

# Initiatives to increase active travel

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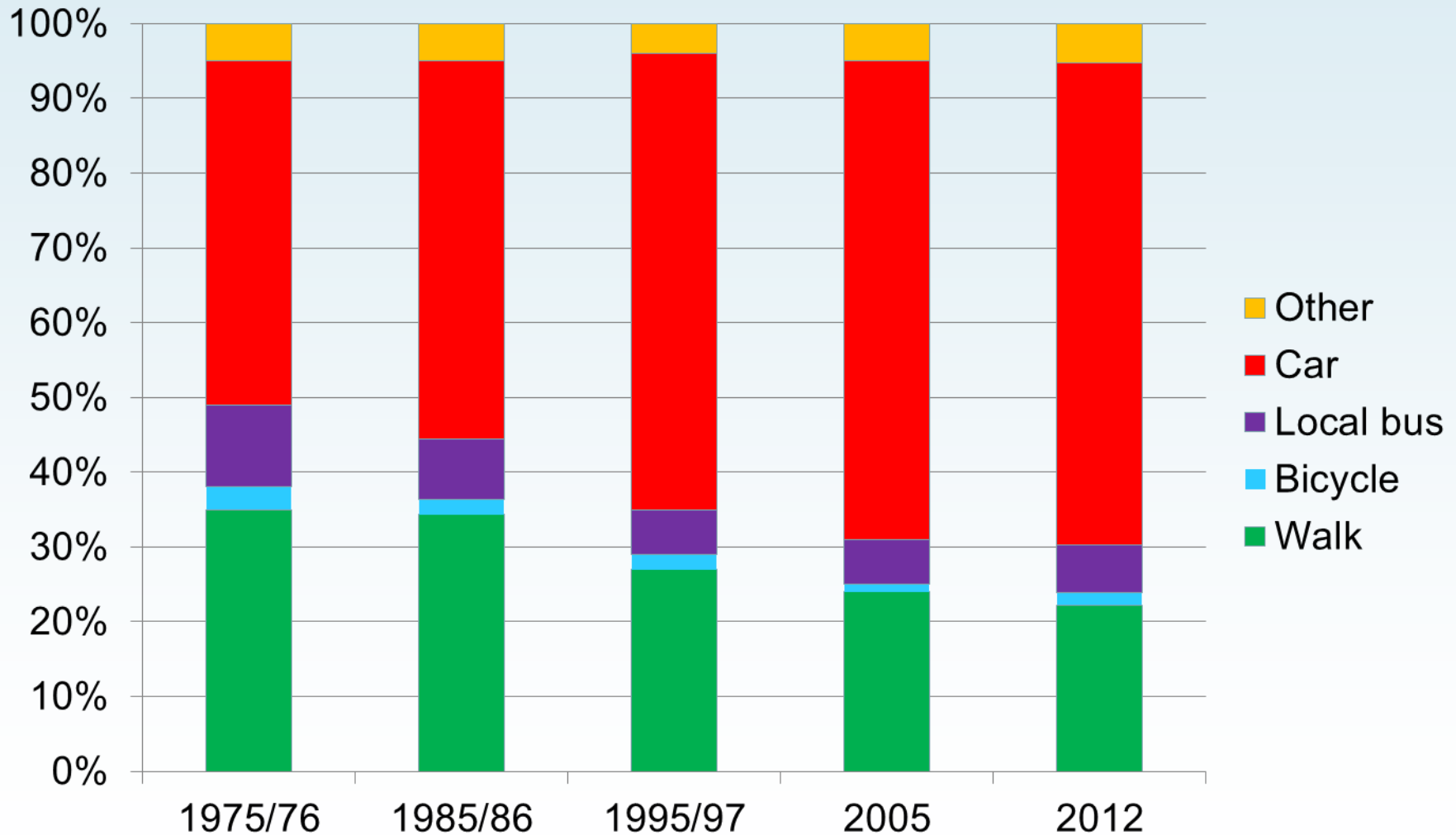
## A few questions...

- Why do we want to increase volumes of active travel?
- How do we increase active travel?
  - What works?
  - What doesn't?
- What is the most cost-effective way to do it?
  - If you wanted to spend, say, £1 million on increasing active travel, what's the best way to do it?
- Why don't we already know the answers to these questions?

