
TRANSFORMING TRANSPORT
In a Carbon Constrained World

HOW EASY IS IT TO CHANGE TRAVEL BEHAVIOUR?

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‘Changing’ is ambiguous

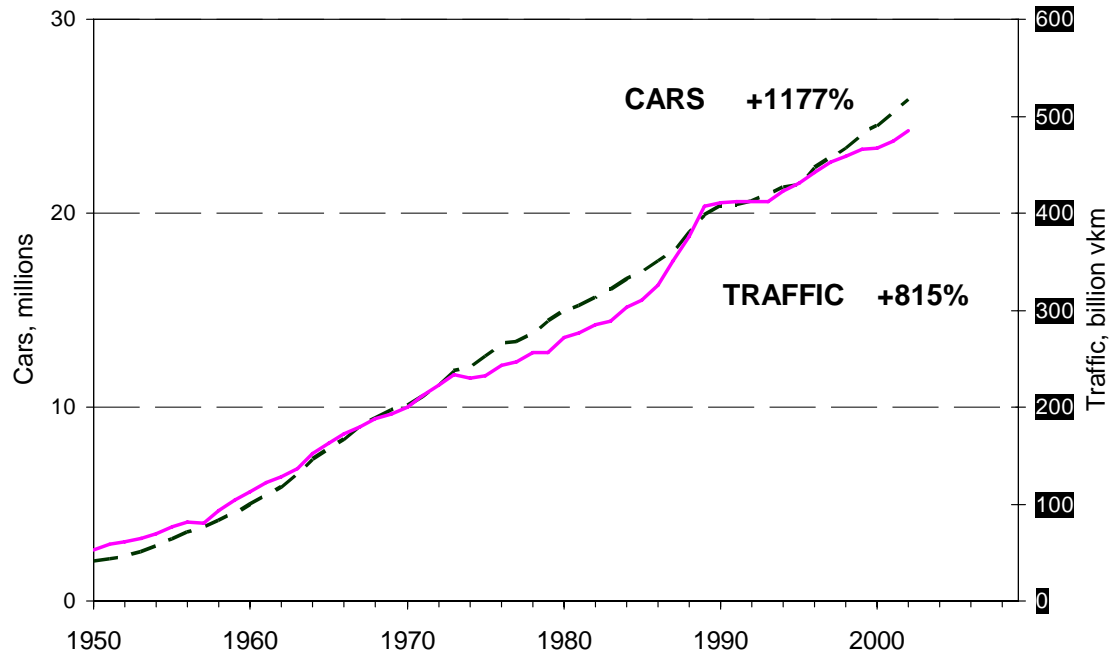
- ‘Changing’ as a description of what is happening, whether we will it or not
- ‘Changing’ as an active intervention, with intent to make things different

**An axiom: travel behaviour *does* change,
and therefore it *can be* changed...**

The argument about why travel behaviour should be changed, and what happened

- **In one lifetime, car ownership and use have changed enormously**
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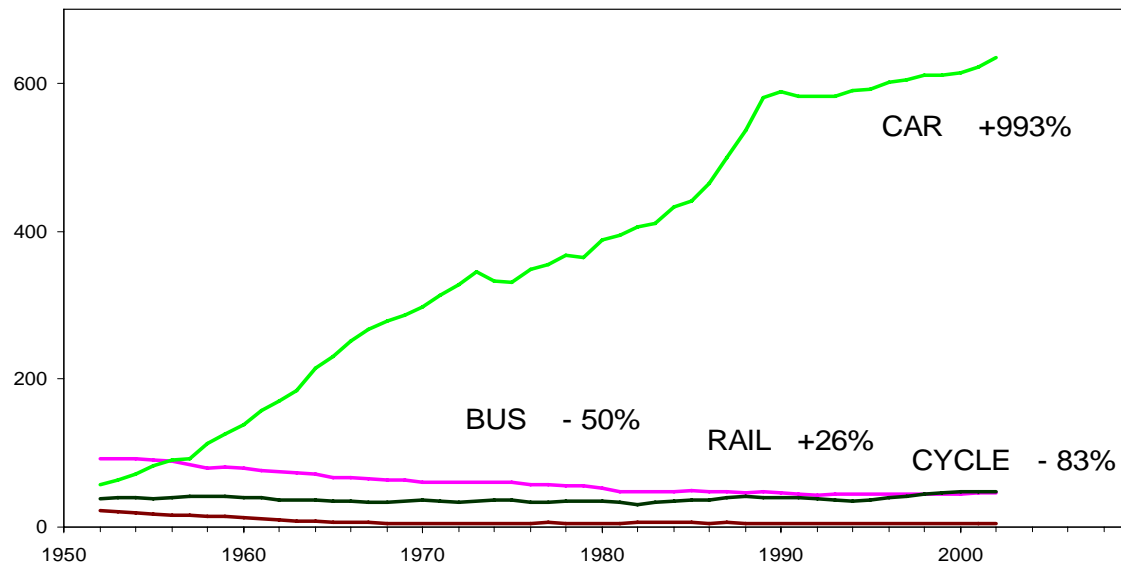
Cars & Traffic in GB



