

# Traffic and Transport Psychology

## The seductiveness of the car

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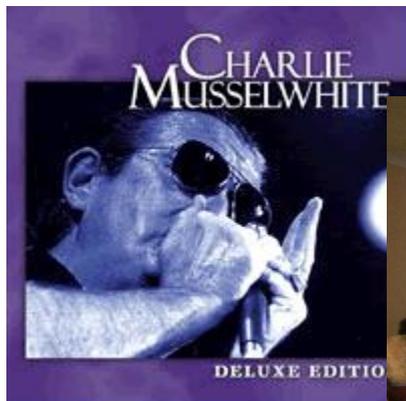
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# Who am I?



Psychology applied to transport and society

Older people and transport, attitudes to transport and road user safety

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# Overview

**Current transport statistics**

**Transport statistics**

**negative externalities**

**A change in philosophy**

**Why are cars so popular ?**

**How to change the dominance of vehicles**

**Social/aesthetics and public transport**

**Sharing the space**

**Conclusions**



# Transport statistics



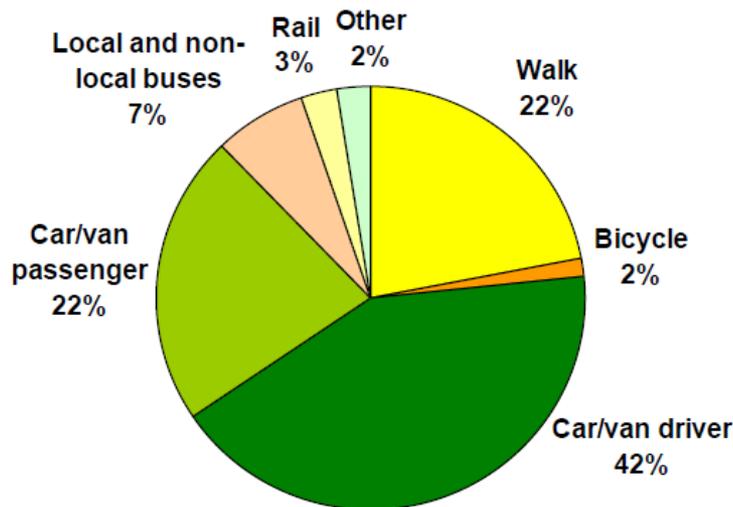
# Transport Modal Split UK 2010

- 910 trips per person per year
  - 582; 64% by car
- 6726 annual miles per person per year
  - 5246; 78% by car

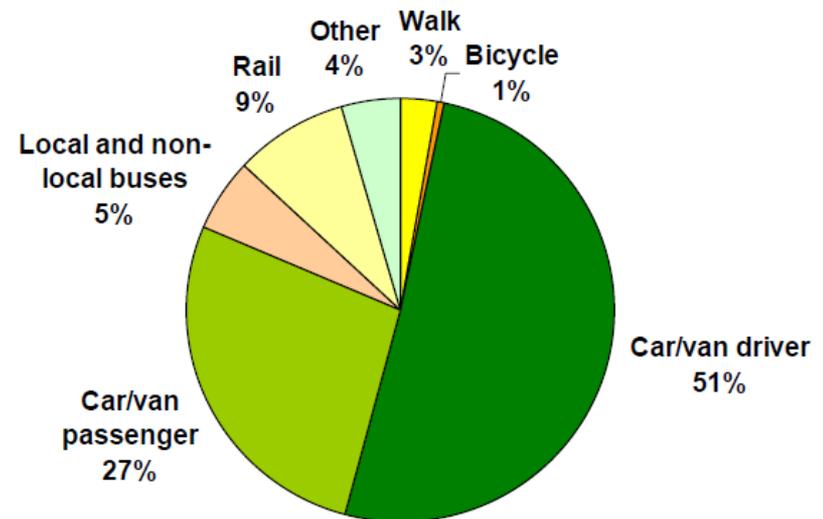
## Mode share: Great Britain, 2010

(NTS web tables NTS0301 and NTS0302)

