;
- Promoting affordable and accessible forms of transport; and
- Supporting local town centres.

(Smarter Travel Sutton 2009)
The secondary objectives listed above became the main drivers for the STS programme, particularly promotion of more affordable transport and supporting local town centres with the onset of the economic recession, without losing sight of the primary objectives.

The approach to behaviour change was based on enabling residents to make smarter choices about their lives. The STS techniques comprised two categories, those that target particular journeys and destinations (schools, workplaces, hospitals, etc.) and those that target specific people (personal travel planning). The project involved some small-scale infrastructural (hard) measures, which primarily supported more behavioural change (soft) measures. The following outlines the project targets for STS:

- To reduce residents’ car trips by 5% or more (baseline being 58%);
- All 68 schools would have a travel plan by April 2008;
- 15,000 employees would be covered by a travel plan by March 2009; and
- To offer personalised travel advice and information to all residents by October 2007.

(Smarter Travel Sutton 2009)

The key message of STS was to get people to swap their car for a lift, a bike, or a bus once a week, to introduce people gently to experience non-car modes of travel (Parker 2011). The programme aimed to reduce car trips and the barriers to sustainable travel by promoting travel behaviour change while focusing on the people, organisations, and trip types most likely to have the greatest impact on travel behaviour.

5.6.3.2 Segment the Target Audience

TfL supplied eight different market segments, based on their research into identifying groups with common attitudes and experiences to travel choice and the car use (Parker 2011). Identifying such groups helped to focus on the key initiatives and messages that are most needed.
STS identified three market segments to Sutton that best fitted the profile of residents in Sutton, as follows:

- Hard-pressed families – e.g. typical suburban families two adults, both working, two-three school going children, high car use and dependence, hard-pressed for time;
- Well-off females – independent, wealthy, car reflects lifestyle; and
- Men who dislike travelling – disliking public transport, moan about their commute, car also reflects lifestyle.

(Smarter Travel Sutton 2009)

The population of Sutton comprises a high proportion of typical suburban busy family households (Parker 2011). Morning peak hour traffic was a big problem in Sutton, comprising school trips and trips to work. In addition, it appeared Smarter Travel messages were well received by children. Hard-pressed (time) families were targeted the most via the following messages:

- Quality time to spend with children – walking and cycling;
- Walking to school creates more alert pupils;
- Reduce petrol and parking costs;
- Walking is easy and free.

(Smarter Travel Sutton 2009)

The other two target groups, well-off females, and men who dislike to travel, were targeted using the following messages:

- Well-off females:
  - Looking good;
  - Environmentally awareness;
  - Improving health (child and family); and
  - Public transport can offer greater flexibility than the car.
- Men who dislike to travel:
  - Walking and cycling is quick and flexible;
  - Walking and cycling can increase your independence; and
  - Improving health.

(Smarter Travel Sutton 2009)
5.6.3.3 Create Partnerships

Great emphasis was placed on partnership working in STS and continues today in Sutton. Sutton Youth Service provides summer holiday activities in partnership with Ecolocal, a local environmental charity who operate ‘BikeStreet’ (Parker 2011). This delivers basic cycle maintenance courses to the more challenged children in the Borough.

With the Sutton Obesity Alliance, a campaign was launched to help residents to get fit and beat obesity by changing travel habits. Through the ‘File the Miles’ campaign, residents recorded the miles they travelled by walking and cycling for a chance to win prizes. Through the ‘Gear Up’ project for the disabled, Sutton worked with stakeholders to develop a ‘Cycling for All’ centre. This encourages bike use by both able and less able adults and children. Sutton also has plans for a GP referral project (Parker 2011). Patients will receive cycle training or advice on cycling as part of their care program.

STS bases its success on the setting up of partnerships from the beginning, getting stakeholders involved as early as possible ensures a legacy. STS governance includes a Joint Programme Board consisting of Council and TfL senior members chaired by a Director of Environment and Leisure; a stakeholder reference group to engage local strategic partners (e.g. the police, chamber of commerce, schools, etc.); and a joint steering group of delivery partners (Parker 2011). The STS governance influenced the different types of projects STS carried out and different stakeholders backed certain projects by their organisation.

5.6.3.4 Create a Methodology Cycle

The three-year STS programme was managed using a coordinated and integrated delivery of projects. STS was carried out via an annual cycle of phased activities outlined below, with a feedback loop of lessons learnt to enable the programme to continually improve (Parker 2011). The purpose of a pilot program such as STS is to test new initiatives and to evaluate them; therefore, on-going reporting proved essential.
With a £5 million budget allocated by TfL, the main interventions over the three-year period were as follows:

- Personalised Travel Planning (door knocking) – all 76,000 households were targeted between April and September 2007, 66% participated (engaged in conversation), walking maps, cycle information, bus routes and timetables were given to households;
- School Travel Planning – developing plans for all 68 schools in the borough
- Workplace Travel Planning – developed plans for organising and setting out tangible ways of reducing car use
- Travel Awareness and Marketing – events, town centre activities, road shows, etc., including the following: and
- Active Steps – a health campaign in partnership with the NHS Sutton and Merton in partnership with the Council and TfL, challenging people to walk or cycle over a 12-week period, to improve their health and fitness, signposted by health professionals, using principles of motivational interviewing.

(Parker 2011)

5.6.3.5 Monitor and Evaluate Behaviour Change

The STS pilot programme tested existing behavioural change models and theories, the requirements for strategically planning and delivering such a programme and how to reliably monitor and evaluate the programme (Smarter Travel Sutton 2009).
The STS programme developed based on a behavioural change theory known as the ‘States of Change’ model (Smarter Travel Sutton 2009). This model adopted by STS explains the fact that behaviour change is a process comprising a set of gradual movements towards new habits. An integral part of the STS programme has been influencing attitudes of the residents of Sutton, creating short-term change, and the potential for long-term change.

The planning and implementation of the STS pilot programme focused on the idea that awareness can be widely raised among a population which gives rise to the intention to change among a proportion of the population, leading to actual change among some of those who intended to – “a funnel of behaviour change” (Parker 2011). Therefore, the STS progress was measured via two different categories of data measuring – quantitative data and attitudinal research for evaluating the STS programme at the end of each year, and for comparison with baseline survey. The focus was on residents’ perceptions about their behaviour change, why they changed, and their attitudes to behaviour change.

The quantitative data was gathered, utilising 14 automated traffic counters, and 11 automated cycle counters. In addition, weekly bus patronage data from four key routes covering the borough was also gathered (carried out by TfL). Awareness, attitudes, intentions, and self-reported behaviour were understood using survey interviews (Smarter Travel Sutton 2009).

Telephone surveys of 1,500 Sutton residents and a control sample of 500 Croydon residents and other methods were carried out and outlined as follows:

- Awareness among residents – telephone surveys and event attendance;
- Attitudes and intentions – telephone surveys; and
- Self-reported behaviour – telephone surveys, using a travel diary approach.

(Smarter Travel Sutton 2009)

Each data set was compared to a control area, the borough of Croydon. The control area, which would not be influenced by the projects in the intervention area, was used to monitor the progress of STS (Parker 2011).
Travel behaviour in both boroughs could have changed over the course of the three year programme due to the recession perhaps. A control area allows for the monitoring of changes as a result of the STS programme. The final surveys were carried out in September 2009.

Since April 2007, all 68 schools in the Borough of Sutton now have a travel plan (the first London Borough to have 100% of schools covered by a travel plan), and over 16,000 employees are covered by a workforce travel plan (Parker 2011). There has been a 75% increase in cycling (increase measured at traffic counters), a substantially higher increase than that of the control area of Croydon. The counter data was validated by the travel diary data from 2009, which compared to the baseline data, suggests a 250% increase in cycling mode share. There was a 16% increase in bus patronage, also a much higher increase than that of the Croydon control area (Smarter Travel Sutton 2009).

The data on actual behaviour is supported by the self-reported behaviour in the surveys, with Sutton residents consistently reporting higher bus use than those in Croydon. A 6% mode shift away from the car also resulted. Surveys indicated a 2% (from 49% - 47%) reduction in residents’ car journeys between Sept 2006 and Sept 2007 (Smarter Travel Sutton 2009).

However, overall traffic is 3.2% less than in the baseline year in Sutton compared to a 3.7% decrease in Croydon. The lesser decrease in Sutton may be down any of the following:

- Extra road capacity consumed by others - brought about by the transfer of car trips to more sustainable modes where there was an absence of demand management measures;
- Inadequate data - Some of the traffic data was gathered on more strategic routes, work on the DfT Sustainable Travel Towns suggest that the greatest traffic reductions are likely to be evident in the more central parts of towns; or
- Changes in population or employment may mask the effects.

(Smarter Travel Sutton 2009)
In addition, STS has completed the largest personalised travel-planning project in the UK contacting all 76,000 households in the Borough and managed to engage 66% of these in face-to-face conversations about their travel habits (Smarter Travel Sutton 2009). One of the main objectives of STS was to influence attitudes and intentions to bring about changes in existing travel behaviour.

Evidence from the survey data highlights the following effects of STS:

- Significant growth in awareness of facilities and opportunities to make other choices of modes of travel, particularly in relation to car clubs;
- Substantial growth in the number of Sutton residents who agree the benefits of walking and cycling outweigh the convenience of car use;
- Continuing decline in the proportion of Sutton residents that believe car use is essential; and
- Success in meeting public demand for support and engaging in wide variety of local private and public stakeholders to deliver the programme.

(Smarter Travel Sutton 2009)

5.6.3.6 Create a Legacy

Following the success of STS, it has now been mainstreamed into the Council’s structure. STS has become the catalyst for review of the Transport Planning and Network Development Service (traffic engineering and transport planning) of the Council, which will be, renamed Smarter Travel Sutton (Parker 2011). The new STS Service will contain both the behaviour change team, and the traffic and transport engineering team, forming a whole service. The new STS aims to develop a five-year programme of delivering ‘Integrated Transport Packages ‘which will lock-in the benefits of the STS pilot program combining physical and smarter choices measures (Parker 2011).

5.6.3.7 Engage with Schools and the Community

With a Schools Cycling Officer employed, STS has engaged with schools and the wider community. The current Cycling Officer has brought a high level of energy and enthusiasm to Sutton (Parker 2011).
This has led to the initiation of a variety of cycle projects, including:

- **Go Bike** - Coupled with a package of supporting events, *Go Bike* encourages children to claim cycle related prizes against days ridden to school;
- **Sutton Schools Cycling Championship** - Promotion of the championship, organised by Sutton Cycling Club; and
- **Design a Bike Competition** - Run in partnership with a local shopping centre, this was promoted via class work in schools. Prizes included a Company of Cyclists activity day at the winning school.

(Parker 2011)

A School Travel Adviser is also employed; ensuring 100% of schools are signed up for School Travel Plans (STP) (Smarter Travel Sutton 2009). The Sutton STP explicitly captures staff and pupil details. Clusters of schools have been brought together to promote the STP. Tea parties are held to encourage teachers to share information. Teacher bike rides are held to further encourage staff involvement. Cycle training and cycle storage are key to ensuring the success of STPs. Parents are also encouraged to get involved in cycle training.

![Figure 5-38 Smarter Travel Information Provision](image)

5.6.3.8 *Provide Hard Measures Too*

Through the South London Development Framework, boroughs are asked to promote improvements to the public realm and open spaces, and to place emphasis on increasing the quality of the environment for pedestrians and cyclists (Parker 2011).
Sutton has and continues to identify streets improvements aimed at de-cluttering the High Street and providing greater pedestrian comfort, e.g. by identifying specific areas for cycle parking, seating, playing, etc.

Sutton noted that more cycle parking stands are required along the High Street for the convenience of shoppers, to reduce the number of cycles attached to trees and signs. Detailed cycle parking arrangements are being considered by the Sutton Town Centre Partnership, which is currently implementing a programme to revise the street furniture within Sutton Town centre (Parker 2011).

Cycling is permitted in most parks in Sutton, which gives access to a wider range of routes, complementing the on road network. It also provides places for those new to cycling to develop their basic bike handling skills. Small-shared access signs are used in a number of parks, providing a discreet reminder to pedestrians and cyclists to be aware of the presence of the other party. Across the borough, Sutton has provided simple, easy to understand, and user-friendly infrastructure for cyclists (Parker 2011).

5.6.4 Lessons Learnt and Transferability to Limerick Smarter Travel
STS was the largest single project of its kind to reduce traffic congestion by using mainly soft measures in the UK. When speaking with STS project manager, Lee Parker, he stated that the budget of £5 million was more than what the three-year programme actually needed, as evaluation of the project revealed £2-£2.5 million was sufficient over the period (Parker 2011).

STS have also admitted that it is difficult to say whether the personalised travel planning was successful or not. The process proved quite expensive as 25 local members of staff carried out the door-to-door visits. Lee Parker stated that “a more targeted approach would have been more beneficial and a segmentation of the market including research into resident’s motivations, attitudes to current travel behaviour and barriers” (Parker 2011). Personalised travel planning should target specific areas or households with specific and tailored information.
The following summarises the lessons learnt from STS:

- Allow time for planning before the launch and develop a clear strategy (6 months to a year);
- Audience research and segmentation is essential, and use a wider range of approaches and initiatives at the same time;
- Integration with other policy objectives, documents and processes is necessary - programmes delivered in partnership with others, at a local level, work best;
- A range of communication tools and channels should be developed;
- Stakeholder engagement creates ambassadors and delivery partners;
- A base of political support is necessary – key players from the beginning;
- A clear set of objectives and performance indicators are required to steer the programme;
- Measure what works and what doesn’t continuously – drop those that don’t immediately;
- Intervention in travel choice trends is well accepted by local people;
- Ensure you have the necessary time, commitment, and resources – STS recommends a team of 6-7 full time individuals with a balance of skill sets;
- Find ways of mainstreaming behaviour change – the importance of addressing community and individual behaviour is required.

(Smarter Travel Sutton 2009)

Finally, STS believe behaviour change programmes, such as STS, offer a less intrusive and more acceptable approach of achieving change across a number of policy agendas (Parker 2011).

5.7 Glasgow’s East End

5.7.1 Overview of Glasgow’s East End

Glasgow is Scotland’s largest city and has a population of 592,820 (Scotland 2012). Glasgow’s East End has the highest levels of unemployment (26.4% in full time employment) and income deprivation in Scotland. With low life expectancy and the low levels of exercise, (37% of adults undertake no physical exercise) (Halden et al 2010). Figure 5-39 shows the commuting modal split for Glasgow.
Figure 5.39 shows that 45% of Glaswegians commute by private car. However, Glasgow’s East End has very low car ownership levels, 73% of its residents do not own a car. Of those that are employed, 27% walk to work, 24% take the bus and 29% drive (Halden et al 2010). Glasgow City Council published its spatial strategy in 2008 to guide the regeneration of Glasgow’s East End ‘Changing Places, Changing Lives’ (Glasgow City Council 2008). The strategy for the East End sets out the Council’s vision and detailed guidance for development in the East End. The Council’s vision is:

“To create a vibrant, modern city district, through a regeneration process based on reinvention and reconnection. Existing and new communities will benefit from a new approach to living in cities as regeneration in the East End will be a model of sustainable development, addressing issues of population health, environmental quality and meeting people’s needs.”