The argument - 2

- In one lifetime, car ownership and use have changed enormously
- **The change has been to establish a domination by car**

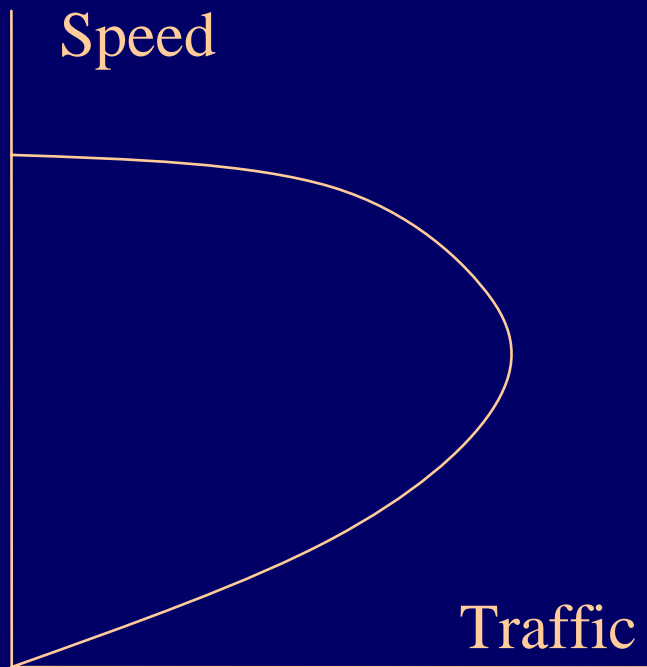
Passenger Travel in GB, billion pkm



The argument - 3

- In one lifetime, car ownership and use have changed enormously
- The change has been to establish a domination by car
- **If traffic grows faster than road capacity, congestion must increase**

The fundamental law of traffic



The more traffic there is
the slower it goes...

'Traffic will inevitably
grow...'

So build more roads?

Why was it a mistake?

- Car dependence *reduces* choice, and makes cities less attractive
- **No feasible road programme can keep pace with unrestricted traffic growth, without destroying the city itself**
- **Therefore congestion will get worse and worse. THEREFORE...**
- Traffic growth from uncharged external costs *damages* economy and environment

If supply **cannot** match demand – we must manage demand to match supply

- Pedestrianisation, traffic calming, control
 - reallocation of road capacity
 - public transport, walking, cycling
 - land use planning
 - prices which reflect full costs including congestion and environmental damage
 - ‘soft’ measures – travel plans, information...
-























THE PROBLEM OF CHANGING TRAVEL BEHAVIOUR

Need 20% or more traffic reduction to solve
congestion

Might need 50% or more traffic reduction to
tackle environmental problems...

Which means **substantial** change in behaviour

IS IT POSSIBLE?

Experience

- Reallocation of road capacity (town centre pedestrianisation, traffic calming, bus priority)
- Price Changes (fares, fuel, congestion charging)
- 'Soft' measures (information, marketing, travel plans, e-commerce...)
- Improvements in public transport, walking, cycling

So what really happens when road space is reduced or reallocated?

