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JANUARY 2019

THE FIRST & LAST MILE

CHANGING THE DYNAMIC OF EVERYDAY JOURNEYS

Go-Ahead

RunFriendly

The First & Last Mile
Released January 2019
go-ahead.com/en/future-of-transport

The Go-Ahead Group

Since it was founded almost three decades ago, Go-Ahead has transformed from a small bus operator in north east England to one of the UK's leading providers of passenger transport enabling more than a billion journeys each year on our bus and rail services.

Today, we are as committed as ever to continually improving the commuter experience, and with it, overall customer satisfaction.

RunFriendly

RunFriendly is devoted to helping more of us run, cycle and move actively, particularly in cities and by thoughtfully complementing good public transit.

It does so through advocacy and research, activation campaigns and digital products that nudge and enable behaviour which is 'good for you and good for the city'.

RunFriendly's first digital product is like an 'Airbnb for showers'. It matches (and helps grow) demand among runners, cyclists and those on-the-go with under-used showers in hotels, gyms, workspaces, leisure providers etc. This helps overcome a barrier to active travel, whatever the weather, whilst enabling hotels, gyms and other venues to sweat their assets in ways that generate new income.

www.runfriendly.com

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Go-Ahead RunFriendly

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FOREWORD

As a doctor, it has long been clear to me that it is the smallest things can make the biggest difference.

Perhaps that is cutting out a chocolate bar with lunch, getting that extra half an hour of sleep at night, or simply drinking an extra glass of water every day. Tiny changes can add up to have a substantial impact on our health.

The incentives that we can offer to encourage people to make those changes are a key part of that.

In political circles, this is known as "nudge theory".

It's why I'm grateful to The Go-Ahead Group and RunFriendly for assembling this first-of-its-kind research, bringing together this kind of cutting-edge "nudge" thinking to the world of public transport and attempting to influence how people travel.

Because a small amount of exercise in the mornings can have huge personal and health benefits, whether that means walking to the next bus stop or cycling to your office.

Studies have shown that walking briskly for as little as 10 minutes can increase mental alertness, energy and positive mood, and reduce your risk of heart attack. People who participate in daily physical activity also have approximately a 20% – 30% lower risk of depression and dementia, and regular brisk walking can cut your risk of cancer by as much as 15%.

Just 10 minutes. A small change, and a big difference.

This report, written in association with an academic researcher and active travel innovators, RunFriendly, includes a treasure trove of information about how we can all make ourselves a little bit healthier and happier.

Not least, the results of a unique survey exploring how different types of commuters face different motivations and barriers to travelling the first and last mile of their journey in a more active way.

However, the way we communicate this information is more important than ever, because having the information is one thing, but encouraging action is another. So I commend Go-Ahead for their commuter profiles, which highlight the different archetypes when it comes to our transport.

And I can see myself in one of them. It turns out that I'm a sporty walker commuter.

I've already made the change I need without realising it. For instance, I'm not remotely embarrassed to be seen in trainers, swapping to office shoes when I arrive at work. A choice I made for comfort turns out to be great for my health too. I don't travel from the closest tube to my house: instead, I walk an extra stop, which allows me to get on at the end of the line and start work on my laptop because I can always get a seat. And at the other end, I walk from the closest stop on my direct line. With 1–1 ½ miles each end of my tube journey, I rack up a gratifying 5 miles a day even when I don't do any 'formal' exercise at all.

I have always believed that it is crucial that we are able to take control of our own health, maintain our well-being, and build regular exercise into our modern lives that just don't stop. This pioneering study helps with that.

But, when all is said and done, the most striking part of this report is just how simple it is to make a change.

This isn't some difficult exercise regime that will take all of the free time out of your day.

For most of us, leaving the car and walking the 10 minutes to the bus stop or train station could mean walking 5 extra miles every week. That's a truly enormous change, and not just to our physical state.

There are lots of ways to fit in exercise in a busy daily regime, here are my top five tips...

1. Take a leaf out of my book and get off the bus or tube one stop earlier. If you're not used to regular exercise, start off getting out earlier just on the way home, so you can have a shower if you get a bit sweaty by the end.

2. If you wear formal shoes at work, keep a pair or two in your locker at work and invest in well padded trainers for maximum comfort while you're walking.

3. Try to build up your walking speed until you're feeling a bit out of breath and your heart is beating a bit faster. Ambling along is better than nothing, but for maximum heart benefits you need brisk walking.

4. Try and find a buddy who shares the same route. That way, you'll be less tempted to give up and stay on for an extra stop if the weather is a bit miserable.

5. Write yourself a list of all the reasons you'd like to get fitter – whether it's being able to play with the kids without getting out of puff or avoiding a heart attack – and bring it out if you're tempted to take the easy option.

Too often, we're sucked in by exercise or diet regimes that make us feel guilty, rather than empowered. As if we're somehow failing in our lives as they are.

Maybe we're not eating enough healthy food, or we're too busy to find the time to go to a gym.

The reality is that grasping the nettle is hard, and it requires commitment. But there is also a tremendous opportunity out there for us all to take on these kinds of small challenges.

Leave the car and travel from the train station on foot. Use a bike hire scheme, rather than a taxi. Do the little things and take control.

Because it isn't just about working harder, it's about exercising smarter. The most sustainable kind of exercise is the kind that fits into your daily routine. And Go-Ahead's research shows that active travel is part of the solution for many people.

It's a fabulous prospect for us all, and I'm grateful to Go-Ahead for using this important report to highlight it.

Dr Sarah Jarvis

Dr Sarah Jarvis, MBE, FRCGP

Dr Jarvis is a general practitioner working in London, and she also works in the mass media to promote health. She was educated at Millfield and qualified as a Medical Doctor in July 1986 from University of Oxford.

She is also the Health and Medical Reporter for The One Show, a regular guest on The Jeremy Vine Show, and Clinical Consultant for health website Patient UK.

EXECUTIVE SUMMARY

We have an opportunity to transform the lives of individuals and their communities by incorporating more walking, cycling or running into the daily commute.

This report focuses on the benefits that might be secured if people switched from car travel to public transport and used more active travel modes for the journey to and from the railway station or bus stop.

It explores how active, or inactive, we are during this first and last mile of our commute and other everyday journeys.

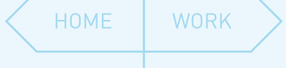
It also uniquely considers running, alongside the very welcome focus on walking and cycling, as a growing, viable and largely accessible mode of active travel, in particular for this first and last mile, within its research scope.

The report uses three methods to examine these 'first & last miles'

Survey
A bespoke survey of an unprecedented 850 commuters, recruited principally at Ashford International and Gravesend stations in July and August 2018, including people who regularly walked, cycled, ran or drove to and from the railway station.

Interviews
In depth follow-up interviews by telephone or face-to-face on platforms and station concourses with 53 commuters over a three day period in August 2018.

Evidence review
A comprehensive review of existing evidence, including work published in academic journals as well as grey literature including reports by government departments and agencies, non-governmental organisations and the third sector.



The potential benefits of more active travel during the first & last miles include:

- Increased physical activity, which can reduce the risk of at least twenty chronic health conditions including heart disease, cancer and diabetes.
- Improved wellbeing and mental health, with studies showing that people who participate in daily physical activity are happier than their inactive counterparts and have approximately a 20-30% lower risk of depression or dementia.
- Reductions in air pollution, noise and road traffic accidents by excessive car traffic in congested areas around railway stations or bus routes.
- Less disruption to neighbourhoods around railway stations or bus routes that is caused by excessive car traffic, supporting a greater sense of place, community cohesion and positive interactions for people living in those areas.
- Cost savings, to the health service arising from reductions in ill health, and to commuters, because active modes are cheaper than car travel.

Policy makers have a series of options for promoting more active first & last miles, however evidence on their effectiveness and cost-effectiveness is currently limited. These include:

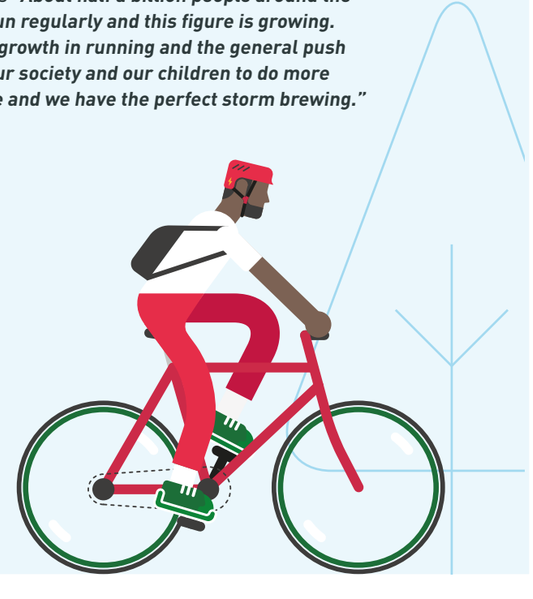
- Changes to the choice architecture, including providing car commuters with information about how to access public transport using more active modes, through a dedicated smartphone app for example.
- Non-financial incentives, including the provision of dedicated cycling infrastructure to access rail stations or bus routes. One of a number of assets that can be further enhanced is the National Cycle Network, a signed-network of over 16,000 miles spanning the UK, which is used by walkers and people cycling, as well as joggers, wheelchair users and even horse riders.[1]
- Financial incentives, including discounts for relevant equipment, e.g. purchase of a bicycle or running gear, or rewards for walking, cycling or running.
- More interventionist policies, including banning cars and vans in certain areas.