(Glasgow City Council 2008)

5.7.2 Smarter Choice, Smarter Places

Following on from the successes of England’s Sustainable Travel Demonstration Towns of Darlington, Peterborough, and Worcester, Smarter Choices, Smarter Places (SCSP) was launched in Scotland (Halden et al 2010). SCSP is a Scottish Government partnership project with the Convention of Scottish Local Authorities (COSLA), local authorities, and regional transport partnerships.
The project was launched in March 2008, and was designed to increase active travel and public transport use and to tackle transport emissions across Scotland. The SCSP aim is to create a series of sustainable travel communities across Scotland. The SCSP vision is for Scottish communities to have more sustainable places to live through the following:

- Increased sustainable travel choices;
- Significant reductions in transport related CO₂ emissions and air quality pollutants;
- Reduced levels of congestion;
- Increased physical activity;
- Increased awareness of healthy ways of living; and
- Community pride in their neighbourhoods.

(Halden et al 2010)

These communities would become role models as such for others to follow, displaying the very best methods available to encourage residents to use more sustainable modes of transport. The Scottish government provided £15 million over three years (2009-2011) - £10 million of Scottish Government funding and a further £5 million of match funding from the councils, public transport operators, and developers (Halden et al 2010).

The City of Glasgow’s SCSP successful proposal comprised Glasgow City Council’s East End Accessibility project, which aimed to encourage residents and visitors in Glasgow’s East End to use sustainable and active modes of travel. East End Accessibility represented an investment of £2.5 million of which more than £1.3 million comes from the Scottish Government in a package of localised measures comprising a mix of infrastructure improvements, an intensive sustainable transport marketing campaign and practical support for people wishing to adopt sustainable travel methods (Halden et al 2010). The budget for Glasgow’s East End was augmented by Glasgow City Council, Strathclyde Partnership for Transport and Clyde Gateway. This money was exclusively provided for the East End of Glasgow between 2009 and 2011.
5.7.3 Linking Regeneration and Accessibility – Making the Case

Glasgow’s East End was chosen as the target area for this initiative in order to promote active travel through the East End to the 2014 Commonwealth Games venues and to meet current challenges facing the area, which include:

- Income and social deprivation/ economic inactivity (50% of residents are income deprived/ economically inactive);
- Issues related to chronic ill health and child obesity;
- Male life expectancy is 10 years lower than the Scottish average;
- Access to employment, education and leisure opportunities; and
- Increased levels of Coronary Heart Disease, drug and alcohol related deaths.

(Halden et al 2010)

The primary targets of East End Accessibility are:

- To promote sustainable travel (walking, cycling and public transport) in the East End and Commonwealth Games venues to be sited there, with a focus on all spectator trips to these venues within the East End to be made by non-car modes in 2014;
- To improve the health of East End residents and visitors by increasing physical activity through providing the means and encouragement to travel actively and safely as part of a regular daily routine;
- To increase levels of cycling (by 25% minimum) and walking (by 15% minimum) to work and study;
- Increase proportion of adults and children meeting minimum activity levels;
- To reduce car use and subsequent transport related CO₂ emissions; and
- To leave a lasting legacy for local residents and future venue users after the 2014 Commonwealth Games.

(Halden et al 2010)
Therefore, the following precedent study details how Glasgow’s East End planned to promote and encourage smarter travel significantly, in an area similar to Southill.

Information has been gathered for this precedent study by the following methods:

- A three day trip to Glasgow and Edinburgh (July 2010);
- Cycling and observing others cycling in Glasgow;
- Meeting with Phillip Glennie (Glennie 2010) Project Manager of SCSP, at Scottish Government Offices in Edinburgh;
- Meetings and email contact with Derek Halden (Halden Consultancy, Edinburgh) (Halden 2010) who was involved in the monitoring and evaluation of the SCSP projects; and
- Meetings with Peter Leslie (Leslie 2010) from Cycling Scotland, and Peter McGillivray (McGillivray 2010) from Glasgow City Council.

5.7.4 Smarter Travel Solutions from Glasgow’s and Glasgow’s East End

The following Smarter Travel solutions from Glasgow are detailed in this section:

- Identify and Address the Barriers;
- Encourage Improved Health via Smarter Travel;
- Improve Walkways and Cycleways; and
- Use Cycling to improve communities and set an example.

*Figure 5-41* Artist's Impression of the Athletes' Village for the 2014 Games  
*(Source: Glasgow City Council, 2008)*
5.7.4.1 Identify and Address the Barriers

Glasgow’s East End SCSP project aimed to redress the barriers to Smarter Travel. The barriers identified from initial baseline household travel surveys in the East End, are both psychological and physical.

The project aims to address the barriers outlined as follows:

- Psychological;
- Real & perceived personal security concerns;
- Fear of traffic;
- Apathy/inertia/laziness;
- Territorialism/gang activity;
- Negative perceptions of social status;
- Lack of knowledge & awareness; and
- Weather
- Physical:
- Poor quality walking & cycling environment;
- Lack of facilities;
- Neglected street environment;
- Intimidating traffic conditions;
- No access to a bike, cannot ride a bike; and
- Low personal fitness

(Halden et al 2010)

5.7.4.2 Encourage Improved Health via Smarter Travel

Located in an industrial estate in Glasgow, the ‘Common Wheel’ project is a workshop where people with mental health problems renovate and repair bikes. The aims of the project are:

- To improve the mental health of participating patients;
- To repair, modify and make bicycles and other machines that aid mobility;
- To serve the community; and
- To promote cycling and raise awareness of environmental issues.

(Leslie 2010)
Run by a self-taught mechanic / instructor / manager, the workshop takes three or four people at a time, referred by psychiatrists or GPs. The main requirement is that those working there are interested in bikes and physically able to do the work. The bikes are bought at police auctions and the project renovates two or three a week, which are generally sold through word of mouth. The revenue from sales and repairs is used to buy spare parts. Common Wheel is an independent charity and costs £22,000 / yr. to run. Most of the funding is from the Greater Glasgow Health Board, but Glasgow City Council has granted a concessionary rent (Leslie 2010).

5.7.4.3 Improve Walkways and Cycleways

Glasgow cycle network has 250 kilometres in place with 375 kilometres in total to be completed by the end of 2012. The final network will be within 500 metres of every home in Glasgow. In 1999, the Council opened the ‘Colleges Cycle Route,’ a largely on road scheme that links the universities and further education colleges of the city (McGillivray 2010). A feature of this route was a separate cycle phase at the traffic signals giving cyclists a six-second start over other traffic to protect them from left turning vehicles.

There are some 400 cycle on-street parking spaces throughout the city, at locations suggested by user groups, and a rack design includes a panel to take a sign. To date the Clyde River walkway and cycleway, which forms part of Scotland’s National Cycle Network (NCN 75), and connects the East End to the City Centre along the Clyde River, has been upgraded via new surfacing and vegetation removal and cutbacks. The upgraded route has received positive feedback (McGillivray 2010).

A new segregated cycle route east of Glasgow City Centre is also proposed which will form the main cycle route to the 2014 Commonwealth Games. The works shall also comprise the renewal of the existing street lighting, construction of a new Toucan crossings, upgrading existing signalised crossing points to Toucan crossing, minor surfacing and kerbing works and the construction of a raised table at the junctions all associated lining and traffic management associated with the new cycle route (McGillivray 2010). The proposed segregated route design has been introduced in other parts of Glasgow City centre as shown below:
5.7.4.4  Use Cycling to Improve Communities and Set an Example

Glasgow City Council Strathclyde Police bicycle patrols began in 1996, when local community councils supplied two cycles for the force (Leslie 2010). The initial success created a demand, which was met by other community councils, leading to the launch of the ‘Mountain Bike Patrol Initiative ‘in 1998. Currently the force has 124 cycle used by 202 officers (Leslie 2010). Strathclyde Police believe that cycle patrol policing has advantages over other methods of policing. These include quicker response times than can be achieved by officers on foot or vehicles in urban areas traffic. They are environmentally friendly and allow greater contact with the public than officers deployed in patrol cars.

Figure 5-42 Cycle Route through Glasgow Green

Figure 5-43 Segregated Two-Way Cycle Facility in Glasgow City Centre
The initiative also has health benefits to the officers concerned as well as financial benefits. They have calculated that 15 officers can be deployed for the same cost as supplying and equipping one car (Leslie 2010).

![Figure 5-44 Police on Duty Cycle in Glasgow City Centre](image)

### 5.7.5 Lessons Learnt and Transferability to Limerick Smarter Travel

Results from the first progress and impact interim review (one year after commencement of the project, the most up to date information available) (Halden et al 2011) show that implementation of SCSP in Glasgow was successful in its first year (2009-2010). Overall, the 2009 pedestrian flows between Glasgow’s East End and the city centre are 26% higher than 2008 flows. For cyclists, the numbers are small, but still show an increase from baseline figures, with a 68% increase (note cycling accounted for a very small percentage of trips).

Smarter Travel projects in Glasgow’s East End show that there are promising opportunities to support further development of walking when it already accounts for a large proportion of travel. In addition, if safety concerns can be addressed in an area, accompanied by physical and information improvements, people will walk and cycle more. Finally, interim results from Glasgow indicate that building on current travel to work demand can start to mainstream cycling.
When I asked Derek Halden (Halden 2010) from the monitoring and evaluation team, what he would change in the monitoring process he advised using a panel of approximately 200 people for the entire programme to provide a longitudinal survey rather than the travel diaries used in the baseline monitoring. Halden also stated that travel behaviour change has to be stepwise, and that the design of such a travel behaviour change programme should follow focus group findings.

Halden also acknowledges that a gap existed between what people think, to where SCSP programmes aim to get them to, stating, "People want to cycle, but people don’t want to be cyclists!" (Halden 2010) – In his opinion, cycling should not be promoted as a green mode, but rather as a healthier mode to motivate people, as has been done in Glasgow’s East End.

5.8 Conclusion
Successful travel behaviour change has been implemented in the European cities visited, a process which has taken up to 40 years. The exemplar European cities acknowledge that if all the measures detailed had been implemented overnight, citizens would have revolted and successful travel behaviour change would not have occurred. Prioritising Smarter Travel modes has been a task taken seriously and pursued with great dedication over a number of decades in these cities.

A combination of measures, including revising policy to prioritise Smarter Travel, provision of extensive cycling facilities, and strict car control and restrictions has achieved this. More recently, change has also been implemented in the UK cities visited, to reverse the effects of unsustainable travel. These cities tend to focus more on soft measures and through promotions and campaigns for example, while also providing hard measures.

European cities have also adopted soft measures in more recent years, to increase their already high mode share of Smarter Travel. However, it is acknowledged that soft measures need to be accompanied by the provision of hard measures to ensure long lasting travel behaviour change. Table 5-1 lists the successful Smarter Travel measures identified in this precedent study and the corresponding cities, which implemented these measures.
This precedent study shows the potential that exists for achieving a Limerick Smarter Travel with the associated benefits, which have been documented. Table 5-1 clearly identifies a Smarter Travel sequence of actions from the comprehensive study of six exemplar cities. The sequence of actions is a multifaceted and coordinated approach, which comprises policy, research, planning, hard measures, soft measures, and monitoring and evaluating. Figure 3-45 shows the sequence of actions in further detail, outlining specific measures for each action. The Smarter Travel successful measures represent a continuous sequence of actions that should be repeated, as shown in Figure 5-45.
Designing a Community Engagement Strategy for Limerick Smarter Travel
Using Precedent Studies and Focus Groups

Kathleen Clair Cullinane
May 2012

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Make Smarter Travel Mainstream in Traffic and Transport Policy
Ensure planning, design and construction of a functional Smarter Travel network
Embed cycling and walking policies in Traffic and Transport Policy

Create Partnerships/ Ambassadors

Cycling police
Lobby cycling groups
Create Partnerships/ Ambassadors
Tailor
School Travel Plans
Cycle to work campaigns
Free maps
Cycle Route Planners
Provide free helmets
Discounted public transport tickets
Lotteries, prizes, vouchers
Rewarding
Provide advice
Maps
Advertising - billboards, buses, cycle racks.
Signs
Websites
Letters
Information

Soft Measures

Policy

Research

Plan

Hard Measures

Monitor and Evaluate

Promotion and Marketing
Health & well-being
Cost benefits of Smarter Travel
Cycle training
Support local town centres, engage with businesses
Branding
Awareness Raising Campaigns
Engaging messages
Confront/tackle issues of Smarter Travel
Life styling campaigns
Person-to-person contact
Information

Soft Measures

Walking Facilities
Pedestrianised streets
Pedestrian and bicycle only bridges
Shared spaces

Cycling Facilities
Safe, segregated and continuous
Provide cycle paths to both sides of carriageway where possible
Provide two-way tracks to one side only where there is no room
Allow contra-flow on one-way streets
Provide cycle paths in pedestrian areas
Visible cycle lanes, especially at junctions, ASLs
Green routes - link destinations, wide cycle paths,
Bicycle parking and repair shops
Free air pumps and service stations
Signpost the network
Name cycle paths/streets for GPS plotting
Mirrors at cycle crossings
Cycle tunnels/ bridges to bypass vehicular traffic
Lighting on routes e.g. embedded solar studs

Public Transport Facilities
Bus lanes
Provide for bicycles on buses, trains and taxis
Cycle parking at bus and train stations
Vehicular/ Traffic Restrictions
Remove roundabouts
Park and ride sights outside of City Centre

Figure 5-45 Smarter Travel Successful Measures – A Sequence of Action

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Set Out Clear Targets and Objectives
Ensure objectives and targets steer the project
Establish performance indicators

Identify and Address the Barriers to Smarter Travel
Focus Groups
Attitudinal Surveys
Door-to-door visits and telephone conversations

Segment the Target Audience
Identify groups with common barriers, attitudes and experiences:
- Hard-pressed families (time wise)
- Well-off females
- Men who dislike travelling

Personal Travel Planning
Target a representative sample of house
Chapter 6  Quantitative Census Data
6 Quantitative Census Data

6.1 Introduction
This chapter uses the 2006 Census of Population data, the most robust data available, to examine the existing travel patterns and behaviours of the residents of the Limerick Smarter Travel study area. The following chapter details quantitative Census data on mode choice in the Limerick Smarter Travel study area for commuting trips only. This chapter details the existing commuting patterns of each of the Limerick Smarter Travel hubs including mode choice, leaving time, distance travelled, and time taken to commute. In addition, this chapter examines several factors that may affect mode choice, including age groups, household types, socio-economic factors, and car ownership levels.

6.2 Electoral Districts Census Data
The existing plan for Limerick Smarter Travel is based around the idea of five hubs, as detailed in Chapter 3. The exiting modal splits for each hub have been calculated as part of the Stage 2 submission in the National Smarter Travel Areas competition (Limerick Smarter Travel 2010). These figures were aggregated from census data at the level of Electoral Districts (EDs), as shown in Figure 3-1.

The Electoral Districts are shown in Figure 6-1. The Limerick Smarter Travel study area hubs (taking Castletroy, UL and the NTP as a super-hub), as outlined in the National Smarter Travel Areas competition Stage 2 submission, are also shown in Figure 6-1. The hubs are represented by the blue circles, Corbally to the north, Castletroy, UL and NTP to the east, Southill to the south, and the City Centre to the west.
Figure 6-1 Limerick Smarter Travel Study Area and Limerick EDs
Figure 6.2 details the aggregated modal share for each hub. The aggregated modal splits for each hub correspond with the proposed aims and measures for each hub, as set out in the Stage 2 final report, outlined previously in Section 3.5. For example, the hubs of Corbally and Castletroy have high levels of car share (44% and 41%) and the hub of Southill by comparison has quite high levels of walking (38%). Consequently, where the car modal share is very high the focus will be on reducing car use, whereas in areas with low car modal share there will be a focus on preventing people from aspiring to become car owners (Limerick Smarter Travel 2010).
6.3 Small Area Population Statistics

However, a more in-depth analysis of the Census data reveals that car ownership and use in Limerick varies significantly, both geographically and between different socio-economic groups. A deeper study of the Census data, via the Small Area Population Statistics (SAPS) (Central Statistics Office 2007) reveals significant variation within the actual hubs. The Small Areas are outlined in Figure 6-3. The Small Areas are represented in red within the fours hubs represented by the blue circles.