# Why do we want to increase volumes of active travel?

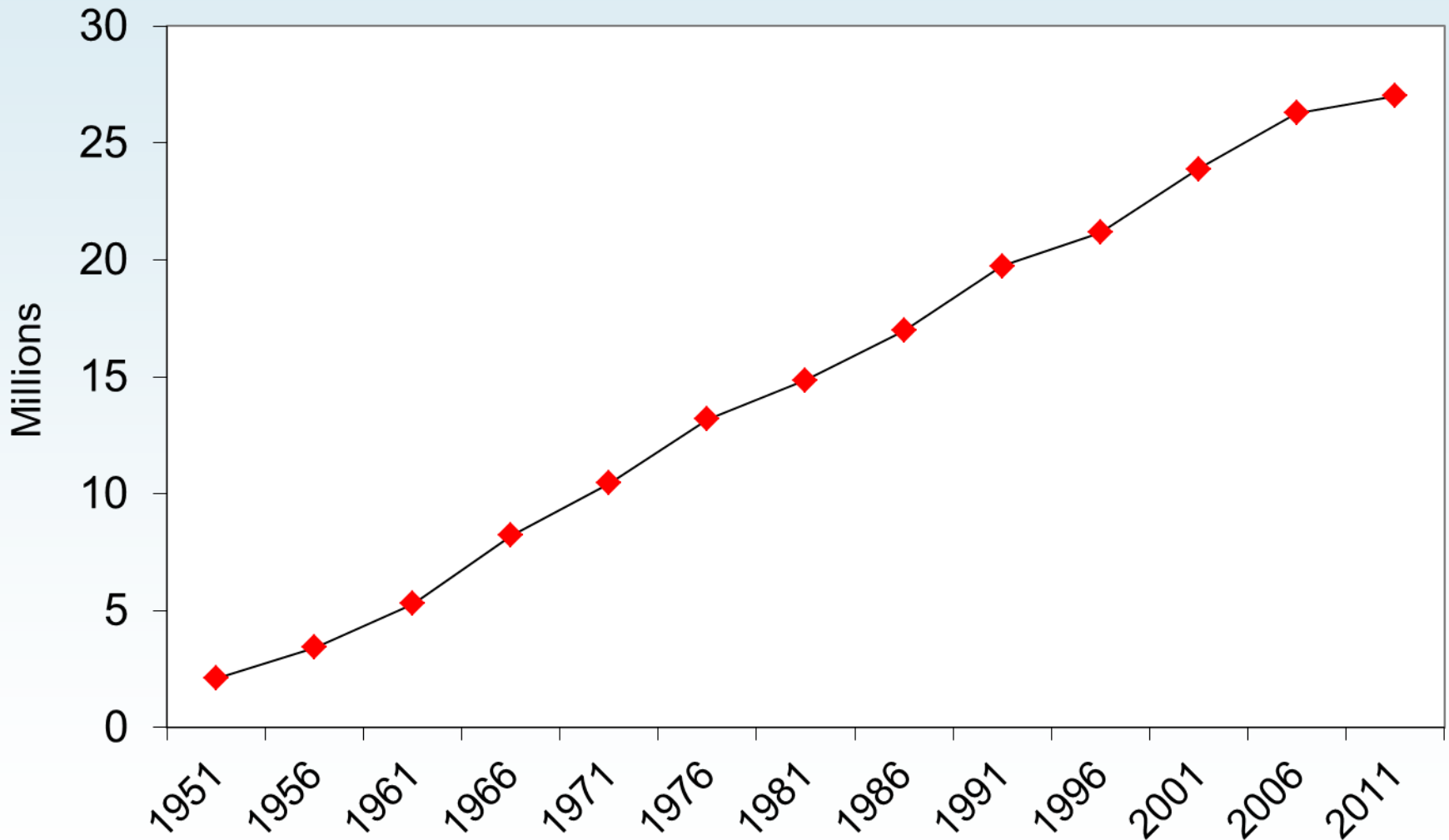
- More active travel should mean less car use, increasing sustainability
- It should increase levels of physical activity:
  - There is increasing concern about the effects of lack of physical activity on health, especially through cardio-vascular disease.
  - In 1996, the US Surgeon-General stated that everyday physical activity including walking and cycling can contribute to physical fitness.