Wi-Fi and smartphone technology have in recent years transformed the onboard public transport experience into a more productive time. Similarly, better opportunities for more walking, cycling or running as part of the first & last miles could enhance the commute experience for existing public transport users, as well as improve the attraction of public transport for people who currently commute by car.

Research suggests that large increases in walking, cycling or running as part of daily commuting has the potential to make a significant impact on the nation's wellbeing, in terms of both momentary happiness and long-term health and wellbeing.

Increases in active travel, in combination with increased public transport use, would, we hope, be supported by local and national Government agencies across the transport, health and environmental sectors. But it will also require strong leadership and a substantial, coordinated and concerted effort to deliver real change at scale.

Marathon world record holder Paula Radcliffe, who recently joined UN Environment as an Advocate for Clean Air, and an asthma sufferer since a teenager, observes ***"About half a billion people around the world run regularly and this figure is growing. [This]...growth in running and the general push to get our society and our children to do more exercise and we have the perfect storm brewing."***



1 INTRODUCTION

> **For most people, the easiest and most acceptable forms of physical activity are those that can be incorporated into everyday life.**
>
> The four UK Chief Medical Officers, 2011[2]

The arrival and expansion of railways during the nineteenth and twentieth centuries revolutionised the world of work, enabling large numbers of people to work further from their homes, and freeing employers from the constraint of having to locate where their employees lived.[3]

With this mass and unprecedented separation of home and work, the rise of a daily commute has since transformed and, in many cases, literally defined the lives of generations of workers and their families. Today, with average rail commutes of 59 minutes and bus commutes of 39 minutes,[4] it's quite common to spend as much time commuting as on other social or leisure activities.[5]

During the latter half of the twentieth century, it was the mass adoption of cars, expansion of road networks and the modification of built environments to facilitate motoring that further enhanced the opportunities for travel and commuting.[5]

Nowadays around 8 billion commuting journeys are made every year. Whilst the majority are by car,[6] the appeal and role of the train and other public transport modes remains, with some academic studies showing that people who are able to commute to work by train or by bus are generally healthier and happier than those who drive to work.

EMERGING EVIDENCE

One study of 6,000 British commuters led by the London School of Hygiene and Tropical Medicine,[7] and another larger study of 50,000 Taiwanese commuters,[8] indicated that people can lose weight by switching from car commuting to public transport and, in the Taiwanese study, were around 15% less likely to be overweight as a result.

A third study of 18,000 British commuters led by the University of East Anglia (UEA) showed that commuting by public transport was associated with higher levels of psychological wellbeing than commuting by car.[9] The study was based on questionnaire data that captured twelve psychological symptoms including feeling under strain and being unable to concentrate.

In all three studies, these relationships held even after accounting for other important factors, such as age, gender, job status or earnings that might also affect commuting behaviours and health or wellbeing.

THE GIFT OF TRAVEL TIME

An intrinsic benefit of train or bus commuting, which academics at the University of the West of England (UWE) have branded "the gift of travel time,"[11] is the opportunity to do valuable activities that might otherwise be impossible in a hectic working day. Perhaps it's a chance to read,[12] be creative,[13] finish a crossword, rest or think about the day.

In recent years, smartphones and on-board Wi-Fi have particularly enhanced the opportunities for public transport commuters to "unlock" time they might otherwise have considered wasted or idle.

A UWE study with Chiltern Railways highlighted how routine it has become for people to use their commute for work purposes, by checking and responding to emails for example, and thus potentially allowing workers to be at least as productive whilst travelling as they are in an office.[14] Hence it seems that public transport has a continued role in facilitating, as well as shaping, the future of work – and in changing people's lives.

Some commuting parents, for instance, stated in the UWE study that they valued the commute because of the chance to work more flexible hours as well as providing an important transition between their work and home roles. If they can tie loose ends from the working day whilst also handling tedious domestic-related administrative things, then they thought there'd be a better chance of enjoying the evenings.

THE FIRST & LAST MILE

Beyond the train or bus journey itself, a relatively overlooked aspect of public transport commuting is the 'first & last miles' – that is the (four) daily journeys that people make to and from the stations or stops near their homes and workplaces. Typically these journeys are a small fraction of the total distance travelled but, in terms of time, potentially as long as the train or bus journey itself and a substantial part of the working day.

Historically, with railway and bus stations often built on the edges of towns and cities,[3] walking between the station and the workplace or home would have been commonplace.

Today, urban transport networks (e.g. connecting buses or the London Underground) and mass car ownership provide people with convenient alternatives. But such choices incur costs, including the various stresses and strains arising from congestion[14] and car parking near railway stations, as well as the missed opportunity to engage in physical activity.

Physical activity is a critically important determinant of health and wellbeing. Yet well over one-third of working-aged adults in Britain (around 20 million people) do not meet the minimum levels of physical activity that are recommended in international World Health Organisation (WHO) guidelines and promoted by the UK Chief Medical Officers (CMOs).[2]

The Chief Medical Officers provide two specific examples of the amount and type of physical activity that people should aim to achieve:

Thirty minutes of brisk walking or cycling on five days each week
or
75 minutes of running each week

A common problem for working-aged adults is finding time to do more physical activity. For example, the nationally-representative Health Survey for England (HSE) interviewed around 6,800 people who said work commitments (45% of men and 34% of women) and a lack of leisure time (38% of men and 37% of women) were the two most common barriers to more physical activity.[15]

In contrast, for most public transport commuters, the first & last miles are an unavoidable fixture of the daily routine and thus perhaps an ideal opportunity to integrate a good amount of physical activity into their daily lives.

EXAMINING THE FIRST & LAST MILE

The purpose of this report is to examine how people travel their first & last miles, what their experiences are, and how this otherwise idle and potentially stressful time might be transformed into a positive, health enhancing prospect for large numbers of people.

The report draws on evidence from three sources:

Survey: A bespoke survey of an unprecedented 850 commuters, recruited principally at Ashford International and Gravesend stations in July and August 2018. Included in the sample were people who regularly walked, cycled, ran or drove to and from the railway station.

Interviews: In depth follow-up interviews by telephone or face-to-face on platforms and station concourses with 53 commuters over a three day period in August 2018.

Evidence review: A comprehensive review of existing evidence. This included work published in academic journals as well as grey literature including reports of government departments and agencies, non-governmental organisations and the third sector.

2

WHAT IS KNOWN ABOUT COMMUTERS' FIRST & LAST MILES?

In this section, four main findings about the first & last miles are highlighted.

They draw on the survey and interview insights, supported by some data from other large, national-level datasets.

Key report findings

1. Active travel in general has declined over time

2. People who are active on the first or last miles don't usually look like athletes

3. People who are active tend to use a mixture of modes throughout the week

4. Minimising journey times and costs are two important decision making factors

FUTURE OF TRANSPORT

In addition to this report, the research insights informed the development of six commuter archetypes – people who opt for different first & last mile options. This provides a rich resource for developing a dialogue with commuters as well as tools to help promote active travel.