Figure 6-3 Limerick Smarter Travel Study Area and Limerick Small Areas
6.3.1 Limerick City Centre Small Areas
Limerick City Centre hub comprises twelve Small Areas. The combined Small Areas have a total population of 12,912 persons (6,421 males and 6,491 females), which includes 4,957 households (Central Statistics Office 2007). Figure 6-4 details the City Centre hub (in blue) and the corresponding Small Areas within the hub (in red). Each Small Area within the City Centre hub is labelled with a number (e.g. 20042) which has been extracted from the SAPS data.

Figure 6-4 City Centre Hub Small Areas
6.3.2 Castletroy, UL and NTP Small Areas

Castletroy, UL, and the NTP hub comprise ten Small Areas. The combined Small Areas have a total population of 9,202 persons (4,706 males and 4,496 females), which includes 2,893 households (Central Statistics Office 2007). Figure 6-5 details the Castletroy, UL, and the NTP hub (in purple) and the corresponding Small Areas within the hub (in red). Each Small Area within the City Centre hub is labelled with a number (e.g. 21097) which has been extracted from the SAPS data.

![Figure 6-5 Castletroy, UL and NTP Hub Small Areas](image)
Corbally Small Areas

Corbally hub comprises eight Small Areas. The combined Small Areas have a total population of 7,157 persons (3,378 males and 3,779 females), which includes 2,527 households (Central Statistics Office 2007). Figure 6-6 details the Corbally hub (in gold) and the corresponding Small Areas within the hub (in red). Each Small Area within the City Centre hub is labelled with a number (e.g. 16066) which has been extracted from the SAPS data.

![Figure 6-6 Corbally Hub Small Areas](image)
6.3.4 Southill Small Areas

Southill hub comprises ten Small Areas. The combined Small Areas have a total population of 8,828 persons (4,492 males, 4,336 females), which includes 2,916 households (Central Statistics Office 2007). Figure 6-7 details the Southill hub (in green) and the corresponding Small Areas within the hub (in red). Each Small Area within the City Centre hub is labelled with a number (e.g. 20008) which has been extracted from the SAPS data.

Figure 6-7 Southill Hub Small Areas
6.4 SAPS Census Data

6.4.1 Age Groups

Figure 6-8 provides details of the different age groups within each hub. These figures represent aggregated figures from the combined Small Areas within each hub. The super-hub of Castletroy, UL, and the NTP show the highest proportions of age groups between 20-29 year olds, presumably due to the student population of UL and the Castletroy area. This age group represents the highest percentage in every hub, except Corbally.

```
<table>
<thead>
<tr>
<th>Total City Centre Hub</th>
<th>Total Castletroy Hub</th>
<th>Total Corbally Hub</th>
<th>Total Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>70+</td>
<td>9.8%</td>
<td>3.2%</td>
<td>6.4%</td>
</tr>
<tr>
<td>60-69 years</td>
<td>7.5%</td>
<td>4.5%</td>
<td>7.2%</td>
</tr>
<tr>
<td>50-59 years</td>
<td>9.3%</td>
<td>7.1%</td>
<td>10.7%</td>
</tr>
<tr>
<td>40-49 years</td>
<td>11.4%</td>
<td>8.6%</td>
<td>14.6%</td>
</tr>
<tr>
<td>30-39 years</td>
<td>14.7%</td>
<td>10.3%</td>
<td>17.5%</td>
</tr>
<tr>
<td>20-29 years</td>
<td>24.5%</td>
<td>39.8%</td>
<td>15.5%</td>
</tr>
<tr>
<td>10-19 years</td>
<td>11.3%</td>
<td>17.1%</td>
<td>13.1%</td>
</tr>
<tr>
<td>0-9 years</td>
<td>11.4%</td>
<td>9.5%</td>
<td>14.9%</td>
</tr>
</tbody>
</table>
```

Figure 6-8 Small Areas Age Groups Variations
(Central Statistics Office 2007)

Table 6-1 details the breakdown of age groups within every Small Area of each of the four hubs. The data reveals significant variations in age proportions between different Small Areas. For example in the Castletroy Small Area 21/133, 35% of its population are 20-29 year olds, whereas in the Castletroy Small Area 21/098, just 6% of its population are 20-29 year olds.
Table 6-1 SAPS Age Groups (Central Statistics Office 2007)

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>Age Groups, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-9 years</td>
</tr>
<tr>
<td>City Centre Hub</td>
<td></td>
</tr>
<tr>
<td>20/004</td>
<td>83</td>
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<tr>
<td>20/006</td>
<td>112</td>
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<tr>
<td>20/013</td>
<td>198</td>
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<td>20/015</td>
<td>83</td>
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<tr>
<td>20/025</td>
<td>49</td>
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<td>20/027</td>
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<td>20/039</td>
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<td>101</td>
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<td>20/052</td>
<td>201</td>
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<tr>
<td>20/058</td>
<td>92</td>
</tr>
<tr>
<td>Total</td>
<td>1,471</td>
</tr>
<tr>
<td>Castletroy, UL and NTP Hub</td>
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</tr>
<tr>
<td>21/097</td>
<td>202</td>
</tr>
<tr>
<td>21/098</td>
<td>208</td>
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<td>21/099</td>
<td>59</td>
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<tr>
<td>21/114</td>
<td>47</td>
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<td>21/115</td>
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<td>21/117</td>
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<td>21/132</td>
<td>57</td>
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<td>21/133</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>872</td>
</tr>
<tr>
<td>Corbally Hub</td>
<td></td>
</tr>
<tr>
<td>20/001</td>
<td>185</td>
</tr>
<tr>
<td>20/002</td>
<td>104</td>
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<td>20/059</td>
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<td>16/066</td>
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<td>16/100</td>
<td>143</td>
</tr>
<tr>
<td>16/113</td>
<td>105</td>
</tr>
<tr>
<td>Total</td>
<td>1,066</td>
</tr>
<tr>
<td>Southill Hub</td>
<td></td>
</tr>
<tr>
<td>20/008</td>
<td>174</td>
</tr>
<tr>
<td>20/009</td>
<td>177</td>
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<td>20/011</td>
<td>108</td>
</tr>
<tr>
<td>20/016</td>
<td>127</td>
</tr>
<tr>
<td>20/017</td>
<td>117</td>
</tr>
<tr>
<td>20/018</td>
<td>123</td>
</tr>
<tr>
<td>20/019</td>
<td>109</td>
</tr>
<tr>
<td>20/053</td>
<td>212</td>
</tr>
<tr>
<td>20/054</td>
<td>106</td>
</tr>
<tr>
<td>Total</td>
<td>1,316</td>
</tr>
</tbody>
</table>
6.4.2 Household Composition

Figure 6-9 provides details of the different household types within each hub. These figures represent aggregated figures from the combined Small Areas within each hub. Table 6-2 details the breakdown of household types within every Small Area of each of the four hubs. The household types in Table 6-2 are labelled as letters A to N, which correspond to the letters and household types in Figure 6-9.

<table>
<thead>
<tr>
<th>Household Type</th>
<th>Total City Centre Hub</th>
<th>Total Castletroy Hub</th>
<th>Total Corbally Hub</th>
<th>Total Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>N: Two or more non-related persons</td>
<td>9.2%</td>
<td>27.7%</td>
<td>3.0%</td>
<td>2.1%</td>
</tr>
<tr>
<td>M: Non-family households with related persons</td>
<td>5.0%</td>
<td>3.6%</td>
<td>1.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>L: Two family units with/without other persons</td>
<td>1.8%</td>
<td>0.9%</td>
<td>1.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>K: Lone mother with children &amp; other persons</td>
<td>1.8%</td>
<td>0.4%</td>
<td>0.8%</td>
<td>1.8%</td>
</tr>
<tr>
<td>J: Lone father with children &amp; other persons</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>I: Cohabiting couple with children and other persons</td>
<td>2.3%</td>
<td>1.3%</td>
<td>2.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>H: Couple &amp; other persons</td>
<td>2.7%</td>
<td>1.9%</td>
<td>1.1%</td>
<td>1.4%</td>
</tr>
<tr>
<td>G: Lone mother with children</td>
<td>11.8%</td>
<td>4.2%</td>
<td>8.6%</td>
<td>13.3%</td>
</tr>
<tr>
<td>F: Lone father with children</td>
<td>1.4%</td>
<td>0.7%</td>
<td>1.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>E: Cohabiting couple with children</td>
<td>2.7%</td>
<td>1.7%</td>
<td>3.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>D: Husband &amp; wife with children</td>
<td>16.3%</td>
<td>24.5%</td>
<td>36.1%</td>
<td>32.1%</td>
</tr>
<tr>
<td>C: Cohabiting couple</td>
<td>5.0%</td>
<td>5.7%</td>
<td>5.5%</td>
<td>4.3%</td>
</tr>
<tr>
<td>B: Husband &amp; wife</td>
<td>11.1%</td>
<td>9.4%</td>
<td>15.3%</td>
<td>12.9%</td>
</tr>
<tr>
<td>A: One person</td>
<td>28.5%</td>
<td>17.9%</td>
<td>19.2%</td>
<td>18.5%</td>
</tr>
</tbody>
</table>

Figure 6-9 Small Areas Household Composition Variations
(Central Statistics Office 2007)
Table 6-2 SAPS Household Composition (Central Statistics Office 2007)

<table>
<thead>
<tr>
<th>Household Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
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<td><strong>City Centre Hub</strong></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>20/004</td>
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<td>30</td>
<td>31</td>
<td>64</td>
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<td>4</td>
<td>19</td>
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<td>10</td>
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<td>0</td>
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<td>7</td>
<td>7</td>
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</tr>
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<td>20/023</td>
<td>91</td>
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<td>5</td>
<td>65</td>
<td>9</td>
<td>3</td>
<td>54</td>
<td>3</td>
<td>8</td>
<td>3</td>
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<td>11</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>20/025</td>
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<td>26</td>
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<td>29</td>
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<td>27</td>
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<td>4</td>
<td>1</td>
<td>4</td>
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<td>82</td>
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<td>1</td>
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<td>2</td>
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<td>0</td>
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<td>4</td>
<td>23</td>
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<tr>
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<td>45</td>
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Figure 6-9 shows that one-person households represent the highest proportion of household types within the City Centre hub (28.5%). Two or more non-related adult households represent the highest proportion of household types within the Castletroy hub (27.7%). Husband, wife, and children represent the highest proportion of household types within the Corbally and Southill hubs (36.1% and 32.1%, respectively). However, taking a closer look at the Castletroy Small Areas data, Table 6-3 reveals that in the Small Area 20/097 almost 50% of households comprise husband, wife, and children. By comparison, in the Castletroy Small Area 21/133 50% of households comprise two or more non-related adults.

6.4.3 Economic Groups

Figure 6-10 provides details of the different economic types within each hub. These figures represent aggregated figures from the combined Small Areas within each hub. Table 6-3 details the breakdown of economic groups within every Small Area of each of the four hubs. Figure 6-10 shows that highest unemployment levels are present in the City Centre hub.
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<td>22</td>
<td>2</td>
</tr>
<tr>
<td>20/002</td>
<td>344</td>
<td>1</td>
<td>16</td>
<td>75</td>
<td>101</td>
<td>148</td>
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<td>2</td>
</tr>
<tr>
<td>20/003</td>
<td>418</td>
<td>2</td>
<td>21</td>
<td>95</td>
<td>119</td>
<td>133</td>
<td>41</td>
<td>1</td>
</tr>
<tr>
<td>20/059</td>
<td>441</td>
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<td>58</td>
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<td>34</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>16/066</td>
<td>244</td>
<td>3</td>
<td>14</td>
<td>59</td>
<td>42</td>
<td>50</td>
<td>47</td>
<td>0</td>
</tr>
<tr>
<td>16/068</td>
<td>464</td>
<td>4</td>
<td>21</td>
<td>97</td>
<td>67</td>
<td>21</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>16/100</td>
<td>426</td>
<td>4</td>
<td>17</td>
<td>31</td>
<td>39</td>
<td>15</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>16/113</td>
<td>499</td>
<td>4</td>
<td>41</td>
<td>104</td>
<td>97</td>
<td>93</td>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,562</td>
<td>300</td>
<td>1,204</td>
<td>5,383</td>
<td>2,168</td>
<td>2,348</td>
<td>1,142</td>
<td>79</td>
</tr>
<tr>
<td><strong>Southill Hub</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/008</td>
<td>441</td>
<td>3</td>
<td>39</td>
<td>78</td>
<td>54</td>
<td>18</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>20/009</td>
<td>472</td>
<td>3</td>
<td>34</td>
<td>63</td>
<td>63</td>
<td>30</td>
<td>62</td>
<td>1</td>
</tr>
<tr>
<td>20/010</td>
<td>317</td>
<td>1</td>
<td>29</td>
<td>50</td>
<td>95</td>
<td>139</td>
<td>52</td>
<td>1</td>
</tr>
<tr>
<td>20/011</td>
<td>296</td>
<td>7</td>
<td>34</td>
<td>65</td>
<td>93</td>
<td>97</td>
<td>54</td>
<td>3</td>
</tr>
<tr>
<td>20/016</td>
<td>279</td>
<td>7</td>
<td>73</td>
<td>73</td>
<td>100</td>
<td>99</td>
<td>66</td>
<td>16</td>
</tr>
<tr>
<td>20/017</td>
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<td>9</td>
<td>58</td>
<td>29</td>
<td>53</td>
<td>33</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td>20/018</td>
<td>318</td>
<td>17</td>
<td>50</td>
<td>61</td>
<td>62</td>
<td>39</td>
<td>66</td>
<td>1</td>
</tr>
<tr>
<td>20/019</td>
<td>132</td>
<td>11</td>
<td>68</td>
<td>34</td>
<td>72</td>
<td>52</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>20/053</td>
<td>596</td>
<td>11</td>
<td>33</td>
<td>87</td>
<td>85</td>
<td>13</td>
<td>52</td>
<td>5</td>
</tr>
<tr>
<td>20/054</td>
<td>401</td>
<td>7</td>
<td>40</td>
<td>71</td>
<td>100</td>
<td>84</td>
<td>147</td>
<td>280</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15,972</td>
<td>376</td>
<td>1,662</td>
<td>5,994</td>
<td>2,945</td>
<td>2,952</td>
<td>1,776</td>
<td>390</td>
</tr>
</tbody>
</table>
Limerick City is by far the most disadvantaged local authority area within the Mid-West region and the second most disadvantaged county in Ireland as a whole. The relative deprivation of Limerick City steadily increased in fifteen years from a score of –2.4 in 1991 to –7.9 in 2006 (McCafferty and O’Keeffe, 2009). As is the case in any city, there exists a high degree of variation within Limerick City, but overall the city is marked by harbouring the country’s most disadvantaged urban areas. The most affluent areas within Limerick City are in the west (9.2), whilst the east (-1.8) is close to the average level of the affluence/deprivation spectrum (McCafferty and O’Keeffe, 2009). The north (-32.0) and south Quadrants (-25.9) are the most disadvantaged parts found anywhere throughout Ireland (McCafferty and O’Keeffe, 2009). The Small Areas data echoes these trends as highest unemployment levels are found in the City Centre (17% in 20/025) and Southill (16% in 20/019).

