Healthy Travel Choices in Warwickshire

Warwickshire County Council

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Foreword

Encouraging healthy travel choices within Warwickshire is an important agenda, and one that cannot be owned by one single body. In order to help Warwickshire residents make healthier travel choices, colleagues throughout the whole of Warwickshire play a part in enabling the right environment in which these choices can be made safely.

The Healthy Travel Choices document is a tool for members and officers within Warwickshire County Council which outlines evidence based methods that have been proven to help reduce some of the difficulties people face when deciding on their commute, their journey and their choices.

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Executive Summary

The travel choices people make are important. Walking or cycling can be a quicker, lower cost alternative to the car for many trips, as well as being an easy and accessible way of being more physically active.

Physical inactivity in adults has reduced from 1 in 3 down to 1 in 4. However, recent evidence suggests that physical inactivity is as dangerous to health as smoking, and is costing the UK economy up to £20 billion a year. If trends continue the costs to both the health of the nation and the economy will continue to increase (ukactive) (EAED) (PHE 2016).

The aim of this document is to provide an evidence base that can be referred to by members and officers in Transport, Planning and Communities Group as a whole, to help in the movement towards providing the right strategies and infrastructure for the people of Warwickshire to encourage healthier travel choices. This can be done by increasing awareness of these choices and safety, as well as providing the right infrastructure to make the choices easier. This document can be used to learn about the benefits of active travel and can raise awareness with wider partners outside Warwickshire County Council such as, medical professionals and other relevant agencies. Active travel is encouraged as part of the wider health agenda to improve health and wellbeing of the population. If partner organisations encourage our population to build physical activity into their daily commute, we can help support people to meet the recommended activity guidelines and deliver the wide range of associated health benefits.

Walking and cycling are accessible, cheap and non-polluting forms of active travel with many positive benefits for physical and mental health. These methods are the healthiest forms of travel, and this document takes into consideration options which incorporate walking and cycling.

There is emerging evidence suggesting a relationship between physical activity levels in children and general health and wellbeing, as well as the likelihood of carrying on the behaviour into adulthood. In looking at the evidence available, this document recognises the need for an improvement in child health and wellbeing taking a holistic approach which includes increasing physical activity levels, contributing to a reduction in child obesity levels. It is important that partners recognise the scope to increase physical activity levels in children with a focus on active travel to and from schools.

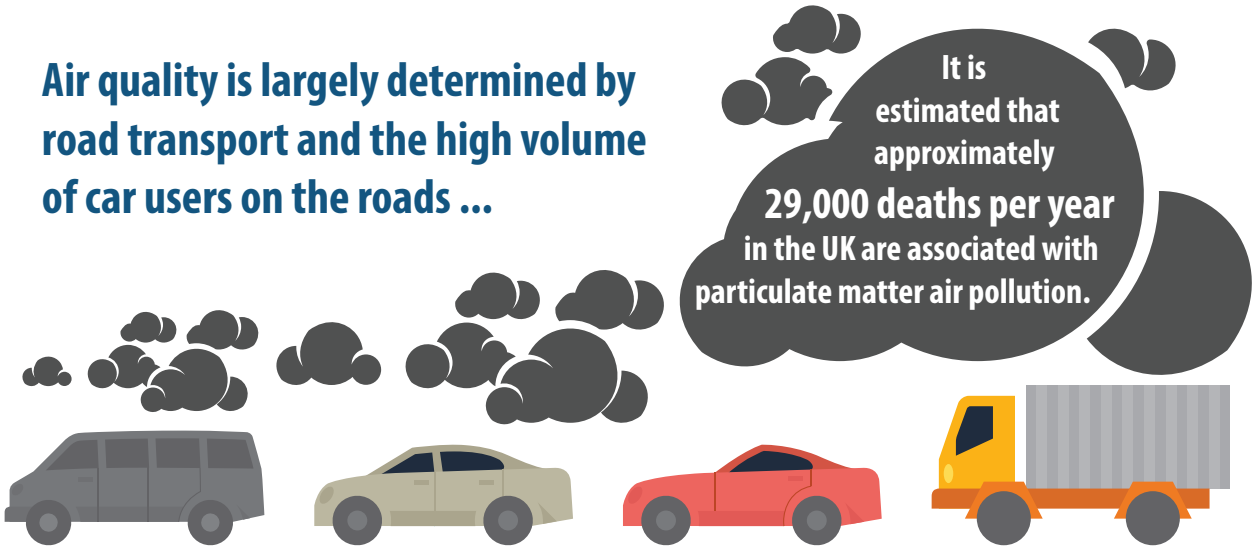
Air quality is largely determined by road transport and the high volume of car users on the roads and is also affected by levels of active travel. It is estimated that approximately 29,000 deaths per year in the UK are associated with particulate matter air pollution *(COMEAP 2010)*. This is only slightly lower than the amount of obesity related deaths and far exceeds other preventable deaths attributable to alcohol, road traffic accidents, illegal drugs, and HIV infection combined *(ASH 2015)*.

Active design is the process of finding ways to design, plan and build spaces that encourage healthy travel choices and physical activity, whilst lowering air pollutant emissions. The process of active design can have significant positive outcomes for both the health of the community and travel choices.

Public transport makes access to healthcare and other services possible and improves social isolation. As some journeys consist of part active travel, part public transport, public transport is an important part of making healthier travel choices. Public transport needs are met by bus, rail services, community transport services and taxis and private hire vehicles and are often a combination of these methods. The Warwickshire County Council Local Transport Plan (LTP) outlines that each of these activities and modes of transport have interlinked strategies, common aims and integrated provision to provide the most effective transport service

Finally, in order to help support and encourage the residents of Warwickshire to make healthy travel choices, we must understand the barriers to behaviour change and effective means of overcoming these. This document gives an overview of some of these techniques.

Air quality is largely determined by road transport and the high volume of car users on the roads ...



(COMEAP 2010)

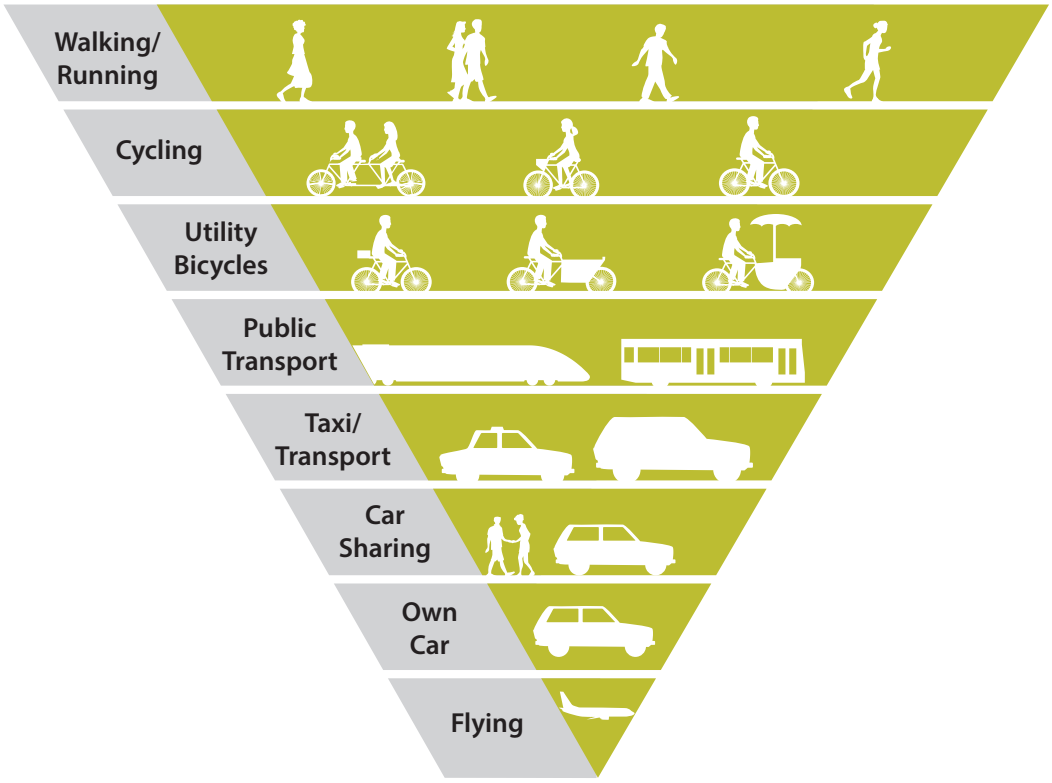
Introduction

The travel choices people make are important. Walking or cycling can be a quicker, lower cost alternative to the car for many trips, as well as being an easy and accessible way of being more physically active.

By encouraging more people to walk and cycle we can help support an active society and deliver a wide range of health benefits. There are also benefits for our communities, including safer and more pleasant streets, better air quality, lower carbon emissions and reduced congestion. On top of this there is potential to improve the local economy across Warwickshire, as well as save millions of pounds for the economy by improving health and thus reducing associated health costs.

Below is the Copenhagen Reverse Traffic Pyramid, illustrating our goal to achieve a sustainable, healthy and green travel network; where walking and cycling are the primary modes of travel, with private car use of much lower importance (Bicycle Innovation Lab, 2012).

This document sets out the evidence behind the benefits of healthier travel choices, and what works to produce positive behavioural change. Using this evidence we have produced an action plan which could help increase positive travel choices made by Warwickshire residents, increase physical activity levels, improve their health, benefit the local economy and reduce congestion and air pollution.



Overview

National Context

1 in 4

adults are physically inactive
(PHE 2016)

Recent evidence suggests that physical inactivity is as dangerous to health as smoking, and is costing the UK economy up to...

If trends continue the costs to both the health of the nation and the economy will continue to increase (ukactive) (EAED).

Tackling physical inactivity is now recognised as a major Public Health priority, and the evidence shows clear health benefits associated with meeting the UK physical activity guidelines of 150 minutes of moderate physical activity per week; these include 30-40% reduction in risk of cancers including colon and breast, 20% reduced risk of heart disease, 33-50% reduced risk of diabetes, as well as improved well-being and mood (Dept. of Health, 2011).

To make real and lasting change on this important public health issue we need to take an evidence based approach using best practice to embed physical activity into people's everyday life; making it easy, convenient, cost effective and enjoyable to ensure long term sustainability.

According to statistics released by the Department of Transport, annual motor vehicle traffic was recorded at the highest level ever in 2015, increasing by 2.2% compared to the previous year.

Although the increase in traffic volumes is likely to reflect favourable growth in the UK economy, lower fuel prices may also have contributed to increased traffic.

Local Context

The World Health Organization states that around 3.2 million deaths per year are due to physical inactivity and can therefore be prevented. In Warwickshire, up to a third of people fail to meet the current UK physical activity guidelines.

Preventable deaths across Warwickshire are decreasing. We can reduce the burden of preventable deaths further by increasing physical activity levels as part of everyday life.

Document Priorities

The aim of this document is to provide an evidence base that can be referred to by partners in Transport, Planning and Communities Group as a whole, to help in the movement towards providing the right strategies and infrastructure for the people of Warwickshire to encourage healthier travel choices. This can be done by increasing awareness of the opportunities, benefits and safety measures relating to active travel, as well as providing the right infrastructure to make the choices easier. This document can also be referred to by members of the public about the benefits of active travel and can raise awareness amongst employers, medical professionals and other relevant agencies.

Active Travel

Active Travel is encouraged as part of the wider health agenda to improve health and wellbeing of the population. If partner organisations encourage our population to build physical activity into their daily commute, we can help support people to meet the recommended activity guidelines and deliver the wide range of associated health benefits.

The average number of miles travelled by individuals per year in the UK increased considerably between 1975 and 2007. In 2012, the majority of miles were travelled as a car driver (3,367 miles) or a car passenger (1,847 miles). Just under 3% of all miles travelled per person per year were through walking, an average of only 181 miles in 365 days of a year.

The Public Health Outcomes Framework sets out a vision for public health outlining desired measurable health outcomes (indicators) across the population. Key indicators that active travel will work towards improving include:

- 1.09ii – Sickness absence. The percent of working days lost due to sickness absence. Sickness at work is a determinant of health. The average worker takes 4.5 sick days each year; whereas National Cycle Network users in 2012 reported, on average, taking 2.4 days sick leave - NICE, 2008, PH13 Promoting Physical Activity in the Workplace.

- 2.06 – Excess weight in 4-5 and 10-11 year olds.

- 2.12 – Excess weight in adults. Studies show that countries with the highest levels of active travel generally have the lowest obesity rates (Bassett et al, 2008, J Phys Act Health, Walking, Cycling, and Obesity Rates in Europe, North America, and Australia).

- 2.13 – Percentage of physically active and inactive adults. For most people, the easiest and most acceptable forms of physical activity are those that can be incorporated into everyday life, such as active travel (Department of Health, 2011, Start Active, Stay Active).

- 3.01 – Fraction of mortality attributable to particulate air pollution. Up to 70% of air pollution in urban areas is attributable to road transport, demonstrating the importance of reducing car use and increasing active travel (Nice 2012, PH41 Walking and Cycling).

- 4.04 – Under 75 mortality rate from all cardiovascular diseases.

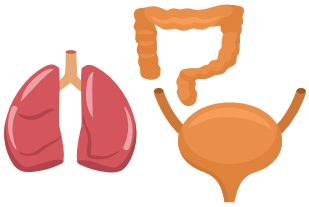
The health benefits of meeting the UK physical activity guidelines include:

19% reduction in risk of death compared with no activity *(Woodcock et al., 2011).*

Potential to extend life by 4.2 years in males and 3.7 years in females *(Wen et al., 2011).*

20-30% reduction in risk of dementia *(O'Donovan et al., 2010).*

20% reduction in risk of ischaemic heart disease *(Dept. of Health, 2011).*



Reduced risk of breast, bowel, endometrial, lung and ovarian cancer *(Chief Medical officer, 2004).*

Improved mental health and reported wellbeing *(Cooney et al., 2013).*

Reduced risk of diabetes and better weight control *(Motivate-2-move website).*

Regular cyclists have fitness levels equivalent to being up to 10 years younger *(Tuxworth et al., 1986).*

However a key challenge remains around encouraging walking and cycling for shorter journeys. This is echoed in the work by Atkins, "Warwick and Leamington Spa Transport Strategy; Review of Sustainable Transport alternatives". As well as improving conditions for active travel, there is a need to overcome perceptions about the safety, convenience and status of cycling and walking.