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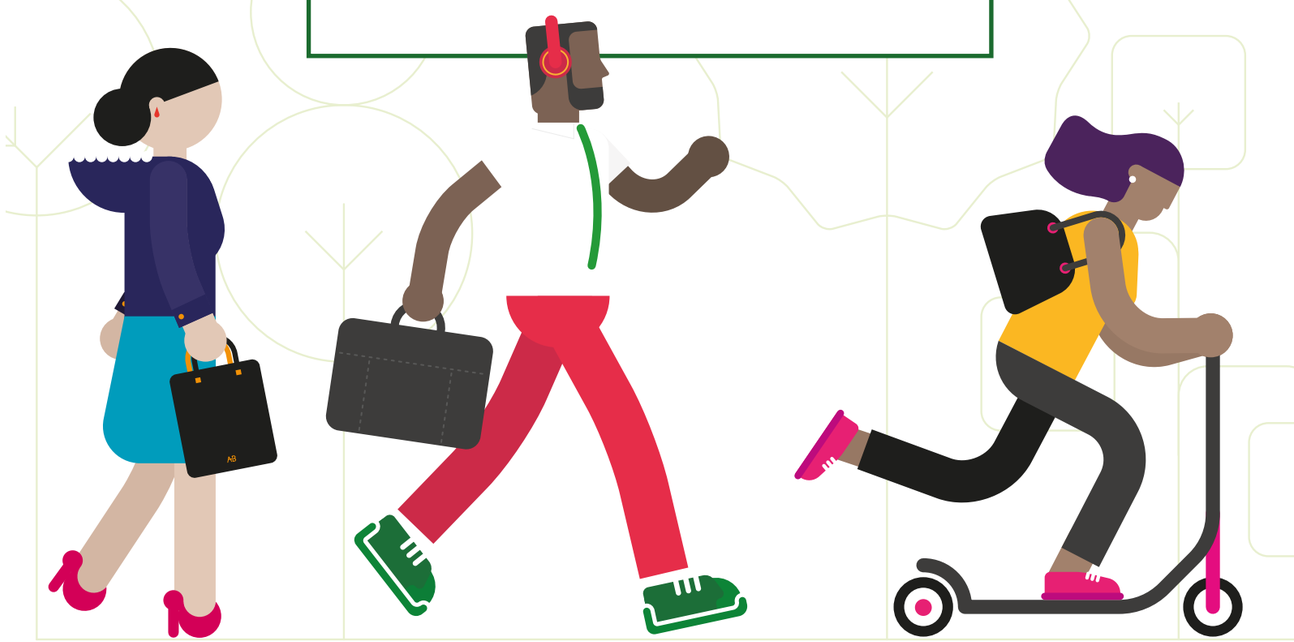


2.1

ACTIVE TRAVEL IN GENERAL HAS DECLINED OVER TIME, BUT THERE'S LITTLE EVIDENCE ABOUT WHAT'S HAPPENED TO PHYSICAL ACTIVITY ON THE FIRST & LAST MILES

Various datasets provide information on the total distances travelled and the total number of journeys that are made by different travel modes, including walking and cycling.

The National Travel Survey (NTS) is a nationally-representative sample of around 7,000 households and includes data collected from comprehensive seven-day travel diaries.[16] The NTS data shows that average distances walked per person per year have fallen from 255 miles in 1975 (when the survey began) to 181 miles in 2012. In contrast, during the same time period, average distances travelled by car (or van) per person per year increased from 1,971 to 3,367 miles (See Graph 1). The data also shows the total number of short walking trips (less than one mile) have also fallen since 1985 (although there has been a slight increase in the number of longer walking trips) (See Graph 2).

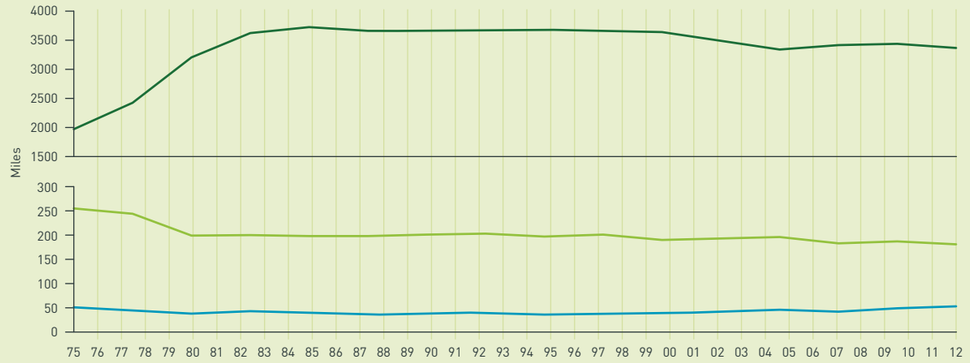
In terms of cycling, the NTS data shows that distances travelled in recent years are similar to those reported in the mid-1970s (See Graph 1), averaging around 50 miles per person per year.

However, longer term data from the National Road Traffic Survey (NRTS), which measures traffic only on roads accessible to cars, shows that a dramatic decline in cycling occurred during the 1950s and 1960s (See Graph 3).[17] In 1949, cycling accounted for 14.7 billion miles per year compared to around 2 to 4 billion miles since the 1970s. The NRTS data also shows that cycling as a proportion of total distance travelled by any mode fell from 34% in 1949 to 1% to 2% since the 1970s.

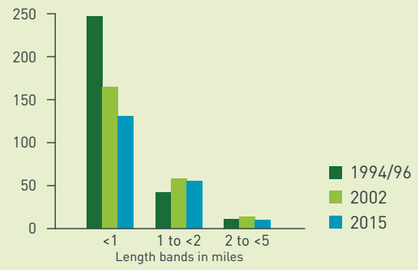
Compared with other European countries, Britain now has a lower than average proportion of adults who cycle at least once a day, and has lower rates of cycling and walking than 23 other European countries.[18]

A notable limitation of existing studies and datasets is that so few specifically examine how people access rail stations or bus stops on their commute. This limits the potential for examining whether these underlying trends in active travel fully reflect how people travel on the first & last miles of their public transport commutes. Whilst the main mode of travel to work is relatively easy to measure and is included in many national surveys of people in work, including the UK Census, most datasets do not collect information about the first & last mile. Even the NTS has relatively little information about walks that are under one mile, or take less than 20 minutes. Furthermore, no existing national-level survey has captured information about running as a transport mode.

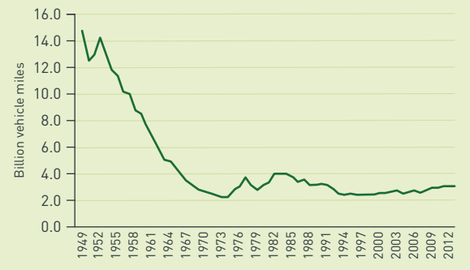
Graph 1: Average distance travelled by mode of travel, Great Britain 1975 – 2012[15]



Graph 2: Number of walking trips per person per year by trip length in 1994/96, 2002 and 2015[16]



Graph 3: Total number of miles travelled by bike on Britain's roads by year (billions)[16]



2.2

PEOPLE WHO ARE ACTIVE ON THE FIRST OR LAST MILES DON'T USUALLY LOOK LIKE ATHLETES

'UNAWARE' WALKERS & CYCLISTS

A key theme identified in the survey and interview components of the research was that many people who used active travel modes did so without considering or being aware of the exercise and health benefits. This group typically wore their usual work clothes rather than any specific sports clothing.

Many people, including some with a physical injury or disability, stated they were not keen or able to do more vigorous exercise, such as brisk walking, cycling or running, but nonetheless (for those who were able) did value a walk to or from the station.

For instance, people said:

"Oh I can't cycle, I'm not that fit."

"My physio says just do the manageable stuff, don't over strain, don't over exhaust yourself."

"I was diagnosed with diabetes and they told me I need to take more exercise to help with that. I need to keep fit. Walking to the bus is my way of exercising."

'SPORTY' WALKERS, CYCLISTS & RUNNERS

The 'unaware' walkers or cyclists were contrasted with more 'sporty' walkers, cyclists or runners who typically dressed specifically for the first & last miles. This group considered the journey a vital way to keep up their physical activity and fitness levels, which were important to them.

In addition to the specialised clothing, some had to make specific arrangements:

"I have to consider whether I have to leave notebooks and computer behind. I just wear a marathon pack... So I have to think about the type of day [it will be]."

Some covered large distances. For example, a walker said:

"I have to force [exercise] into my day, my exercise is my commute. It's just under 4 miles a day."

A runner said:

"Sometimes I'll run to London Bridge, which is about 8k."

Nevertheless, the survey component of the research showed that many (45%) of the commuters who identified themselves as first or last mile runners said they typically ran for journeys of less than 10 minutes.

Many people in this group thought that walking to the station was not really exercise.

One person said:

"I don't consider getting to the station exercise... that's a lazy form of exercise."

However, another reported changing their mind once they'd measured how much physical activity they accumulated each day:

"Running is my main thing. I don't really count the walk as exercise because I never thought it was enough - until I [was off work] and I wasn't doing the walking and put on loads of weight! And I got a fitbit and saw it all adds up."

> **"I have to force exercise into my day, my exercise is my commute. It's just under 4 miles a day."**

2.3

PEOPLE WHO ARE ACTIVE ON THE FIRST OR LAST MILES TEND TO USE A MIXTURE OF MODES THROUGHOUT THE WEEK

In the survey component of the research, it was clear that most people used a variety of different modes for each of the four first & last mile sections of the journey, and did not always make the same travel mode choices from day to day.