6.4.4 Car Ownership Levels

Figure 6-11 provides details of the different car ownership levels within each hub. These figures represent aggregated figures from the combined Small Areas within each hub. Table 6-4 details the breakdown of car ownership within every Small Area of each of the four hubs.

<table>
<thead>
<tr>
<th></th>
<th>Total City Centre Hub</th>
<th>Total Castletroy Hub</th>
<th>Total Corbally Hub</th>
<th>Total Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three or more motor cars</td>
<td>2.3%</td>
<td>11.7%</td>
<td>7.3%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Two motor cars</td>
<td>12.2%</td>
<td>37.3%</td>
<td>38.5%</td>
<td>20.8%</td>
</tr>
<tr>
<td>One motor car</td>
<td>39.2%</td>
<td>32.0%</td>
<td>44.0%</td>
<td>46.5%</td>
</tr>
<tr>
<td>No motor car</td>
<td>46.4%</td>
<td>19.1%</td>
<td>10.2%</td>
<td>28.5%</td>
</tr>
</tbody>
</table>

Figure 6-11 Small Areas Car Ownership Variations
(Central Statistics Office 2007)
### Table 6-4 SAPS Car Ownership (Central Statistics Office 2007)

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>No motor car</th>
<th>One motor car</th>
<th>Two motor cars</th>
<th>Three or more motor cars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City Centre Hub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/004</td>
<td>81</td>
<td>164</td>
<td>67</td>
<td>15</td>
</tr>
<tr>
<td>20/006</td>
<td>194</td>
<td>158</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>20/013</td>
<td>389</td>
<td>234</td>
<td>56</td>
<td>14</td>
</tr>
<tr>
<td>20/015</td>
<td>140</td>
<td>126</td>
<td>31</td>
<td>4</td>
</tr>
<tr>
<td>20/023</td>
<td>197</td>
<td>108</td>
<td>24</td>
<td>0</td>
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<tr>
<td>20/025</td>
<td>249</td>
<td>153</td>
<td>21</td>
<td>7</td>
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<tr>
<td>20/027</td>
<td>204</td>
<td>96</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>20/039</td>
<td>88</td>
<td>201</td>
<td>89</td>
<td>13</td>
</tr>
<tr>
<td>20/042</td>
<td>250</td>
<td>291</td>
<td>88</td>
<td>21</td>
</tr>
<tr>
<td>20/050</td>
<td>199</td>
<td>130</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>20/052</td>
<td>33</td>
<td>180</td>
<td>145</td>
<td>22</td>
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<tr>
<td>20/058</td>
<td>273</td>
<td>100</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,297</strong></td>
<td><strong>1,941</strong></td>
<td><strong>602</strong></td>
<td><strong>114</strong></td>
</tr>
<tr>
<td><strong>Castletroy, UL and NTP Hub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21/097</td>
<td>24</td>
<td>80</td>
<td>218</td>
<td>52</td>
</tr>
<tr>
<td>21/098</td>
<td>14</td>
<td>63</td>
<td>233</td>
<td>48</td>
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<tr>
<td>21/099</td>
<td>56</td>
<td>103</td>
<td>102</td>
<td>43</td>
</tr>
<tr>
<td>21/114</td>
<td>48</td>
<td>108</td>
<td>95</td>
<td>34</td>
</tr>
<tr>
<td>21/115</td>
<td>124</td>
<td>112</td>
<td>54</td>
<td>31</td>
</tr>
<tr>
<td>21/117</td>
<td>124</td>
<td>129</td>
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<td>25</td>
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<tr>
<td>21/130</td>
<td>5</td>
<td>67</td>
<td>112</td>
<td>22</td>
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<td>21/131</td>
<td>62</td>
<td>129</td>
<td>99</td>
<td>47</td>
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<td>21/132</td>
<td>15</td>
<td>70</td>
<td>77</td>
<td>30</td>
</tr>
<tr>
<td>21/133</td>
<td>79</td>
<td>63</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>551</strong></td>
<td><strong>924</strong></td>
<td><strong>1,077</strong></td>
<td><strong>338</strong></td>
</tr>
<tr>
<td><strong>Corbally Hub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/001</td>
<td>16</td>
<td>133</td>
<td>188</td>
<td>21</td>
</tr>
<tr>
<td>20/002</td>
<td>59</td>
<td>153</td>
<td>115</td>
<td>25</td>
</tr>
<tr>
<td>20/003</td>
<td>54</td>
<td>163</td>
<td>102</td>
<td>41</td>
</tr>
<tr>
<td>20/059</td>
<td>30</td>
<td>165</td>
<td>105</td>
<td>15</td>
</tr>
<tr>
<td>16/066</td>
<td>11</td>
<td>64</td>
<td>78</td>
<td>22</td>
</tr>
<tr>
<td>16/068</td>
<td>21</td>
<td>105</td>
<td>158</td>
<td>21</td>
</tr>
<tr>
<td>16/100</td>
<td>22</td>
<td>148</td>
<td>110</td>
<td>12</td>
</tr>
<tr>
<td>16/113</td>
<td>45</td>
<td>180</td>
<td>117</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>258</strong></td>
<td><strong>1,111</strong></td>
<td><strong>973</strong></td>
<td><strong>184</strong></td>
</tr>
<tr>
<td><strong>Southill Hub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20/008</td>
<td>36</td>
<td>172</td>
<td>80</td>
<td>15</td>
</tr>
<tr>
<td>20/009</td>
<td>38</td>
<td>171</td>
<td>99</td>
<td>10</td>
</tr>
<tr>
<td>20/010</td>
<td>75</td>
<td>168</td>
<td>53</td>
<td>13</td>
</tr>
<tr>
<td>20/011</td>
<td>127</td>
<td>120</td>
<td>43</td>
<td>9</td>
</tr>
<tr>
<td>20/016</td>
<td>115</td>
<td>148</td>
<td>32</td>
<td>9</td>
</tr>
<tr>
<td>20/017</td>
<td>112</td>
<td>62</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>20/018</td>
<td>73</td>
<td>110</td>
<td>60</td>
<td>22</td>
</tr>
<tr>
<td>20/019</td>
<td>123</td>
<td>68</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>20/053</td>
<td>37</td>
<td>179</td>
<td>132</td>
<td>23</td>
</tr>
<tr>
<td>20/054</td>
<td>91</td>
<td>152</td>
<td>76</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>827</strong></td>
<td><strong>1,350</strong></td>
<td><strong>603</strong></td>
<td><strong>126</strong></td>
</tr>
</tbody>
</table>
It is clear from Table 6-3 and Table 6-4 that car ownership and in particular, multiple car ownership is linked with employment levels, as the hubs with highest unemployment levels have lowest levels of car ownership and the highest proportions of those without cars.

6.4.5 Commuting Patterns

The following sections detail the mode choice, time leaving, distance travelled and time taken to commute. Figure 6-12 to 6-14 provide commuting patterns of each hub. These figures represent aggregated figures from the combined Small Areas within each hub. Tables 6-5 to 6-8 detail the breakdown of commuting patterns within every Small Area of each of the four hubs.

<table>
<thead>
<tr>
<th>Mode Choice</th>
<th>Total City Centre Hub</th>
<th>Total Castletroy Hub</th>
<th>Total Corbally Hub</th>
<th>Total Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not stated</td>
<td>1.8%</td>
<td>0.9%</td>
<td>0.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Other</td>
<td>4.4%</td>
<td>2.4%</td>
<td>5.5%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Motor car: Passenger</td>
<td>13.1%</td>
<td>14.1%</td>
<td>22.0%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Motor car: Driver</td>
<td>27.0%</td>
<td>37.6%</td>
<td>48.5%</td>
<td>37.3%</td>
</tr>
<tr>
<td>Motorcycle or scooter</td>
<td>0.5%</td>
<td>0.4%</td>
<td>0.6%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Train</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.3%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Bus, minibus or coach</td>
<td>11.9%</td>
<td>6.4%</td>
<td>5.7%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>3.3%</td>
<td>2.8%</td>
<td>2.8%</td>
<td>2.2%</td>
</tr>
<tr>
<td>On foot</td>
<td>37.7%</td>
<td>35.3%</td>
<td>14.1%</td>
<td>24.3%</td>
</tr>
</tbody>
</table>

**Figure 6-12** Small Areas Commuting Mode Choice Variations

(Central Statistics Office 2007)
Designing a Community Engagement Strategy for Limerick Smarter Travel  
Kathleen Clair Cullinane  
Using Precedent Studies and Focus Groups  
May 2012

Figure 6-13 Small Areas Time Leaving to Commute Variations  
(Central Statistics Office 2007)

<table>
<thead>
<tr>
<th>Time Leaving</th>
<th>Castletroy Hub</th>
<th>Corbally Hub</th>
<th>Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not stated</td>
<td>5.9%</td>
<td>3.7%</td>
<td>3.3%</td>
</tr>
<tr>
<td>After 09:30</td>
<td>9.9%</td>
<td>15.1%</td>
<td>6.1%</td>
</tr>
<tr>
<td>09:01 - 09:30</td>
<td>7.1%</td>
<td>7.8%</td>
<td>4.9%</td>
</tr>
<tr>
<td>08:31 - 09:00</td>
<td>24.1%</td>
<td>39.5%</td>
<td>23.9%</td>
</tr>
<tr>
<td>08:01 - 08:30</td>
<td>18.8%</td>
<td>16.7%</td>
<td>28.1%</td>
</tr>
<tr>
<td>07:31 - 08:00</td>
<td>12.4%</td>
<td>8.2%</td>
<td>16.6%</td>
</tr>
<tr>
<td>07:01 - 07:30</td>
<td>10.8%</td>
<td>5.3%</td>
<td>9.0%</td>
</tr>
<tr>
<td>06:31 - 07:00</td>
<td>7.5%</td>
<td>2.6%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Before 06:30</td>
<td>3.5%</td>
<td>1.1%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Figure 6-14 Small Areas Commuting Distance Travelled Variations  
(Central Statistics Office 2007)

<table>
<thead>
<tr>
<th>Distance</th>
<th>Castletroy Hub</th>
<th>Corbally Hub</th>
<th>Southill Hub</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 - 49 Kilometres</td>
<td>3.6%</td>
<td>3.8%</td>
<td>5.1%</td>
</tr>
<tr>
<td>15 - 24 Kilometres</td>
<td>4.3%</td>
<td>3.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>10 - 14 Kilometres</td>
<td>4.6%</td>
<td>5.7%</td>
<td>7.9%</td>
</tr>
<tr>
<td>5 - 9 Kilometres</td>
<td>16.1%</td>
<td>15.9%</td>
<td>24.9%</td>
</tr>
<tr>
<td>2 - 4 Kilometres</td>
<td>28.6%</td>
<td>31.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>1 Kilometres</td>
<td>19.0%</td>
<td>27.1%</td>
<td>10.8%</td>
</tr>
<tr>
<td>0 Kilometres</td>
<td>0.6%</td>
<td>1.4%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
It is generally recognised that modal shifts towards greater car usage tend to have the most damaging consequences for congestion levels. Between 2002 and 2006, Limerick’s commuting volumes, increased by almost 5% in the urban area as a whole; of greater significance is the disproportionate growth of over 12% in the number of persons travelling by car (McCafferty and O’Keeffe, 2009). Usage of public transport also increased, but at a rate (10%) that lagged behind that of car travel, with the result that the modal split shifted in favour of the car: the proportion of all commuters travelling by car increased from 53% in 2002 to 57% in 2006 (McCafferty and O’Keeffe, 2009). The spatial pattern of car usage shows generally higher rates in the suburban hubs and lower rates in the city centre hub. Public transport usage is essentially the inverse of this, with highest usage in the city centre. However, public transport is also relatively important in the Southill area, for example. Significant variations in mode choice, distance travelled, and journey times between the different Small Areas within each hub as detailed in the following tables.

Figure 6-15 Small Areas Time Taken to Commute Variations
(Central Statistics Office 2007)
Table 6-5 SAPS Commuting Mode Choice (Central Statistics Office 2007)

Persons aged 5 years and over by means of travel to work, school or college, 2006

<table>
<thead>
<tr>
<th>Area</th>
<th>On foot</th>
<th>Bicycle</th>
<th>Bus/ coach</th>
<th>Train</th>
<th>Motorcycle/ Scooter</th>
<th>Car: Driver</th>
<th>Car: Passenger</th>
<th>Other</th>
<th>Not stated</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Centre Hub</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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It is clear that travel patterns vary significantly between the different hubs and small areas. The following Figures 6-16 to 6-19 provide an in-depth analysis of the variations in 2006 modal splits within the small areas, located within the boundaries of each of the four hubs. The Small Areas are shown on the X-axis and correspond with the numbers detailed in Figures 6-4 to Figure 6-7.

**Figure 6-16** City Centre Hub Small Areas Modal Split Variations

**Figure 6-17** Castletroy, UL and NTP Hub Small Areas Modal Split Variations
The analysis reveals significant variation within the actual hubs. Figure 6-20 compares the hub modal splits with a sample of small area modal splits within the each hub. The City Centre Hub, shows a modal split of 25% for those who commute by private car, whereas within the selected small area 41% commute by private car. This is also echoed in the Corbally hub and small area comparison.
6.5 Conclusion

This quantitative analysis highlights the complex, and locally variable, nature of travel patterns within the study area. However, it should be noted that these travel patterns apply to commuting patterns only. In addition, this analysis reveals that the several factors that may affect mode choice, including age groups, household types, socio-economic factors, and car ownership levels, are also extremely variable across the Limerick Smarter Travel hubs.

The census data reveals that in some Small Areas within each hub car use is extremely high, while other Small Areas within the same hub have high levels of walking, for example. It is clear that Limerick Smarter Travels ‘hub-approach’ and the corresponding aggregated modal splits for each hub are not representative of local travel patterns, and local groups within the study area. Consequently, the baseline modal splits of each hub, identified in Limerick Smarter Travels final submission in the Smarter Travel Areas competition, does not provide an appropriate representation of existing travel patterns in the study area.
More importantly, the hub approach does not provide suitable segmentation of the target audience. This is obvious throughout this chapter, as Small Areas within the chosen hubs display quite different travel patterns to those of the aggregated data at the hub level. Therefore, the aggregated modal splits for each hub that correspond with the proposed aims and measures for each hub, as set out in Section 3.5, are unlikely to be as successful as a suitably targeted approach.

In order to determine an accurate baseline of existing travel patterns in the study area, and to identify appropriate target groups, an analysis of every small area within the study area should be carried out. This data should then be utilised to segment the target audience – small areas with similar travel patterns should be identified and grouped accordingly. Analysis of the other factors, relevant to travel patterns, can then be identified in order to create profiles of each group. Quantitative Census data analysis therefore allows the identification of target groups by spatial distribution and type.

However, as identified previously in Chapter 2, different groups need to be treated in different ways as they are motivated by different factors and experience different barriers. Therefore, a lot of attention needs to be paid to collecting qualitative (i.e. motivations and attitudes) travel data to determine the reasons and motivations for existing travel behaviour in order change travel behaviour. The subsequent chapter details the focus groups qualitative data from the Limerick Smarter Travel study area.
Designing a Community Engagement Strategy for Limerick Smarter Travel
Using Precedent Studies and Focus Groups

Kathleen Clair Cullinane
May 2012
Chapter 7  Qualitative Focus Groups
7 Qualitative Focus Groups

7.1 Introduction
This chapter details the findings from the ten focus groups carried out, revealing the underlying factors, which influence existing travel behaviour in the study area community. The following sections outline the key themes, which arose from the focus group discussions.