findings

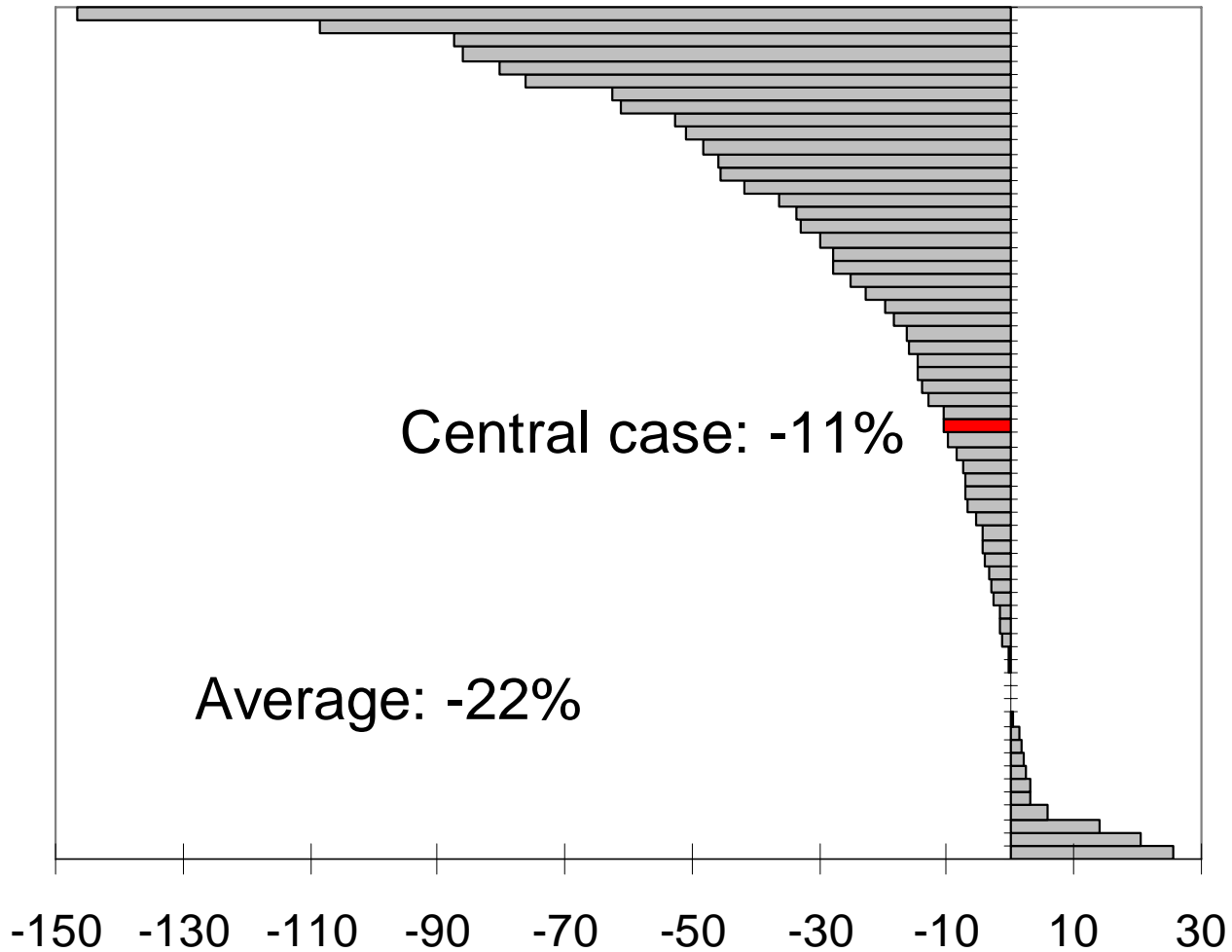
Evidence about 60 case studies from 11 countries - traffic bans, bus lanes, closures, disasters

Traffic problems are usually less serious than predicted because when road capacity is reduced, a proportion of the traffic 'disappears' due to complex behavioural adjustments