# In Britain, there has been a shift from walking and cycling to the car

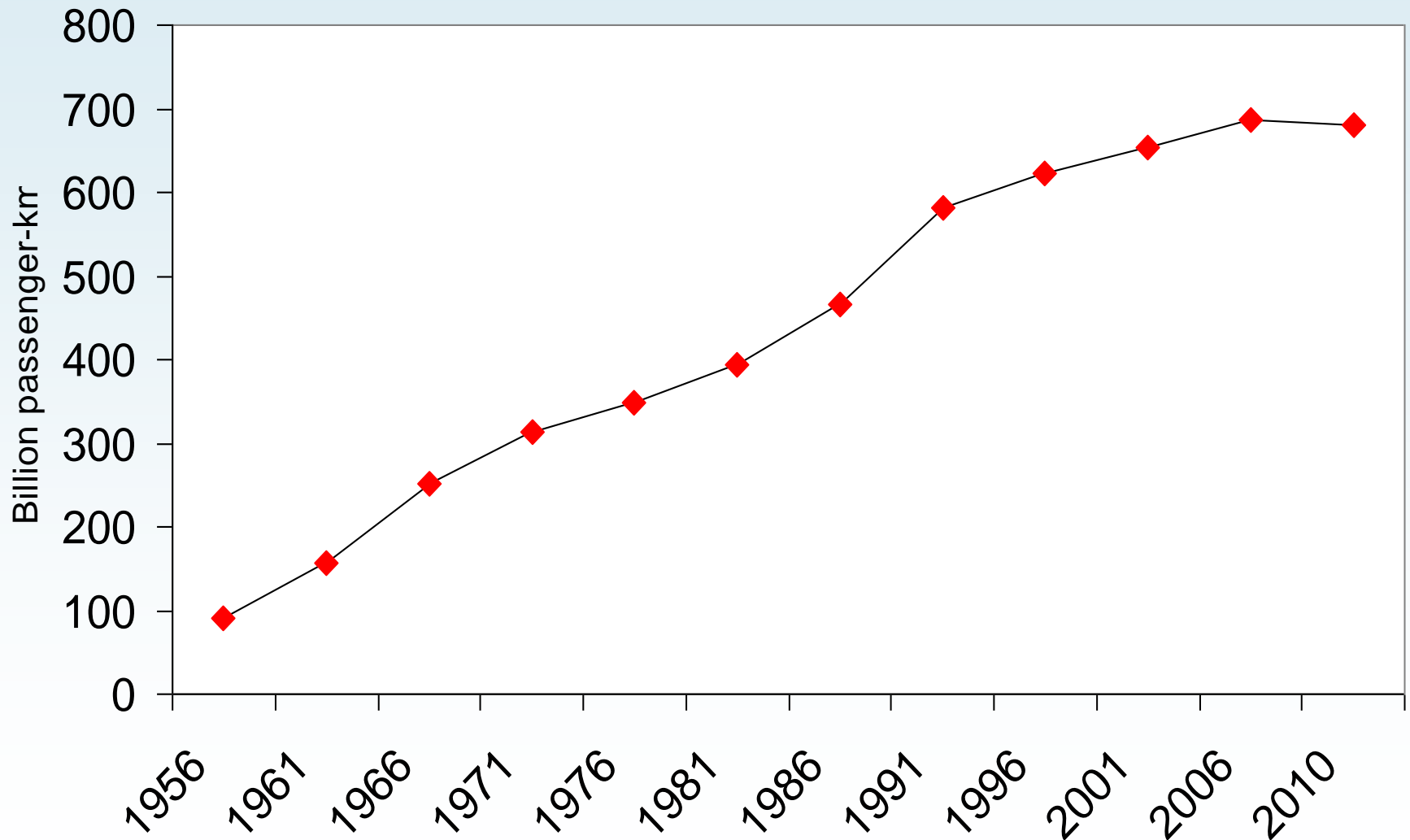


Source: UK National Travel Survey, 2012

# Total number of cars licensed in Great Britain



# Total distance travelled by car, van and taxi



## People with access to a car walk less

	People in households without a car	People in households with cars		
		Main drivers	Other drivers	Non drivers
Number of trips	312	160	179	232

*Source: UK National Travel Survey, 2012*

- Given how easy it is to walk, and all the messages about ‘the obesity crisis’, why is it so difficult to get more people walking?
- Can we get more people cycling?
- How do we get people out of their cars to walk and cycle?

## The barriers to walking and cycling

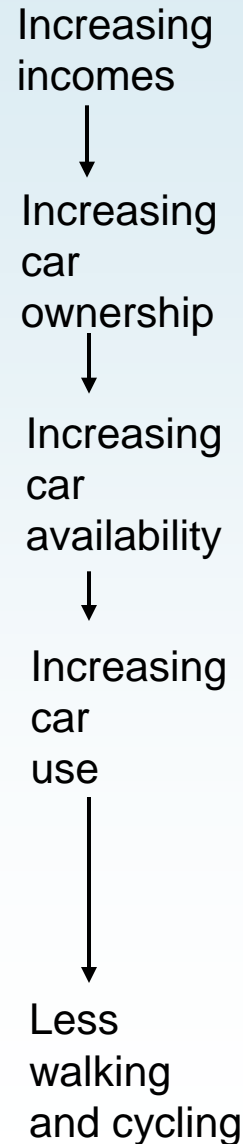
In a project carried out at UCL for the UK Department for Transport on the potential for switching short car trips (<8 km) to alternative modes, the following barriers to walking and cycling were identified:

- Difficulties in walking and cycling
  - Physical difficulties
  - Fear of going out
  - Local environment is unsuitable
  - Desired opportunities are too far away
- Lack of motivation
  - Why bother?
- Lack of time because of modern lifestyles



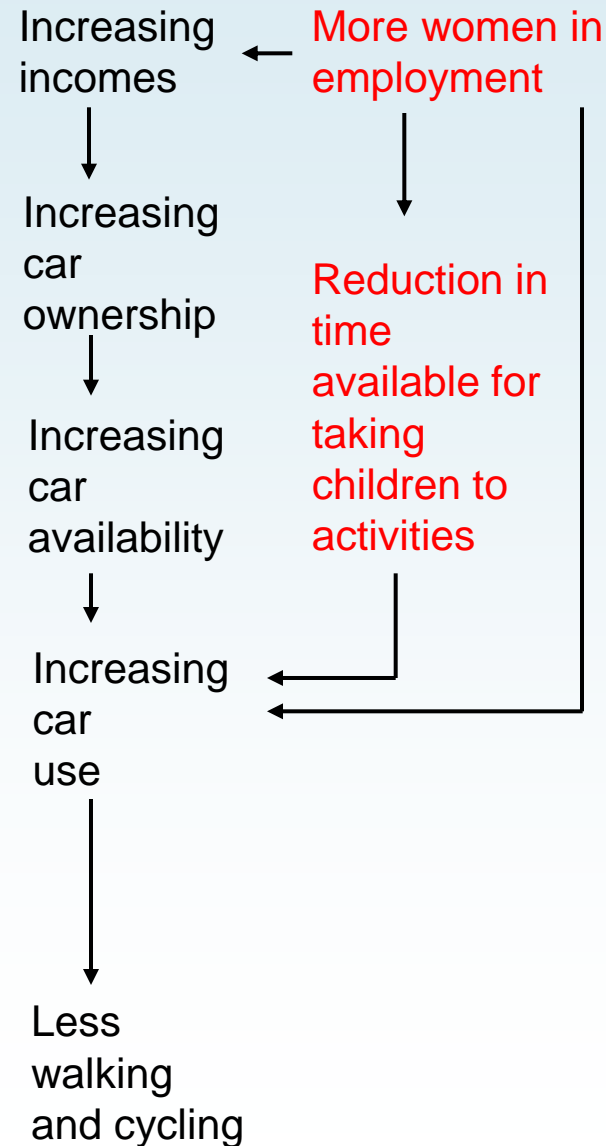
# Modern life and the decrease in active travel