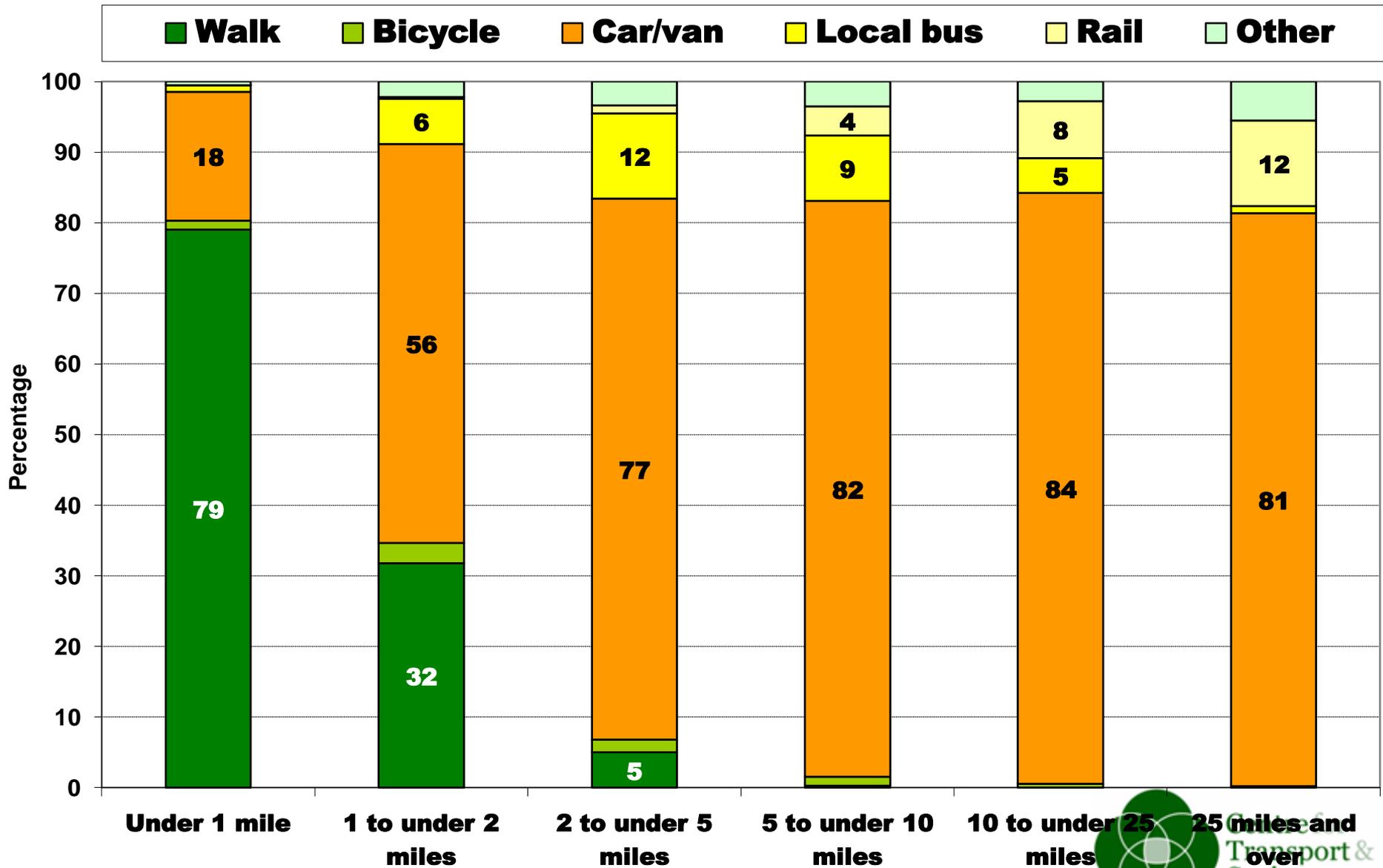
### Average number of trips



### Average distance travelled