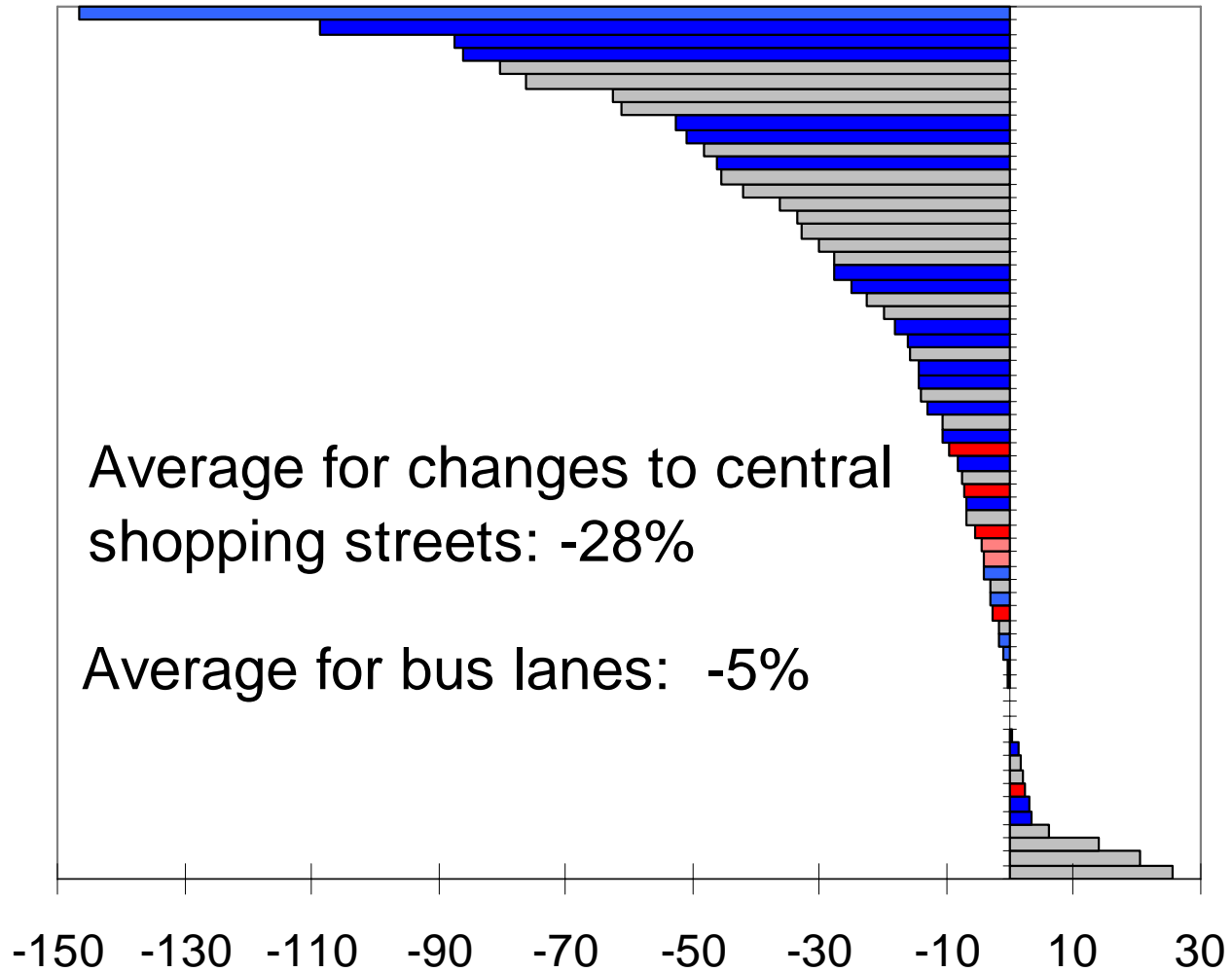
Practical results

- For radical pedestrianisation in German cities, traffic reduced on closed roads *and on alternative routes as well*
 - For modest schemes in most areas, traffic reduced on affected streets, and increased on alternative routes - *but not **all** the diverted traffic re-appeared. (Average 25%)*
 - *Extra* traffic induced by bypasses greater than *reduced* traffic from town centre schemes
 - a *very wide* range of different results....
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Changes in traffic



Changes in traffic



Road Pricing

- **London, Stockholm...**
- **Around 20% reduction in traffic in central areas**
- **Controversial, needs strong and brave political leadership... but in the right circumstances it *wins* elections for them**

Price Elasticity Greater Than Expected

TfL Mid-point Forecast

-20% chargeable vehicles

+ £120m revenue 1st year

Outcome 1st 6 months

-30% chargeable vehicles

+£68m revenue est. 1st year

(also because of exemptions etc)

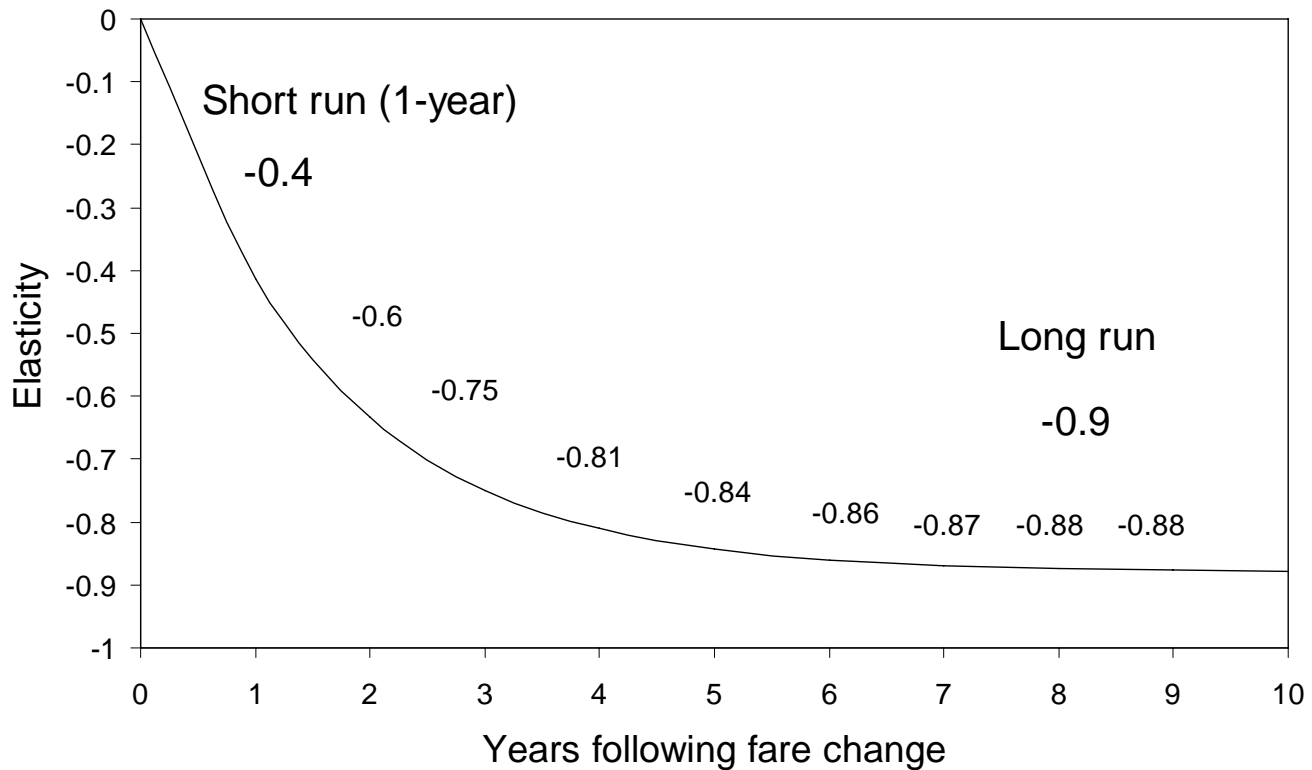
PRICE WORKS. (cf London, and...