Of those commuters who identified as being first or last mile runners at least once a week, less than one-fifth said they ran 'most of the time' for any particular section of the journey. For those who used the train, running on the 'home to train' and 'work to train' sections of the journey was the most common (17% reported running these sections 'most of the time'), whilst running the 'train to home' section was least common (6%). Runners in the survey said they also used bikes (30% of respondents), buses (34%) and cars quite frequently as part of their commute.

Of those train commuters who identified as being first or last mile cyclists at least once a week, more than half said they cycled 'most of the time' for the 'home to train' and 'train to home' sections of the journey. Of these, very few also reported cycling on the 'train to work' or 'work to train' sections. Conversely, those who reported cycling on the sections to and from work rarely cycled on the sections to and from home.

The survey found that people who walked a particular section of the journey at least once a week did so much more regularly throughout the week than commuters who chose other active modes (83% said that they walked any particular section of the journey 'most of the time').

Less than one fifth of **first or last mile runners** said they ran **'most of the time'** for any particular section of the journey.

2.4

MINIMISING JOURNEY TIMES AND COSTS ARE TWO IMPORTANT FACTORS IN PEOPLE'S FIRST & LAST MILE DECISIONS

Consistent with standard economic theory,[19] a common theme to emerge from the survey and interview components of the research was that journey times and costs were important factors in first & last mile travel decisions.

Commuters who frequently travelled by car for the first & last miles often stated that they did so because it was easiest and fastest. Many also commented that they preferred having a lift from friends or family, since this made the journey particularly convenient, quick and cheap.

For instance, comments from drivers collected in the interviews and free-text fields of the survey included:

"My mum dropped me off. It's easy."

"[The journey] would be a 20 minute walk at the other end but my husband picks me up."

"It's a 25 minute walk or a 10 minute drive."

"No, I don't miss the walk. A lift is easier, I can get into work earlier."

"I would have to get up even earlier or I would get home very late."

Whilst most of the first & last mile car drivers stated that more active modes would be impractical for them, by taking too long for example, it was striking that many were eager to do some walking if there was a potential saving to be made on car parking fees. For example:

"I park 15 minutes away, rather than the station car park... It's a way to save money."

"I park 5 minutes away, not at the station, to avoid the car park fee. Then walk up a steep hill."

"I drive halfway and then walk the last 15 minutes to the station – to avoid the car park fee at the station."

People who exclusively walked, cycled or ran for the first & last miles also emphasised the importance of time and cost savings. For example:

"[I walk] to save time and keep fit."

"It shortens my journey and means I can get a later train in the morning. When [our children] are really little it's invaluable."

"I get to the station quicker."

"[Cycling] shortens my journey and means I can get an earlier train."

3

WHAT ARE THE POTENTIAL BENEFITS OF A PHYSICALLY ACTIVE FIRST OR LAST MILE?

In this section, evidence is presented which shows how a more active first & last mile can support a healthier and happier commute. As well as conveying health and wellbeing benefits directly from increased overall physical activity levels, other benefits of active travel are also examined.

> **The potential benefits of physical activity to health are huge. If a medication existed which had a similar effect, it would be regarded as a 'wonder drug' or 'miracle cure'.**
>
> Sir Liam Donaldson, former Chief Medical Officer (England)[20]

3.1 MORE PHYSICAL ACTIVITY

One analysis of 3,300 North American commuters,[21] and another of 3,600 English commuters,[22] who had participated in nationally representative travel surveys found that people who travel by public transport (trains, buses and trams) on average accumulate at least 20 minutes of physical activity each day just as part of their regular journey.

In the English study, it was train commuters who accumulated the most physical activity – on average 28 minutes each day. Since the CMO and WHO physical activity guidelines state that adults should aim to achieve thirty minutes of brisk walking on five days per week (See Introduction), this study demonstrates the ease with which people can meet those guidelines on their daily commute alone.

Considering that these two studies and all other comparable studies have not differentiated between how people travelled to and from the railway station, it thus seems probable that people who exclusively used active modes would easily exceed the physical activity levels recommended in the guidelines.

Some other studies also indicate that when people start doing more active travel, they do not offset this by reducing the physical activity done elsewhere in their lives, such as sports, running or walking during leisure time. One study of 1,600 British adults, for example, showed that increased active travel was associated with an increase in overall physical activity levels.[23]

In the survey component of the research, at least two-thirds of those who were active during the first & last miles stated that exercising as part of their commute was an important consideration. Of all three active modes (walking, cycling, running), it was cyclists who were the most likely to state exercise as an important factor in their mode choice decision (83%).

3.2 BETTER PHYSICAL HEALTH

Physical inactivity is associated with at least twenty chronic health conditions including coronary heart disease, cancer, diabetes and stroke, and identified by the WHO as the fourth leading risk factor for global mortality. It is also a significant determinant of obesity, since physical activity is a key determinant of energy expenditure.

There is strong evidence to show that people of all ages can gain substantial health benefits by meeting the CMO and WHO physical activity guidelines. This includes a reduced risk of death, equivalent to a 30% risk reduction for the most active people compared with the least active.[2] Even small increases in physical activity among those who are the least active can bring substantial benefits.[2]

In addition to this general evidence on the health benefits of physical activity, some studies have also linked these health benefits directly to increased active travel, including during the first and last miles.

One study published in the British Medical Journal analysed around five years' worth of data on 260,000 British commuters. The researchers at the University of Glasgow showed that commuters who combined cycling with non-active modes (assumed to be mainly public transport) had a reduced likelihood of a new cancer diagnosis or death (by any cause) when compared to commuters who did not use any active travel modes (i.e. people who drove the first & last miles to access public transport, or who drove for the whole journey).[24]

A further study of 360,000 people showed that, among regular commuters, more active patterns of travel compared with exclusive car use were associated with an 11% lower relative risk of developing heart disease or stroke and a 30% lower relative risk of death from heart disease or stroke. The association was even stronger when all forms of travel, both commuting and everyday travel, were included in the analysis.[25]

3.3 IMPROVED WELLBEING & MENTAL HEALTH

Evidence shows that physical activity is a determinant of wellbeing,[26, 27, 28, 29] and can increase positive mood and self-esteem, and reduce anxiety and stress. Some studies suggest that even small amounts of physical activity can lead to significant benefits. One study, for example, showed that a 10 minute brisk walk can increase mental alertness, energy and positive mood.[30]

Physical activity is also reported to prevent the development of mental health problems as well as improve quality of life for people experiencing mental health problems.[31]

Studies have demonstrated that people who participate in daily physical activity have approximately a

20–30%

lower risk of depression and of dementia.[2]

A small number of studies have also examined whether these benefits can be accrued specifically through walking and cycling for travel. The UEA study described in the Introduction, for example, showed that the likelihood of reporting being constantly under strain or unable to concentrate was at least 13% higher when commuters drove to work, compared to when they walked or cycled.[9] A further study of 800 commuters in Cambridge showed that people who maintained cycling over a one year period had better mental wellbeing than commuters who did not cycle to work.[32] Furthermore, the cycle commuters also reported lower sickness absence equivalent to one less day per year. However, the study did not identify comparable benefits for people who walked to work.

In the survey component of the research, the majority of commuters who used active modes agreed or strongly agreed that the first or last miles were relaxing (55% of walkers and 67% of cyclists) and enjoyable. At least one third agreed or strongly agreed with the statements that they enjoyed the journey because it gave them time and space to think about the day (54% of walkers, 36% of cyclists and 39% of runners) and that they found the active first or last miles to be more enjoyable than the train journey itself (38%). 17% of cyclists and walkers agreed or strongly agreed that they found the first or last miles to be stressful.

The majority of commuters who used active modes agreed or strongly agreed that the first & last miles were relaxing.

During the interview component of the research, people also said they had chosen active travel because of perceived benefits related to wellbeing. For example, a walker, a cyclist and a runner said:

"I prefer to walk than take the underground – it's less stressful, plus the fitness thing!"

"I enjoy it, there's just something about cycling... It makes me emotionally alert at work and productive."

"Running helps me sleep better and gives me more energy."

A possible cause of stress during the journey to the railway station might be the lack of control over arrival time caused by traffic jams or finding a car parking space. This is partially supported by studies that have used NTS data to examine variation in journey times. They have demonstrated that, for the same journeys and individuals, commuters face greater day-to-day variation in journey times, and thus less predictability and reliability, when travelling by car compared with walking or cycling.[6]

3.4 WIDER ENVIRONMENTAL & SOCIETAL BENEFITS

If large numbers of commuters were to switch from car travel to active travel for the first or last miles, then local communities and the environment would likely benefit from reductions in (negative) externalities that are associated with car use in urban areas, particularly near railway stations and at peak times.