Smarter Choices initiatives, such as travel awareness campaigns, will have a key role in promoting active travel. Warwickshire County Council is working to develop a campaign leading on from the work by Atkins to focus on encouraging local employees to actively travel to work. Additionally, a central role will be working with the health sector to deliver joint initiatives to meet health and transport objectives. Therefore Public Health and Transport are working together in this particular campaign to deliver in an integrated way.

Walking and Cycling Evidence Review

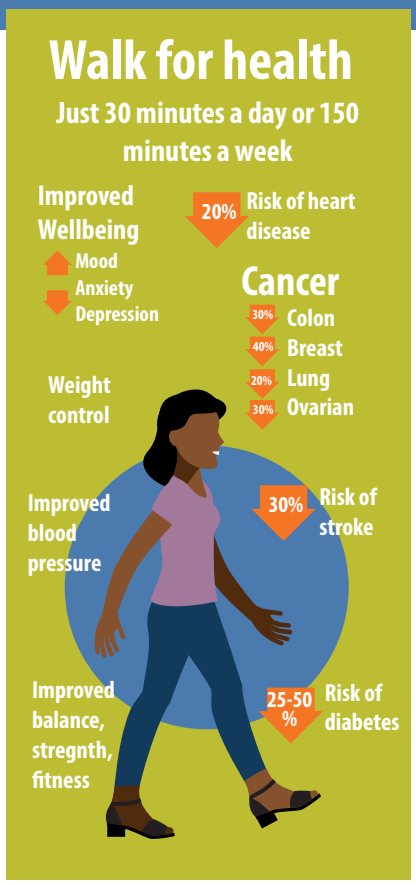
Introduction

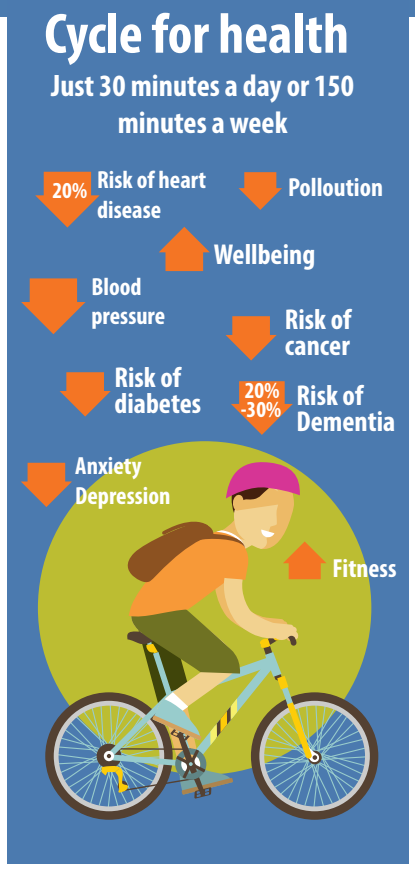
Walking and cycling are accessible, cheap and non-polluting forms of active travel with many positive benefits for physical and mental health. These methods are the healthiest forms of travel, and this document takes into consideration options which incorporate walking and cycling as an options.

By encouraging our residents to build physical activity into their daily commute and other key journeys through walking and/or cycling, we can help support people to meet the recommended physical activity guidelines and deliver the wide range of associated health benefits.

Walking is a healthy, low-cost, non-polluting mode of transport that is available to most people, regardless of their age and income.

Cycling is an effective, low-cost, non-polluting form of moderate intensity physical activity with a wide range of positive health benefits.





Figures 1 and 2: Health Benefits of Walking and Cycling, Public Health Warwickshire 2015

Over two thirds of adults in Warwickshire are overweight or obese (65.6%) which is similar to the England average (64.6%). Furthermore, the percentage of adults who are physically inactive is higher than national average at 28.2% versus 27.2%. It is therefore vital that active travel is made more accessible, user friendly and attractive to help improve the health of Warwickshire residents.

Walking and Cycling in Warwickshire

Census data (2011) revealed that Warwickshire has a higher percentage of people travelling to work by car (44%), and a lower percentage of people walking, cycling and using public transport compared to the national average. This is shown in the pie chart below.

Mode of travel to Work in Warwickshire

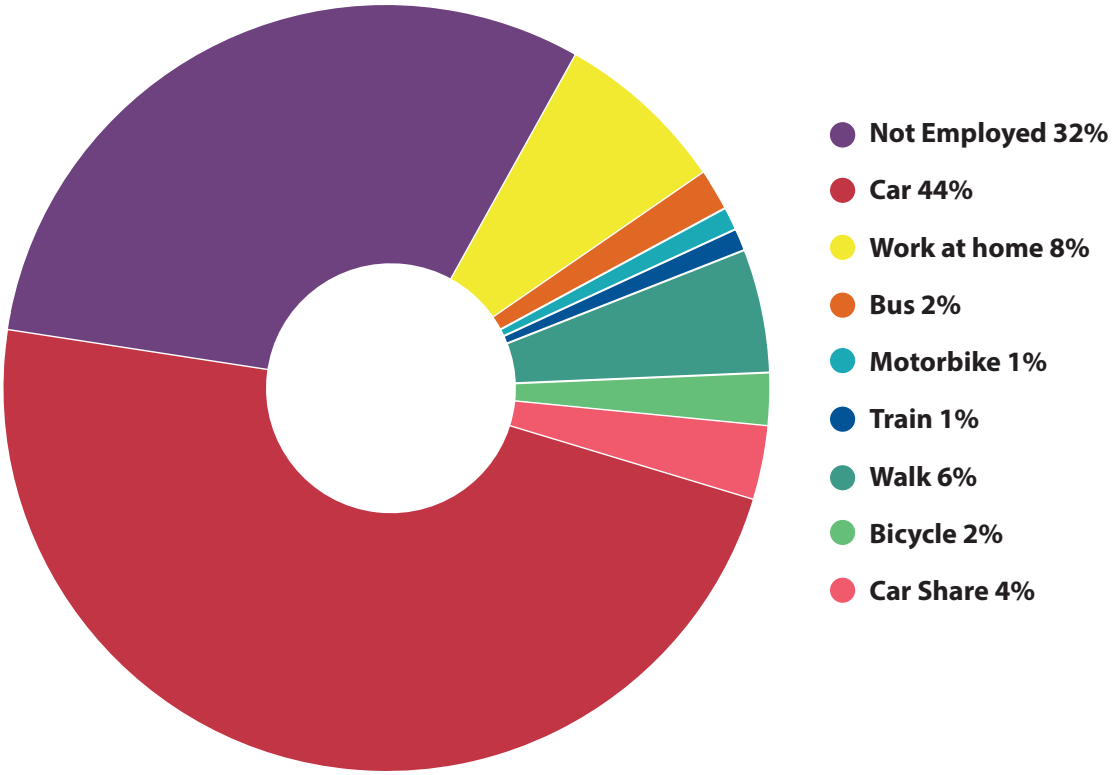


Figure 3: Mode of travel to work in Warwickshire, Census 2011

The evidence highlights that only 6% of people travelled to work by walking and only 2% by cycling. Therefore only 8% of Warwickshire's population chose to actively travel to work.

The Census (2011) data also revealed that within Warwick District 53% of resident travel to work destinations were within the district itself, indicating a high amount of short journeys being travelled by car.

It can also be seen from the data that there is a downward trend for walking and cycling travel to work trips.

A recent Sport England survey (2014) found that only 3.6% of those surveyed walked to and from work in Warwickshire (England average 3.7%), and 1.6% cycled to work in Warwickshire (England average 1.9%). Across Warwickshire, only Rugby and Warwick had higher than average levels of cycling to work than the national average.

Table 1: Mode of transport for travel to work in England and Warwickshire, Census 2011

	Train	Bus	Car	Passenger	Bicycle	Walk	Not in Employment
England Average (%)	3	5	35	3	2	6	35
Warwickshire Average (%)	**1**	**2**	**44**	**4**	**2**	**6**	**32**
North Warwickshire (%)	1	2	47	4	1	4	32
Nuneaton and Bedworth (%)	1	3	44	5	1	6	35
Rugby (%)	2	2	45	5	2	7	31
Stratford-on-Avon (%)	1	1	44	3	1	6	31
Warwick (%)	2	2	42	3	2	8	32

When comparing to other areas in England where cycling culture and infrastructure is more established, Warwickshire has a considerable opportunity to improve; for example in Oxford six times more people cycle to work (10%), and in Bristol two and a half times more cycle to work (5%) compared to Warwickshire (2%).

The table above illustrates that Warwickshire has a higher proportion of its population travelling to work by car, with less people using public transport (bus and train). Across Warwickshire there is some regional variation; in Rugby and Warwick, more urban regions, there is a higher than National average use of bikes (2%) and walking (6.6 – 7.5%) for travel to work. However, in more rural North Warwickshire there is a higher reliance on cars (47%) for travelling to work.

The rise in the use of cars and decline in walking and cycling has contributed to widespread problems of congestion and pollution in urban areas; as car travel has become more dominant, conditions for walking have worsened which has only reinforced the downward trend.

Wider Benefits of Walking and Cycling

As well as the health benefits of walking, increasing use of this form of transport in Warwickshire would result in (PHE, 2013):

Improved air quality:

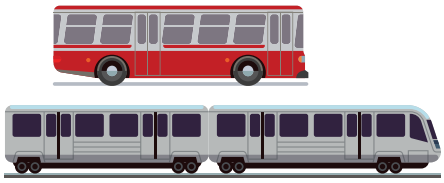
- Reduction in carbon emissions and the health benefits of improved air quality (Lindsay et al., 2011).

Enhanced accessibility:

- Reducing barriers to walking has a role to play within the transport element of delivering improved accessibility. Walking is free and so is particularly important for certain groups, such as children, older people and those without access to a car.

Improve the local economy:

- Safe and attractive streets and public places are crucial to attracting shoppers, visitors and tourists to our region.
- Improved productivity and reduced absenteeism
- An integrated high quality safe cycle network is hugely beneficial for tourism and recreational cycling



Improved utilisation of public transport:

- Walking and public transport go hand in hand, and investment in both must be made together to achieve a high quality, affordable and integrated service.
- Cycling to public transport hubs such as train stations can increase use. Investment in both must be made together to achieve a high quality, affordable and integrated service.

Enhanced social inclusion

- Changing the social norm away from private car use towards active travel can reduce social inequalities, improves accessibility undesirable environments and injustice. With some basic training, cycling an activity that almost everyone is able to undertake, from children to elderly people.

Reduced congestion:

- Particularly in towns and urban areas, which can help improve the environment and improve quality of life for many.
- Reduced congestion from private cars also reduces noise pollution and improves the ambiance of urban and rural environments.

Economic Benefits of Walking

There are wide economic benefits associated with the promotion of walking which include reported up to 80% increase in sales where shopping areas have been planned to be walkable and increased house prices in walking friendly areas (Ross *et al*., 2014).

Significant work-place and school-based productivity improvements are seen with active travel to place of work/school, and staff health and wellbeing is improved with reduced absenteeism of between 2 to 4 days per employee (PHE, 2015). Public Health England calculates that getting one more person to walk to school could pay back over £700 in terms of NHS savings, productivity improvements and reductions in congestion and air pollution (PHE, 2015).

Economic Benefits of Cycling

Public Health England calculates that getting one more person to cycle to school could pay back between £500 and £650 in terms of NHS savings, productivity improvements and reductions in congestion and air pollution (PHE, 2015).

The National Cycle Network is a series of safe, traffic-free paths and quiet on-road cycling and walking routes that connect every major town and city. It passes within a mile and a half of all UK homes and now stretches over 14,000 miles across the length and breadth of the UK. Almost 5 million people use the National Cycle Network. The NCN is not only used by cyclists but is utilised by walkers, joggers, wheelchair users and horse riders.

The NCN is estimated to save the UK economy over £160million per year in health costs associated with overweight and obesity (Sustrans, 2015). It is a vital piece of infrastructure which should be considered when looking at planning new developments and incorporating these developments around it.

The World Health Organisation have developed an on-line tool to use when planning a new piece of walking or cycling infrastructure, it allows the user to model the impact of different levels of cycling and attach a value to the estimated level of cycling when the new infrastructure is in place. By comparing it with the costs, this can be used to produce a cost–benefit ratio (and help make the case for investment) (WHO, 2008). This tool can be used by transport and planning colleagues when considering new infrastructure.

Public Engagement: Perceptions of walking and cycling

National data has shown that the vast majority of the public agree that everyone should be encouraged to cycle to assist their health (87%), help the environment (79%) and ease congestion (73%). Around 37% of people state that that they could easily walk or cycle on journeys they currently make by car. There is also public support for taking measures to improve conditions for cyclists with just over two-thirds (68%) of respondents agree that 'cyclists should be given more priority', while only 11% felt that 'cycle lanes on roads simply reduce space' (SQW Consulting, 2008).

Safety of Walking and Cycling

National data has shown that the vast majority of the public agree that everyone should be encouraged to cycle to assist their health (87%), help the environment (79%) and ease congestion (73%). Around 37% of people state that that they could easily walk or cycle on journeys they currently make by car. There is also public support for taking measures to improve conditions for cyclists with just over two-thirds (68%) of respondents agree that 'cyclists should be given more priority', while only 11% felt that 'cycle lanes on roads simply reduce space' (SQW Consulting, 2008).

The Real Risk is Low

Pedestrians and cyclists have similar fatality rates of approximately 35 to 38 per billion miles travelled. The general risk of injury from cycling in Great Britain is 0.05 injuries per 1,000 hours of cycling. In 2014 car occupants accounted for 45% of road deaths, pedestrians 25%, motorcyclists 19% and bicyclists 6%. Since 2009 the total number of fatalities on our roads has decreased by 12%, and is down 21% since 2005 (Department for Transport, 2015).