As people get richer, they buy mobility



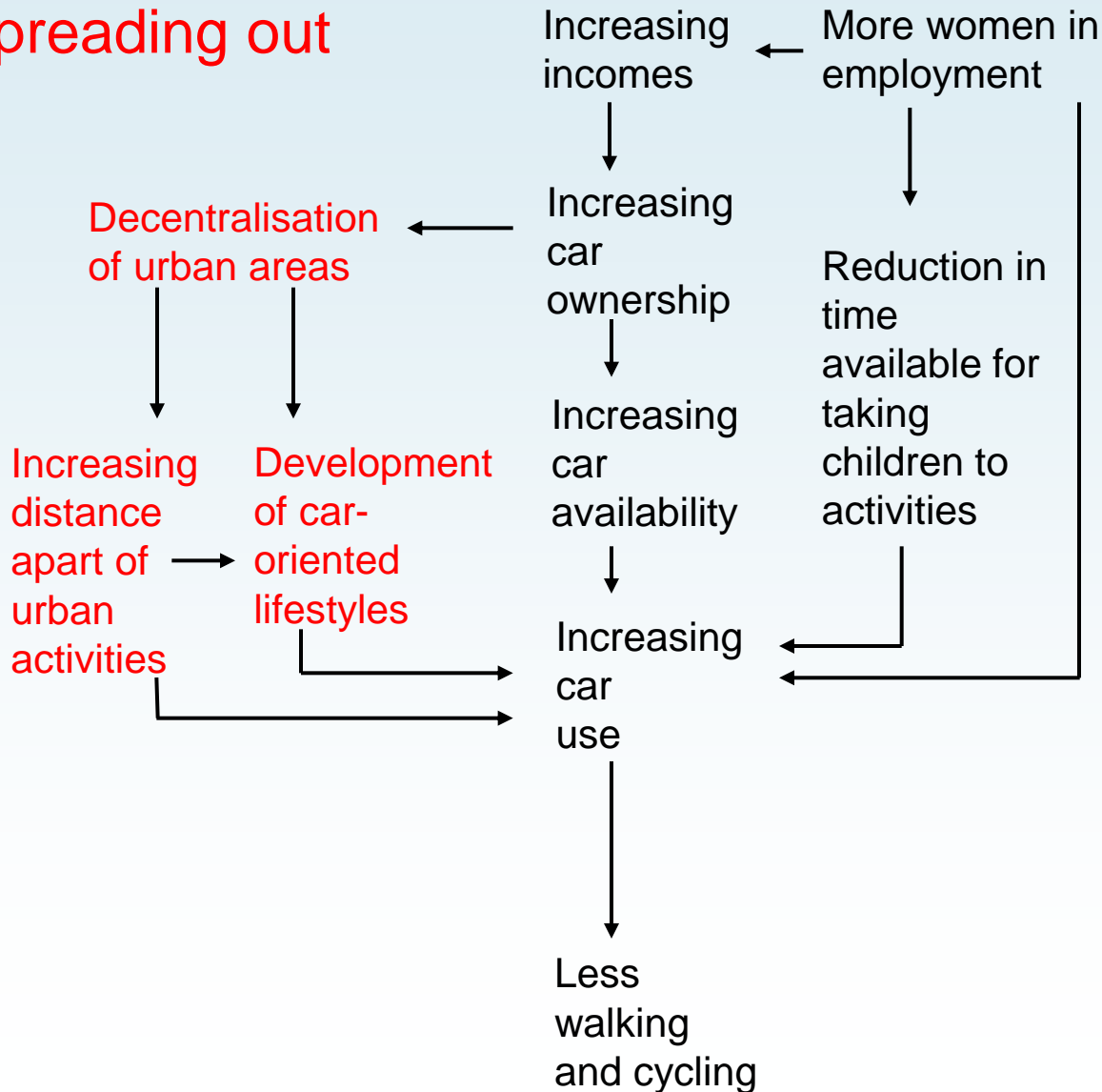
# Modern life and the decrease in active travel