Three of the principal externalities highlighted in two recent reports on urban transport published by the National Institute for Health and Care Excellence (NICE)[33] and Public Health England (PHE)[34] are air pollution, noise and road traffic accidents. These also capture the most commonly cited barriers to active travel identified in the free-text fields of the survey component of the research (after poor weather, which was cited more frequently than any other barrier).

Each of these externalities presents specific challenges in their own right. For example, each year in Britain around 2,000 children are killed or seriously injured in road traffic incidents[34] and vehicle emissions contribute substantially to a further 40,000 adult deaths attributed to outdoor air pollution, as well as to climate change.[35]

These three externalities also all contribute to physical inactivity, in that they act as a disincentive for adults and children to use outdoor facilities, as well as exacerbating health inequalities.[34] Road traffic casualty rates, for instance, show a steep social gradient, with children in the 10% most deprived areas being four times more likely to be hit by a car than those in the 10% least deprived.[34]

Excessive motorised traffic can also reduce opportunities for positive contacts with other residents in a neighbourhood and, for many people, can contribute to increased social isolation.[34] In one study highlighted in the PHE report, older people in England who experienced high levels of social isolation had significantly higher mortality rates than those with low or average levels of isolation.[36] In contrast, more active travel can help to increase the number of people of all ages who are out on the streets, not only providing opportunities for social interaction and supporting local shops, but also making public spaces seem more welcoming for all.[33]

3.5 COST SAVINGS

Considering the health benefits associated with physical activity, an economic modelling study published in the Lancet by UEA researchers found that replacing short car trips with active travel could save £17bn in healthcare costs over a 20 year period. This is because of the subsequent reductions in seven selected diseases related to physical inactivity (breast cancer, cerebrovascular disease, colorectal cancer, dementia, depression, ischaemic heart disease and type 2 diabetes). Whilst the study did account for the possibility that there might be an offsetting increase in healthcare costs arising from more road traffic incidents, other environmental and societal benefits that might arise from reduced road traffic externalities were not included.

Sustrans' Scotland, a cycling charity, also modelled the financial benefits to individuals of replacing short car trips with cycling. They focused solely on the costs of running a car and identified average annual savings of £1,800, which they concluded would, for most people, be equivalent to at least a 10% increase in take-home pay. This study did not consider possible further savings that would be expected from giving up car ownership altogether. Hence the savings they estimated might be considered an underestimate in the context of more active first and last miles.

In the survey component of the research, 64% of cyclists said they had chosen to cycle to or from the station because it was too expensive to park the car.

Replacing short car trips with active travel could save

£17 billion

in healthcare costs over a 20 year period.

4.

WHAT CAN BE DONE TO ENCOURAGE MORE ACTIVE FIRST & LAST MILES?

In this section, policies to promote more active first & last miles are reviewed. It draws on the findings of published reports and studies as well as insights from commuters who responded to the survey and interview components of the research.

> **By giving people a true alternative to the car, we will tackle many of our health, congestion and air quality issues in one go.**
>
> Rt Hon Andy Burnham, Mayor of Greater Manchester, announcing plans in 2018 for a city-region-wide cycling, walking and running network made up of more than 1,000 miles of routes (including 75 miles of Dutch-style segregated bike lanes).[37]

4.1 A POLICY FRAMEWORK

There are many different policies that could be used to influence people's travel decisions and encourage more active first & last miles. These range from nudging people towards more active travel, such as providing information about the choices they face, through to highly intrusive policies that restrict people's options, such as banning car use in particular places.

The Nuffield Council on Bioethics' has devised a 'ladder' which can be used for comparing these types of policies.[35] This has been adapted here in order to categorise the types of policies that policy makers might choose to consider (see Figure 1).

The ladder is designed to highlight the challenge of choosing policies that are most likely to change behaviours, against a need to avoid things that are overly restrictive of choice, or too costly or unacceptable to the public.

In general, higher rungs of the ladder represent increasing effectiveness which, in this case, would be measured in terms of more frequent use of active travel for the first & last miles. However, higher rungs of the ladder are also associated with increasing intrusiveness and decreasing public acceptability, and so would likely require greater investment of political capital. Hence it is usual to assume that policy makers would only consider policies on higher rungs of the ladder if policies on lower rungs are deemed to be ineffective and the risks associated with inaction are overwhelming.

Policy makers may also be concerned that policies on the higher rungs of the ladder are more costly, disruptive and complex, and require more time for approval and delivery. They will also want to choose interventions that are at lower risk of unintended consequences, whereby behaviour changes in unexpected ways, and those that have greatest chance of increasing the accessibility of walking, cycling and running for all people, not just the 'sporty' archetypes which were identified in Section 2. For example, Chris Grayling MP, Secretary of State for Transport, has recently stated: ***"For too long, some have seen cycling as a niche activity, rather than a normal activity for all."***[39]

Boris Johnson MP, the former Mayor of London, also said: ***"I want cycling to be normal, a part of everyday life. I want it to be something you feel comfortable doing in your ordinary clothes, something you hardly think about..."*** [40]

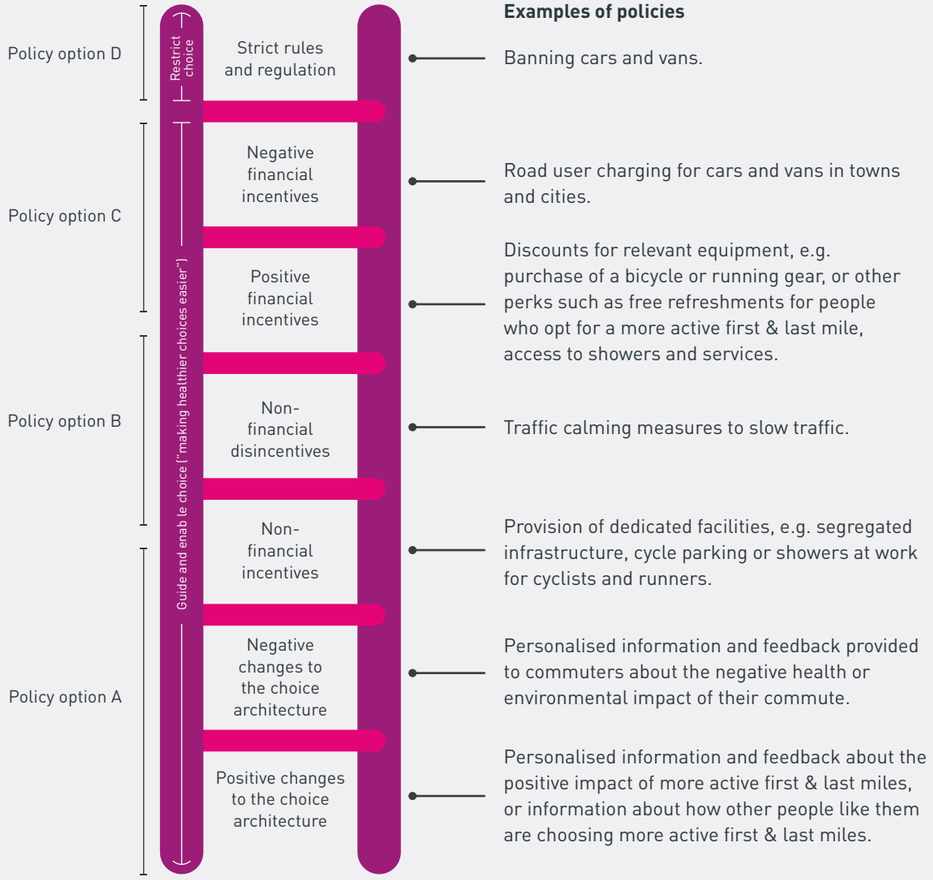
Chris Boardman, Greater Manchester's Cycling and Walking Commissioner, when announcing bold plans for the North West: ***"Making it easier for more people to travel without using cars, particularly for short journeys, is one of the key ways we can tackle congestion. We can only do this***

if we make active travel the easiest, most attractive and logical option."

Despite wide variation in active commuting between towns and cities in the UK, and between different countries, there remains a shortage of published impact evaluations to demonstrate what works best, and what is most cost-effective, in terms of promoting more walking, cycling and running.

This is not just for the first & last miles, but also for active commuting in general. A recent systematic review, for example, identified just 12 studies that had examined interventions to increase commuter cycling (6 of which were not from the UK)[41]. The review identified mixed findings and the wide range of study types and populations under investigation meant that it was difficult to draw general insights.