Number of serious injuries and fatalities in pedestrians has been relatively stable since 2010, with a small increase in distance walked.
The number of bicycle road deaths has remained relatively stable since 2010 and is down 13% since 2005. However there has been a consistent increase in the number of reported bicycling injuries (31% since 2007) and bicycle traffic in the same period (27% since 2007). It could be that with the increase in cycling over this period there has been increased exposure to motor vehicle traffic and therefore increased risk of injury (Department for Transport, 2015)

Table 2: Cause of death prevalence in England and Warwickshire, ONS, 2014 & Department for Transport, 2014

Cause of death	Example	ENGLAND	England % (of England population)	Warks	County % (Of Warks Population)
POPULATION (ONS mid-2014 estimate)		54,316,600	-	551,594	-
Neoplasms (e.g. cancers)	Cancers	137,493	29.44%	1,490	29.42%
Endocrine, nutritional and metabolic diseases	Diabetes	6,690	1.43%	77	1.52%
Diseases of the circulatory system	CHD	126,679	27.12%	1,347	26.59%
Cyclist Casualty (DfT 2014)	-	100	0.0002%	2	0.0004%

In order to put these statistics into context we can compare them to the common causes of death in the UK, which can be influenced by physical inactivity; circulatory diseases such as heart disease, metabolic diseases (such as diabetes) and cancer.

We can see from the table above, the number of deaths due to these illnesses far exceed the number of deaths due to cyclist casualties in England. In Warwickshire in 2014, there were 1,490 deaths due to cancer, 77 deaths due to endocrine, nutritional and metabolic diseases and 1,347 deaths due to circulatory diseases such as heart disease. (ONS, 2014). In the same year there were 2 deaths caused by cyclist casualty (DfT, 2014).

Therefore we can see that in Warwickshire, the risk of being killed in a cycling accident is much more than the risk of dying from one of the above diseases, which we know can be influenced by our levels of activity. It is estimated that over 57,000 people died of cardiovascular disease and stroke in 2014 related to physical inactivity, and over 28,000 from cancer related to physical inactivity. This is significantly more that the number of road cycling fatalities (McPherson et al., 2002).

By meeting the recommended physical activity guidelines there is a 20% reduction in cardiovascular and stroke disease, and between 20 and 40% reduction in cancer risk (Dept. of Health, 2011) (Chief Medical officer, 2004); in balance the long term risks of physical inactivity are significantly more worrying than those of walking or cycling.

Safety in numbers?

There is evidence that in a community where cycling doubles, there will be a 34% increase in cycling related injuries. However it appears that motorists adjust their behaviour where there are more cyclists on the roads, and as a result of this, the relationship is not linear i.e. the more cyclists on the roads, the safer cycling becomes – the phenomenon of 'safety in numbers' (Jacobsen *et al*., 2003). This concept is supported by a number of research papers which have shown that as the number of cyclists increase, the number of cyclists injured or killed falls. One of the theories behind this phenomenon is that with increased pedestrians and cyclists, vehicle drivers alter their behaviour by slowing down and being more aware of the risk, and so the safety on the roads improves. Safety is a real and valid concern, but much can be done towards making improvements.

1. Improving transport infrastructure

For pedestrians this might include:

- Extensive car-free zones that cover much of the city and town centres.
- Wide, well-lit footpaths on both sides of every street.

For cyclists this might include:

- Bicycle paths and lanes.
- Connected Cycling Networks through rural and urban areas.

2. Traffic Calming Measures

Traffic calming measures limit the speed of motor vehicles by limits on speed by law, physical barriers such as speed humps, or both. Traffic calming measures need to be well thought out and applied across strategic areas in order to control flow of traffic through residential areas.

The benefits of 20mph zones and limits are numerous and include (LGIU, 2012):

- Lowering the speed limit to 20mph decreases collisions between vehicles and children by up to 70%.
- Improves survival chance in event of collision as risk of pedestrian death is 5% at 20mph, 45% at 30mph and 85% at 40mph.

3. Active Design and Planning the Built Environment

Ensuring active design is incorporated into all new developments and re-developments is vital to both encouraging active travel and ensuring safety.

4. Restrictions on Motor Vehicle Use

Dedicated right-of-way for pedestrian and cyclists, traffic calming and restricted parking can be effective in reducing traffic speed and volume in urban areas, in turn improving safety for pedestrians and cyclists.

5. Education

Education and training of drivers improves awareness of pedestrians and cyclists, the unique vulnerabilities these groups have on the road and how to avoid collisions. As well as this, pedestrians and cyclists must be educated in safe practice.

National Walking and Cycling Policy

There have been a succession of documents outlining the importance of promoting walking and cycling as sustainable, cheap, healthy, congestion reducing and pollution free forms of travel:

- Encouraging Walking: Advice to local authorities (Wolverhampton City Council, 2005).
- The Manual for Streets (Department for Transport, 2007).
- The Active Travel Strategy (Department of Health and Department for Transport, 2010).
- The National Planning Policy Framework (Department for Communities and Local Government, 2012).
- "Planning healthy–weight environments" (Ross *et al*, 2014).
- Public Health England and Sport England published Active Design (Public Health England and Sport England, 2015).

Evidence based interventions: *what works?*

In order to increase the number of people choosing to walk and cycle to work rather than using the car we must first establish what the perceived barriers to walking and cycling are. This will enable targeted interventions to address the concerns of our population.

Challenges of Walking

Despite being the most easily accessible form of physical activity there are still real and perceived barriers to participation. Commonly reported barriers include; lack of time (C3CFH, 2012), lack of access to a safe route (including road safety, footpath condition and personal security), poor weather, trend towards car ownership, peer pressure, requirement to carry equipment, dark mornings, lack of places to sit down, undesirable terrain and physical illness or disability (NICE ph41, 2012). Methods to overcome these barriers are discussed in the "Evidence based interventions: what works?" section.

Challenges of Cycling

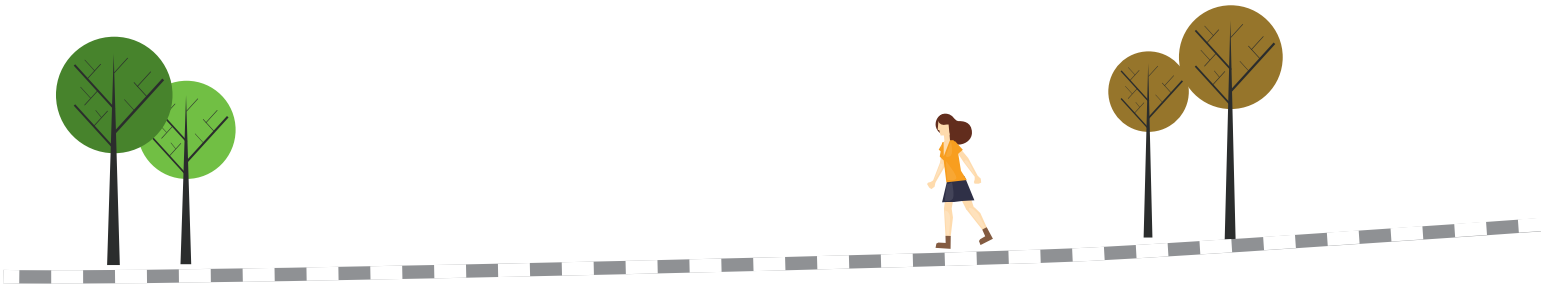
Commonly cited barriers to cycling include; distance being too great, adverse weather, adverse cycling environment, culture of car use, increasingly large distances travelled and arriving to work sweaty (Davis *et al*., 2007).

National level surveys have found that one of the most significant perceived barriers to cycling in the UK is the perception of risk. Cycling is associated with a higher rate of serious injury than motorised transport, with the exception of motorbikes. There are 3.6 fatalities per 100 million kilometres cycled per year in UK, however in the Netherlands there are three times less (1.1). This is thought to be primarily due to significantly greater investment in cycling infrastructure and education (Pucher, 2008).

A further difficulty in determining whether provision of greater levels of cycle infrastructure will make cyclists safer is identifying how this can change cyclists' behaviour. Wardlaw (2002) reports that the provision of new infrastructure may increase the perception of safety for cyclists who in turn will 'risk compensate' away the extra safety benefits by cycling in a more dangerous fashion, increasing the risk of accidents.

Evidence base to Increase Walking

There is a strong and growing body of evidence behind interventions which are effective at changing behaviour. Crucially we must also look for evidence of interventions which sustain behaviour change in the long term. Interventions which work are summarised in the diagram below, and discussed in detail throughout this section.



Evidence based interventions to Increase Walking

Policy | Environment & Planning | Health Improvement | Promotion

INCENTIVES	COMMUNITY ENGAGEMENT	EDUCATION & PROMOTION	ENVIRONMENT & PLANNING	PUBLIC TRANSPORT
Pedometers Wearable technology Self-monitoring Self-regulation (eg. goal setting)	Community based volunteer or employee led walks	Self help materials Written information Local walking maps Individual, targeted provision of health information Web-site and app based route planners	Pedestrian friendly environment Safe, clean & well lit streets Connecting areas of high unemployment to employment opportunities through walking links Traffic calming measures	High quality, affordable public transport Walking network integrated with public transport hubs and stops

Evidence for Incentives: Pedometers & Wearable technology

There is strong evidence that the use of pedometers can lead to significantly increased number of steps; up to 2,500 more per day. This is associated with greater weight loss and reduced blood pressure in the short term (Bravata *et al.*, 2007). Longer term pedometer based interventions in workplace have been shown to increase in walking for leisure or travel up to one year (NICE ph41, 2012).

Successful incentive based schemes that have increased walking in a community have utilised technology and incorporated this into a fun and interactive game, for example "Beat the Street" in Reading (Sport England, 2015). This scheme enabled people to compete for Decathlon vouchers with awards given for 1st, 2nd and 3rd places over a time frame based on the maximum distance travelled, encouraging friendly competition and boosting activity.

Evidence for Education & Promotion

Mass-media campaigns have been shown to increase knowledge and awareness, but don't always result in behaviour change. Therefore we must focus on specific messages, contacts and

interventions. This might include:

- Self-help materials can increase walking to work (Mutrie *et al*., 2002). When promoting active travel by walking to place of work, material and content should contain evidenced based motivating factors such as convenience, speed, cost and reliability (Jones & Ogilvie, 2012).
- Other studies targeting physically inactive people with educational written information and local walking maps have been shown to be successful in increasing walking levels and are sustainable (Vernon *et al*., 2002).
- Tools such as smartphone route planners or web-sites such as walkit.com can help to break down barriers by reducing concerns over getting lost, providing information about the distance and time required for a journey and linking to social media (C3CFH, 2012).
- Individual, targeted provision of health information (by printed media, telephone support and text message) delivered in the community are effective in increasing individual levels of walking for leisure or travel up to one year post intervention (NICE ph41, 2012).

Evidence for Environment & Planning

Distances that people are prepared to walk when planning a journey can be increased by improving the pedestrian environment (Chaug-Ing & Yau-Ching 2014). There is a wealth of evidence examining the powerful impact of the built environment on creating a favourable walking environment.

Mixed-use Neighbourhoods

Mixed-use neighbourhoods are urban development's consisting of a wide variety of uses such as industrial, residential and commercial linked by pedestrian connections. Investment in infrastructure which is supportive of walking and cycling behaviours has been shown to increase net walking and cycling as well as total physical activity (Goodman *et al*., 2014). The evidence shows that walkable, mixed-use neighbourhoods result in increased number of steps taken per day, higher social capital and increased social engagement (Van Dyck *et al*., 2009).

Integrated public transport network

Jones & Ogilvie (2012) suggest that distance should not be a barrier to active travel; instead we should promote walking as a means of getting to public transport hubs. This requires provision of high quality, affordable and linked public transport

to encourage walking (or cycling) as part of a journey, if people live too far away to walk the entire way (Jones & Ogilvie., 2012).

Overcoming physical barriers

Research has suggested a variety of interventions can have a greater impact in deprived areas; this can be achieved by overcoming barriers to walking by connecting new or existing employment opportunities to areas of high unemployment. This might involve building walking (or cycling) links across existing physical barriers such as busy roads or large intersections (Ross *et al*., 2014).

In summary, factors of the built environment that have a positive impact on walking include (C3CFH, 2012) (Ross *et al*., 2014):

- Appropriate street lighting.
- Well-designed builds that overlook the streets without compromising home privacy and security.
- Integrated public transport network.
- Coherent connected streets.
- High housing density and mixed land use.
- Car free zones.
- Pedestrian crossings.
- Traffic Calming measures including speed reduction.
- Clear signposting for destinations within 400-800m walk (5-10minutes).
- Limited or more expensive car parking charges.
- Overcoming physical barriers such as large intersections or busy roads.

Evidence for Community Engagement

Community based interventions including community based led walks (paid or voluntary), aimed at physically inactive people are recommended by NICE as an effective method of increasing physical activity (NICE ph41, 2012). Successful walking campaigns are often run by volunteers, with an emphasis on the social and group interaction. This has been found to increase adherence to walking programmes (C3CFH, 2012).

Social media can also be used to create online walking communities which can improve adherence and sustain behaviour change. Apps such as 'Map My Walk' allow users to share routes.

Evidence for Behavioural Change Techniques

Reviews of the evidence on the effectiveness of behavioural change techniques in walking have shown that self-monitoring (e.g. recording behaviour on a self-monitoring form) and self-regulation (e.g. goal setting) are effective methods to encourage behaviour change (Michie *et al*., 2009).

Efforts to promote active travel may be more effective if applied following a change of circumstance e.g. relocation or starting a new job (Jones & Ogilvie., 2012).

There is growing evidence of the importance of social norms in behavioural change. Where behaviour change is supported widely and embraced, more people are likely to follow the crowd. This can take time and requires investment to create a supportive environment for these changes to take place (Nolan *et al*., 2008).

It is unlikely that a 'one size fits all' approach will be successful. Targeted interventions, with different approaches for different groups, are much more likely to be successful (Ogilvie, 2007).

KEY MESSAGES: Walking

Walking is a healthy, low-cost, non-polluting mode of transport that is available to most people, regardless of their age and income.

Walking is an effective form of moderate intensity physical activity.

Walking across Warwickshire continues to fall year on year, whilst private car use, pollution and congestion increases.

Integrating walking infrastructure with areas of employment opportunity, public transport hubs and housing areas is key to creating a connected pedestrian friendly environment.

Clean, safe and attractive streets will increase walking.

Evidence Base to Increase Cycling

There is a strong and growing body of evidence behind interventions which are effective at changing behaviour and can be used to increase the number of people choosing to cycle. Crucially, we must also look for evidence of interventions which sustain this behaviour change in the long term. Interventions which work are summarised in the diagram below, and are discussed in detail throughout this section.