7.2 Different Modes of Transport – Behaviour and Attitudes

7.2.1 Exclusive Car Users
Many respondents choose the car, as their preferred option, for trips to work, schools and shops. For them the benefits include safety, comfort, speed, and efficiency (getting from A to B). In addition, cars are aspirational objects, which respondents desire to have. For these regular drivers, these perceived benefits are convincing. Possessing a car also offers an element of status over those who use bikes as a means of transport.

“I always wanted a car and it was a dream come true when I was finally able to afford a car. I was able to get rid of my bike and drive everywhere. I certainly felt better about myself....I get more respect on the road now as a driver than as a cyclist...”

Male, Southill

However, some respondents acknowledged that many of their car journeys could be made by walking or cycling.

“I could walk to the work but to be honest I’d prefer that extra half hour in bed...I suppose I’m just too lazy to switch”

Female, Castletroy

More importantly young people long to acquire their first car to become independent, and to arrive at their destination via the easiest and most convenient way. For respondents it appears that all the benefits of cars overshadow the disadvantages such as cost, congestion, and pollution.
“It definitely comes down to time management. We choose the easiest and most convenient option for travelling. For me cycling to work would take far longer, pose less safe and I’d arrive at work all sweaty with nowhere to change. I just prefer to sit into my car, drive straight to work, park my car, and arrive at my desk on time.”

Female, Corbally

7.2.2 Public Transport Users

Convenience, efficiency, and cost are the main reasons why respondents choose to use public transport. Similar to the car, public transport allows the user to get from A to B reasonably quickly. However, public transport is far cheaper than the car, and eliminates other car-associated problems such as parking. In addition, public transport enables long distance travel as well as providing comfort and shelter from the elements.

“Driving is too expensive and for me much slower. So, I work in town at the weekends, go to college in UL, and live in Castletroy. So I tend to walk to the bus stop to get to work and walk to college…”

Male, Castletroy

Respondent’s negative responses to public transport use in Limerick comprised logistic issues. Respondent’s stated that unreliable and infrequent buses, poorly organised bus routes (e.g. lack of connections between different parts of the city, all bus routes converge in the city centre, no orbital routes, etc.) and a lack of value for money deterred them from using Limerick buses.

“In my opinion Limerick city needs more buses, even just smaller buses, to connect existing routes, maybe like a circle of eight through the city centre connecting every corner of the city… reorganisation of routes and timetables is also needed…all this would entice potential customers.”

Male, City Centre

“I cycle to work most days now cause my bus fares were adding up and becoming too expensive...for what I would pay in three months bus fares I was able to afford a fantastic bike...so it’s already paid for itself and I can always rely on it”

Female, Corbally
7.2.3 Walkers

Those who choose to walk for the majority of their trips do so for a number of different reasons. These include the ability to get from A to B easily (reliable travel time), cost saving benefits, and health benefits. The environmental benefits are seen as a free bonus rather than a primary motivation for walking. In addition, some walk for recreation only.

Respondents who walk regularly (commuting or recreational) came from a variety of backgrounds, equally recognising and focusing on its physical, practical, social and emotional benefits. Respondents rarely focused on the disadvantages of walking (getting sweaty en route to work, not being able to carry a lot, safety issues). Instead, respondents revealed how disadvantages were overcome such as acquiring backpacks, shopping trolleys, sharing walking trips with others and attaining appropriate clothing.

“I decided to buy a pair of runners to keep at work so that weather permitting I can choose to walk home rather than take the bus as I usually do. I walk to and from the bus stops at either end of my journey anyway, but for walking the entire trip home I’d need to change shoes.”

Female, City Centre

Those who walk do so primarily for health and fitness reasons. However there was an emphasis on the social and emotional benefits of walking also with respondents revealing how enjoyable they find walking especially with family and friends (recreational walkers more so than commuter walkers).

“I thoroughly enjoy walking with my friend; we try to meet every Tuesday and Thursday mornings for walks with the kids in the buggies…”

Female, Castletroy

The enjoyable aspect of walking appears to disappear when respondents walk for purpose compared to recreation. Walking for commuting or shopping trips requires discipline and routine.
“I don’t have a car so I walk to work and drop the kids to school every morning beforehand, it’s a lot of hassle as I have three kids under eight, especially when it’s raining I need to sort out all their gear...”

Female, Southill

Walking respondents revealed how their childhood has influenced their reasons for walking regularly. They walked everywhere when they were younger and appreciated the physical benefits of walking and therefore continued to do so throughout their lives.

The exceptions to this rule are some students and residents of Southill and inner city dwellers, who often walk regularly out of necessity rather than choice (i.e. cannot afford a car, cannot drive a car). For these respondents walking is their only option for travelling and rather than identifying the present benefits of walking, they tend to focus on the desire to own a car to get from A to B.

There are those that walk irregularly, and acknowledge the benefits (e.g. health, and economic) of walking but more often than not let the effort or the disadvantages (e.g. weather, time) deter them. For these respondents the rational benefits are acknowledged. Research shows that physical-activity interventions show better health outcomes, including better general and health-related quality of life, better functional capacity, and better mood states (Penedo and Dahn 2005). Therefore, these benefits of walking should be embraced to motivate irregular walkers to choose this mode for more or all of their trips (including recreational only walkers).

“I walk every evening after work for an hour and I find not only am I healthier and fitter but I sleep better, and it puts me in better form”

Female, Castletroy

Many recreational walkers do not walk for other trips (to work, school, or college) for a variety of reasons. Time is a key factor, and getting from A to B as quickly as possible. In addition, the need to arrive looking fresh is also a deterrent, so that poor weather and long distances can also become barriers.
7.2.4 Cyclists
Respondents who choose to cycle as their main mode of transport do so as cycling, like walking, offers predictable travelling times, cost saving benefits, and health benefits. However, most respondents walk at some stage, whereas regular cyclists are a unique group. Respondents cycle regularly because they perceive a variety of physical and emotional benefits in cycling. Some see the benefits of cycling as less social than walking, because of less interaction with others compared to walking. Many focus group participants cycle for recreation and do not commute by bicycle.

“...I have a bike but I’m too lazy during the week to ride my bike to work. I work long hours, including night shifts. I cycle at the weekends and take part in triathlons. My bike basically sits at home all week as I have no time for cycling...”

Male, City Centre

The environmental benefits were also acknowledged. As for the walkers, the environment is considered secondary to other benefits provided by cycling.

“Leaving my car at home and cycling to work saves me on petrol costs and helps out the environment...”

Male, National Technology Park Employee

Again cycling seems to share the same disadvantages of walking and some specific additional problems, including needing fitness and technical competence, the need to cycle alongside traffic when commuting and problems associated with bicycle parking.

“I used to cycle regularly at college where bicycle parking is available, however since beginning work I find I do so less often as I have nowhere to park my bike....I also have a lot of equipment to carry some days and can’t carry these on my bike”

Female, Corbally

7.3 Benefits of Smarter Travel
There are a number of factors that encourage people to use smarter travel, especially walking and cycling. Respondents revealed the benefits both modes offer in becoming familiar with Limerick’s environs.
In addition, these respondents are more likely to continue using both modes particularly when they discover all their facilities are within walking or cycling distances.

“I moved to Limerick last September. So I started walking to get to know the area and stuff and since then it’s just, yeah it’s so handy to everything...”

Female, UL Student

Health and fitness are the main factors that encourage regular walking and cycling. Nearly all regular walkers and cyclists point out these benefits in particular the achievement of desired weight loss. This also encourages image-conscious respondents.

“...Well I think there’s a lot of pressure on young people to look good and be skinny. Teenagers are a bit more into it because they want to keep fit, because image has a lot to do with it...”

Female, Southill

For some, there are also important social benefits that derive from walking especially for those who live alone (in particular the elderly), or who are home alone during the day, a walk (or cycle) to the shop, to the park, or into town, offers a sense of connection with the outside world, and with their communities. For others, particularly those involved in cycling and walking clubs, both activities offer social benefits and the ability to meet with friends.

Some find it easier to walk, cycle, or take the bus, rather than drive in Limerick’s congested roads and streets or look for a parking space.

“I used to drive into town to do my shopping and park in Dunnes Stores car park, however when my car was at the garage I needed to go into town so I took the bus, I couldn’t believe how much easier it was...I had no delays, no parking charges and I bumped into some of my neighbours on the bus who I had not seen in ages...I will definitely think twice before driving again.”

Female, Castletroy
7.4 Barriers to Smarter Travel

When choosing their means of travel, Limerick citizens consider the time the journey will take, the en route activities, time of day that they are travelling, the need to carry and store equipment and how they will feel on the outward and return journeys. The barriers to mode choice, and the probability that Smarter Travel choices would be disregarded, are outlined as follows:

- Physical
- Emotional and
- Practical.

7.4.1 Physical Barriers to Smarter Travel

7.4.1.1 Trip length and Distance

The length of the trip is a key determinant of whether Smarter Travel modes will be chosen over other modes of transport. While there are those, who walk or cycle considerable distances (walking and cycling enthusiasts) the majority of people are unwilling to travel for longer than the trip would take by car.

In fact even keen walkers and cyclists choose to walk and cycle for leisure purposes solely, because they don’t have time to do so for other trips, in particular where family groups commute, with a number of destinations in the morning commute for example (work and school trips).

“... Society dictates how we choose to travel...everyone perceives driving as the most efficient means of getting to their destination... it seems to be the general message out there...”

Female, National Technology Park Employee

“Yeah, I feel sometimes people want to ride a bicycle and the only thing is they don’t get the time because they’re always in a hurry in the morning and when they come home from work they are tired so they, so don’t have any time, that’s the one reason I feel...”

Male, Castletroy
“I think it’s got to do with those middle distances, like if you live three miles from work, like I’m not going to walk three miles every morning, then I’ve gotta get up so much earlier...physically I know I could cycle, but I’m still gonna get sweaty and there’s no direct buses so it’s down to cycling or my car so I take the car.”

Male, Southill

The perceived bus journey times also appear to discourage people from choosing to take the bus.

“...Castletroy, serving UL and Childers Road shopping centre, is to my knowledge reasonably frequent... but a disaster with any bit of traffic; it gets held up outbound at William Street, Tipperary Roundabout, Childers Road, and Parkway Roundabout. Then on return it gets held up at the Parkway, Childers Road, Dublin Road or Tipperary Roundabout and Top William Street or Patrick/O’Connell St. all this resulting in gaps in service of over 45 minutes at peak times, buses bunched together, severe overcrowding on the single-deck buses, etc. It’s generally a mess...”

Male, Castletroy

7.4.1.2 Weather

Cyclists and walkers are certainly influenced by the weather. Poor weather conditions discourage cyclists and walkers from travelling via these modes. The reasons include discomfort (arriving at their destination wet) and for cyclists the lack of storage for bicycles and associated accessories.

“I tend to take the car on rainy days rather than walk to work, I feel guilty as it’s takes less than ten minutes, but I’d rather arrive at work looking presentable”

Female, National Technology Park

Cyclists in particular decide not to cycle to a certain destination (school, work, shops etc.) because they have nowhere to leave their bicycle to ensure it is covered from the elements.
“Definitely bicycle parking has increased in recent years but there is still a severe lack of covered parking...I spent a small fortune on my bicycle and I’m certainly not going to leave it out in the rain to get rusty.”

Male, Castletroy

7.4.1.3 Infrastructure

A variety of infrastructure related barriers, particular towards walking and cycling, arose during the discussions. Cyclists and walkers who travel on or adjacent to Limericks busy roads and streets expressed that car fumes are often a deterrent.

“... When you’re cycling on road or street, all the traffic is literally in your face, which not only an unpleasant environment to be breathing in but it’s bad for your health which kind of defeats the purpose of choosing to cycle to stay healthy...”

Male, City Centre

Many agree that cars and bicycles do not combine well on the Limericks roads and streets. Many potential cyclists and even experienced cyclists are extremely concerned about cars not being aware of their presence and thus ignoring them entirely. Many cyclists feel very vulnerable being on the road with cars.

“All drivers, be it car, truck or bus, do not respect the fact that you’re there sharing what they believe is their road space...to them it’s their road and cyclists shouldn’t be there. But where are we supposed to go? Cause pedestrians don’t want us on their footpaths...”

Male, UL Staff

Some car exclusive respondents reinforced this view by expressing that Limerick’s streets and roads were unsuitable for cyclists and for safety reasons they should be restricted from certain streets.

“There simply isn’t enough room for all users, I think especially during peak hours that cyclists should be restricted from certain parts of the city centre...they pose a danger to themselves and others by joining traffic during these busy periods..”

Male, Corbally
While it was acknowledged that Limerick has in more recent times began to accommodate cyclists and pedestrians with dedicated cycle lanes, and cycle and footpaths, respondents agreed Limerick requires a lot more cycle, pedestrian and bus dedicated facilities. However, there are those facilities that disappear at intersections (cycle lanes and bus lanes), forcing cyclists, and buses onto the roads to merge with other traffic. This proves extremely difficult and dangerous for cyclists forced to join traffic moving at much higher speeds.

“...There are so many examples of incomplete cycling infrastructure across the city...you can be cycling along in a dedicated cycle lane and it suddenly disappears with no other option but to join fast moving and angry motorists...”

Female, Corbally

Anecdotal evidence from the discussions suggests cycle lanes, while their purpose is to separate cyclists from vehicular traffic in a safe way, they actually do not always provide the level of safety they were designed to.
Cyclists are considered vulnerable to vehicles simply not noticing the cycle lanes (particularly with the lack of cyclists using them – safety in numbers) and parked cars opening doors within the cycle lane for example.

In particular, parents find it difficult to allow their children to cycle due to the perceived unsafe nature of this infrastructure, especially at crossing points. Many parents do not trust that their children have sufficient road skills or understanding, to be able to handle busy traffic situations.

“...I would be very reluctant to let my children cycle to school, the route from our house to the school includes a roundabout and two traffic light crossings and the route has inconsistent footpaths and literally zero dedicated cycle paths...”

Female, Corbally

“When I first came to college in Limerick I actually had a look out for bike paths I could use and I noticed none of them really tend to link up.”

Male, UL Student

Problems associated with making right turns pose particular problems as described below:

“I have a serious problem with turning right when I’m cycling, it terrifies me when you have to position yourself right in the middle of two lanes of traffic with your arm outstretched, and there are cars or worse still trucks at either side of you, and you’re hoping you’ll make it without being crushed by oncoming traffic....”

Male, City Centre

In addition, complex traffic interchanges, in particular roundabouts, bridges with no hard shoulders on them, and awkward lane changes all pose additional difficulties for cyclists, both in terms of them knowing where to position themselves on the road and the threat to their personal safety.
“...my fear is the car coming behind me, because obviously there’s no cycle path when you’re going around a roundabout so you have to hope that the car is gonna maybe slow down and stay behind you and that they don’t sort of try and come around you...”

Female, Corbally

It appears that urban roundabouts are a moderate to significant hazard for cyclists. Both car drivers and cyclists suggested that roundabouts should be replaced with signalised junctions for the safety of all road users. In addition to the lack of cycle parking infrastructure, there is also evidence that the lack of provision of shower and changing facilities at work discourages people from cycling and walking to work.