More women are employed



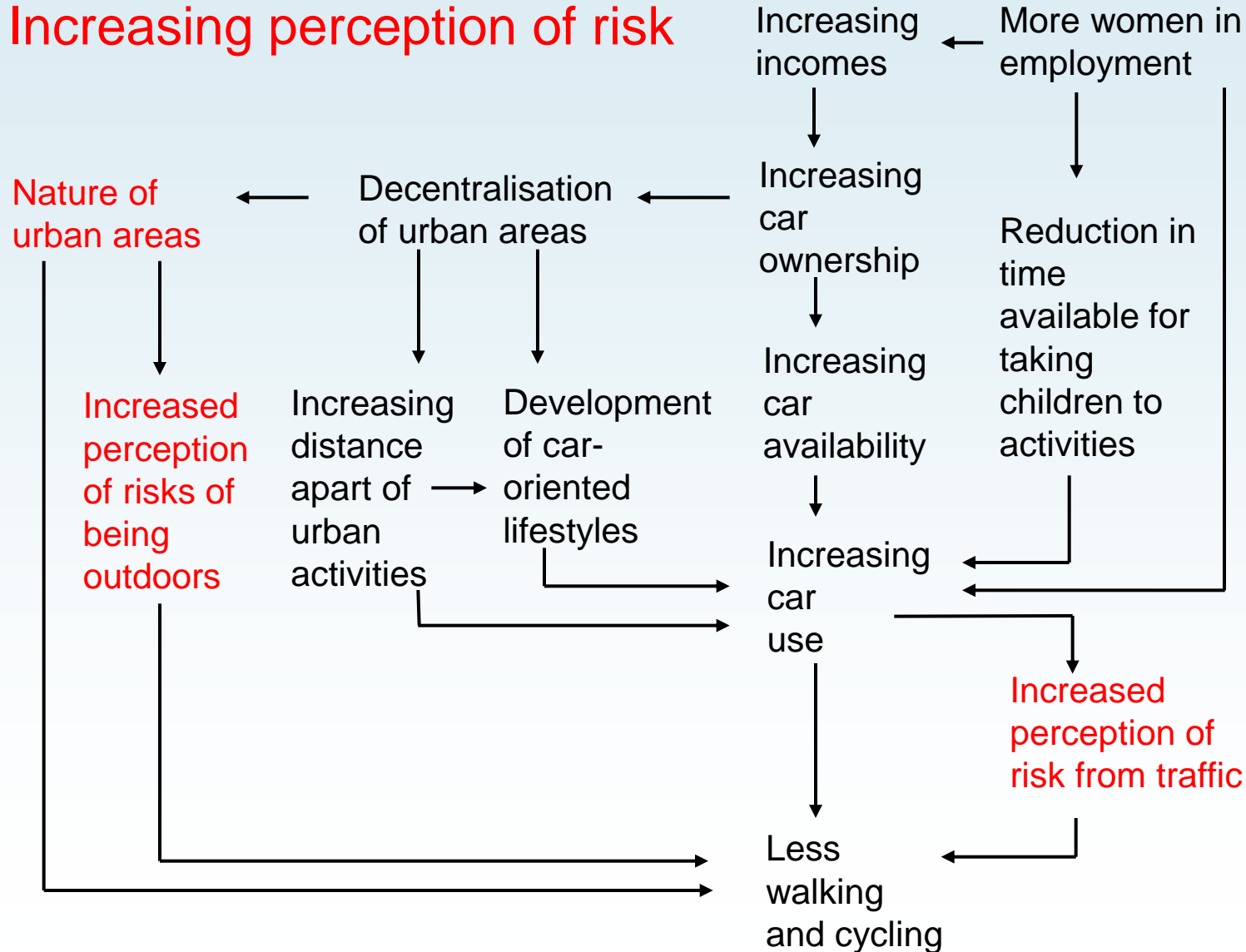
# Modern life and the decrease in active travel