Evidence based interventions to Increase Cycling

Policy | Health Improvement | Environment & Planning | Promotion

INCENTIVES	COMMUNITY ENGAGEMENT	EDUCATION & PROMOTION	ENVIRONMENT & PLANNING	PUBLIC TRANSPORT
Cycle to work scheme Public Bicycle Sharing Schemes	Employers Community Near-miss reporting systems Infrastructure network reporting systems Ensure facilities for all target groups	Co-ordinated multi-component interventions Workplace based interventions Maps and route planners in printed and electronic form Cycle skills courses	Investment in cyclings lanes Integrated complete cycling network Linked to places of employment, shopping and housing Traffic calming measures Parking charges Accurate and up-to-date Signage	Bike-Rail integration Cycle Network connected to public transport hubs

Evidence for Community Engagement

A review of the evidence shows that there are schemes based on community engagement which can increase the number of people choosing to cycle for travel.

Engaging with companies and employers to promote cycling:

- Promoting cycling as a means of travel to the workplace is an important and effective method of increasing cycling. There are well recognised economic benefits for

the employer in the form of increased productivity and reduced absenteeism. Local Authorities can encourage employers by making the business case to make investment in facilities for bicycle storage as well as showering and changing facilities (Davis *et al*., 2007).

- Other methods used to encourage employees to cycle to work include government subsidies such as cycle to work schemes, education and promotion of current cycling promotional campaigns, and providing information about where to find more information and routes (Davis *et al*., 2007).

Near-miss Reporting Systems:

- Police services across the country have set up cycling near-miss online reporting systems. The information gathered is used in identifying problems and locations that need to be improved.

Infrastructure Network Reporting Systems:

- Reporting hazards on the roads by road users is a sensible way for Local Authorities to gather information about where action needs to be taken. "Fill that Hole" is a downloadable application and website for reporting hazards, potholes or other issues that cyclists observe, run by Cyclists' Touring Club. This system or a similar feedback and reporting system could be embedded into a council run active travel website to aid the council in identifying high collision risk sites, network gaps, and network disrepair with the aim of improving the service, reducing the risk of harm and improving perceptions of safety.
- Currently, Warwickshire County Council are developing a reporting system called "Fix my Street" which operates off the County Council website.

Ensure facilities for all target groups:

- Consideration of all target groups must be given to ensure that facilities and policy meet demand appropriately.
- Different target groups include: shoppers, commuters, school travellers, leisure users and public transport users.

Evidence for Incentives

A review of the evidence shows that there are incentive based schemes which can increase the number of people choosing to cycle for travel.

Cycle to Work Schemes:

- The Government's Cycle to Work initiative is a scheme where employees can save money

on new bicycles and employers receive significant National Insurance Contribution (NIC) savings. The major benefit for both is a healthier, more motivated workforce with less sick days.

- Assessment of this scheme has shown financial savings to the employing company of approximately £100 per employee taking up the offer, as well as the benefits of healthier, fitter employees with better well-being and productivity (cycle-scheme.co.uk).

Cycle Hire Schemes:

- Across Europe and the UK cycle hire schemes have become increasingly popular, for example, the London and Barcelona Cycle Hire Schemes.
- Users of these schemes can borrow a bicycle from any one of several self-service stations and drop it off at any other station across the city, making cycling into a form of public transport.
- In London 7.4 million cycle hire trips were made in 2012, the majority by men (71%). The results of an evaluation showed fewer fatalities and injuries than expected on cycle hire bicycles.
- Using the observed injury rates, the population benefits from the cycle hire scheme substantially outweighed harms

(Woodcock *et al*., 2014).

- Evaluation of cycle hire schemes in Barcelona found that 11% of the population had signed up to the scheme, with over two thirds of trips used for commuting and one third of these in conjunction with another mode of travel (Rojas-Rueda *et al*., 2011).

Evidence for Education & Promotion

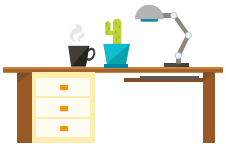
A review of the evidence shows that there are a number of different educational schemes and promotional methods that can increase the number of people choosing to cycle for travel.

Target audiences:

- Targeting young adults and higher socioeconomic groups is an effective means of increasing cycling. These groups often own a bicycle, but do not necessarily use them for commuting (DfT, 2011).

Key messages and themes:

- Promotional material informing potential cyclists of the sense of freedom, fun and de-stressing 'me time' is effective in engaging these target audiences (DfT, 2011).
- Other key messages include saving money and saving time (Jones et al., 2012).
- Distance of journey should not be considered a barrier. Instead people should be encouraged to combine active travel with public transport to commute to work (Jones et al., 2012). In order to make this happen, engaging with rail providers would be necessary to clarify when and how bikes can be transported on trains for clear messages around this.



Workplace-based interventions:

- The workplace is an important site for interventional campaigns and promotional messages, with a large proportion of the population accessible via the workplace. NICE has shown that workplace based interventions are cost effective (NICE, 2012). Examples include installation of cycle storage facilities showers and introduction of cycle to work incentives.

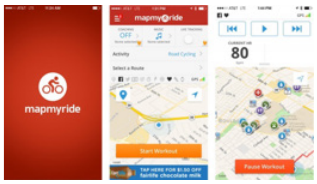
Maps and Route planners:

- Accessible information about local cycling routes, facilities and route planning is an important component of publicising the local cycle network. Warwickshire County Council produces cycle maps and guides for all main towns in Warwickshire. There are also a range of apps available including "Map My Ride" and "Cycle Streets.net", which provide detailed feedback on cycling trips, suggested routes and link to social media. Warwickshire County Council's 'Choose how you Move' initiative combines social media for ease of usage along with public discussions about different options of travel across Warwickshire. Apps and websites such as this are easily accessed and consistently publicised by the Council and associated organisations.

- The Bike Citizens app is used by Coventry City Council and extends over Warwick, Leamington Spa and Nuneaton areas. It is a funded app which calculates real time cycling routes, favouring cycle paths and side streets as opposed to busy main roads (http://www.bikecitizens.net/app/).

Cycle skills courses - Bikeability:

- One of the main barriers to cycling is the perception of poor safety. Cycling skills courses aim to improve confidence of local cyclers by teaching practical skills and important cycling safety knowledge.
- 'Bikeability' is the Department for Transport's national scheme including 3 levels of training for schools. Warwickshire County Council is an accredited provider of the scheme and

  is working towards providing every child in Warwickshire with the opportunity to have Bikeability training.
- Love2Bike is a Warwickshire County Council combined adult cycle and awareness initiative. Local data can be assessed to view who could benefit from the schemes most, and so training can be targeted to areas with the most need.

- There is a lack of high quality evidence to support the effectiveness of cycling skills training and improved safety at present. Despite this, across the world, cycle skills training and safety education remains a high priority area.

Evidence for Environment & Planning

An excellent website, endorsed by many major bodies and organisations is Making Space for Cycling (http://www.makingspaceforcycling.org/). This guide gives practical advice on planning cycling infrastructure and network co-ordination.

Cycle Network Infrastructure:

- There is good evidence that installation of dedicated cycling lanes leads to a significant increase in bicycle use (Pucher *et al*., 2010).
- Infrastructure options (SQW Consulting, 2008):
  - "On-road" improvements to the cycling infrastructure (widening the road and cycling in bus lanes). Less expensive with average cost of 16.5p per trip.
  - "Off-road" improvements include

segregated path and free cycleway. More expensive with average cost of 67 pence per trip.

- The evidence shows that cyclists value the ambience of off-road cycling a lot more than on-road cycling facilities. This is unsurprising, particularly for new or inexperienced cyclists who may feel intimidated by fast moving vehicular traffic even when cycling in on-road cycle lanes.
- The off-road facilities are valued more as they provide a greater level of perceived safety and lower levels of air and noise pollution.
- Improving the safety of cyclists is important to increase participation. Incorporating advanced stop lines, advance green lights and bicycle turning lanes can help to ensure cyclist safety.
- Benefits in ensuring the local network is complete and connects with new or existing employment opportunities to areas of high unemployment across existing spatial barriers (e.g. busy roads).
- Accurate and up-to-date signposting helps improve the co-ordination of a cycle network.

Secure storage:

- Lack of safe secure storage facilities for bicycles is a commonly reported barrier to active travel by bike. Investment in storage facilities at places of work, shopping areas, public transport hubs, schools and train stations is an important step to reducing the barriers to cycling.

On Road Cycle Lanes

Advanced stop lines

Evidence for Public Transport: Bike-Rail Integration

In the UK only 2% of rail users cycle to the station, compared to 40% of rail users in the Netherlands. A high proportion (71%) of current bike-rail users are male, in their 30s and in employment. Improving facilities for bike access and storage at rail stations and places of work can help increase bike-rail uptake (Sherwin *et al*., 2011). More research is needed to increase participation in other population groups.

KEY MESSAGES: Cycling

Cycling is an effective, low-cost, non-polluting form of moderate intensity physical activity with a wide range of positive health benefits.

Improving cycling infrastructure through dedicated cycle routes and traffic calming measures improves cycling safety.

Increasing the perception of cycling safety is key to promoting more cycling.

Increasing physical activity by only 1 hour per week, easily achievable through active travel to work, can boost productivity and reduce absenteeism which is of clear commercial interest to employers.

Effective interventions must be integrated and complementary:

1. Infrastructure investment.

2. Facilities at transport hubs and places of employment.

3. County wide policies, campaigns and programmes to increase cycling.

Action Plan

Walking and Cycling

1. **Include Public Health Walking and cCycling Strategy in Warwickshire County Council strategies and key.**
2. **Education and Information Provision.**
    a. Provide and make available self-help materials to public and employees at place of work, highlighting the health benefits of walking, information sources.
    b. Promote use of Pedometers, Wearable technology, self-monitoring and self-regulation (e.g. goal setting).
    c. Liaise with large employers to establish local barriers to walking and identify possible local solutions.
3. **Provide information through a single point of access Active travel website.**
    a. Including travel planner, walking route maps (walkit.com or Choose how you move Warwickshire - warwickshiretravel.co.uk), practical tips, links to training courses (Love2Bike), links to integrated travel options involving public transport, car sharing and pooling.
4. **Target cycling infrastructure investment on joining up the existing cycling Network and integrating with transport hubs and new development schemes.**
5. **Improving cycle safety.**
    a. Education: Love2Bike training course, with ongoing evaluation of effectiveness and change where required.
    b. An increase in numbers of children undertaking bikeability training.
    c. Consideration of Traffic Calming Measures.
    d. Consideration of Restrictions on Motor Vehicle Use.
    e. Active Design and Planning the Built Environment to support a walking and cycling friendly environment as per best practice guidance.
6. **Hold Campaigns with promotional events and co-ordinated strategy to encourage active travel and walking.**
7. **Link with justice teams, volunteers, businesses to support the maintenance and cleaning of foot paths, green spaces, bridleways and paths.**

Children's Evidence Review

There is emerging evidence suggesting a relationship between physical activity levels in children and their general health and wellbeing, as well as inactivity in adulthood. In looking at the evidence available, this document recognises the need for an improvement in child health and wellbeing, taking a holistic approach which includes increasing physical activity levels contributing to a reduction in childhood obesity. It is important that partners recognise the scope to increase physical activity levels in children with a focus on active travel to and from schools. A prospective cohort study found an inverse relationship between time spent being sedentary at age 14 years and GCSE results by the age of 17 suggesting a relationship between activity levels and academic attainment in children (Corder *et al*., 2015).

Current government guidelines recommend at least 60 minutes of moderate to vigorous intensity physical activity every day for 5 to 18 year olds. Suggested simple activities include active travel options such as brisk walking and cycling to school. Studies show that moderate intensity aerobic exercise such as walking and cycling can reduce body fat in overweight children, without dietary intervention *(Goran et al., 2009).*

Health Benefits of Physical Activity for Children

Travelling to school by walking or cycling helps contribute to physical activity levels in children and adolescents. This can in turn help them to maintain healthy growth and development, muscular strength and endurance, flexibility and a healthy weight. Physical activity can also benefit children's mental health. Studies have found that 15 minute bouts of exercise such as active travel in 9 – 10 year olds increases positive mood and consequently decreases negative mood (WHO, 2002).

There is evidence to suggest that good physical activity levels in children and adolescents also increases bone mineralisation by up to 15% helping reduce the risk of osteoporosis development later in life (WHO, 2002).

A systematic review of 150 studies published over the past 25 years found that the more time spent outdoors doing activities such as active travel, the more likely those children would be to meet their required physical activity levels. If behaviour change and an active travel culture are introduced early in life, it is likely that these habits will be transferred into the later stages of life, helping

adults who have been active as children to avoid serious impacts of physically inactive lifestyles.

Evidence - Current National Situation

HSE (2013) results showed that the prevalence of childhood obesity has increased since 1995, when 11% of boys and 12% of girls aged 2-15 were obese. The levels in 2013 were at 16% for boys and 15% for girls. The National Child Measurement Programme in 2014/15 reported 21.1% of 4-5 year old children to be overweight or obese increasing to 30.7% by age 10-11.

The 'Physical Activity Statistics 2015' produced by the British Heart Foundation and Health Survey for England (HSE) gives a good indication of current child activity levels across the UK (as displayed in Table 2). They found that in England in 2012, only 21% of boys and 16% girls aged 5 to 15 reported meeting physical activity recommendations. The group with the highest proportion of active children were boys aged 8-10 at 26%.

It was also acknowledged that between 2008 and 2012 the proportion of boys and girls in the 5-15 age group across England meeting their recommended physical activity levels, reduced significantly.

According to the HSE results more than two thirds of boys and girls walk to school, with the proportion increasing with age.

However, the proportion of children cycling to school still remains low with only 6% of boys and 1% of girls riding to school (Table 3)

Table 3: Activity levels of children in England in 2015, British Heart Foundation and Health Survey for England, 2015.