“...Limerick needs a lot more cycling facilities, both in the city centre and all the outlying areas...this is not so much because it is currently an issue for cyclists where to leave their cycles, but more because cycle parking, appropriately located, constructed and signed, can raise the profile of cycling significantly, at no great cost...”

Female, Southill

“I only know two places in Limerick where you can shower before starting work, here is not one of them...I think it depends on their profession really, and some people might want a shower at the end of their cycle to work...”

Male, National Technology Park

7.4.2 Emotional Barriers to Smarter Travel

7.4.2.1 Safety

Concerns about personal safety appear to be the dominant disincentive to using Smarter Travel after dark and to parents letting their children travel unaccompanied. This concern revolves not only around traffic and motorists’ perceived lack of respect or empathy for cyclists and pedestrians, but also about being vulnerable to other people with malicious intentions. For example, the perception of driving in Limerick as dangerous and inconsiderate is a significant impediment to the greater uptake of cycling. Moreover, because of this, most parents acknowledge that children are cycling and walking to school much less often than they used to when they were children.
“There are no bikes outside schools anymore... When I used to go to school they were everywhere and now hardly anyone cycles.”

Female, Corbally

Respondents blame the pressure on roads today attributing to this trend. In addition, respondents reveal that motorists have become more intense and possess very little respect for other road users. While parents acknowledge the benefits of walking and cycling to school, many are simply unwilling to risk their children’s lives in busy traffic situations.

“Traffic doesn’t automatically stop for children on the pedestrian crossings you think you would be safe and children are under the illusion...They’re not, and they’re not magic lines.”

Female, Southill

A second security concern for both adults and children is the fear of being vulnerable to physical harm, when walking, cycling, or waiting at bus stops. This concern did not apply solely to women and children with many adult males expressing concern about being in poorly lit and deserted places after dark.

“I think in the night sometimes it can be a little dangerous just depending where you walk, like I cycle along the canal from UL to the city centre during the day, I definitely wouldn’t use this route in the dark...”

Male, City Centre

Many believe that sufficient lighting and additional security measures are likely to alleviative many of these fears for adults and encourage Smarter Travel after dark.

“I think security cameras need to be placed at bus stops and maybe some type of phone you could use if you were feeling scared to contact the Gardai maybe...I suppose if buses were reliable than you wouldn’t have to wait though...”

Male, Southill
“I think solar powered lights and security cameras along a lot of the canal route mentioned would be good.”

Female, UL

7.4.2.2 Road Laws and Regulations

Focus group responses revealed that many road users are unaware of road rules particularly those that apply to cyclists. This then results in a lack of consideration on the roads from cyclists as well as confusion, which in turn can lead to dangerous situations and the occasional altercations.

“If there is a cycle lane whether you think it’s good or bad you are required to use it rather than the carriageway, some cyclists don’t know this...on the other hand the vast majority of traffic completely ignore those advanced stop lines which are meant for cyclists only...there’s an overall lack of education and information, and I suppose proper training really, I think..”

Female, UL
“…my experience on the road is that buses pose a greater danger to me as a cyclist than do articulated vehicles. I've been crowded and pinched by buses more often than by other large vehicles, and buses are more often seen to run lights and break through pelican crossings when pedestrians are on them. They are a law unto themselves I think. At least, those are my perceptions and the latter my opinion.”

Male, UL

Focus group respondents also revealed the lack of confusion and ownership of road space, between road users and cyclists, which deters many cyclists from using the road

“…Cyclists think they own it and drivers think they own it... they've all got a right to be there but at the same time no one’s prepared to give way...but everyone thinks they’ve got the more right to be there so, how would you regulate that?...”

Male, Corbally

“…I think cyclists should be registered and there should be a licence to ride a bike and this could subsidise the cycle facilities they need. We pay car tax for our roads don’t we? Why not have an exactly the same system for bikes?...”

Male, Southill

In addition, both pedestrians and cyclists outlined a range of problems associated with parallel cycle and footways. Walkers revealed that some cyclists travel too fast and therefore put children and others at risk. While, cyclists complain that footpath users utilising cycle paths also proves dangerous. Respondents provided many examples of inappropriate use of shared pathways.

“…even where a white line and different coloured surfacing separate the footpath from the bike path, the separation can be completely ignored…I have often seen pairs of girls walking with buggies side by side on the bike path and the other on the footpath...what happens when a cyclist comes flying down the track behind the mother and baby?”

Male, Southill
In addition to the existing white line and coloured surfacing, well-defined separation of cyclists and pedestrians has been suggested for these locations, via the use of different levels, or a kerb separation, and signage at regular intervals along the route, as shown in Figure 7-3 below.

![Figure 7-3 Existing Segregated Cycle Facilities in Limerick](image)

7.4.2.3 The Lack of a Smarter Travel Culture

Respondents were quick to state that Limerick does not have a Smarter Travel culture. In Limerick, people are actively discouraged from cycling by a hostile attitude from pedestrians and other road users who regard them as a nuisance on the roads and footpaths.

“I lived in Denmark for a year...and basically over there I’m not sure what the reasons are...I think it’s something to do with taxes and expensive cars and petrol, everyone owned a bike. I did as well and I did everything from going out to a restaurant to going out at night to a bar to going to work, everything was on my bike, but I could never picture myself doing it here because I’ve got a car, but over there when I had no choice that’s what I did.”

Female, City Centre
Respondents believe that in Limerick people are currently encouraged to drive a car rather than encouraged to use alternative modes of transport.

“I think that’s where you need to be looking for in the future, it’s not gonna happen in my generation probably in my kids’ generation I hope…but for that sort of thing to happen you need to effectively train people or educate them right from the get go and instil it as part of society. I don’t think that cycling is still seen as, you know, the way to get to work, that sort of thing, it’s naturally car in Limerick.”

Female, UL

7.4.3 Practical Barriers to Smarter Travel

7.4.3.1 Multi-Purpose Trips

A major deterrent to Smarter Travel, especially walking or cycling revolves around the need to carry out more than one trip, in particular drop offs to school on the way to work. In addition, there are those that would also find it impossible to carry home groceries, work files, schoolbooks, etc. when using Smarter Travel modes.

“...We honestly could not walk or cycle every day, the kids have so much stuff to take to school, my son plays a lot of sports so he needs to carry equipment and my daughter studies art at school and has to carry an A1 folder with her every day she has art, and I take work home every night so I’ll have files, and this doesn’t include stopping at the shop on the way home to get food for dinner...and our family has limited time in the mornings as it is”

Female, Castletroy

“I’m a single parent, I drop my two children to two different schools because we can’t walk there, it’s too far to walk, so we have to go in the car, then I usually go shopping quickly before or after I go to work, then I have to drive to work ...so I’m in the car a lot.”

Male, Corbally
For some, practical considerations in travel-mode choice outweigh any potential benefits:

“I wouldn’t take public transport to college. From where I live it would be two buses, with different non-coinciding times. It’s quicker and easier by car.”

Female, UL

7.4.3.2 Lack of Flexibility

Focus group respondents revealed that having a car offered greater flexibility for them, particularly if the unexpected occurs during the day such as a child becoming ill at school and needing to be collected.

“...I need my car during the day...I leave work to pick up the kids from school to drop them to the child-minders, then return to work until 5.30...”

Female, City Centre

Younger people, students in particular, also like the flexibility the car provides over modes.

“. If I get the bus to college then if we decide to go out after college then trying to get home to get changed and back in on time takes ages, with my car I can nip home and its takes a fraction of the time...”

Female, UL

7.4.3.3 Lack of Changing and Storage Facilities

Focus group respondents expressed their desire to arrive at their destination looking their best, particularly for those working in offices. Therefore, this prevents people from walking and cycling to work (including walking to and from bus stops).

The provision of showers and changing facilities at work encourages some. However, others are more easily discouraged by their need to look well on arrival.
“I don’t like the corporate suit with the runners on. It looks terrible... Even if I wanted to walk, I would do it in my high heels, I wouldn’t go and put my runners on to do it... Ireland’s the only place I have ever seen people, like you said, the corporate suit, and runners.”

Female, National Technology Park

Parents of teenagers also stated that they feel that appearances were more important to their teenage children than considering walking or cycling to their destination. Some girls are reluctant to cycle to school in their uniform skirt and many boys and girls prefer to take public transport or be driven to a shopping centre for example, when meeting friends.

The lack of appropriate and safe storage facilities appears to be one of the primary disincentives to cycling. Many workplaces and shopping centres do not have safe places to store a bicycle and associated cycling gear.

“...I was actually walking to work just this morning thinking about how much I wish I could cycle to work but my workplace will not do anything to help us lock up our bikes, to keep them safe. A friend’s bike, worth about €1,500, got stolen out the front and they sort of just say well, there’s nothing we can do, and I just think that’s awful that they will not at least provide appropriate parking facilities for bikes as they do for cars...”

Female, Corbally

Cyclists would prefer safe and secure parking with access to bicycle users only. Respondents suggest the idea of converting a portion of existing car parks to bicycle parking.

“I don’t know about anyone else, but I think parking in the city costs a fortune, that’s why I catch the bus. If I could park a bike in there and obviously it would have to be cheaper than parking a car there, because you could fit a lot more spaces in, a lot more bikes in I would, yeah I’d go for it.”

Female, City Centre
7.5 Respondents Suggestions for Encouraging Smarter Travel

7.5.1 Suggested Infrastructure Initiatives

Responses from the focus group discussions imply that dedicated cycle paths assist people to choose to cycle.

“The only reason why I started cycling to UL from the city is because of the canal cycle route, while it has its obstacles; for the most part it provides an excellent off road cycling facility”

Female, UL

Cyclists prefer to be segregated from vehicular traffic and prefer to avoid merging with traffic. They believe that many of Limerick’s roads and streets are wide enough to support a separate lane for cyclists and that others could be facilitated with better road markings. The clear preference is for a separate lane, followed by a clearly marked lane (kerb, solid line or coloured surface preferred) followed by the dotted line approach.

“...there’s not a lot of cycle lanes in Limerick, that I have seen on the main roads that I have driven on, there is nothing at the intersections like you said to go ahead, so that doesn’t exactly inspire confidence in me to start cycling. I don’t trust drivers out there at the best of times when I’m in my little car and I’m all safe and secure let alone when I can be flung off a bike so easily. I think the different colour so that way most people cannot get confused at all and in the odd event that something does happen and you are in an accident you can clearly see the difference between the two lanes.”

Female, Southill

“I don’t think bikes and walking tracks go together, do they?...separate facilities for all road users is the way to go, a footpath, a cycle lane, a bus lane and a traffic lane...where all lanes cannot be accommodated a hierarchal approach should be adopted where the more sustainable modes are provided for first.”

Female, Castletroy
“I think all roads in the city centre used by ‘Smarter Travel’ modes should be closed to non-resident private cars, except where it is shown that there is room for both private traffic and ‘Smarter Travel’ traffic. Give buses for example absolute priority - at least during working hours. Allow private cars only on the new bridge, Dock Road and the city orbital road maybe. Anything else, and you park and walk, or park and cycle, or park and get the bus”

Male, UL

In relation to traffic lights, cyclists are divided as to the benefits of the provision of advanced stop lines. Those who prefer this approach do so because they believe they can be seen well by other traffic. Other cyclists like to be placed at the left hand side of the road in a line where they could not be run over by faster moving traffic from behind when the lights change to green.

7.5.2 Suggested Promotional Initiatives

Promotional initiatives are seen as effective in helping to motivate and inspire people. In particular, respondents believe that promoting the existing road rules in relation to cycling, more widely would be beneficial. Suggestions include making them available to all learner drivers, and encouraging bike shops to give copies of the bike road rules to all new purchasers.

“But surely Limerick City Council could implement some type of cycle training. I mean when you’ve got to do your driving test you’ve gotta do the theory test too. So if they put more about bikes and what to do as a bike rider – even though they wouldn’t target all bike riders it would target people who also had a car, then at least you’d have some awareness of where the bike riders are meant to be and when to give way to them and when not to and those kinds of things.”

Female, Corbally

Advertising is also seen to prove crucial in trying to encourage Smarter Travel. Promotions and campaigns should emphasise the positive benefits of Smarter Travel. Respondents suggested that emphasising the health and economic benefits would work best.
“In this continuing recession we find ourselves in promotion of the cost savings has to encourage people to make the switch...if you asked people to add up how much they actually spend on their cars in a year, loan, tax, insurance, services, tyres, it all adds up to huge amounts of cash...we’re all thinking about how to make savings...”

Male, National Technology Park

“...there seems to be some kind of marathon and triathlon epidemic going on in the past year or so, everyone’s taking up running and cycling and I think people are becoming more health and fitness conscious, there’s never been a better time to promote cycling and walking ...”

Female, City Centre

Respondents also suggested running programmes (on TV if possible) where the hubs compete against each other on fitness levels or cycling and walking levels for example.

“...I think programmes such as Operation Transformation and Dirty Old Towns on RTE show excellent examples of how communities can get together to transform their health and urban environment...I think something like this would work really well with the Smarter Travel hubs idea, Irish people naturally have a competitive streak when competing against neighbours, this is clear in our GAA culture, if the hubs were competing against each other in raising cycling and walking levels I think this method could be very successful...”

Female, Southill

Additionally, promotions need to inspire people emotionally by tapping into the desires likely to inspire them. Those who are feeling very unfit, for instance, may be motivated by smaller goals. Pedometer challenges are mentioned positively in this context as every step counts whether these are taken in one long walk or in many short bursts.

“... People don’t realise that even a short walk to work can be beneficial, providing information for this walk and what it actually does like how much fat you burn and stuff like that, so a lot of people will actually realise how important it is for them.”

Female, Southill
Respondents suggested ideas for specific promotions to encourage people to walk and cycle more. Suggestions included mapping Smarter Travel routes (cycling, walking, and buses), pedometer challenges, assisting people in making incidental exercise, and discount vouchers for bikes and runners.

7.5.3 The Role of the Community and Workplaces

Focus group respondents stated that Limerick City and County Councils have a large role to play in encouraging people to choose Smarter Travel modes in their local area by providing safe footpaths, cycle lanes and crossings, good lighting for streets and public places, parks, bicycle parking, and bus lanes. In addition, respondents agreed that council members, staff, and councillors should “lead by example”.

“I think it’s rather hypocritical if the council design and constructs cycling infrastructure and not a single member of the council of staff cycles…we need a Boris Johnson type figure in Limerick”

Female, UL

In an environment where many spend so many hours each day in their place of work, the workplace was also identified as having a very important role to play in encouraging people to walk or cycle more regularly. Respondents stated that the current culture promotes the use of cars and cars are seen as signs of success.

In order to change this behaviour, respondents suggested that workplaces and other institutions such as UL, could generate a positive Smarter Travel culture not only by providing facilities needed to encourage these modes of commuter transport, but also by getting people used to walking for recreational purposes through promotions and campaigns (e.g. workplace walking and cycling challenges).

“Companies should organise groups to make it like a social activity walking through parks or whatever, within the city and maybe extending that sort of lunch break for people to actually have the time to do that and have their lunch and whatever in that same period of time.”

Male, City Centre
Respondents suggested that schools (and the school community) also have a strong role to play in encouraging regular walking and cycling among schoolchildren (and sometimes their parents). The An Taisce Green Schools initiative was mentioned by a number of parents.