FIGURE 1: POLICIES TO PROMOTE MORE ACTIVE FIRST & LAST MILES



In general, higher rungs on the ladder represent increasing effectiveness and increasing intervention, but also decreasing public acceptability and increasing intrusiveness. The ladder is based on a framework developed by the Nuffield Council on Bioethics.[38]

4.2 OPTION A: CHANGING THE CHOICE ARCHITECTURE

The idea that it is desirable and feasible to influence people's behaviours without restricting their choices came to prominence amongst policy makers after publication in 2008 of Richard Thaler and Cass Sunstein's book 'Nudge: Improving Decisions About Health, Wealth, and Happiness.'[42]

A nudge was defined as ***"any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not."***[40]

Since public transport commuters are a relatively captive audience, and thus potentially receptive, one option for altering the choice architecture might be the provision of personalised information to commuters about more active first & last miles. Other strategies would also be required for providing information to car commuters about the benefits of public transport plus active first & last miles.[43]

A practical toolkit published by the Department of Transport provides some guidance on the sorts of information that could be useful in terms of altering the choices people make.[44] It is based on theoretical and evidence-based insights about people's behaviours. These include:

Costs
This could include provision of information about the relative cost savings of travelling the first & last miles by more active modes (as reviewed in section 3 and highlighted as a major consideration for commuters in section 2).

Improving knowledge and awareness.
This might include a range of 'static' information about how to access alternative first & last mile travel modes, where and how to leave a bicycle at railway stations, and when and how bicycles can be carried on trains. 'Dynamic' information on factors such as the weather, or traffic conditions, could also be useful.

Attitudes
This might include information designed to encourage people to review and assess what they like and dislike about each travel mode option.

Norms
This might include sharing information about what people like them do, perhaps in other cities or countries where active travel is more common, in order to emphasise that travelling by more active modes can be a 'normal' activity.

Capability and self-efficacy
This might include information designed to encourage people to feel more confident about choosing more active first & last miles, such as guidance on quieter or well-lit running routes, or how to handle a bicycle in wet weather conditions. For example, one of the survey respondents suggested providing ***"maps for runners which show roads or routes with better air quality."***

This information might be delivered to commuters in a variety of ways, from onboard announcements to bespoke smartphone apps. It could simply provide a trigger for commuters to reconsider their existing choices, overcome inertia and break longstanding habits. But it could also spark interest in more novel options they might not otherwise have considered, such as using a folding bike, or choosing a 'park and run' option (where people deliberately park their car some distance from the railway station and then enjoy a run).

4.3 OPTION B: NON-FINANCIAL INCENTIVES INCLUDING INFRASTRUCTURE

Non-financial incentives are defined here as policies that penalise (negative incentives) or reward and incentivise (positive incentives) certain behaviours. They do not eliminate choices in the way that strict rules and regulations might, but unlike the provision of information they are not so easy or cheap to avoid.

An example of a positive (non-financial) incentive is changing the physical environment to encourage more active first & last miles. This was the most common policy suggestion made by participants in the survey and interview components of the research. Examples of their suggestions include:

"Better traffic calming measures"
"Illuminate roads on the route home"
"Make the busy roads more pedestrian friendly"

Amongst cyclists and runners, the most common suggestion for changes to the physical environment was the provision of better quality, segregated infrastructure including:

"Provide more dedicated cycle routes separate from traffic."
"More cycle lanes"
"Continue development of cycle superhighways"
"Wider pavements would be preferable"
"Bigger pavements on the station approach"

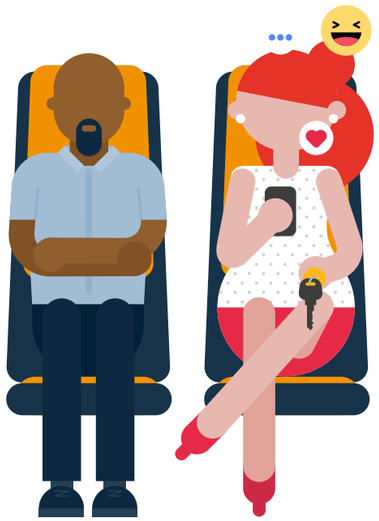
Other non-financial incentives that were mentioned in the survey and interview components of the research were the provision of dedicated facilities. Large-scale cycle parking facilities are increasingly common, for example. In Cambridge, a safe undercover park for 2,850 cycles opened in 2016. However, the world's largest bike park is in Utrecht (Netherlands) with spaces for 12,000 cycles.[45]

Interview respondents also focused on the role of their employer:

"My employer could provide personal lockers"
"More showers at workplace - and towel/ toiletries provision."

Compared to the provision of information, the delivery of these proposed changes may require a more concerted effort by multiple stakeholders, including local and national Government and public transport operators, not least in securing necessary funding and planning approvals.
In congested areas around railway stations, major changes to the physical environment may face considerable resistance from people and groups who might be perceived as losing out from the policy. For instance, the provision of dedicated cycle routes would likely involve the removal of some road capacity.

Despite these challenges, public transport operators probably have good incentives to work with relevant stakeholders in delivering such enhancements to the first & last mile experience. In addition to their responsibilities in terms of customer satisfaction and the health and wellbeing of existing customers, by improving the accessibility of existing stations or stops, the size of the customer base and catchment area would be increased. The provision of designated cycle infrastructure or high quality facilities for runners, for example, might encourage people who would otherwise be unable to access railway stations to switch from car to public transport for their commute.



One recurring issue is the shortage of evidence on the impact of infrastructure-based policies to increase the use of active travel. This is not to say that there are no examples of highly effective schemes, it's just that too few of them have been evaluated. However, two recent controlled studies of large cycle infrastructure projects, which both involved substantial investment to promote cycling in particular English towns or cities, identified only a very modest impact on cycle commuting.[46,47]

Following unprecedented investment in cycling initiatives (predominately capital investment) in Cycle Demonstration Towns (to £17 per person per year for a five year period in some towns), one study using Census data showed that, when compared to control towns, the proportion of commuters who cycled to work increased on average by just 0.69 percentage points.[46]

In the second study, of the Cambridgeshire Guided Busway, no statistically significant associations were found between exposure to cycle lanes next to the busway and changes in travel mode or overall physical activity. But there was an association with overall time spent in active commuting among the least active commuters at baseline.[47,48]

One argument might be that positive incentives such as new cycling infrastructure must also be combined by other policies on higher rungs of the ladder in order to be more effective. Consider Stevenage, for example, a post-war new town built in the 1960s. It already has a substantial 23-mile network of separated cycleways comparable to what might be expected in the Netherlands, yet the proportion of residents who cycle frequently to work (or for other reasons) is not much different from the rest of the country.[49] Suggesting that negative incentives to discourage car travel would also be important, former Cycling England head Phillip Darnton said:

"If the reasons for Stevenage's failure to encourage cycling were that it was too easy to drive, then no amount of investment in marketing the town's cycling facilities would have changed travel behaviour." [49]

Additionally, the British Medical Association has also argued:

"Road safety should be addressed at a strategic level through a danger reduction approach that addresses the factors that put pedestrians and cyclists at risk, rather than seeking to reduce casualties by limiting pedestrians and cyclists from making the trips they need to undertake." [50]

In contrast to those two existing studies in English towns and cities, which focused on cycle commuting in general, it may also be argued that a more focused policy of improving the physical environment around railway or bus stations could be more cost-effective. Considering that large numbers of frequent first & last mile users would share the same destination point, i.e. where they join a public transport service, then perhaps a relatively small investment of resources would be necessary to influence a large number of journeys. Furthermore, some of the problems that new cycle infrastructure would be expected to alleviate, such as air pollution from road traffic, may be more prominently felt in the congested areas around railway or bus stations when compared to new infrastructure deployed in other parts of town. Hence further research is necessary to understand the impact of new infrastructure around well-used commuter railway stations.

4.4 OPTION C: FINANCIAL INCENTIVES

Financial incentives are defined here as policies involving a targeted payment to an individual that makes certain behaviours more financially beneficial (positive incentive), or a withdrawal of monetary resources from an individual that makes certain behaviours more costly (negative incentive).[19]

Financial incentives are already very common in transport policy, in terms of fuel duty for example that is included in the price paid for petrol and diesel, and in health policy, for influencing smoking behaviours and alcohol consumption for example. In these two cases, financial incentives might be viewed relatively favourably by policy makers since they provide a compromise when compared to other policies on lower rungs of the ladder, which may be ineffective when used in isolation, and stricter rules and regulations.

Respondents to the survey and interview were more likely to suggest positive financial incentives than negative financial incentives. Examples include discounts or refunds when people opt for a more active first & last mile, including special offers at railway station cafes. Other comments of survey and interview respondents included:

"Give me a free roadbike."

"Provide discounts based on fitness tracker data."

"Discounts on running gear."

"Free bikes."