England	All children (5-15)	2-4	5-7	8-10	11-12	13-15
	(%)	(%)	(%)	(%)	(%)	(%)
Boys						
Meeting Recommendations	21	9	24	26	19	14
Some Activity	41	6	39	40	38	44
Low Activity	39	85	37	34	43	42
Base	643	212	192	175	123	153
Girls						
Meeting Recommendations	16	10	23	16	14	8
Some Activity	40	7	37	41	44	38
Low Activity	45	83	40	43	42	54
Base	651	206	182	190	133	146

According to the HSE results more than two thirds of boys and girls walk to school, with the proportion increasing with age. However, the proportion of children cycling to school still remains low with only 6% of boys and 1% of girls riding to school (Table 4)

Table 4: Children travel to school methods in 2015, British Heart Foundation and Health Survey for England, 2015.

England	Age (Years)			
	All children (2-15)	2-4	5-10	11-15
	(%)	(%)	(%)	(%)
Boys				
Walking	64	53	70	63
Cycling	6	3	7	5
Base	696	165	307	224
Girls				
Walking	67	56	70	70
Cycling	1	2	1	1
Base	685	145	311	229

Evidence - what works in schools

A briefing has been produced by Public Health England, the Youth Sport Trust and Association of Colleges Sport which provides an evidence based overview about what works in schools to encourage physical activity amongst children (2015).

The evidence is split into 8 principles for practice as follows:

1. Develop and deliver multi component interventions.
2. Ensure skilled workforce.
3. Engage student voice.
4. **Create active environments.**
5. Offer choice and variety.
6. Embed in curriculum, teaching and learning.
7. **Promote active travel.**
8. Embed monitoring and evaluation.

Within this health travel choices guidance, we will explore the seventh principle as an evidence based measure to encourage active travel and therefore physical activity levels.

Promoting Active Travel

Policies such as HM Government (2006) recommend that each local education authority should have a sustainable travel strategy to encourage meeting the school travel needs of their area. A joint Department for Children, Schools and Families and Department for Transport target was for all schools to have an approved sustainable travel plan referring to pupil health and fitness by March 2010.

Interventions encouraging active travel to and from schools often involve an introduction of sustained behaviour change into a school culture, firstly on an intense level and then decreasing in intensity allowing the school to incorporate a new culture and deliver this independently. These methods have been found to contribute to children and young people's activity levels.

NICE guidance supports active travel interventions such as this, recommending that local organisations, such as schools and colleges, plan and deliver and train to encourage physical activity within these settings. NICE recommends that schools and colleges develop a school travel plan, having physical activity as a key aim, and then further develop this by linking in with other local school travel plans, increasing community action as

a whole. NICE suggests there is a special focus on those children who live within a 2 mile radius as the option to walk and cycle to school is an achievable one. NICE also recommends incorporation of safety training for walking and cycling alongside active travel plans, ensuring young people are safe if they chose to actively travel.

Sustrans work as an aid to encouraging physical activity and active travel

Sustrans projects across the country involve dedicated officers working with children and schools as well as partners around schools to help introduce a pro cycling and walking culture, which can be nurtured through school years. They aim to encourage children to actively travel to school, whilst teaching them the right skills to do so, encouraging teacher and parent confidence and support in the methods chosen. The work aims to create safer routes and networks around schools, for a safe area to practice new travel skills.

The evidence to support the success of targeted work like this is positive. In schools with project officers, the impact has included:

- 27% of pupils cycling regularly to school, up from 15% for 2010/2011 – Bike it hands up survey.
- Double the levels of everyday cycling, from 4% to 8% for 2010/2011 – Bike it hands up survey.
- Reduction in children who never cycle to school from 72% to 52% for 2010/2011 – Bike it hands up survey.
- Completion of a typical safe route to school in Norfolk led to a fivefold increase in the number of children walking to school.

Incorporation of schemes such as these have been proven to have a dramatic impact on the numbers of children, and therefore parents walking and cycling to school.

Practice Example

Modeshift STARS is a national scheme that rewards schools that encourage active travel to school including walking and cycling. In Stoke-on-Trent, interventions included cycle safety training, pedestrian training, cycle tracks and storage for scooters as well as a walking bus.

Since the introduction of these interventions in 2008, car usage has dropped from 19.3% to 14.7% and 14% of pupils now cycle to school. This is an example of how an active travel culture can be incorporated into schools long term.

Action Plan

Children

1. Use of campaigns to promote the idea that walking is moderate intensity physical exercise and cycling at higher speeds is vigorous intensity exercise which can help children reach national physical activity guidance and recommended levels.
2. Promotion in schools and across campaigns about the benefits of physical activity on development of children physically and also the benefits on school achievement and mental wellbeing.
3. Introduction of walking buses in schools, and other active travel groups.
4. Projects and workstreams led by Local Authorities and Schools to incorporate walking and cycling culture change initiatives into schools, such as Sustrans approaches.
5. Appropriate cycle and pedestrian safety training to incorporate and compliment a drive to increase active travel measures.

Air Quality and Noise Evidence Review

Air quality is largely determined by road transport and the high volume of car users on the roads and is affected by levels of active travel.

(COMEAP, 2010)

This is only slightly lower than the amount of obesity related deaths and far exceeds other preventable deaths attributable to alcohol, road traffic accidents, illegal drugs, and HIV infection combined (Ash, 2015)

Gowers *et al* (2014), found the current levels of particulate matter are likely to have a considerable impact on population health. Their figures should act to encourage local authorities to devise and implement measures, such as encouraging active travel, to reduce emissions and population exposure to air pollutants. However, significant national air pollution reductions can only be achieved if action is taken on a national, regional and local level combined.

The World Health Organisation estimates that gobally 80% of outdoor air pollution-associated premature deaths worldwide are due to heart disease and strokes, while 14% of deaths are due to chronic obstructive pulmonary disease (COPD) or acute lower respiratory infections and 6% of deaths are due to lung cancer. Available data suggests that air pollution is associated with the development of COPD and asthma. It has also been found that outdoor air pollution is a significant environmental trigger for acute exacerbation of COPD and asthma, leading to increasing symptoms, emergency department visits, hospital admissions and death.

In relation to asthma research has found a possible link between exposure to road side pollutants outside homes and the development of asthma in children during the first 8 years of life. It was found that high air pollutant levels were more likely to be found to be present outside the homes of those containing children suffering with asthma suggesting a possible link. (Gehring, U., Wijga, A.H., Brauer, M. *et al*. 2010)

A 2014 observational study in Barcelona produced evidence to suggest that physical exercise completed in areas with high air pollutant levels still had benefits on pulmonary function in healthy participants. This promotes the choice of selecting active travel options such as walking and cycling even in busy urban areas.

National Emissions from Work and School Travel

In the 2009 Annual Report produced by the Chief Medical Officer, there was a request for an eight fold increase in cycling and a greater proportion of journeys being undertaken by cycling and walking to reduce climate change and pollutant emissions and to significantly improve health.

Between 1990 and 2006, pollutant emissions from school travel increased by 59%. Nationally in 2009, 51% of 5-16 year olds travelled to school by car instead of sustainable travel options. Due to school journey distances ranging from on average between 1.6 – 3.4 miles, most journeys undertaken within urban areas will be of a stop - start nature, contributing to higher volumes of air pollutant in comparison to non-stop –start journeys.

As a result of the 2008 Climate Change Act, schools were set the target of reducing travel pollutant emission levels by 34% for 2020. As part of this, encouraging active travel alternatives was a key suggestion.

Evidence – Warwickshire

Warwickshire Local Transport Plan (LTP) 2011-2026 looks at Warwickshire's use of road transport and its significant impact on air quality in Warwickshire. The LTP acknowledges the severe impacts that air pollution has on health and other environmental factors. In addition the plan works to influence air quality and transport policy works to promote healthier lifestyle choices through the encouragement of walking and cycling.
Like public health, the LTP aims to focus on air quality issues within Warwickshire, working closely alongside the five District/Borough Councils (in their role as the local Environmental Health Authorities), whilst also taking into account regional considerations and the UK National Air Quality Strategy objectives.

Current Initiatives

Warwickshire County Council is working on several initiatives and guidance documents which will help to directly and indirectly improve air pollution. These include:

- **Public Health Evidence for Planning Document** – This document helps planners, developers and public health teams to support integration of public health into planning decisions. This can include infrastructure aspects to encourage active travel, and therefore reduce air pollution from transport. Greater use of active transport would result in a vast reduction in transport pollution and improved health outcomes (Acharya, 2010)
- **Warwickshire Wide Green Space Health and Wellbeing priorities 2014 – 2018** - Section on environment states "There is an association between park proximity, park use and physical activity and people with greater access to safe green spaces and public parks use them more often" (Cohen *et al* 2007, Natural England 2011). More green space incorporation may mean less car usage on key routes through town centres, as green spaces offer the potential for traffic free cycle routes which are suitable for beginners and can be connected to other networks for commuting. Through green spaces, there are opportunities for active travel signage – distance markers etc. to encourage active travel further, improving air pollution.
- **Warwick and Leamington Spa Transport Strategy** (Review of Sustainable Transport Alternatives – Atkins) – Study undertaken using Census 2011 travel to work data, showing 61% and 57% travel to work trips in Warwick and Leamington Spa are undertaken as single car passengers. Transport structure and behavioural change measures are outlined as key to addressing the air quality issues in these central areas. Warwick District Council and Warwickshire County Council are committed to reducing CO2 emissions. The district has targeted a reduction in carbon emissions of 12% by 2029. Strategy components which will improve air quality will include:
  - Smarter choices and behavioural change programme –major local employers, schools, residential developments and other major trip generators to include:
  - Active push on the provision of on-site facilities for walking and cycling.
  - Implementation of car share initiatives.
  - Walking buses.

- Provision of parking strategy advice.
- Travel plan advice.
- Marketing and Promotion.

Leading on from the review by Atkins on Warwick and Leamington Spa Sustainable Travel alternatives, Public Health Warwickshire and Transport are working on a healthy travel choices campaign. The campaign aims to follow a behavioural insight approach, using questionnaires within the workplace in Warwick and Leamington Spa to discover barriers to target behaviour change in the working population.

Organisations, such as Sustrans, are able to help encourage active travel and acknowledge the impact on air quality improvement. They have done this through various projects over the Country with schools, communities and workplaces raising awareness of air pollution and the causes of it. Sustrans projects like The National Cycle Network (NCN) create public space for safe walking and cycling, enabling people to switch safely and comfortably to active travel instead of using cars, therefore reducing air pollution emissions. In 2013, 748 million trips were undertaken on Sustrans NCN resulting in 157 million fewer car journeys as 1 in 3 NCN users chose to actively travel rather than use the car.

- **Warwickshire Local Transport Plan (LTP) 2011 – 2026** outlines the benefits of active travel to health and includes encouragement of active travel as one of its key priority areas. They acknowledge there is scope to encourage more active travel in Warwickshire, encouraging people into more healthy lifestyles through walking and cycling.

Traffic noise and health

55% of people living in urban areas containing more than 250,000 are exposed to road transport noise above the EU benchmark for excess exposure levels. A reduction in traffic of at least 40% would be required to reduce perceived noise.

One study in Denmark investigated the association between residential exposure to road traffic noise and risk of myocardial infarction (MI) in a cohort group of 57,053 people. Although there are many contributing factors to MI occurrences, the results of the study indicated residential exposure to road traffic noise was associated with a 12% higher risk for incident MI per 10 dB higher exposure to noise.

Research also suggests that excessive exposure to

noise pollution caused by tyres, brakes, engines and other noisy components produced by road traffic can cause sleep disturbance, cardiovascular disease, elevated hormone levels, psychological problems and premature death. In children it has also been found to cause cognitive impairment, worsened behaviour and overall quality of life. Reductions in road traffic will be crucial in the reduction of noise pollution caused by vehicles.

1. **Infrastructure development and incorporation into new builds to encourage active travel, and therefore reduce air pollution from transport.**
2. **Continuation of air quality monitoring. Alongside this, development of active travel action points with Air Quality Management Area action plans in Local Authorities.**
3. **A focus increasing particulate matter monitoring alongside other pollutants including CO2 and NO2.**
4. **Incorporation of green spaces into new and existing developments, providing traffic free cycle routes which are suitable for beginners and can be connected to other networks for commuting.**
5. **Smarter choices and behavioural change programme (LA led) – major local employers, schools, residential developments and other major trip generators.**

Planning and Active Design Evidence Review

Introduction

Active design is the process of finding ways to design, plan and build spaces that encourage healthy travel choices and physical activity. This process can positively influence the environment we live in, helping us to be more physically active on a daily basis, improve community cohesion and our quality of life. The process of active design can have significant positive outcomes for both the health of the community and travel choices.

Travel Outcomes

Literature has also shown that places deemed to be highly walkable, have significantly better travel outcomes, with increased levels of active travel and reduced dependence on private car use. Designers and planners have a unique and powerful position to positively impact the health of the local population, as well as creating thriving economic spaces across Warwickshire.

There is evidence to support increases in trade of up to 40% by retailers where areas have been made more attractive to walking, up to 80% increase in sales where shopping areas have been planned to be walkable and increased house prices in walking friendly areas (Ross *et al*., 2014).

As well as a stronger local economy wider benefits of planning and designing an active environment include reduced health inequalities, greater social cohesion, better quality of life, reduced pollution, better air quality, better mental wellbeing and reduced demand on local health care services (PHE, 2015).

The World Health Organisation have developed an on-line tool to use when planning a new piece of active travel infrastructure; this can be used to produce a cost–benefit ratio and help make the case for investment during the planning and design phase (WHO, 2008).

The Evidence to Support Active Design

The role of our built environment cannot be underestimated; accessibility, safety and attractiveness of the built environment are thought to be amongst the most important factors in determining a community's activity levels (ukactive, 2015). There are many national planning guidelines that document the role of planners in active design:

The World Health Organisation (2011), describe the need for Planners to place an increasing emphasis on transport systems. WHO recommend that policy makers should consider the needs of disadvantaged and vulnerable groups in society, explore potential alternative transport technologies and consider the mandates and responsibilities of other policy areas such as health, transport and environmental health.

The UK's National Planning Policy Framework (2012) states that "transport policies have an important role to play in facilitating sustainable development, but also in contributing to wider sustainability and health objectives…The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel."

The National Planning Policy Framework, 2012 guidance states that as a minimum, major developments should:

- Minimise the need to travel by private car; "ensure that travel is balanced in favour of sustainable transport".
- Provide linkages, or develop new, footways, cycle paths and bridleways giving access, to key local facilities (especially town centres).
- Provide appropriate facilities to support access to high-quality public transport.