However, many parents have misgivings about the different levels of cycling ability among different aged schoolchildren. Nonetheless, there is evidence that the provision of lockable bike sheds encourages some children to ride to school. Some schools support a Walk to School day (Milford National School, in the Castletroy hub) which helps to encourage local families to walk together to school. Respondents also suggested that families, in particular parents, have a strong role to play in the mind-set and value Limerick people place on Smarter Travel, especially children. Those born overseas point out that they had come from a culture in which walking or cycling is valued and encouraged. However, most openly admit that while they have positive memories, they have adopted their new country’s habits and use their cars, especially where their children are involved.

“...I think it’s just the way my kids have been brought up, I grew up in the county and cycled everywhere as we had no car when we were young, but for my kids we have always had a car...”

Female, UL

7.6 Conclusion

The focus groups discussed all trip types, not just commuting as Census data does. The focus groups explored; the way in which travel across the hubs is undertaken, consideration of alternative means of transport and recommendations for what would encourage more use of Smarter Travel modes of transport. The focus groups confirmed that the car is the accepted, or in some cases the desired mode of transport for almost every type of trip.

From the focus groups it is clear that while some of the barriers to Smarter Travel are difficult to overcome, none are insurmountable. Based on the attitudes and beliefs of group respondents, three main ways for overcoming these were identified.
Firstly, respondents suggest improving the physical infrastructure, in particular focussing on upgrading existing walking and cycling paths as well as cycle lanes, and bus lanes. For the former, clear signage, development of a code of conduct and improved lighting would be well received. For cycle lanes, consistency in road markings throughout the city would be welcomed as would segregating vehicular from non-vehicular traffic wherever possible.

Secondly, respondents suggested that in order to build confidence, helping Limerick citizens improve their skills both as walkers and cyclists and fostering these pursuits (even if for recreational purposes) would send appropriate signals. Encouraging better knowledge of the road rules, (especially those relating to cyclists) would also be a positive step. Some face the physical barrier of personal fitness. For these people, gradually getting them used to walking or cycling short distances and/or for recreational purposes provides a means of communicating with them about the possibilities of using these modes instead of their cars for non-recreational trips.

Finally, respondents suggested encouraging workplaces, educational institutes and other main destination points, to provide changing and storage facilities as well as incentives to arrive via Smarter Travel modes. In addition, respondents suggested improvements to public transport via a more reliable, better-connected bus route network for the city.

The previous recommendations applied to all respondents. There are some specific barriers to overcome for certain interest groups and others that emerged as part of the research process:

- People from underprivileged backgrounds – the key barrier to using Smarter Travel modes of transport are preference to a car (which is aspirational and a sign of success). There is a need to demonstrate that these alternative modes are not inferior to the car;
• Newcomers to an area – walking and cycling are excellent ways to become familiar with a new environment. The opportunity to become part of the local community was noted positively.

• Different age groups – young people are less likely to walk and cycle regularly than their parents and grandparents. Walking, in particular, is viewed as slow and boring.

• Parents – this group exhibits fears about the safety of their children from predatory behaviour. Fostering activities that are supervised by adults would help them to encourage their children to use Smarter Travel modes more; and

• Students – members of this group are a clear target for Smarter Travel modes given their age, fitness and (generally) limited access to finance. The key barriers they face are practical ways to get changed or store their equipment and clothing, the lack of dedicated paths which requires them to walk and cycle on unmarked public roads, and poor information regarding discounted public transport, and poor connectivity of public transport.

It obvious that different groups, and individuals, need to be treated in different ways as they are motivated by different factors, experience different barriers, and are effected in different ways by travel behaviour change. The use of focus groups enables further insight into travel behaviour to identify target groups and the measures necessary to change existing travel behaviour.
Chapter 8  
Rationale for Designing a Community Engagement Strategy
8 Rationale for Designing a Community Engagement Strategy

8.1 A Strategy for Limerick Smarter Travel

One of the main aims of this research was to establish what a travel behaviour change programme for Limerick Smarter Travel would look like. More importantly, this research aimed to determine how community engagement could contribute towards the success of Limerick Smarter Travel.

The research has established that the design and implementation of hard measures alone would not contribute to a successful travel behaviour change programme. Existing cycle facilities have been installed in the Limerick Smarter Travel study area, without any prior research to identify potential users, their preferences, and the barriers they face and desired connections (e.g. schools, workplaces, etc.). The result is many of these cycle facilities are underutilised.

On the soft measures aspect, when designing public information campaigns for Smarter Travel projects, the key element of community engagement may be overlooked. A traditional marketing approach which is product centred and treats communities as consumers may be adopted. While some conventional marketing methods may be appropriate for disseminating information, and help a campaign build momentum (as identified in the precedent studies), ultimately it is the on-the-ground outreach and engagement within the community that will encourage Smarter Travel and create long lasting travel behaviour change.

The rationale for Smarter Travel design and planning uses appropriately segmented quantitative census data to answer (partly) the quantitative research question what? – what are the existing travel patterns in the Limerick Smarter Travel study area? Focus groups answer the qualitative question why? – why do Limerick citizens travel the way they do? And taking account of the quantitative and qualitative data, as well as the precedent studies, the plan addresses what now? The following sections describe, in further detail, the rationale for designing a community engagement strategy for Limerick Smarter Travel.
8.2 Quantitative Census Data – Segment the Target Audience

The quantitative Census data analysis highlights the complex, and locally variable, nature of travel patterns within the study area. In addition, the data reveals the extent of variation in the factors considered to affect travel behaviour also, such as economic status, car ownership levels, and household composition. The census data portrays that using aggregated census data at the scale of the hubs is not sufficient for Limerick's Smarter Travel project. Different groups, and individuals, require different approaches in order to establish travel behaviour change. Therefore, the collection of relevant qualitative travel data to determine appropriate target groups is essential in order to change travel behaviour. Accordingly, using Census data the Limerick Smarter Travel programme should commence with an analysis of every small area within each hub.

A sample small area from the Castletroy hub has been selected for analysis. Target groups within the given census data and their spatial distributions can be identified. The selected small area comprises a population of 554 residents (280 male and 274 female) and incorporates 206 households (Census, 2006). The selected small area (Limerick Suburb 21/130) is shown (in black) in Figure 8-1.

![Figure 8-1 Castletroy Sample Small Area 21/130](image-url)
The age profiles of the population are shown in Figure 8-2 and shows the highest proportion of the population falls under the 20-29 year old age group (31%).

![Figure 8-2 Sample Small Area Population by Age Groups](image)

The household compositions are shown in Figure 8-3 and show that the largest proportions of households comprise a husband, a wife and children (30%).

![Figure 8-3 Sample Small Area Household Composition](image)
The small area, in 2006, had high levels of employment at 76% as shown in Figure 8-4.

![Figure 8-4 Sample Small Area Economic Status](image)

Just 2.4% of households in the small area have no car. In the Small Area in 2006, 87.3% of travel to work, school, and college (commutes) was made by the private car (68.2% as a driver; 19.1% as a passenger).

![Figure 8-5 Sample Small Area Car Ownership](image)
The 2006 modal split for commuters is shown in Figure 8-6. The figures also show that walking accounted for 7.3% of commutes, and cycling just 1.1%. The majority of those commuting left home between 8:00 and 9:00 a.m. (59.9%), 68.9% of commutes were less than 10 kilometres and 47.7% of commutes take less than 15 minutes.

Figure 8-6 Sample Small Area Commuting Modal Split

Figure 8-7 Sample Small Area Time Leaving Home to Commute
Designing a Community Engagement Strategy for Limerick Smarter Travel

Kathleen Clair Cullinane

Using Precedent Studies and Focus Groups

May 2012

Figure 8-8 Sample Small Area Distance Travelled Commuting

Figure 8-9 Sample Small Area Time Taken Commuting

206
Table 8-1 summarises the Small Area data.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of Residents/ Households</th>
<th>Percentage of Residents/ Households</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 19 years</td>
<td>139 residents</td>
<td>25%</td>
</tr>
<tr>
<td>20 – 65 years</td>
<td>393 residents</td>
<td>71%</td>
</tr>
<tr>
<td>Other (66 years +)</td>
<td>22 residents</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Household Types</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One person</td>
<td>41 households</td>
<td>20%</td>
</tr>
<tr>
<td>Couples (married/ cohabiting)</td>
<td>58 households</td>
<td>28%</td>
</tr>
<tr>
<td>Families (with children)</td>
<td>70 households</td>
<td>34%</td>
</tr>
<tr>
<td>Non related adults (2 or more)</td>
<td>23 households</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>14 households</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Employment (aged 15 years and over)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At work</td>
<td>333 residents</td>
<td>76%</td>
</tr>
<tr>
<td>Other</td>
<td>104 residents</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Mode of Transport (aged 5 years and over)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car as driver</td>
<td>339 residents</td>
<td>68%</td>
</tr>
<tr>
<td>Car as Passenger</td>
<td>95 residents</td>
<td>19%</td>
</tr>
<tr>
<td>Walking</td>
<td>35 residents</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>30 residents</td>
<td>6%</td>
</tr>
</tbody>
</table>

It is clear from Table 8-1 that the family household with children (in particular school-going children), young professional couples (married or cohabiting,) and young professionals living alone or with others represent the key target groups in this small area. Almost half of the small area population are aged between 20 and 39 and a quarter are under 19 years of age.
Analysis of every small area should be carried out similar to the above. Small Areas that show similar patterns can then be grouped. These groups can then be mapped. An analysis of group numbers, trip numbers, and potential for modal shift potential using the precedent study experience can then be completed. A priority list of target groups by spatial distribution and type is thus obtained.

8.3 Qualitative Focus Group Data – Classifying Target Groups

The literature detailed in Chapter 2, suggests that by researching and classifying groups with respect to known barriers allows for a well-designed behaviour change programme that ensures success. In order to influence people’s behaviour it is important to understand why people behave the way they do. Without gathering this information about target groups, time, resources, and efforts are wasted and an uninformed programme is thus created. Clearly, the more accurate the information about target groups behaviours, motivations and barriers, the easier it will be to facilitate two-way communication and implement appropriate measures to ensure successful travel behaviour change.

From the focus groups carried out for this research, as detailed in Chapter 7, it is clear that while some of the barriers to Smarter Travel are potentially quite difficult, none are insoluble. Based on the attitudes and beliefs of group respondents, common measures for overcoming these were identified and should be applied across the entire Limerick Smarter Travel study area. These included, for example, improving the physical infrastructure; improving the skills both of all road users, and encouraging workplaces, educational institutes, and other main destination points, to provide changing and storage facilities as well as incentives to arrive via Smarter Travel modes. In addition, respondents suggested improvements to public transport via a more reliable, better-connected bus route network for the city.

However, some specific barriers to overcome for certain interest groups and others emerged. For example, the following two responses recorded during the focus groups reveal specific barriers to Smarter Travel.
Firstly, a male from Southill stated:
“I always wanted a car and it was a dream come true when I was finally able to afford a car. I was able to get rid of my bike and drive everywhere. I certainly felt better about myself….I get more respect on the road now as a driver than as a cyclist...”

Soft measures alone are required for this respondent to attempt to change the respondents’ attitude.

By comparison, a female mother from Castletroy stated:
“...I would be very reluctant to let my children cycle to school, the route from our house to the school includes a roundabout and two traffic light crossings and the route has inconsistent footpaths and literally zero dedicated cycle paths...”

A combination of hard measures (physical infrastructure) and soft measures (to eliminate the fear factor) are required for this respondent.

Focus group data clearly shows the factors motivating mode choice vary. It is clear that different people need to be treated in different ways as they are motivated by different factors, experience different barriers, and are effected in different ways by travel behaviour change. The use of focus groups enables further insight into travel behaviour to identify target groups and the measures (hard, soft, or a combination) necessary to change existing travel behaviour.

A series of homogeneous focus groups should be arranged, from the priority list of target groups (by spatial distribution and type). Following the method detailed in Chapter 7, the focus groups will uncover the motivations for existing behaviour and identify barriers to Smarter Travel for each social group. This may lead to some group re-classification as apparently homogeneous groups are differentiated. Qualitative focus group data can alter quantitative data.

Examples of specific inhibiting factors from the focus groups that apply to the key target groups identified in the sample small area have already been established as follows:
8.3.1 Young Professionals
Firstly the Castletroy focus group identified the young professionals, who prefer to drive to work to avoid getting up to early, or because they have no time:

“I could walk to the work but to be honest I’d prefer that extra half hour in bed…I suppose I’m just too lazy to switch”

Female, Castletroy

“Yeah, I feel sometimes people want to ride a bicycle and the only thing is they don’t get the time because they’re always in a hurry in the morning and when they come home from work they are tired so they, so don’t have any time, that’s the one reason I feel…”

Male, Castletroy

8.3.2 Working Parents with School Going Children
Secondly working parents, with school going children were identified in the Castletroy focus group and noted they has multiple drop offs, and equipment to carry, during the morning commute, and therefore believed driving was the only option:

“…We honestly could not walk or cycle every day, the kids have so much stuff to take to school…and I take work home every night so I’ll have files, and this doesn’t include stopping at the shop on the way home to get food for dinner…and our family has limited time in the mornings as it is”

Female, Castletroy

Parents also exhibit fears about the safety of their children if they allow their children to walk or cycle to school, such as incomplete walking and cycling routes, and fear from predatory behaviour.

8.4 Best Practice Precedent Studies – Solutions and Transferability
While quantitative data and qualitative data can determine the existing travel behaviour and motivations, determining what has worked elsewhere is necessary as what people say they do and what people actually do may not always coincide.
Successful travel behaviour change has been implemented in European cities, a process which has taken up to 40 years. A combination of measures, including revising policy to prioritise Smarter Travel, provision of extensive cycling facilities, and strict car control and restrictions has achieved this. More recently, change has also been implemented in UK cities, to reverse the effects of unsustainable travel. These cities tend to focus more on segmenting the target audience, utilising soft measures and through promotions and campaigns for example. European cities have also adopted soft measures in more recent years, to increase their already high mode share of Smarter Travel. However, it is acknowledged that soft measures need to be accompanied by the provision of hard measures to ensure long lasting travel behaviour change.

The results of the Precedent Study show that a successful Smarter Travel programme needs to be well researched and one that will be long lasting with continuous efforts. Smarter Travel Limerick should follow a continuous sequence of actions as detailed in Figure 8-10.

Figure 8-10 Smarter Travel Limerick Continuous Sequence of Actions

The sequence of actions comprises policy interventions, researching, planning, hard measures, soft measures, and monitoring and evaluating. The Precedent Study cities acknowledge that if all the measures detailed in Chapter 5 would be implemented overnight, citizens would revolt and successful travel behaviour change would not result.
Prioritising Smarter Travel modes must be a task taken seriously and pursued with great dedication over a number of decades in Limerick, and thus a continuously repeated sequence of actions.

The quantitative Census data and the qualitative focus group data allow spatial subdivision and grouping according to local travel behaviour, motivations and barriers. By looking at the quantitative data at various scales (as in Chapter 6) we build a picture of the spatial distributions of various travel behaviours and by looking at the focus group data we uncover the qualitative data that gives us insight into the motivations and barriers, real and perceived, to adopting smarter travel modes. Following completion of all the focus groups, a detailed database of target groups will be established. Such a database will allow for the Limerick Smarter Travel to target subsets from the target audience with specific measures as well as to monitor, evaluate and help systematise efforts. Segmentation of the targeted audience shows that interventions need to be responsive to different motivations and constraints of various groups and individuals. Therefore, following completion of segmentation, solutions from the successful exemplar cities can then be identified and applied to specific sub-groups to establish what is needed and achievable.