Whilst financial incentives do not eliminate choice as such, negative financial incentives in particular may require strong justification (and be less acceptable to the general public), because they penalise individuals for the choices they have made. Hence planned increases in fuel duty, which might have provided an incentive to switch to more active first & last miles, have been regularly cancelled by successive Governments. The Government estimates that by 2019, fuel duty freezes since 2011 will have cost Government a total of £7 billion compared to what would have been expected under pre-2010 planned increases, saving the average driver £850 during the period.[51]

Other examples of negative financial incentives include road user charging, which has been a core component of transport policy in London since 2003, and remains one of the largest such scheme in the world.

4.5 OPTION D: STRICT RULES & REGULATIONS

In terms of discouraging car use, motor vehicle bans are likely to be amongst the most effective policies. But of course these are also the most intrusive in terms of restricting individual choice and, often undesirable or unfeasible.

Some opinion polling has suggested banning cars may be appropriate and acceptable to the general public in some circumstances. However, very few participants in the survey and interviews suggested this as a potential solution (although this might be because they didn't consider it a realistic prospect and so didn't suggest it).

Comments from participants who were in favour of policies that strongly restricted choices included:

"Ban diesel vehicles to reduce air pollution."

"Get rid of cars from the city centre."

In recent years some cities have banned petrol and diesel cars in small areas or as part of larger pilot schemes. Petrol and diesel cars are currently banned from nine roads in east London during the morning and evening peak as part of a cleaner air initiative. More radical policies are planned in other cities, including Oslo (Norway) and Madrid (Spain), where all cars will be banned from the city centre by 2020.

It seems unlikely that strict rules and regulations of these kind would be used solely to promote more active first & last miles, but would instead be implemented on a much larger scale with broader objectives. As these pilot schemes and larger schemes are implemented, it will be valuable to evaluate their impact in terms of changes in the use of more active travel modes. One concern might be the possibility of unintended consequences. For example, restrictions on cars accessing city centres including public transport access points might lead some commuters to abandon public transport altogether.

5 CONCLUSION

Many will be surprised that a quarter of all car journeys are under two miles. For most of these short journeys, there may be a practical alternative to the car. By opting for the alternative, drivers will help to reduce congestion and pollution, and may even improve their physical and mental health.[52]

David Bizley, Chief Engineer, Royal Automobile Association (RAC), 2018

If we can increase levels of walking and cycling, the benefits are substantial. For people, it means cheaper travel and better health... For society as a whole it means lower congestion, better air quality, and vibrant, attractive places and communities.[39]

Rt Hon Chris Grayling MP, Secretary of State for Transport, 2017

Walking and cycling are both extremely important modes of sustainable transport. The health benefits, as well as their contribution to cutting air pollution and congestion on the roads, are clear.

Lilian Greenwood MP, Chair, House of Commons Transport Committee, 2018

It is vital that we have policies that encourage a modal shift away from unnecessary car use and the development of a transport environment that facilitates active and public transport journeys.[50]

Professor Averil Mansfield, Chairman, Board of Science,
British Medical Association (BMA), 2012

Momentum has been building in recent years around the idea that more active travel could boost health and wellbeing whilst also helping to address multiple societal challenges, including road congestion, obesity, stress and climate change.

There's also broad consensus on the need for some form of firm action to support active travel as the default choice for shorter journeys. This includes support across multiple and diverse groups, from the BMA to the RAC and the House of Commons Transport Committee[50, 52], as well as from within Government, as demonstrated by publication in 2017 of a new DfT cycling and walking investment strategy.[39]

A substantial remaining difficulty facing policy makers is a lack of clarity on the form that such actions should take and uncertainty about where best to focus scarce resources in order to achieve the greater uptake of active travel that many desire.

The distinct contribution of this report lies in its emphasis on the possible advantages of focusing those resources and effort on the first & last miles of public transport commutes.

THE FUTURE OF TRANSPORT = PUBLIC TRANSPORT + ACTIVE TRAVEL?

Section 3 of the report highlighted the numerous potential benefits to individuals (in terms of health and wellbeing improvement and cost savings) and to society (e.g. in terms of less traffic pollution around railway stations) of more active first & last miles.

These benefits were presented in comparison with less active (motorised) first & last miles and may be used to build a case for a concerted effort to substantially increase walking, cycling and running as part of public transport commutes.

Additionally, from the policy makers perspective, it is important to examine the potential benefits and viability of promoting more active first & last miles when compared to alternative demands on resources that come from other approaches to boosting physical activity.

A particular appeal of more active first & last miles lies in the opportunity to make more productive use of otherwise wasted or idle time during journeys that must be made out of necessity. Thus, for many people, it may be possible to integrate regular physical activity into the daily routine without incurring substantial personal costs, including opportunity costs.

This is in some contrast to doing more physical activity during leisure (or work) time that may be substantially more costly, in terms of gym fees for example, and would likely be much less enticing because other enjoyable leisure activities (or wages) would have to be forgone.

Similarly, trying to incorporate physical activity into non-routine or irregular journeys may be more challenging and costly, in terms of identifying and planning routes for example, and might not provide sufficient opportunities for the regular, daily physical activity that is recommended in health guidelines.

Since eight billion commuter journeys are made in Britain each year, of which 10% are by train and 7% by bus, another attraction of promoting more active first & last miles is the scope for reaching large numbers of people, including those who might be unlikely to engage in health promotion activities provided in healthcare settings.

CAN WE GET THERE?

Section 4 highlighted some potential approaches to encouraging more active first & last miles. There were clear indications from the survey, interviews and existing literature that interventions such as segregated cycle infrastructure would have a meaningful impact in terms of overcoming often-cited barriers to more active first & last miles, including dangerous roads and air pollution.

Unfortunately too few schemes to promote the first & last mile have yet been tried and/or tested and so, in general, there is limited evidence to indicate that any particular policy or package of policies has had the transformative effect on first & last mile commutes that might be hoped for.

In some sense it's useful simply to look at the past as a guide to the future, to earlier decades before mass car ownership when walking and cycling were more commonplace. As such, one proposal highlighted in Section 4 was to ensure that active travel is (re-)normalised, moving away from a current perception that people must adhere to 'sporty' stereotypes. But there are also many prevailing factors that appear to favour more active first & last miles and thus present opportunities that could be exploited by policy makers in coming years.

First is the rise of cycling and running as popular leisure time pursuits. This can be linked to the development of fitness tracking apps for smartphones, widespread participation in activities like 'Parkrun', and high profile spectator events like the 2014 Tour de France which was staged in England. Although such pursuits will never suit everyone, if people are willingly opting for them during their leisure time, then there ought to be scope for channelling that interest into the cause of more active first & last miles.

Second is the changing nature of work, including more flexible working arrangements and part-time work, which means commuters seem much less constrained to rigid and inflexible routines that were common in earlier decades. This can allow them greater opportunity to decide whether to opt for a more active first or last mile depending on the demands of a particular day, potentially even at short notice. The widespread acceptance of more casual work clothing could also be important, since this might be better suited to everyday walking or cycling.

Third is technological innovation in the transport sector. This includes ride-hailing apps, car clubs (and forthcoming developments in autonomous vehicles) which can provide further opportunity for people to choose different travel modes each day, for each segment of the commute (e.g. walk from home to station, but drive from station to home), even at a moments notice. This contrasts with the relative inflexibility of traditional car ownership, where cars must be picked up from places they were parked, for example.

Electric bikes (ebikes) and scooters are another recent technological development. These tend to be associated with many of the same benefits reviewed in section 3 that would be expected from a switch from car travel to more traditional active modes. But crucially, because they make it easier to cycle in hilly areas, or over longer distances, they could be attractive for commuters accessing public transport from areas where more active first & last miles would not normally be considered feasible (e.g. rural areas located some distance from railway stations, or modern housing developments which are often situated on the edges of towns).

STRONG LEADERSHIP & INTEGRATED WORKING IS NEEDED

It is clear that substantial increases in walking, cycling and running as part of public transport commutes would require strong leadership and a substantial and concerted effort amongst multiple stakeholders. These include local authorities, multiple Government departments and agencies and public transport operators. Researchers also have a role in evaluating interventions to promote more active first & last miles in order to build a stronger evidence base and provide better guidance for policy makers.

Central Government must provide the leadership, funding and commitment to support active travel and public transport. The Government's 2017 cycling and walking strategy, for example, states an ambition to "transform our country's attitude to walking and cycling, positioning England as a global-leader and inspiration around the world."[39]

Local authorities must ensure that walking, cycling and running is prioritised as part of local authority transport plans. Local authorities have a critical role in the delivery of more active first & last miles since they hold the jurisdiction, funding and responsibility for many crucial and overlapping policy areas, including local transport policy, urban planning, roads, housing and public health.