A practical resource document for practitioners to use when collaborating on planning developments and urban environments is 'Planning Healthy Weight Environments' (2014). Its aim is to create a healthy-weight environment where integrated public transport, active travel and green spaces facilitate healthy lifestyles (Ross *et al.*, 2014).

What makes a neighbourhood walkable?

- Active streets: Streets designed for cyclists, pedestrians, and public transport.
- Pedestrian and cycling active design: Buildings are close to the street with parking spaces relegated to the back. Connected and well maintained footpaths and cycle paths.
- A centre: Walkable neighbourhoods have a centre, (e.g. main street or a public space).
- Mixed income, mixed use: Affordable housing located near businesses
- People: Enough people for businesses to flourish and for public transport to run frequently.
- Parks and public space: Plenty of public places to gather and play.

- Schools and workplaces: Close enough that most residents can walk from their homes.

Walkable neighbourhoods

Planning and designing infrastructure delivering high quality 'walkable streets', has been shown to significantly increase the average number of minutes per week of walking for transport; in streets with poor quality walkability the average time was 12.8 minutes per week, but where there was high levels of walkability this increased to 44.3 minutes per week. There was also a significantly improved neighbourhood resident satisfaction level reported where walkability was high (Sallis J, 2009).

Cervero and Radisch (1995) found that residents of walkable streets walk, bicycle or use public transport for up to 50% of work trips and 15% of non-work trips, 20% and 10% more than in a comparable car-orientated community respectively. Other studies have found that walking is three times more common in communities with pedestrian friendly streets than in otherwise comparable communities (Moudon, *et al*. 1996).

Distance and time markers should be included on any new signage and when updating existing signage (NICE, 2012). Public transport options should be easily accessible to key facilities further afield. Well connected and attractive streets encourage more people to exercise and make active travel choices (Glasgow Centre for Population Health, 2013).

Summary

Creating a walkable community with mixed use space, connected and well maintained streets, designed with walking, cycling and public transport as priority, can lead to significant change in travel culture, promoting healthy travel choices as the norm.

Cycling Friendly Neighbourhoods

Riding to work or to access services is one of the most time-efficient ways to combine regular exercise with everyday routine. Integrating cycle facilities into any new housing developments would enable access to opportunities to increase communities' levels of physical activity and improve wellbeing.

Morris (2004) found that residents living within a half-mile of a cycling trail are three times as likely to bicycle commute compared to the country average.

In order to support people to take up and continue to participate in cycling, good quality facilities and connections should be made between green spaces, leisure facilities and places of employment. Important facilities and infrastructure includes

secure storage, clear signage, adequate lighting and ride surface.

Investment in infrastructure has been shown to make cycling safer and increases participation (Pucher *et al*., 2008). More detail on this can be found in the cycling section.

Summary

Communities and businesses that are connected by direct, legible and integrated cycle networks, which are well maintained, well lit and clearly signposted, have been shown to increase active travel participation by bicycle.

Reducing Habitual Car Use

Travel habits are triggered and reinforced by infrastructure and perceptions of socially and culturally acceptable behaviour. When change happens, old habits are disrupted and people re-think their behaviours. Planners have an opportunity to contribute towards this behaviour change through the design of the environments we live in.

A review of evidence by Healthy Active by Design (2015) found that neighbourhoods with limited on street parking in commercial areas, and therefore greater pedestrian emphasis, had less single-occupant car travel for non-work purposes. The review also reported that car-park dominated centres constrain pedestrian activity, and limit social interaction and opportunities to improve community cohesion.

Summary

Abundant car parking discourages active travel (Healthy by Design, 2015). Neighbourhoods should be designed to minimise the need to travel by private car, and to maximise opportunities for active travel. Car parking facilities should not dominate a development, but design should instead focus on encouraging active travel, such as the installation of measured miles (signposted useful routes that specify distances in miles to encourage walking/cycling to local amenities).

Social Networks and Community Cohesion

Fewer and weaker social networks are associated with a range of adverse health outcomes including cardiovascular disease, mental health problems and higher rates of mortality.

Neighbourhood designs that are likely to promote social networks are generally diverse and pedestrian-oriented. They offer; choice and diversity in well-kept environments; affordable and efficient public transport; safe, well-lit and pedestrian-friendly play areas and green spaces;

and street patterns that provide opportunities for informal contact among residents thus enabling opportunities for socialising (Glasgow Centre for Population Health, 2013) (Heath, 2006).

Summary

Modest physical changes in neighbourhood design can improve mental health and the sense of community between residents. Well-maintained areas have been found to be associated with increased social capital and perception of safety (Glasgow Centre for Population Health, 2013).

Green Spaces

Children living near green spaces are less likely to be overweight (Allen *et al*., 2014). Adults with access to good quality and safe green spaces are more likely to be physically active, have healthy weight and have better self-rated mental wellbeing (Kent *et al*., 2011) (Public Health England, 2014b). The availability and accessibility of parks, recreation and sports facilities strongly influence physical activity levels, and areas of socioeconomic disadvantage often suffer due to the poor quality or unequal distribution of such resources (Glasgow Centre for Population Health, 2013).

Natural England's view is that there should be provision of the widest range of access opportunities for people of all abilities, ages, ethnic groups and social circumstances to actively engage in, value and enjoy the natural environment. The use of these spaces is associated with better self-rated health, higher levels of physical activity, improved mental health and wellbeing, as well as greater community cohesion and reduced social isolation (Public Health England, 2014b).

Access opportunities should aid healthy activity and be integral to people's daily lives particularly close to where they live. Access should contribute to achieving the transition to a low carbon economy by encouraging sustainable travel and leisure use. Integrating green spaces with the local transport network is an opportunity to encourage active travel into people's everyday lives.

Recommended standards are available from Fields in Trust (2008), Natural England (2010) and the Woodland Trust (2010).

Summary

Access to high quality, well maintained and safe green spaces is associated with healthier residents and can help to encourage active travel through walking and cycling.

Active Design Guidance Documents

Building for Life

'Building for Life 12' is a government-endorsed industry standard for well-designed homes and neighbourhoods. Local communities, local authorities and developers are encouraged to use it to guide discussions about creating good places to live. There is a theme of active travel and active design running through its 12 questions. If the developer can answer these to a high standard, then they can receive a much coveted 'Building 4 Life' award for the development. (David Birkbeck and Stefan Kruczkowski,

1. Connections: Does the scheme integrate into surroundings and reinforce existing connections and create new ones?
2. Facilities and services: Does the development provide community facilities?
3. Public transport: Does the scheme have good access to public transport to help reduce car dependence?
4. Meeting local housing requirements: Does the development have a mix of housing types and tenures that suit local requirements?
5. Character: Does the scheme create a place with a locally inspired or otherwise distinctive character?
6. Working with the site and its context: Does the scheme take advantage of existing topography, landscape features (including water courses), trees and plants, wildlife habitats, existing buildings, site orientation and microclimate?
7. Creating well defined streets and spaces: Are buildings designed and positioned with landscaping to define and enhance streets and spaces?
8. Easy to find your way around: Is the development designed to make it easy to find your way around?
9. Streets for all: Are streets designed in a way that encourage low vehicle speeds and allow them to function as social spaces?
10. Car Parking: Is resident and visitor parking sufficient and well integrated so that it does not dominate the street?
11. Public and Private Spaces: Will public and private spaces be clearly defined and designed to have appropriate access, and be able to be well managed and safe in use?
12. External storage and Amenity Space: Is there adequate external storage space for bins and recycling, as well as vehicles and cycles?

This work can be incorporated into other workstreams. For example, Sport England has produced Active Design guidelines which centre around ten principles of active design leading on from Building 4 Life Guidelines.

Using these government-endorsed , 'Building for Life' guideline questions, planners can have a major impact on active travel and in turn the local health economy.

Active Design Building Progress

Around the world, green building and active design is fast accelerating and gaining considerable reputation as a long-term business opportunity. This boom is being driven by significant client and market demand, coupled with lower operating costs and desirable branding and promotion opportunities (McGraw-Hill, 2013).

Developments featuring open space, trails and greenways have sold more quickly than similar properties elsewhere, and often have a high rate of presold units, with customers willing to pay a premium to locate in walkable developments featuring open space (Active Living Research, 2010).

Sites that are more walkable command higher property values across property type including office, retail, apartment and industrial; depending on the property type, a 10% increase in walkability increases property values by between 5% and 8% (Active Living Research, 2010).

For developers, these economic benefits can translate into reduced financial liability, faster sales and ultimately higher profits. Whilst neighbourhood residents gain a wide range of health benefits, improved well-being, community cohesion and quality of life: a win-win situation for all concerned.

Action Plan

Active Design

Good design and planning, as well as working to improve existing developments, can positively influence the environment we live in, helping us to be more physically active on a daily basis, improve community cohesion and our quality of life. This action plan sets out key evidence-based recommendations that can help achieve a sustainable, healthy and green travel network:

1. **Policy:**
    a. **Council policy should be consistent with national planning guidance documents.**
    b. **A senior town planner involved with the Health and Wellbeing Board should ensure development of healthy environments and encourage healthy travel choices at the strategic decision making level.**
    c. **Planning, Transport and Public Health departments should collaborate across policy to deliver change in active environments.**
2. **Incorporate the active design principles in all new planning and development schemes including:**
    a. **Giving priority to pedestrians and cyclists.**
    b. **Ensuring access to public transport hubs.**
    c. **Design of attractive and safe built environments.**
    d. **Ensure maintenance of the built environments.**
    e. **Consideration of the needs of people with disabilities.**
3. **Connectivity:**
    a. **Link new and existing developments to travel interchange points and amenities:**
        i. **Bus stops.**
        ii. **Park and Ride Facilities.**
        iii. **Train stations.**
        iv. **Local services and amenities.**
        v. **Green spaces.**
    b. **Consider travel options available for residents of new developments to places of employment, ensuring that active travel opportunities are prioritised.**
4. **Promote a mix of land-use, co-location and concentration of key retail, community and associated uses to promote linked multi-function trips.**

Public Transport

Nobody should face disadvantage with regards to accessing sustainable transport modes because of where they live; such opportunities should be equal to all. Developments should support access to public transport schemes, in turn reducing car dependency whilst benefiting health and wellbeing; a by-product of increased physical activity.

It is possible to encourage both physical activity and public transport use by promoting 'stride and ride' and 'bike-rail integration'. To achieve this goal investment in an integrated, safe and attractive sustainable transport network, connected to public transport hubs, is vital (Sherwin *et al*., 2011). Walking to and from public transportation can help physically inactive populations, especially low-income and minority groups, attain the recommended level of daily physical activity. Increased access to public transport may help promote and maintain active lifestyles (Goodman *et al*., 2014) (Van Dyck *et al*., 2009). Ryan and Frank (2009) found that improved walkability around bus stops increases public transport use.

Any public developments should be designed for good public transport access. Where possible, bus stops should be accessible to the surrounding residential areas and close to footpaths and cycle routes. Waiting areas should have good quality seating and timetable displays (WCC, 2015).

Summary

Incorporating access to public transport through active design can reduce car dependency whilst have positive effects on health and wellbeing as a by-product of increased physical activity.

Public transport makes access to healthcare and other services possible and improves social isolation. It also has a role to play within encouraging walking and cycling journeys, as many public transport journeys incorporate this into their overall journey. Public transport needs are met by bus, rail services, community transport services and taxis and private hire vehicles and is often a combination of these methods. The Warwickshire County Council LTP outlines that each of these activities and modes have interlinked strategies, common aims and integrated provision to provide the most effective transport service.

Public transport influences priority areas, outlined within Warwickshire Health and Wellbeing Strategy 2014 – 2018.

1. Promoting Independence for all – ensuring that all members of the community can reach facilities and maintain wellbeing. 19% of the population living in Warwickshire over the age of 16 are disabled and the highest rates of projected population growth are in the groups aged 65 years and over. There is the potential for a significant increase in the numbers of people accessing health, social care and community services in the years to come. Resources will have to be used differently to provide more responsive and integrated health and social care services.

2. Community resilience - Access to public transport enhances community resilience. In Warwickshire, approximately a third of our local areas have difficulty accessing key services. Some communities are more vulnerable, including socially isolated people, young people, older people, those living in rural areas, or with long term health conditions. Where health needs can only be met through public services, we need to ensure that these services are effective, accessible and targeted efficiently to those that need it the most.

3. Integration and working together - The Health and Social Care Act 2012 introduced statutory duty to promote integrated care. A commitment to partnership working, joint commissioning, and using resources (people, premises and finances) is needed to maximise cost-effectiveness and health and wellbeing, for individuals and communities. Public transport is a key component of this priority.

Current Bus Usage

Statistics show that the level of public transport use in the UK has increased slightly in the past 20 years; however a large proportion of this positive change has been driven by bus and rail services in London. In 2013/14, outside of London passenger numbers grew by 1.5%. Outside of London, the motivation to use buses is less, and main users tend to be younger age groups or pensioners travelling free of charge. (Dft, 2014).

In Warwickshire, differing levels of service exist depending on criteria including community population size within Warwickshire and vehicle ownership levels measured by Census data. Therefore the services are needs based. (WCC, 2011).

For some services in Warwickshire, such as Arriva, Real Time Passenger Information (RTPI) exists in the form of live maps where users can see where buses are on a route and can access up to date information about the delays and what services are available. For consistency, and as many journeys are undertaken by more than one service, it would be beneficial for other services, such as Stagecoach, to develop similar initiatives.

Increasing Bus usage

There is much to be gained from improved passenger information and the role it has to play in encouraging public transport use from looking at train services. Due to the frequency of rail travel, and the number of timed stops, as well as having designated stations to display clear information, keeping passengers informed is easy to do, increases passenger trust and encourages use of the service.

Passenger Focus, 2014 revealed that train delays, often seen as an off-putting factor to public transport, are not as much of a deterrent as how the delays are dealt with. Recommendations from the report include:

- **Using up to date technology** – Up to date technology methods such as texts and alert methods are more effective than others as they catch the attention of the passenger rather than the passenger needing to spend time searching for the information.
- **Deliver timely disruption information** – The report outlines that passengers wish to know about delays that could affect their journey at the earliest possible time, giving them ample time to make other travel arrangements.
- **Give a reason for the disruption/delay** – Passengers are more likely to accept the delay if a reason has been given. The top reasons that passengers report when they feel disruption has been dealt with poorly are a 'lack of communication/information' and 'no explanation/reason given for the delay'.