## Cities are spreading out



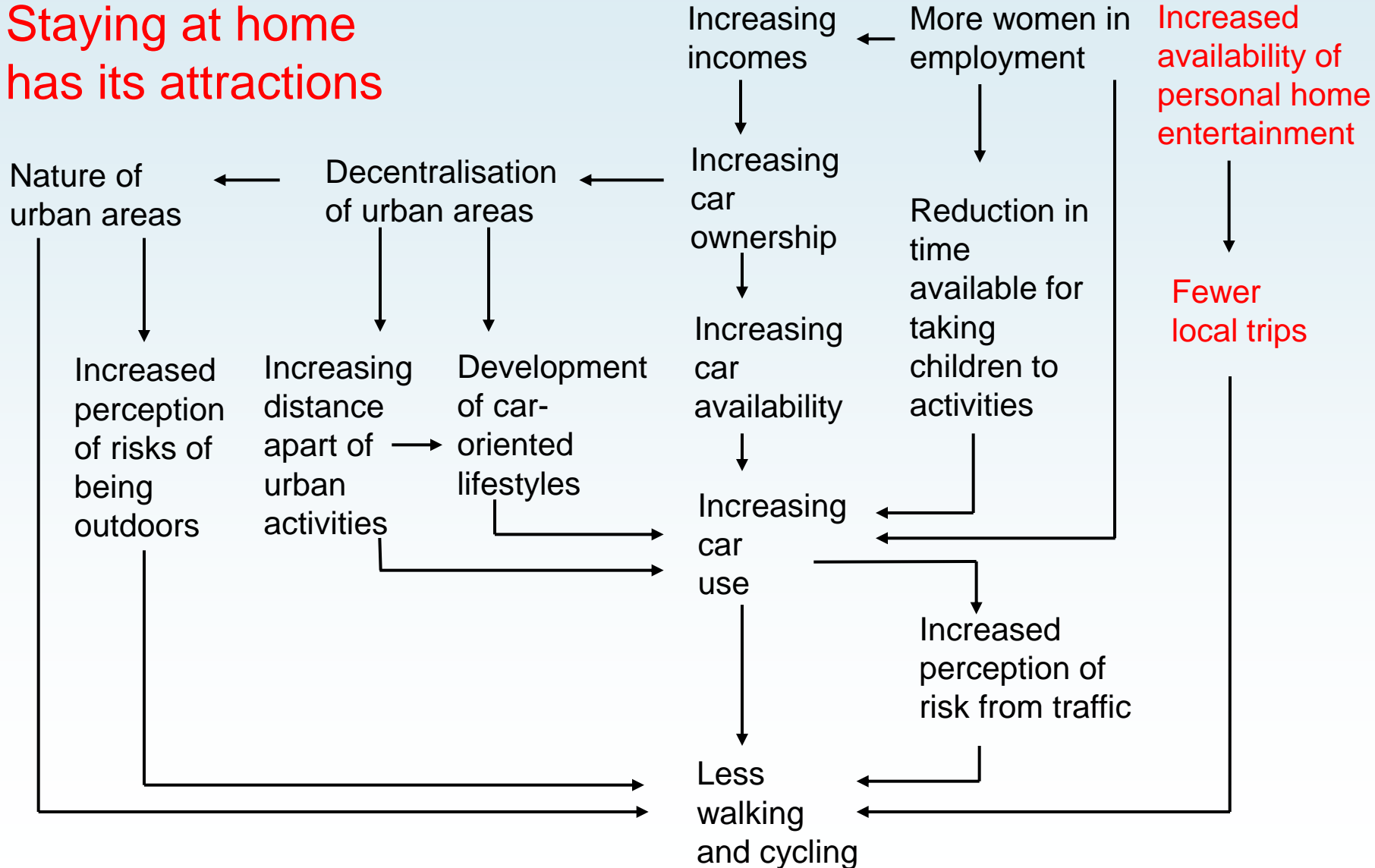
# Modern life and the decrease in active travel

## Increasing perception of risk



# Modern life and the decrease in active travel

## Staying at home has its attractions



# What do people say would make them switch?

Factors that car users say could make them switch from car to other modes (% of all short car trips).

Action	Walk	Cycle	Bus	Total
Improve bus services	0	0	21	21
No specific action	12	2	5	19
Change own behaviour	8	1	1	10
Better weather	5	1	0	6
A reduction in the need to travel	2	1	1	4
Better travel facilities for children and other dependents	2	0	2	4
Improvements in walking facilities	2	0	0	2
Improvements in cycling facilities	0	1	0	1
Cancel activity	1	0	0	1
<b>Total</b>	<b>31</b>	<b>7</b>	<b>31</b>	<b>68</b>

Source: Short trips study carried out at UCL for the UK Department for Transport

# Sociological perspectives on car dependency

- Car use has emotional and ethical dimensions which other travel modes may need to tap into in order to achieve modal shift (e.g. ‘freedom’).
- Cars have symbolic and cultural significance (status symbols, ‘Top Gear’ syndrome).
- The meanings and values attached to cars vary over time, and for particular social groups (some low income groups buy many more cars than the norm).
- The car provides a unique travel experience which need to be considered more in the promotion of other, lower-carbon modes (e.g. your own clutter, etc).

*Source: Cairns et al. (2014) Sociological perspectives on travel and mobility, Transportation Research A, vol. 63, pp 107-117*

# Research into the factors influencing walking and cycling (1)

Two types of study:

- Correlates studies
- Intervention studies

A correlates study involves the collection of data on the volumes of active travel and on the population and environmental factors and then carrying out modelling of the relationship between the variables to see which independent variables influence the dependent ones.



# Research into the factors influencing walking and cycling (2)

Intervention studies require:

- A proposal for an intervention (Infrastructure or policy)
- Before and after surveys of travel patterns and population characteristics to establish changes with large samples because the effects may be small, plus data on other relevant factors
- A control population to allow removal of temporal effects
- Statistical modelling to establish links between the volumes of active travel and the causal factors

# The impact of the Cambridgeshire Guided Busway

- The objective of this project is to examine the impact of the Cambridgeshire Guided Busway on walking and cycling and hence on health.
- Funded by NIHR.
- In co-operation with the MRC Epidemiology Unit in Cambridge and the University of East Anglia.
- Methods: surveys and quantitative and qualitative analysis.