This organisational arrangement ought to lend itself to the joined-up approach that would be necessary to successfully encourage higher levels of physical activity beyond the traditional organisational boundaries of the health care sector.

Public transport operators must examine the role they can play in encouraging more active first & last miles and in enhancing the first & last mile experience. As described in Section 4, this can include the provision of information about different options, as well as working with local authorities and other stakeholders to invest more in better facilities for active travel.

Further information

If you're interested in finding out more about how Go-Ahead and its partners are helping to shape the future of travel, please use these useful contacts who will be happy to connect with you.

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REFERENCES

1. Sustrans (2018) Paths for Everyone: Sustrans' Review of the National Cycling Network.

2. Department of Health (2011)
Start Active, Stay Active: a report on physical activity for health from the four home countries' Chief Medical Officers.

3. Aldred R (2014)
The Commute. In: Adey P, Bissell D, Hannam K, et al. The Routledge Handbook of Mobilities. Routledge.

4. Department for Transport (2017)
Transport Statistics Great Britain 2017.

5. Robson D (2018)
The neglected benefits of the commute. BBC Online.

6. Department for Transport (2017)
Commuting trends in England 1988 - 2015.

7. Flint E, Webb E, Cummins S (2016)
Change in commute mode and body-mass index: prospective, longitudinal evidence from UK Biobank. Lancet Public Health.

8. Liao Y, Tsai H-H, Wang H-S, et al. (2016) Travel mode, transportation-related physical activity, and risk of overweight in Taiwanese adults. Journal of Transport and Health.

9. Martin A, Goryakin Y, Suhrcke M (2014) Does active commuting improve psychological wellbeing? Longitudinal evidence from eighteen waves of the British Household Panel Survey. Preventive Medicine.

10. Jain J, Lyons G (2008)
The gift of travel time. Journal of Transport Geography.

11. Belton P (2017)
An easy way to read more each year. BBC Online.

12. Meierhans J (2017)
The commuters who enjoy being creative with their time. BBC Online.

13. Jain J, Bartle C, Clayton W (2018)
Continuously connected customer (Project Report). Bristol: Centre for Transport and Society.

14. The Economist (2018)
People say they hate traffic jams, but are oddly tolerant of them.

15. NHS Health and Social Care Information Centre (2008)
Health Survey for England - 2007: Healthy lifestyles: knowledge, attitudes and behaviour.

16. Department for Transport (2018)
Statistical Release: Analyses from the National Travel Survey.

17. Department for Transport (2012)
National Road Traffic Survey, Table TRA0401.

18. European Commission (2013)
Attitudes of Europeans towards urban mobility.

19. Martin A, Suhrcke M, Ogilvie D (2012)
Financial incentives to promote active travel: an evidence review and economic framework.

20. Department of Health (2010)
2009 Annual Report of the Chief Medical Officer.

21. Besser LM, Dannenberg AL (2005)
Walking to public transit: steps to help meet physical activity recommendations. American Journal of Preventive Medicine.

22. Patterson R, Webb E, Millett C, Laverty AA (2018) Physical activity accrued as part of public transport use in England. Journal of Public Health.

23. Sahlqvist S, Goodman A, Cooper AR, et al. (2013) Change in active travel and changes in recreational and total physical activity in adults: longitudinal findings from the iConnect study. International Journal of Behavioural Nutrition and Physical Activity.

24. Celis-Morales CA, Lyall DM, Welsh P, et al. (2017) Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study. British Medical Journal.

25. Panter J, Mytton O, Sharp S, et al. (2018) Using alternatives to the car and risk of all-cause, cardiovascular and cancer mortality. Heart.

26. Anokye NK, Trueman P, Green C, et al. (2012) Physical activity and health related quality of life. BMC Public Health.

27. Huang H, Humphreys BR (2012)
Sports participation and happiness: Evidence from US microdata. Journal of Economic Psychology.

28. Humphreys BR, McLeod L, Ruseski JE (2013) Physical activity and health outcomes: evidence from Canada. Health Economics.

29. Biddle SJH, Mutrie N, Gorely T (2015) Psychology of Physical Activity: Determinants, Well-Being and Interventions. Routledge.

30. Ekkekakis P, Hall EE, VanLanduyt LM, et al. (2000) Walking in (affective) circles: can short walks enhance affect? Journal of Behavioral Medicine.

31. Mental Health Foundation (2013)
Let's Get Physical: The impact of physical activity on wellbeing.

32. Mytton OT, Panter J, Ogilvie D (2016)
Longitudinal associations of active commuting with wellbeing and sickness absence. Preventive Medicine.

33. National Institute for Health and Care Excellence (NICE) (2012)
Physical activity: walking and cycling (Public health guideline PH41).

34. Public Health England (2016)
Working Together to Promote Active Travel: A briefing for local authorities.

35. Royal College of Physicians and Royal College of Paediatrics and Child Health (2016) Every breath we take: the lifelong impact of air pollution.

36. Steptoe A, Shankar A, Demakakos P, et al. (2013) Social isolation, loneliness, and all-cause mortality in older men and women. Proceedings of the National Academy of Sciences.

37. Greater Manchester Combined Authority (2018) Beelines: Greater Manchester's cycling and walking infrastructure proposal.

38. Nuffield Council on Bioethics (2007)
Public health: ethical issues. Cambridge.

39. Department for Transport (2017)
Cycling and walking investment strategy.

40. Transport for London (2013)
The mayor's vision for cycling in London: an Olympic Legacy for all Londoners.

41. Stewart G, Anokye NK, Pokhrel S (2015) What interventions increase commuter cycling? A systematic review. BMJ Open.

42. Thaler R, Sunstein C (2008)
Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.

43. House of Lords Science and Technology Select Committee (2011)
Second report of session 2010–12: Behaviour Change. London: Stationery Office Ltd.

44. Department for Transport (2011)
Behavioural Insights Toolkit.

45. Boffey D. (2017)
World's biggest bike parking garage opens in Utrecht – but Dutch dream of more. London: The Guardian 07.08.17.

46. Goodman A, Panter J, Sharp SJ, et al. (2013) Effectiveness and equity impacts of town-wide cycling initiatives in England: a longitudinal, controlled natural experimental study. Social Science and Medicine.

47. Panter J, Heinen E, Mackett R, et al. (2016) Impact of New Transport Infrastructure on Walking, Cycling, and Physical Activity. American Journal of Preventive Medicine.

48. Heinen E, Harshfield A, Panter J, et al. (2017) Does exposure to new transport infrastructure result in modal shifts? Patterns of change in commute mode choices in a four-year quasi-experimental cohort study. Journal of Transport and Health.

49. Reid C (2017)
Build it and they will come? Why Britain's 1960s cycling revolution flopped. London: The Guardian 19.09.17.

50. British Medical Association (2012)
Healthy transport = Healthy lives. London.

51. Seely A (2018)
House of Commons Library Briefing Paper: Taxation of road fuels. London.

52. RAC (2018)
RAC Report on Motoring. Walsall.

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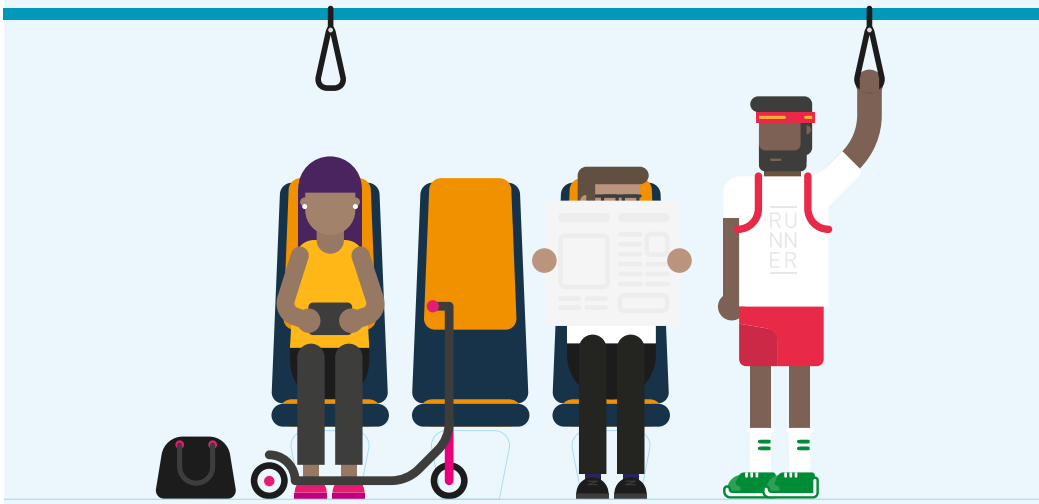

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