The report acknowledges that real time passenger information or RTPI is key within improving passenger experience and therefore encouraging people to use public transport.

There are many social media and technological methods which can improve the success rate of RTPI. These include:

- **Social media** – Social broadcasting methods such as Twitter and Facebook offer a simple way to reach a huge audience of potential passengers.
- **Personalised alerts** - Providing accurate, targeted information during travel. These personalised methods would enable bus operators to deliver 'timely disruption information' which is recommended in the Passenger Focus report.

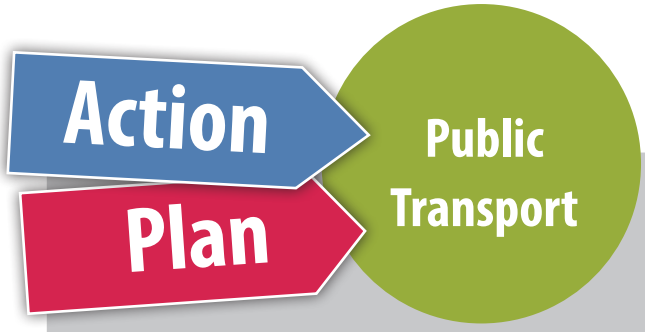
Perceived Issues

- Potential bus users report that the main barrier to bus travel is that there is not a bus stop near their house or place of work. This is a perceived barrier, and depends on the

individual, how far they are prepared to walk to a bus stop and what they think is acceptable. Challenging this comes in the form of encouraging walking as part of wellbeing and conducting campaigns around this.

- 'No direct routes' is commonly stated as a barrier and whilst it would be impossible to have direct bus routes catering for all individual's needs, Local Authorities and bus operators must be encouraged to work together to update routes and remove this barrier when there is a need for a direct route is regularly expressed.
- Lack of reliability, in the form of late buses or buses not arriving at all, is a barrier which can be challenged, as it has been found that more passengers are able to accept this if clear RTPI information is provided highlighting delays in a prompt fashion and reasons why. Reasons that were out of control of the operators were understood by some members of the focus groups within the study.

It is possible to encourage both physical activity and public transport use by promoting 'stride and ride' and 'bike-rail integration'. To achieve this goal, investment in an integrated, safe and attractive sustainable transport network, connected to public transport hubs, is vital (Sherwin *et al*., 2011). Walking to and from public transportation can help physically inactive populations, especially low-income and minority groups, attain the recommended level of daily physical activity. Increased access to public transport may help promote and maintain active lifestyles (Goodman *et al*., 2014) (Van Dyck *et al*., 2009). Ryan and Frank (2009) found that improved walkability around bus stops increased public transport use.



Increasing the use of buses is a shared responsibility between bus operators and Local Authorities. Management control and positive travel friendly infrastructure are key areas of focus to make positive changes.

1. **Any public developments should be designed for good public transport access.**
2. **Where possible, bus stops should be accessible to the surrounding residential areas and close to footpaths and cycle routes.**

3. Waiting areas should have good quality shelters and timetable displays.
4. Promotion of the advantages of travelling by bus, and the health, financial and social benefits associated with this should be conducted.
5. Waiting areas should be clearly lit with a 10 metre surrounding visibility to encourage community safety and improve the image of public transport (WCC, 2015).
6. It would be beneficial for passengers to find all RTPI information in one place on one website for ease of usage and to encourage passengers to reply on the service. This could be in the form of live maps and service disruption alerts.
7. On board information of where the next bus stop will be and easier to understand bus maps and routes.
8. Dealing with complaints well, and offering passengers a free ticket or refund when a bad experience has occurred, can encourage passengers to return and give it another try.
9. Bus lanes should be considered where possible to help ease congestion and improve bus promptness, journey time and reliability.
10. Car parking controls on street and in workplaces may encourage potential users to make the decision to travel by bus.
11. The role of workplace parking needs to be considered. Employers could work with bus operators to create corporate discount schemes.
12. Park and ride promotion in the form of promotional ticketing e.g. offers for park and ride users and increasing the number and awareness of park and ride services should be undertaken.
13. Increase in promotion and marketing of current public transport services, focusing on buses but also incorporating rail and other public transport forms, highlighting how they can complement and link together should be conducted. Examples include wider distributions of timetables to households and public transport leaflets to new residents and developments.
14. Incorporating multi bus operator tickets to reduce the impact of barriers due to having to change service in the middle of journeys, and the associated expense of this.
15. Regular re-evaluation of routes and piloting of new routes, whilst monitoring and evaluating the success of these with methods such as passenger surveys.
16. Perception of expense to be challenged by strong marketing campaigns.

Carpooling, Car Sharing and Car Club Schemes

These schemes provide novel ways of improving mobility for members of a community or workplace, with the additional benefits of reducing costs, congestion, pollution, as well as providing a shift in culture away from private car ownership. They are summarised in the diagram below.

Carpooling

Carpools consist of two or more persons driving together in a privately owned vehicle. At a workplace, employees may choose to carpool without any assistance or involvement from the employer. However, carpool incentive programs are a way for employers to encourage employees to carpool.

Car Sharing Schemes

Car-sharing is a service that provides members with access to a fleet of vehicles for a set time or distance basis. At the workplace, it provides access to a vehicle for business use and personal errands during the day, allowing employees to avoid driving to work.

Car Clubs

Car clubs are similar to car sharing schemes and provide access to shared vehicles to members on a pay-as-you-drive basis. They provide much of the convenience of owning a car without the hassle or costs of repairs, depreciation, insurance, servicing and parking. Car clubs tend to be organised on an area basis with cars located in clusters so that if one car is not available, a member will only have a short walk to access another car. Examples include Zipcar which operates in London, Bristol, Cambridge, Edinburgh and Glasgow (www.zipcar.co.uk).

Currently car sharing in Warwickshire is provided through CarShare Coventry and Warwickshire (https://carsharewarwickshire.liftshare.com/directory.asp) for employees of Warwickshire CC, Coventry CC, Warwick and Stafford Hospitals, Jaguar Landrover, Aston Martin, NFU and others.

Promotion of Carpooling

Promotion and marketing of car sharing schemes are a key part of raising awareness of their availability and making them a success. Methods for successful promotion include high quality, diverse and visual marketing campaigns consisting

of many options (Department for Transport, 2005):

- Posters distributed amongst the catchment group.
- Leaflets distributed to staff and residents.
- Press, radio, TV – this is a particularly effective communication process for car clubs
- Newspaper advertisements.
- Branding of vehicles and car club parking bays

Carpool incentive programs and promotion may incorporate a variety of means to encourage employees to carpool. Possible incentives include reduced cost or free parking, preferred parking, or reward programs (such as prize draws).

Employee benefits from carpooling include cost sharing and lower car maintenance costs and the ability to socialise whilst commuting (USEPA, 2005). A local example of a successful carpooling scheme in Warwickshire is Warwick University; here 1,500 members have signed up for the scheme, and their website contains an excellent link to a cost saving estimating tool which predicts the amount people will save by taking part in the scheme (Liftshare: https://liftshare.com/content/savings_calculator.asp).

The primary employer advantage is the need for fewer parking spaces; other advantages include less employee stress and improved productivity (TCRP, 2005).

A barrier preventing some employees from carpooling is the fear that they will not be able to get home quickly in the event of an emergency, such as picking up a sick child from school, or working unscheduled overtime. Emergency ride home programmes provide commuters, who regularly carpool, vanpool, bike, walk, or take public transport to work, the security of a reliable ride home when an unexpected emergency arises. Usually the employer will pay for a taxi or rental car home in the event that an employee who is a carpool passenger has to leave in the middle of the day, or the carpool driver is for some reason unavailable (USEPA, 2005).

The Benefits of Car Sharing and Car Clubs

The benefits to individual users of car sharing schemes include (TfL, 2015b):

- Reducing the need to own a car.
- Reduce habitual car use and encourage car use for only essential journeys.
- Lower running costs and costs of living (members could save up to £3,500 a year when switching from private ownership to a car club).

- Increased mobility (where the person did not own a car before).
- Sociability.

Research into the wider impact of these schemes can be complex to calculate, but data from Europe shows evidence of reductions in private car ownership, with 16 to 34 % of people involved with car sharing selling their car, and each car sharing vehicle replacing between 4 to 10 privately owned vehicles on the road (TfL, 2015a).

Carpooling, car sharing and car clubs provide novel ways of improving mobility, reducing travel costs, congestion, pollution, as well as providing a shift in culture away from private car ownership.

1. **Encourage and support new communities, businesses and large employers to join car sharing, carpooling or car club schemes within Warwickshire. Ideally this should be provided through the existing Car Share Warwickshire scheme https://carsharewarwickshire.liftshare.com/.**
2. **Increase promotion and incentives for existing car sharing schemes through CarShare Coventry and Warwickshire.**
3. **Engage with private car clubs (such as Zip Car) to offer car club services across Warwickshire. Likely to be most beneficial in urban areas.**

Communication, Engagement and Supporting Behaviour Change

Supporting Behaviour Change

In order to help support and encourage the residents of Warwickshire to make healthy travel choices, we must understand the barriers to behaviour change and effective means of overcoming these. This chapter aims to set out current thinking around behaviour change, and the evidence supporting what is effective to support change.

Enabling behaviour Change

It is up to individuals to decide to change their behaviour. Society and public sector can influence this decision through various means. People change their behaviours in response to changes in their surrounding environment, their understanding of the world around them and changes in their perceptions.

To successfully enable behaviour change the new behaviour should seem:

- More advantageous
    - Cheaper, quicker, more convenient
- More prevalent
    - Increased awareness of who else is doing it, acceptance as the social norm
- More achievable
    - Increased confidence in ability to change; people feel able to do it, and are able to access information and guidance
- More relevant
    - Behaviour fits with the perception or aspirations of the individual; people want to do it

Overcoming Barriers to Behaviour Change

Behaviour change can be challenging and there are many psychological barriers which can prevent the development of healthy behaviour change. Barriers can make it difficult to identify that an unhealthy habit exists, to initiate change and then to sustain long-term change (Olson, J., 1992). To help encourage Warwickshire residents to make healthy travel choices we must understand the key barriers to address in order to enable behaviour change:

- **Identification of an unhealthy habit**
    - People can face barriers such as trivialisation or denial of issues, perceived invulnerability, faulty self-diagnosis and difficult emotions in the identification of an unhealthy habit. (Olson, J., 1992) For example, people may feel that health issues caused by physical inactivity aren't severe enough to warrant behaviour change or may attribute the health issues or associated symptoms to other causes. They may also find the thought of changing behaviour stressful.
- **Initiating change**
    - Lack of knowledge, self-belief and differing attitudes towards healthy choices can all be a barrier to taking the initial steps towards making a healthy change. (Olson, J., 1992) For example, a lack of knowledge of available active travel options may cause a person to believe that making a healthy travel choice is not possible or safe. Concerns around safety may in turn affect self-confidence and people may believe they aren't capable of travelling safely as they don't possess the correct skills. Attitudes towards healthy choices are key and some people may favour unhealthy choices such as car travel and may not believe in the negative consequences of this choice.
- **Sustaining long-term change**
    - Maintaining long-term change can be difficult. Lack of motivation, perceived improvement, and social support are common barriers to the sustenance of long term change (Olson, J., 1992). For example, unless people are reminded of the positive health impacts associated with active travel, motivation may drift back to previous levels. Lack of perceived improvement, such as not seeing immediate physical benefits, may cause a wain in motivation. Social support from family and friends is important in

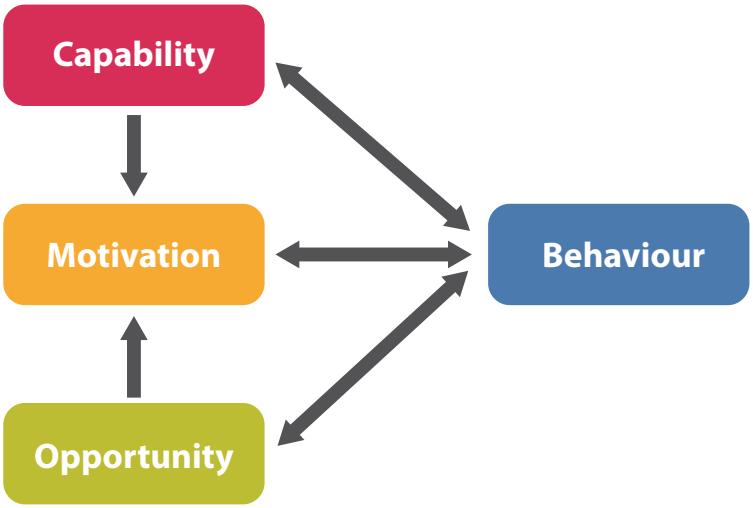
the maintenance of long term behaviour change, and people may be less likely to choose healthy modes of travel if their actions are not encouraged by others.