## Difficulties with correlates studies

- The method assumes that spatial differences in population characteristics can be interpreted as indicating which factors that will cause behavioural change for individuals
- Only associations between variables can be established, not causality

# Difficulties with intervention studies

- Large interventions are rare
- The intervention may be cancelled or delayed
- Such interventions take a long time to implement and other things are likely to change in the meanwhile.
- Effects of the intervention may start before its introduction, e.g. moving home to favourable locations
- The intervention may not start all at once, so 'before' and 'after' may be complicated
- Establishing a control group who are not affected by the intervention may be very difficult
- Ensuring the control group is 'identical' to the study population almost impossible because of spatial differences
- Impacts of the intervention on active travel may be small compared with the 'noise'
- A comprehensive study will be expensive

# Benefit-cost ratios for walking and cycling infrastructure projects

Study	Agency	BCR
Canal towpath in London assessed in terms of levels of walking and cycling commuter use.	DfT	24.5:1
Estimated impacts of five cycling infrastructure projects across the UK.	SQW Consulting	Almost 10:1
Increases in cycling in Cycling Demonstration Towns in England – mortality benefits only.	Cycling England	2.59:1
Resurfacing, some new construction, road marking, signing and lighting in Bootle.	Sustrans	29.3:1
Construction of toucan crossing close to primary and secondary school in Hartlepool, plus some general infrastructure improvements nearby.	Sustrans	32.5:1
New shared-use path in an existing grassed verge adjacent to the A259 in Newhaven.	Sustrans	14.9:1
Average		19:1

## Why are the benefit-cost ratios so high?

- Calculations are based on before and after counts of the numbers of users of the infrastructure.
- It is assumed that all (or most) of the extra trips are generated, i.e. trips that would not have otherwise been made.
- In fact, many will be reassigned trips, i.e. they would have been made elsewhere.
- To avoid this problem it is necessary to carry out a comprehensive survey of all trips made over a period of time.
- HEAT (Health Economic Assessment Tool) produces these high BCRs because of the built-in assumption about trip generation.

# What is the evidence on the effectiveness of transport policies and actions on modal shift?

- Whilst there are reviews in the transport literature, they do not seem to be very systematic, but there are in the health and related literature.
- The UK National Institute for Health and Care Excellence (NICE) has carried out two studies:
  - ‘Promoting and creating built or natural environments that encourage and support physical activity’.
  - ‘Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation’.
- Ella Graham-Rowe and colleagues published ‘Can we reduce car use and if so, how? A review of the available literature’ in Transportation Research A.

# NICE evidence on impacts (1)

	No of studies	No of studies with short term increases in		No of studies with long term increases in	
		walking	cycling	walking	cycling
Road user charging	2	1	1	0	1
Traffic calming	8	4	3	1	1
Combined walking and cycle paths	4	1	2	1	1
Trails (e.g. converted railway lines)	2	1	1	1	0
Closing or restricting use of roads	3	2	1	1	0
Cycle infrastructure	7	0	0	0	7
Street infrastructure	7	3	2	1	0
Safer routes to schools	2	2	2	1	1

Source: NICE Review on Physical Activity and the Environment



## NICE evidence on impacts (2)

	No of studies	No of studies with increases in	
		walking	cycling
TravelSmart	7	7	7
Cycle Demonstration Towns	3 studies on 6 towns	0	3
Sustainable Travel Towns	1 on 3 towns	1	1
University travel plans	1	1	1
School travel plans	2	1	1
Safer routes to school	1	1	1
Bike It scheme	1	0	1
Walking school buses	10	8	0

*Source: Systematic review on the effectiveness of local interventions to promote walking and cycling carried out for NICE.*

## Quality of the evidence on impacts

- Of the 61 studies examined in detail in the NICE reviews, almost all showed some positive impact on levels of walking and cycling.
- However, nearly all the studies were regarded as having methodological flaws, including:
  - Possible selection bias
  - Lack of information on confounders
  - Poorly described methods
  - Lack of reporting on before and after states
  - Small sample sizes.
- Hence it is difficult to be confident about the reported outcomes.

# Evidence on the effectiveness of policies to shift people out of their cars to walking and cycling

- The NICE reviews concentrated on walking and cycling interventions.
- Graham-Rowe et al (2011) examined interventions to reduce car use.
- They found 3464 studies of possible relevance.
- Reduced to 77 primary studies which included car reduction measures.
- Only 12 regarded as methodologically strong.
- Of the 12, only 3 considered walking and cycling.

## The three relevant studies identified by Graham-Rowe et al

- Bamberg (2006) looked at giving free public transport in Stuttgart, Germany, and found small shifts that were not statistically significant.
- Cervero et al (2002) looked at a car sharing scheme in San Francisco and found less walking and cycling (but more in the long run).
- Hodgson et al (1998) looked at public awareness campaigns in Maidstone, in Great Britain, but found no statistically significant modal shifts.

# Do we know how to shift people from their cars to walking and cycling?

- Various initiatives seem to show that levels of walking and cycling can be increased.
- However, the reviews of the evidence suggest that most of the evidence is methodologically flawed.
- The researchers carrying out the reviews are from the health and related fields and adopt very systematic approaches to research.
- Health research is based on medical research where it is relatively easy to control the environment.
- The reviews do not fully reflect the evidence in the UCL work on car short trips which suggests that the issue is more complex than building new infrastructure.