# Trips by length and main mode: Britain, 2009

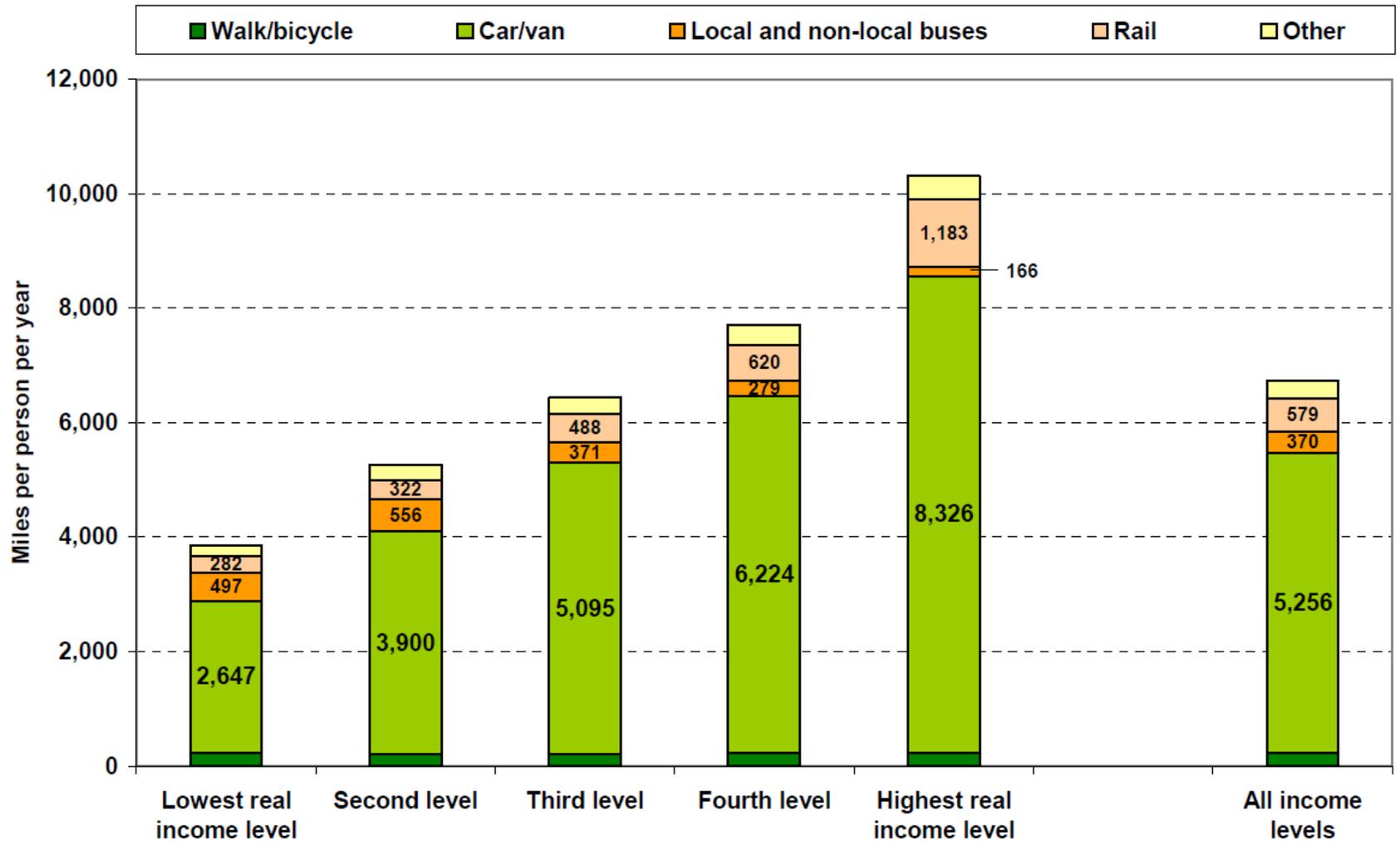


Source: DfT (2010)