COM-B; A Model of Behaviour Change

A widely used model of the factors involved in behaviour change is the COM-B model. This model can be applied to some of the behaviour change factors discussed throughout this document. This model states that there are three essential conditions needed to be present in in order for a behaviour change to occur (Michie *et al*., 2014):

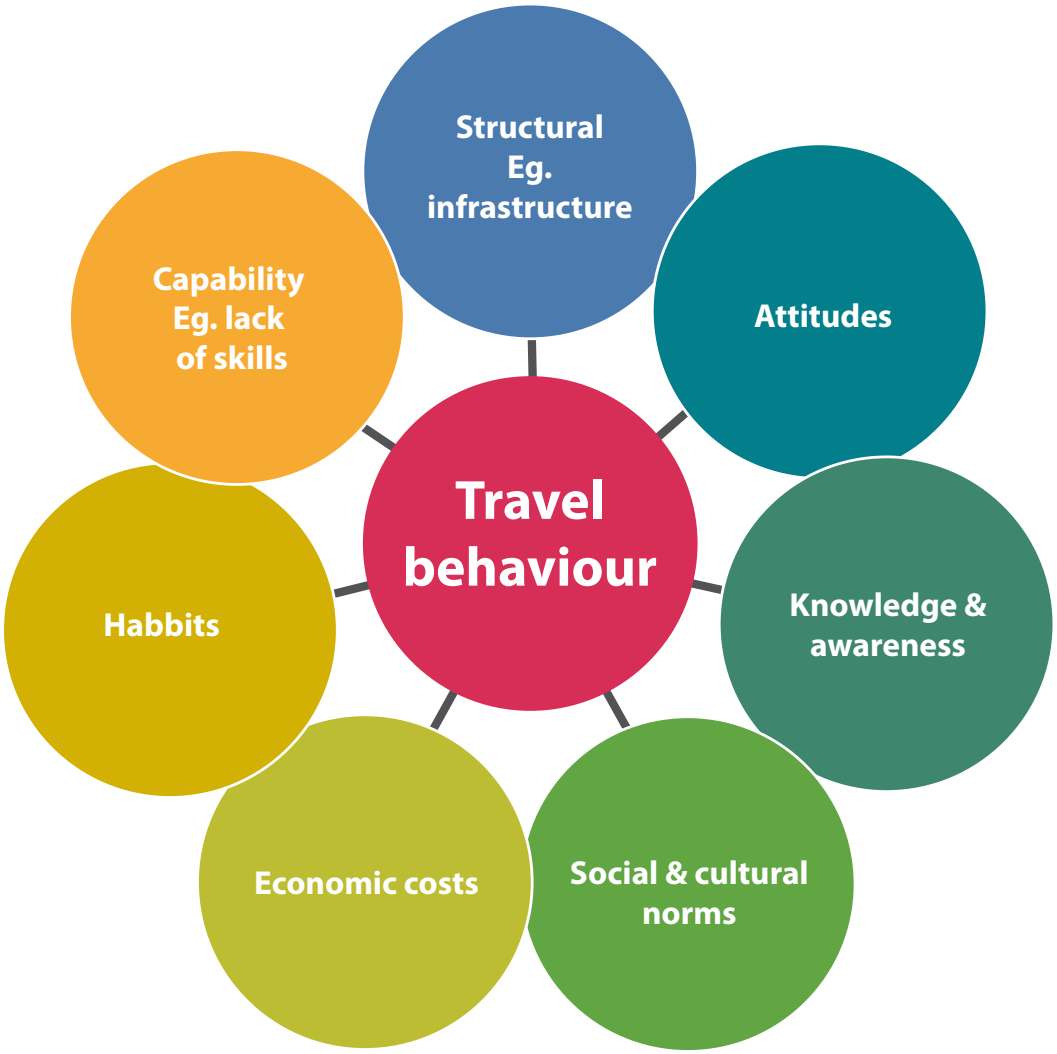
These are:

- Capability
  - People must have the physical and psychological capability (e.g. skills and knowledge) to change their behaviour
- Motivation
  - People must want to change their behaviour
- Opportunity
  - People must have the opportunity, afforded by both external social and physical factors, to change their behaviour.



What influences travel behaviour?

Travel behaviour is influenced by a number of inter-connecting factors (DfT, 2010):



What works to address the barriers to behaviour Change?

The different inter-connecting factors that influence travel behaviour can be positively influenced in many ways. This section discusses the evidence behind effective interventions that can help change behaviours.

Attitudes

Attitudes commonly reflect deeply held values or beliefs, and so can take time to change. A widely held attitude is that cycling and walking can be dangerous. The Department for Transport's THINK! Campaign is an example of how social marketing and communications can raise awareness and address barriers around safety, in order to improve road safety for users and reduce the perception of danger. This in turn increases self-confidence, a common barrier to behaviour change.

Social Networking Sites

Social Networking sites, such as Facebook or Twitter have become a global phenomenon and are now an integral to many people's daily lives. Greatest use is seen in younger age groups. There is huge potential for social media to impact positively on health outcomes, and so must be considered as part of any campaign. Analysis of the current evidence has shown that use of social networking sites can have a positive impact on health behaviour-related outcomes (Laranjo *et al*., 2014).

The Transport Research Laboratory conducted a survey in 2012 finding that 30% of people surveyed though social media could change their behaviours, and 20% already used social media to plan travel and car sharing arrangements.

People were more likely to be influenced by personal networks (friends and family) than formal contacts (governments or charity), highlighting the social support element of behaviour change. This highlights the benefit of personal contacts, and the role of information "sharing" and pages that they "like" being seen by other contacts (Binstead & Hutchins, 2012). Recommendations from this report are that successful social media campaigns should:

- Exploit the "social" aspect of social networking sites (interactive, timely replies to comments, personal)
- Communicate the wider benefits of sustainable travel
- Inform to spark interest and discussion
- Link to further information and journey planning, improving knowledge
- Make the site easy to navigate
- Tailor the information to the user
- Encourage active participation
- Convey professional credibility

Examples of car sharing social network sites on Facebook include Liftshare and Whipcar. Other useful sustainable travel networks include the Sustrans and Twago Facebook groups.

Structural

These barriers can potentially be expensive to overcome, involving building new cycle lanes for example. However targeted interventions can produce significant results. An example is cycle in bus lanes and cycle advance stop lines at junctions can lead to increased perception of safety and are more cost effective options.

Perceived structural barriers can be overcome with improved information provision. For example there may be a lack of awareness about a cycle route, and this can be overcome by advertising, signage and information provision.

Maintenance & Reporting

Potholes and the condition of roads, cycle routes and footpaths can be a major area of requests for service, complaints or claims to a local highway authority. Engagement with the public using our services is vital to boost satisfaction and confidence in the services.

A similar direct feedback system, accessed through a single point of access active travel website, could be used by Warwickshire residents to give feedback to the Local Authority, enhance community engagement and improve perception of ownership of the County's active travel network.

Knowledge and Awareness

Information delivery is not just the responsibility of the Local Authority but also local businesses and partner organisations.

Understanding how different audiences access this information and use it is vital in ensuring information delivery is effective and yields the greatest impact.

Transport Merseyside, (2011) state that key messages and information, in conjunction with key partners can be delivered via many forms of communication to those who will benefit and use services. They encourage work with partners, the voluntary sector and community groups which can further aid 'word of mouth' promotion about the ways people can be encouraged and helped to walk and cycle more.

Website Design Guidance

Research into website design has shown that active travel websites, concerned with searching and delivering information to users, should be easy to navigate with fast download speeds (Tarafdar & Zhang, 2006). Warwickshire County Council's "Choose how you move" website is currently being updated and should reflect this guidance.

The 'Transport Research Laboratory' survey into

website and social media preferences found that the tone of writing should be professional but accessible, and should avoid being condescending or overly formal. Information provided should be practical and relevant to individual users, as well as drawing on the motivating effect of the collective action e.g. focus on individual achievement and health benefits, whilst highlighting the considerable collective impact of behaviour change on environment.

The website should also have immediate impact; an attention grabbing website will have high quality design, content and will be well presented, easy to use and navigate making the user more likely to spend more time on the site. Finally the website should be accessible from a smartphone with links to social media (Binstead & Hutchins, 2012).

Apps

One of the common barriers to use of buses is waiting time. Smart phones and real-time schedule information and updates on delays have been embraced successfully by the train industry and lessons learnt from the railways could be applied to buses.

Surveys revealed that bus riders using smartphone apps had shorter waiting times and perceived that their waits were shorter because the app enabled them to plan their travel better. They also reported higher overall satisfaction levels with public transport (Badger, 2014).

Social and Cultural Norms

Creating a culture of similar behaviour within an organisation or community can influence behaviour as a result of the new social norm.

Using credible and well respected figureheads is an effective way of delivering messages. An example of a campaign aimed at challenging social attitudes and changing cultural norms towards bus travel in Brighton and Hove is the "On the Bus" campaign; advertising featured prominent and respected local celebrities, businessmen, sports stars and families in order to challenging the local perception that the bus was down-market and only for those who can't afford to use a car.

Habit

Encouraging people to reflect on their habitual behaviour can be useful in changing perceptions of behaviour and drive change. In order to make a change people need to have the sufficient understanding and understanding of alternatives. Changing habits can be time consuming and challenging, but is achievable through ongoing

interventions involving targeted information, incentives and ensuring that barriers are removed or reduced where possible.

Costs

Using price incentives is an effective method of encouraging behavioural change. It is important that pricing is kept simple, reward good behaviour rather than punish bad and promote the short term benefits as well as long term gains.

Capability

Equipping the target population with the skills to make a behavioural change is an important set. This may be in the form of physical equipment required to partake in activity (e.g. cycling equipment) or psychological skills (e.g. confidence). This leads on from COM-B model work as described in a previous chapter.

Choice architecture

Choice Architecture is the careful design of environments to present choices to users. By designing environments to 'nudge' people into making positive choices we can influence the choices people make. It is important to consider this when planning a marketing campaign, incentive scheme or infrastructure investment.

An example of a successful choice architecture scheme is the use of "smart tickets (eg. London Oyster card system). With this the commuter can use a single card to travel on all forms of public transport, rather than requiring multiple cards or tickets. This makes choosing public transport simpler, more convenient and more attractive.

Taking into account the barriers to walking and cycling, we can design environments that encourage residents to choose walking and cycling as the primary modes of travel. This can be achieved through (Cycle Nation, 2014):

- Direct walking and cycle routes; between housing areas and major destinations, making walking and cycling the most pleasant and easiest way to travel around.
- Convenient cycle infrastructure; avoiding stop-start travel caused by obstructions, lack of priority, and narrow pavements shared with pedestrians.
- Convenient and safe cycle parking.

Action Plan

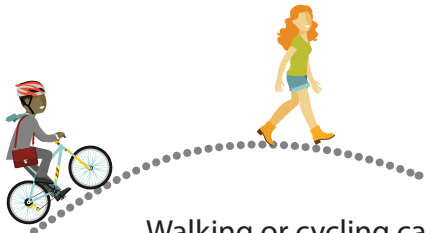
Behavior Change

An understanding and knowledge of behavioural insights is vital when planning any intervention to increase positive travel choices in Warwickshire. The key points to consider in order to enable positive behavioural change include:

1. **Identification of perceived barriers to sustainable travel choices using surveys:**
   - **Target groups should include employers and organisations across Warwickshire as well as current public transport users.**
2. **A well designed and user friendly website with social media integration:**
   - **Providing accurate and personalised travel information that is relevant to the target audience.**
   - **Attractive, user friendly and relevant information provision.**
   - **Links to further information including live bus and rail timetables.**
   - **Route planning tools (such as Choose How You Move Journey Planner).**
   - **Linked to social networking sites.**
   - **An integrated social network campaign.**
   - **Links to maintenance and reporting tools.**
3. **Addressing barriers to behaviour change:**
   - **Greater education of the health benefits of regular physical activity.**
   - **Awareness raising of active travel friendly infrastructure including the incorporation of signage.**
   - **Consistent and persistent positive health messages associated with active travel.**
   - **Encouragement of a change in social culture towards active travel choices.**
4. **Engagement with employers and organisations to create a culture of sustainable travel with investment in reducing perceived barriers identified through survey.**
5. **Marketing of routes and services:**
   - **Through a media campaign, with integrated social network campaign.**
   - **Through printed materials and travel maps.**
6. **Campaigning and lobbying to keep costs of public transport as low as possible, with subsidised services for selected vulnerable population groups.**
7. **Investment in reducing structural barriers. Investment should be targeted where most need is identified, using survey data and existing research e.g. Atkins report.**

Summary

The travel choices people make are important.



Walking or cycling can be a quicker, lower cost alternative to the car for many trips, as well as being an easy and accessible way of being more physically active.

By encouraging more people to walk and cycle we can help support an active society, and deliver a wide range of health benefits.

There are also benefits for our communities with safer and more pleasant streets, better air quality, lower carbon emissions and reduced congestion.

On top of this there is potential to improve the local economy across Warwickshire, as well as save millions of pounds for the economy from health costs.

This document has set out the evidence behind the benefits of sustainable travel, and what works to produce positive behavioural change. Using this evidence we have produced an action plan to support Warwickshire residents to make healthy travel choices in order to increase physical activity levels, improve health outcomes, benefit the local economy and reduce congestion and air pollution

Next Steps

Action	Responsibility	Description & Evaluation
1. Survey the largest 10 employers across Warwickshire on travel habits, barriers to active travel and current infrastructure deficits.	Transport and Public Health	• Survey results • Action plan for each local employer based on individual requirements • Assess impact of interventions
2. One WCC website for Healthy Travel Choices and Real Time Passenger Information.	Transport and Public Health	• Launch a one travel website for the WCC combined with current initiatives such as 'Choose how you move' • Website to include: information on walking, cycling, car sharing, bus and rail services, • Journey planner (e.g. choose how you move), evidence basis, maintenance report tool • Real time passenger information
3.Transport Operations Initiatives.	Transport and Public Health	• Research into a multi operator bus ticket for ease of usage • Launch of initiatives such as this • Integration of bus operators
4. A Signage Strategy.	Transport, Planning and Public Health	• Signage strategy publication • Signage to promote walking and cycling routes across Warwickshire
5. A single real time Smartphone App for Bus Travel.	Transport, Bus operators and Public Health	• Promotion of a real time Smartphone app • Co-operation with bus companies • Enhanced timetable information and accurate real time passenger information
6. Support Children's Walking and Cycling Schemes.	Transport, Public Health and Education and Learning	• Evaluation of children's cycle and walking schemes • Uptake in numbers of children attending Bikeability training
7.Consideration of Traffic Calming Measures.	Transport and Public Health	• 20mph zones • Physical traffic calming infrastructure • Creation of pedestrian and cycling friendly environments/zones

Action	Responsibility	Description & Evaluation
8. Support Employers to Develop and Maintain Car Sharing Schemes and Incentive Programmes.	Transport, Estates and Public Health	• Increase number of employers and institutions using Car Share Warwickshire • Incorporated into single website and greater advertisement
9 . Education Projects.	Transport, Education and Learning and Public Health	• Healthy Travel Choices education across the county • Road safety education • Promotion of Love2Bike through single website • Children's educational programmes
10. Walking and Cycling a priority for planning and development decision making.	Planning, Transport and Public Health	• Increase priority of walking and cycling provision for all new developments and redevelopments • DPH role on Health and Wellbeing Board

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