# What sort of study is required to provide convincing evidence of the effectiveness of a transport action or policy?

- It needs to be an intervention study with before and after surveys of all the trips made over a period of time by a randomly-selected sample of the population with a matched control sample not affected by the intervention.
- Most studies by transport researchers are ‘correlates studies’ which compare people in different situations at the same time and assume that differences over space can be interpreted as changes over time, for example, that people who give up using their cars will behave like people who do not have one (and possibly never had one).

# Transport, physical activity and health

A report reviewing the evidence on the links between transport, physical activity and health has been carried out at UCL with funding by the UK Department for Transport (DfT).

It is available from <https://www.ucl.ac.uk/news/pdf/transportactivityhealth.pdf>.



## Transport, Physical Activity and Health: Present knowledge and the way ahead

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Scanning Study commissioned by the Department  
for Transport, London, Great Britain

December 2011

## Why does this all matter?

- Health conditions associated with lack of physical activity cause many premature deaths and cost national economies significantly.
- Most interventions by health professionals have been found to cease to be effective once the funding and support by professionals ceases.
- Transport has the potential to help address the issues by providing sustainable, relatively low-cost initiatives that can help address the situation by encouraging everyday walking and cycling.
- The lack of systematic evidence means that we do not know the most cost-effective ways to do this.



# What are possible ways to increase active travel?

- Encourage more walking and cycling
- Try to change travel behaviour
- Encourage alternatives to household car ownership (Harmer and Cairns have shown that car club members own fewer cars and walk and cycle more than other people)
- Try to reduce car use through land use planning
- Link the sustainable travel and health agendas

# Encouraging more walking and cycling

- Cycling Demonstration Towns show that cycling can be increased, but at a cost
- London Bicycle Hire Scheme is seen as successful, but does not cover its costs



But: Any scheme that requires funding may be diverting money from better ways of spending it

- The extra cycling may be people who already cycle cycling further rather than people who were not active taking up cycling
- How do we increase walking?

## Changing travel behaviour

- Charge for use of the road, e.g. congestion charging
- Increase the cost of fuel
- Pay-as-you drive vehicle insurance
- Manage car parking better (e.g. parking levy scheme started in Nottingham in 2012).
- Incentives to change mode, e.g. Step2Get in Wimbledon to incentivise children to walk to school using swipe card technology
- Bicycle hire schemes like the one in London
- ‘Nudging’ (based on Thaler and Sunstein’s work): making the choice easy

## Alternative methods of accessing cars

- Taxis, including shared taxis
- Conventional car rental
- Car clubs e.g. Streetcar
- One-way car rental e.g. Car2Go
- Neighbourhood car rental e.g. Whipcar
- Car sharing e.g. Car Share Devon



But, trips using urban car rental schemes may be short trips which could be walked or cycled

## The costs of alternatives to owning a car

- Taxi: in London black cabs cost about £16.20 (or more) for a km journey
- Minicabs: about half the price
- Car rental (e.g. Hertz or Avis): about £80 a day plus fuel in London
- Car clubs (e.g. Streetcar): from £50 a day, including some fuel plus £59.50 a year
- Neighbourhood rental: from about £30 a day plus fuel

# Reducing car use through land use planning

- Policies to make walking and cycling more accessible:
  - Physical integration, e.g. bicycle racks at stations
  - Building bus stops and cycle lanes near residential, employment and shopping areas
  - Mixed use developments
- Increasing residential densities
- Provide more local facilities e.g. shops
- Include travel costs of users when considering location of new hospitals, schools etc.

# Linking the sustainable travel and health agendas

- Active travel helps address both the sustainable travel and the health agendas
- Active travel has many positive aspects: it is cheap, has few barriers to entry, and is politically acceptable
- But, there are significant differences between the approaches of transport and health professionals



Photograph: Lewis Whyld/PA

# The transport and health fields

	Transport	Health
Collective mission	?	Improve the nation's health
Models	Usually mathematical	Usually conceptual
Evaluation	Cost-benefit analysis in £	Cost-utility analysis in QALYs (quality-adjusted life year)
Empirical research	Associative	Interventions based on randomized control trials (RCTs)
Literature reviews	Unsystematic	Systematic
Perception of the other field	Health issues are complex	Transport issues are simple



## Summing up

- Walking and cycling can make a positive contribution to sustainability and to health through physical activity.
- The growth in car ownership is a major cause of the decline in walking and cycling.
- Walking and cycling can be increased by various transport policies and actions.
- But, we do not know which policies and actions are most cost effective at doing this.
- Systematic evaluation of the impacts is needed to establish this.
- In the meanwhile:
  - the policies and actions which seem to be cost effective should be implemented;
  - they should be evaluated;
  - transport and health researchers and professionals should work more closely.

## Further information

- E-mail: [r.mackett@ucl.ac.uk](mailto:r.mackett@ucl.ac.uk)
- Phone: +44 20 7679 1554
- Report on transport, physical activity and health:  
<https://www.ucl.ac.uk/news/pdf/transportactivityhealth.pdf>