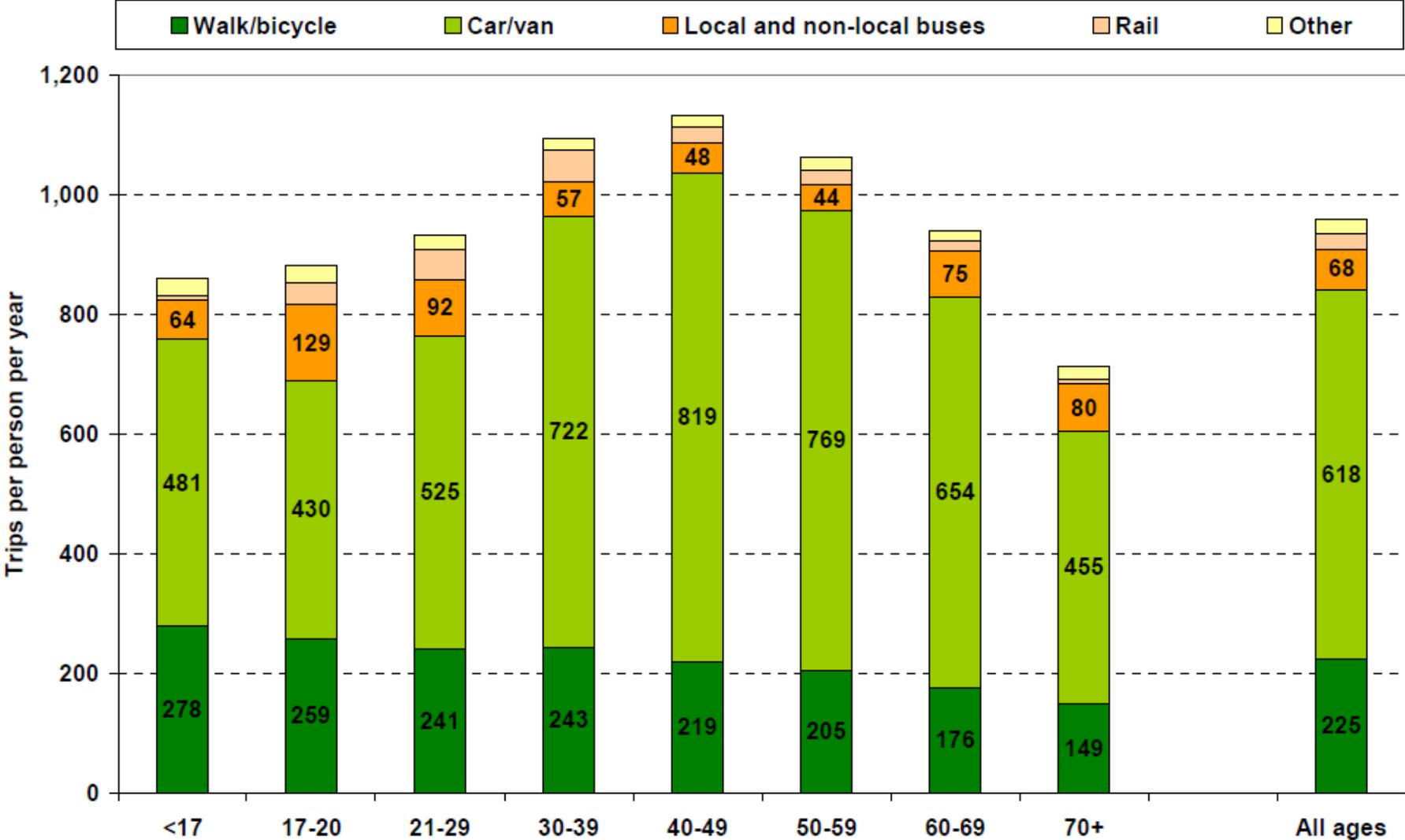


## Average distance travelled by mode and household income: Great Britain, 2010

(NTS web table NTS0705)