Elasticities wrt Fuel Price per Litre Literature Review

	short term	long term
fuel consumption	-0.25	-0.60
traffic volume	-0.10	-0.30

And public transport fares as well

Dynamic Bus Fare Elasticity



Paris – an extraordinary re-invention of cycling



THE SOFT FACTORS

Travel Plans (Workplace and School)

Better information (Personalised Travel Planning, Public Transport Information, Travel Awareness Campaigns)

New Ways of organising activities (Home shopping, Teleworking, Video-conferencing)

New patterns of car use (Car-sharing, Car Clubs)

Government Advice 2002-3

“...assume that soft measures could get you into a position where you had reduced travel overall by some 5%...” (D. MacMillan, DfT, to Transport Select Committee)

and the various Multi-Modal Studies assumed between 1% and 10%...

Much contested...

July 2004: the scope is much greater than had been assumed

- Taken together, these policies could reduce traffic nationwide by about 11%, by active implementation over ten years
 - and by over 20% in peak period, urban traffic
 - at a cost of about 1.5pence per vehicle kilometre taken off the road – and a benefit of ten times as much
 - (BUT only if ‘high intensity’ implementation)
-

Implications of the evidence

Soft measures can contribute greater traffic reduction than assumed

But only if they are supported by 'hard' measures - certainly PT quality, parking; possibly pricing or restraint.

Dominant theme in case studies: soft measures must be part of a coherent package applied over a large area.

‘Soft’ doesn’t mean ‘Easy’

The soft measures are in themselves popular, encouraging choices by individuals, and therefore making other policies – parking restraint, pricing, reallocation of road capacity, priority measures etc – more acceptable. But they need those other measures in order to fulfil their potential. ‘Soft measures alone’ is not an effective strategy.