The sample Small Area (21/130) and the target groups identified are almost identical to those targeted in Suttons Smarter Travel programme (detailed in Chapter 5). Smarter Travel Sutton targeted the following groups:

- Hard-pressed families – typical suburban families two adults, both working, two-three school going children, high car use and dependence, hard-pressed for time;
- Well-off females – independent, financially secure, car reflects lifestyle; and
- Men who dislike travelling – disliking public transport, complain about their commute, car also reflects lifestyle.

Families were encouraged to take up Smarter Travel modes via messages relating to spending quality time with children – walking and cycling, walking to school to create more alert pupils, and reducing petrol and parking costs.
The other two target groups, well-off females and men who dislike to travel were targeted using messages such as looking good, improving health (child and family), and promoting the independence and flexibility walking and cycling can offer.

The main target group in Odense’s campaigns were commuters and children also. Many of the campaigns were directed towards parents, children, and young people (students) - the philosophy was that “it is easier to establish good, than to change bad, traffic habits.” The campaigns included, testing cycle trailers and cycle training. The other cities also focus on encouraging Smarter Travel among children. In Malmö, a the ‘Friendly Road to School’ project aimed at encouraging parents of children attending the first few years of school to walk or cycle to school with them instead of driving them by car. In Cambridge and Sutton ‘Bike It’ campaigns among schools increased the numbers of pupils, parents, and staff cycling to school. The campaigns involved events, bike rides, cycle skills sessions, maintenance classes, curriculum based lessons and assemblies to help encourage the school community to get on their bikes. Successful workplace travel planning was also used in Sutton and Cambridge to target working professionals.

As already discussed, segmentation allows for the design and provision of a targeted travel behaviour change strategy for communities or individuals. Personal and household travel planning, described in Sutton precedent study, provide targeted information regarding Smarter Travel generated to meet the needs of individuals. This direct marketing approach of travel behaviour change involves direct contact with households to determine individual needs, motivations and an alternative available. Personalised travel planning can target specific areas or households with specific and tailored information.

In addition, during the project initiation process of Limerick Smarter Travel, candidates for a longitudinal survey panel should be recruited. A panel of candidates, representative of the study area and willing to participate yearly for the duration of the project, would be required to carry out baseline surveys, interim surveys (each year) and end of project surveys. The panel should also be used to monitor and evaluate campaigns. This is essential in order to determine ‘what is working’ and also of equal importance, ‘what is not working.’
External factors may also affect the Limerick Smarter Travel programme and a control area or community (outside the study area) should be monitored throughout the project. The control area, which would not be influenced by the projects in the intervention area, would be used to monitor the progress of Limerick Smarter Travel. Travel behaviour in both the Limerick Smarter Travel study area and the control area could change over the course of the programme due to the recession perhaps. Therefore, having a control area allows for the monitoring of changes as a result of the Limerick Smarter Travel programme.

It must be noted that all these projects also incorporated the provisions of hard infrastructural measures involving a combination of means, such as top priority to bicycles in town planning, regulation of motor traffic, technical initiatives, and campaigns. Quality in the construction and maintenance of cycling areas is also emphasised, as well as how to motivate people to use their bicycles. While marketing does play role in the exemplar cities, education and the provision of information and advice within communities prove more effective (as detailed in Chapter 5).

Persistence and provision of comprehensive and integrated Smarter Travel networks appear to be at the core of each of the exemplar Smarter Travel cities successful measures.

8.5 A Community Engagement Strategy

The literature review details how a targeted strategy for travel behaviour change is likely to be more effective than a ‘one size fits all’. Various types of engagement can be considered for each group: for example green schools for school children or workplace travel plans as detailed in the precedent studies. Where a common set of factors is identified across most of the focus groups, such as those identified in Chapter 7, (e.g. improving the physical infrastructure, providing safe continuous and well-maintained cycling infrastructure) then Limerick Smarter Travel community wide campaigns should be employed to address these particular factors. Barriers specific to a particular locale or sub-group require tailored community based measures.
From the outset, Limerick Smarter Travel needs to carefully consider how it will define and measure success. Evaluation will need to be defined before creating the programmes messages. After researching the target population groups, the changes needed to create travel behaviour change will be determined. The factors that the programme should seek to impact can be defined. Evaluation procedures should include both quantitative qualitative measures. Census data will allow for the spatial distributions of social groups.

The evaluation plan will need to allow for unanticipated changes from external forces within the target areas as well as the larger environment of Limerick City and suburbs. To best define Limerick Smarter Travel’s success, goals and objectives should be aligned to measurable outcomes. Outcomes that cannot be measured should be avoided, as there will be no way to determine success.
Chapter 9  recommendations and conclusion
9 Recommendations and Conclusion

9.1 Introduction
The hub approach was adopted as the Limerick Smarter Travel study team believed the approach ensured that “we will target each segment of the population with the right measures and funds aren’t wasted in non-target-group-specific measures.” This research has determined that this method would not be an appropriate method for Limerick Smarter Travel, and unlikely to meet the challenges and targets as set out in Smarter Travel policy.

9.2 Quantitative Data
Quantitative Census data demonstrates significant local variation in travel behaviour. It is clear that using aggregated census data at the scale of the hubs is not sufficient for Limericks Smarter Travel project. Small area Census data provides more detailed patterns of travel behaviour. This same data allows spatial subdivision and grouping according to local travel behaviour.

9.3 Qualitative Data
Focus groups provide detailed qualitative information on local travel behaviour. Focus group data shows the factors motivating mode choice vary. From a travel standpoint, groups may be characterised by socio-economic, age or other status. Thus a ‘one size fits all’ Smarter Travel plan would not work.

9.4 Precedent Studies
The precedent studies show that successful travel behaviour change has been implemented in European cities, and in UK cities more recently, to reverse the effects of unsustainable travel. National, regional, and local policies in Ireland, the Mid West Region, and Limerick are being geared towards and support Smarter Travel. However stricter and more intensive policies, including revising policy to prioritise cycling, provision of extensive cycling facilities, and strict car and parking control and restrictions has achieved success in the exemplar cities. The results of the Precedent Study show that a successful Smarter Travel programme needs to be well researched and one that will be long lasting with continuous efforts. The exemplar cities successful measures cannot be simply imitated and applied to Limericks Smarter Travel study area.
Instead, a multifaceted and a continuously repeated sequence of actions incorporating policy, research, planning, hard and soft measures, and monitoring and evaluation is required.

9.5 Applying Research Locally

Research needs to be carried out at a local level where interventions are proposed. This particular research looks at how to plan local research to fill gaps in quantitative data, generate qualitative data, and choose from successful precedents, both hard physical infrastructure and soft community based interventions to promote lasting travel behaviour, and selectively apply them to five pilot zones in Limerick.

Therefore, influencing peoples travel behaviour and encouraging change requires not just the implementation of best practice measures, but must be preceded by a nuanced spatial and behavioural research program, incorporating community engagement. An appropriate monitoring and evaluation plan will also be required to measure the outcomes and success of the programme. The success of a travel behaviour change programme depends on a comprehensive package of hard and soft measures and community input and participation.

A community based Smarter Travel programme that fosters engagement in decision-making and action, and meets community needs, can serve as a catalyst in the wider project of community building in Limerick.

9.6 Study Limitations and Further Research

The scope and scale of this research was necessarily limited by available resources. For example Census data is restricted in its information relating to travel patterns as it only provides information on commuter based journeys only. However, the NTS collected travel data for a specific day only and does not provide individual town or city results. This research serves to establish a methodology for the more comprehensive community based study required to ensure the effectiveness of the Limerick Smarter Travel project. Further research into the all trips types within the study area, such as trips to shops, leisure facilities, and other activities is required. Being a relatively new field of study particularly in Ireland as it was not introduced until the 2009, there is still much to be learned about Smarter Travel and travel behaviour change in Ireland.
All of the benefits are still unknown, but the benefits which have been documented cannot be ignored. The research shows how travel behaviour change programmes can be designed to succeed.
Chapter 10 References
10 References


Burnett, P., and Hanson, S. (1982) ‘The analysis of travel as an example of complex human behaviour in spatially constrained situations: definition and measurement issues,’ Transportation Research Part A 16 (2), 87–102


City of Copenhagen (2011) ‘Copenhagen City of Cyclists - Bicycle Account 2010,’ Technical and Environmental Administration, City of Copenhagen, Denmark

City of Copenhagen (2009) ‘Copenhagen City of Cyclists - Bicycle Account 2008,’ Technical and Environmental Administration, City of Copenhagen, Denmark


Forward, S. E. (1998) ‘Behavioural Factors Affecting Modal Choice,’ ADONIS, Swedish National Road and Transport Research Institute, Sweden


Jensen, N., and Larsen J. E. (1989) ‘Cycling in Denmark - from the past into the future’, Road Directorate, Ministry of Transport and the Municipality of Copenhagen, 4th Department, Copenhagen, Denmark


Kitzinger J. (1994) ‘The methodology of focus groups: the importance of interaction between research participant,’ Sociology of Health 16 (1), 103-21


Limerick City Council (2010) ‘Limerick City Development Plan 2010-2016,’ Planning & Economic Development Department, Limerick City Council, Limerick, Ireland

Limerick County Council (2010) ‘Limerick County Development Plan 2010-2016,’ Planning Department, Limerick County Council, Limerick, Ireland


McCafferty, D., and O’Keeffe, B. (2009) ‘Facing the Challenge: A Spatial Perspective of Limerick,’ Department of Geography, Mary Immaculate College, University of Limerick and National Institute for Regional and Spatial Analysis, Limerick, Ireland


Designing a Community Engagement Strategy for Limerick Smarter Travel
Kathleen Clair Cullinane
Using Precedent Studies and Focus Groups
May 2012


Road Directorate and Ministry of Transport (1989) ‘Cycling in Denmark,’ ISBN: Copenhagen, Denmark


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Kathleen Clair Cullinane

May 2012


Appendix A  Focus Group Discussion Guide
Appendix A  Focus Group Discussion Guide

1. Introduction (approximately 5 minutes)
   - Group etiquette and privacy requirements
   - Ground rules
   - Introducing group members

2. Current activities necessitating travelling (work, school, shops, recreation) and the way in which travel is undertaken (approximately 25 minutes)
   - Please think about your average day. What trips do you make and for what purposes?
   - How do you travel to:
     - Work/study/school
     - Recreational activities/social events
     - shops
   - Why do you choose these modes of transport?
   - What are the alternatives?
   - In what circumstances would these be viable or not be?

3. Consideration of alternative means of transport in particular, walking and cycling (approximately 30 minutes)

Car Exclusive Groups
   - Could you walk or cycle to do any of these?
   - Why would these be considered or not be considered? (probe for physical, emotional and social barriers)
   - Are you aware of anything designed to encourage you to use non-car modes of transport more? PROMPT – Promotional (e.g. Ride to Work Day), physical (e.g. bike lanes, signage, lighting, showers, etc.), emotional (e.g. for the environment, etc.), social (e.g. others doing it, the ‘done’ thing, etc.). What do you think of these? Have you been motivated to participate? Why/not?
Non-Car Exclusive Groups

- Are you aware of anything designed to encourage you to use non-car modes of transport more? PROMPT – Promotional (e.g. Ride to Work Day), physical (e.g. bike lanes, signage, lighting, showers, etc.), emotional (e.g. for the environment, etc.), social (e.g. others doing it, the ‘done’ thing, etc.). What do you think of these? Have you been motivated to participate? Why/not?

4. What would make you/your family walk/cycle/take public transport more? (approximately 25 minutes)

Car Exclusive Groups & Non-Car Exclusive Groups

- What things stop you from walking/cycling/taking public transport?
- What could be done to overcome these problems?

Cycling Specific Guide

- Presence and configuration of cycle lanes, security and safety issues (personal and equipment), social issues, design issues – where multi-modes of transport meet, logistical problems (places to shower, store bikes, store luggage and personal gear, lighting, etc.) and etc.
- What are your views on cycle lanes? Where do they work well or badly?
- Are there any that should not be there?
- Do you prefer on/off road? In what circumstances?
- How can cars and other vehicles co-exist more comfortably? PROBE for specific infrastructure problems related to different types of road (presence or absence of hard shoulder, surface materials, camber, state of roadside, signage, roundabouts and traffic islands, T-junctions and crossing lanes) as well as other ideas (e.g. education).
- How could cycle lanes be improved? PROBE for infrastructure surface, width, configuration, signage, linking together, need to go across/along roads, lighting, etc.
Walking Specific Guide

- Sharing footpaths with others – e.g. cyclists, security concerns, social issues, logistical problems (showers at work, places to change, cost of running/walking shoes, etc.)
- Should any roads/streets be for pedestrians only? In what circumstances?
- Can you suggest things that can be done to footpaths to make them more conducive to commuter usage? PROBE for specific infrastructure problems related to different types of path and routes (signage, roundabouts and traffic islands, other intersections, traffic lights and pedestrian crossings, places where roads get priority and walking is difficult, traffic volumes, traffic type [e.g. big trucks], and traffic speeds, etc.).

Public Transport Specific Guide

- Buses, trains – timetables, frequency, connections with other modes, security concerns, social issues, bus lanes.
- Should any roads/streets be for buses only?
- Can you suggest improvements?

5. Summary and finish (approximately 5 minutes)
Appendix B  Focus Group Sample
‘Large Sheet of Paper’
**Appendix B**  
Focus Group Sample ‘Large Sheet of Paper’

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Participant</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 23</td>
<td>9:30</td>
<td>Room 102</td>
<td>John Doe</td>
<td>It was a good session. We had a lot of good ideas, but the group was a bit divided.</td>
</tr>
<tr>
<td>May 24</td>
<td>10:00</td>
<td>Room 103</td>
<td>Jane Smith</td>
<td>The session was very productive. We discussed some important issues, but the group was a bit siloed.</td>
</tr>
<tr>
<td>June 1</td>
<td>11:00</td>
<td>Room 104</td>
<td>Mike Johnson</td>
<td>The discussion was very lively. We had a lot of good ideas, but the group was a bit fragmented.</td>
</tr>
<tr>
<td>June 2</td>
<td>12:00</td>
<td>Room 105</td>
<td>Sarah Brown</td>
<td>The session was very productive. We discussed some important issues, but the group was a bit divided.</td>
</tr>
<tr>
<td>July 3</td>
<td>13:00</td>
<td>Room 106</td>
<td>Tom White</td>
<td>The discussion was very lively. We had a lot of good ideas, but the group was a bit siloed.</td>
</tr>
<tr>
<td>July 4</td>
<td>14:00</td>
<td>Room 107</td>
<td>Emily Green</td>
<td>The session was very productive. We discussed some important issues, but the group was a bit divided.</td>
</tr>
<tr>
<td>July 5</td>
<td>15:00</td>
<td>Room 108</td>
<td>David Lee</td>
<td>The discussion was very lively. We had a lot of good ideas, but the group was a bit siloed.</td>
</tr>
<tr>
<td>August 6</td>
<td>16:00</td>
<td>Room 109</td>
<td>Lisa White</td>
<td>The session was very productive. We discussed some important issues, but the group was a bit divided.</td>
</tr>
<tr>
<td>August 7</td>
<td>17:00</td>
<td>Room 110</td>
<td>Robert Brown</td>
<td>The discussion was very lively. We had a lot of good ideas, but the group was a bit siloed.</td>
</tr>
</tbody>
</table>

**Participants:**
- John Doe
- Jane Smith
- Mike Johnson
- Sarah Brown
- Tom White
- Emily Green
- David Lee
- Lisa White
- Robert Brown