Dimensions of Behavioural Change – 1, 2

- Changes in driving style
 - Moderate and more extreme changes of route
 - Moderate and more extreme changes in the time at which the journey is made
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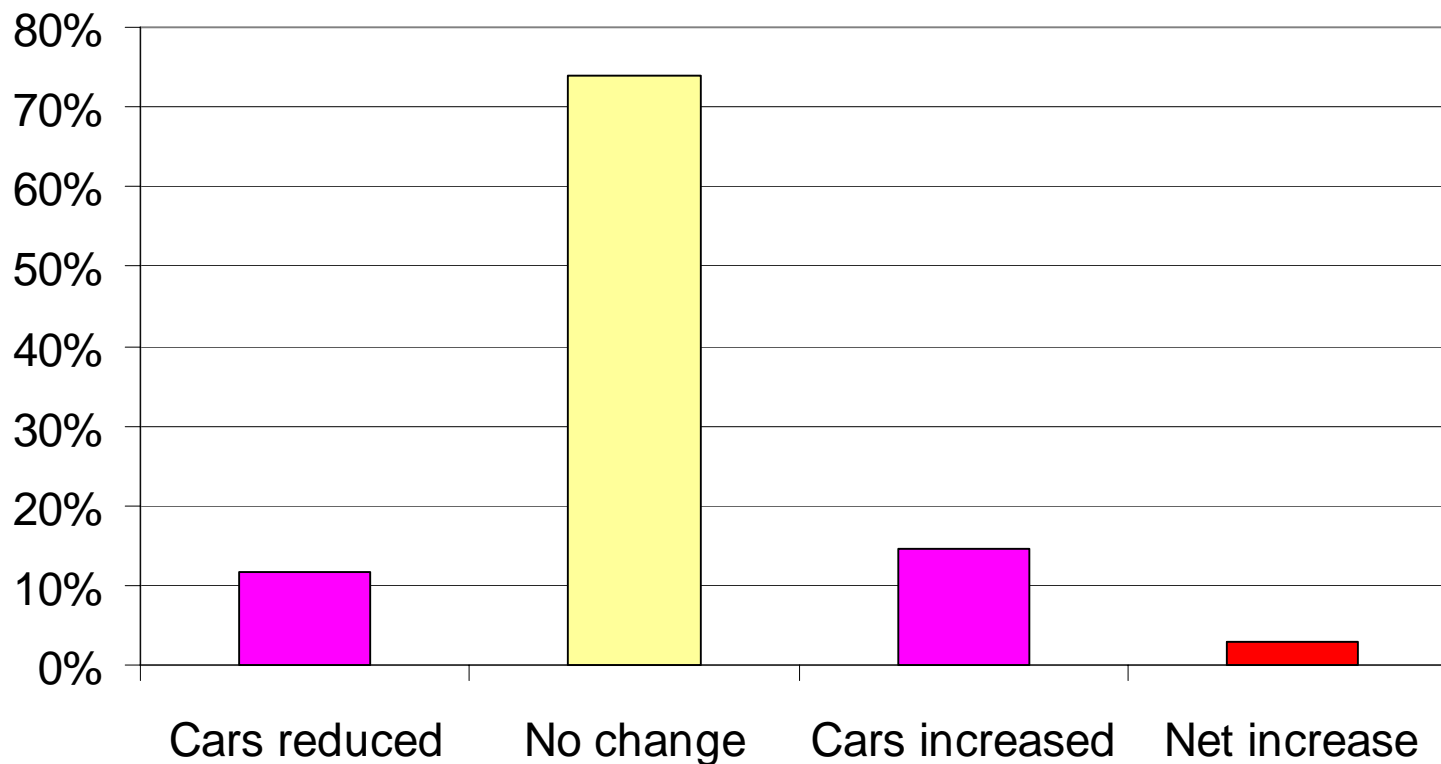
Dimensions of Behavioural Change – 3, 4

- Different destination
- Different frequency of journeys
- Different mode (or combination)
- Change balance of purposes
- Car sharing
- Consolidating trips
- Allocation within household
- Elimination/suppression/generation of trips
- Move home
- Move job

Changes in land-use/development/location of facilities

Trends show the *net* effect of a churn:
but individuals change in *either* direction

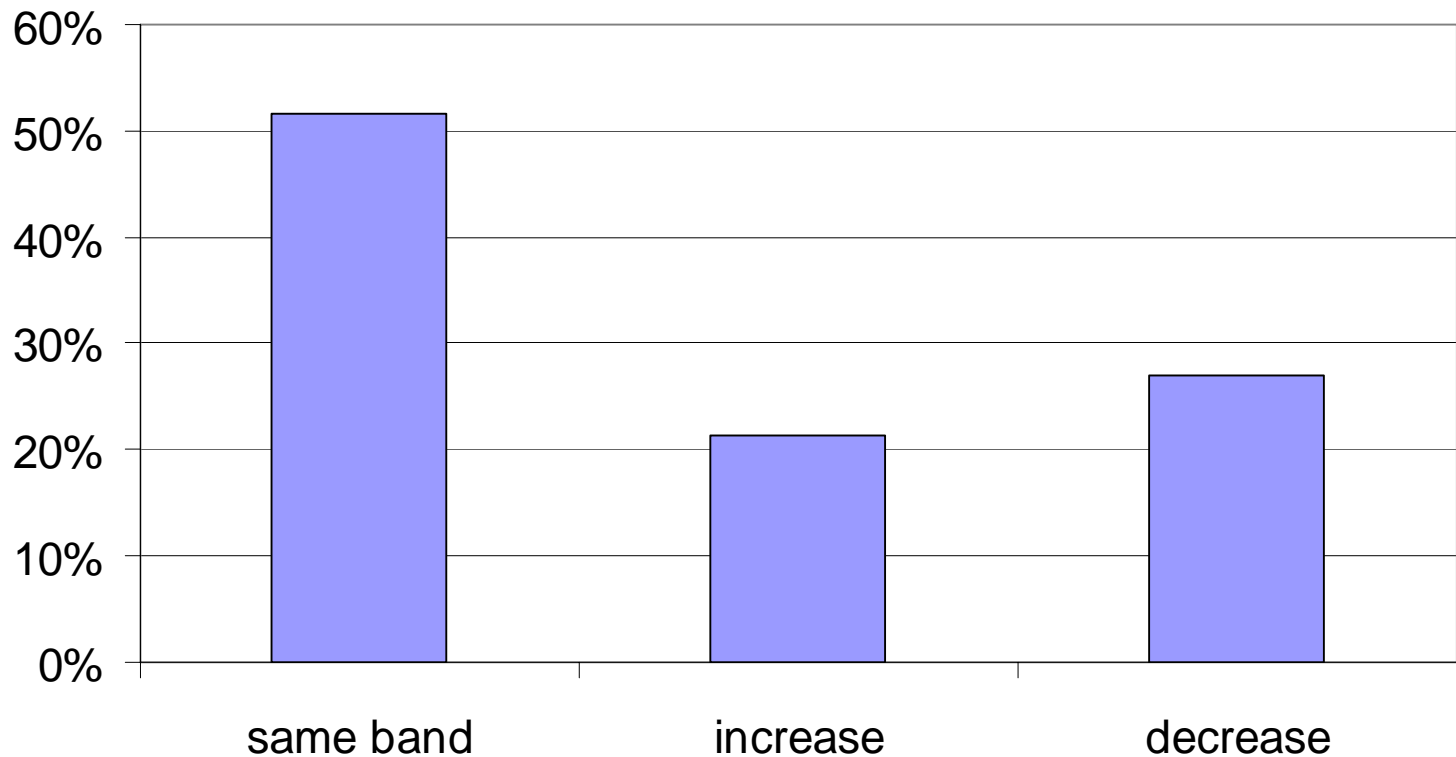
Proportion of people in households whose
car ownership increased or reduced



Source – 1988 and 1991 South Yorkshire Panel surveys

Trip rates also can increase or reduce

% of people in groups with similar numbers of trips per person



Source – London Panel Survey Spring and Autumn 1976

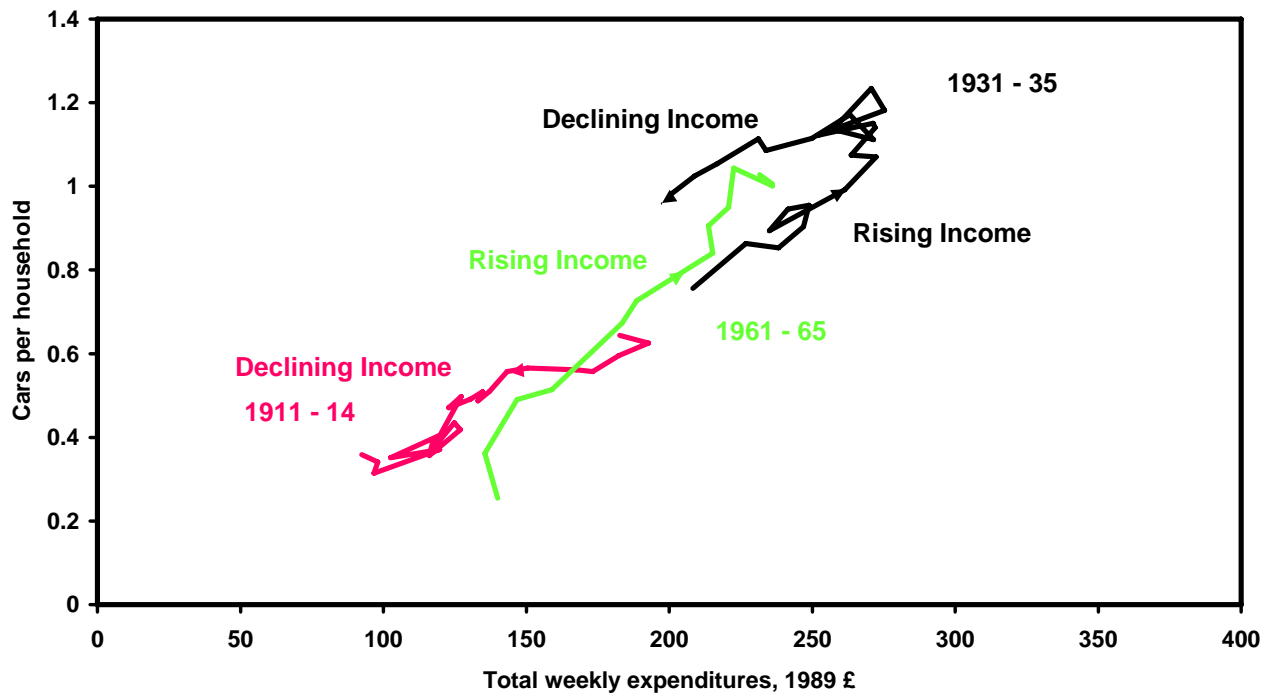
All the time, people are changing the method of transport they use

Main Commuting Mode, % of commuters

	rail	tube	bus	m'cyc	car driver	car pass.	cycle	walk
ave. yr	3.3	1.4	6.2	1.5	66.9	7.4	3.3	9.7
at least n years								
1	7.8	3.9	16.5	4.7	83.1	25.0	9.4	22.1
2	5.6	2.6	11.5	3.1	79.3	13.9	6.2	16.4
3	4.9	1.9	8.4	2.2	76.3	9.4	3.9	12.9
4	3.4	1.6	6.7	1.5	73.4	7.2	3.4	10.6
5	2.9	1.2	5.4	0.9	70.8	5.3	2.8	8.5
6	2.5	0.9	4.4	0.7	67.8	4.5	2.3	7.4
7	2.0	0.6	3.6	0.7	63.9	3.5	1.7	6.5
8	1.6	0.4	2.7	0.5	58.7	2.6	1.3	5.6
9	1.2	0.4	1.8	0.4	53.4	1.9	1.2	4.3
10	1.1	0.2	1.4	0.2	42.4	0.9	0.9	2.4

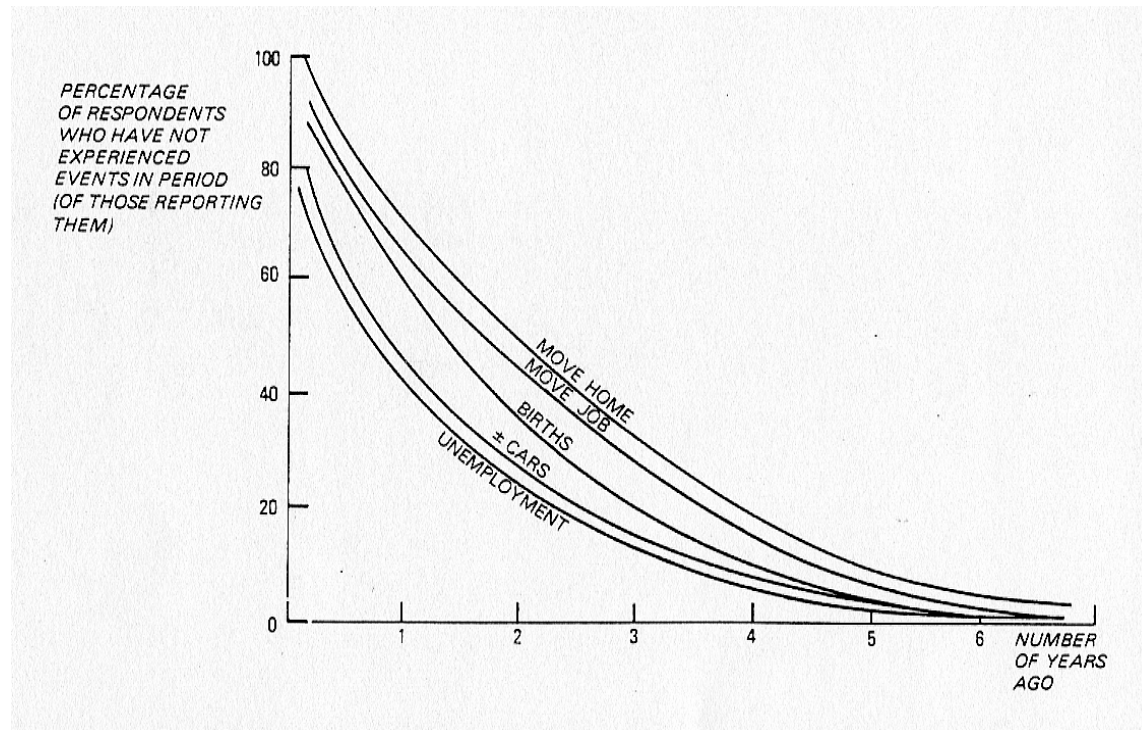
And between car ownership and income

Relationship between Car Ownership & Income



How fast does behaviour change?

The early research:
Frequency of life events enabling choice



WE DO NOW HAVE THE FACTUAL EVIDENCE THAT IT WORKS

- Increases in road capacity induce traffic, and capacity reduction reduces traffic
 - Well planned pedestrianisation is commercially successful
 - Transport prices do change travel choices
 - 'Soft' measures change individual behaviour substantially
 - **But these changes take 5-10 years (maybe 20) of persistent effort, creative imagination, and political courage**
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Denial or Despair?

- **Denial** – there is no problem – *might* be true, but if not, is foolish and dangerous.
- **Despair** – the problem is too big, and we can do nothing – *might* be true, but we have to act as if it is not.
- **Between denial and despair is the territory of the transport policies *which make sense anyway, even if there is no carbon problem.***