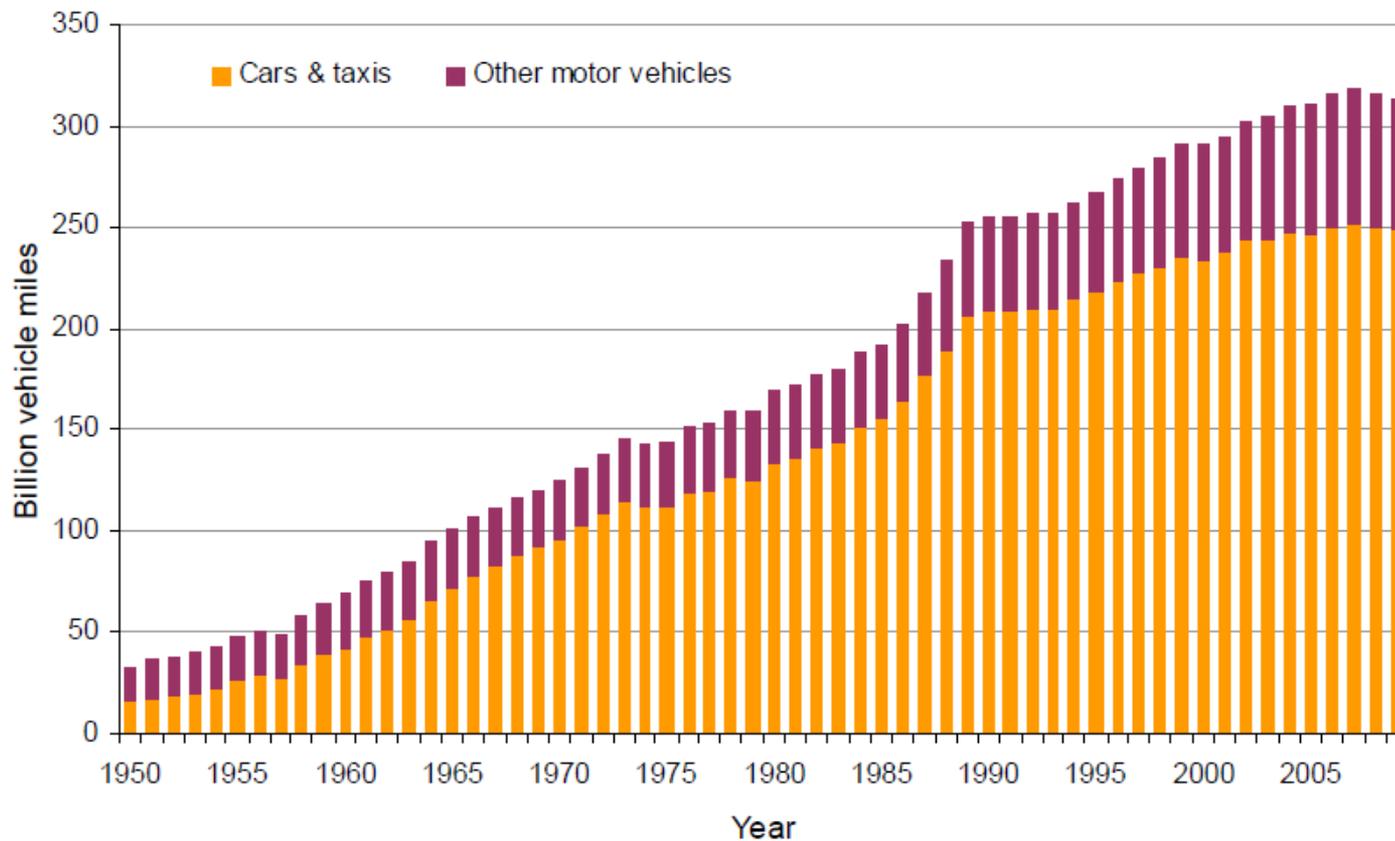


**Average number of trips (trip rates) by age and main mode: Great Britain, 2010**  
 (NTS web table NTS0601)

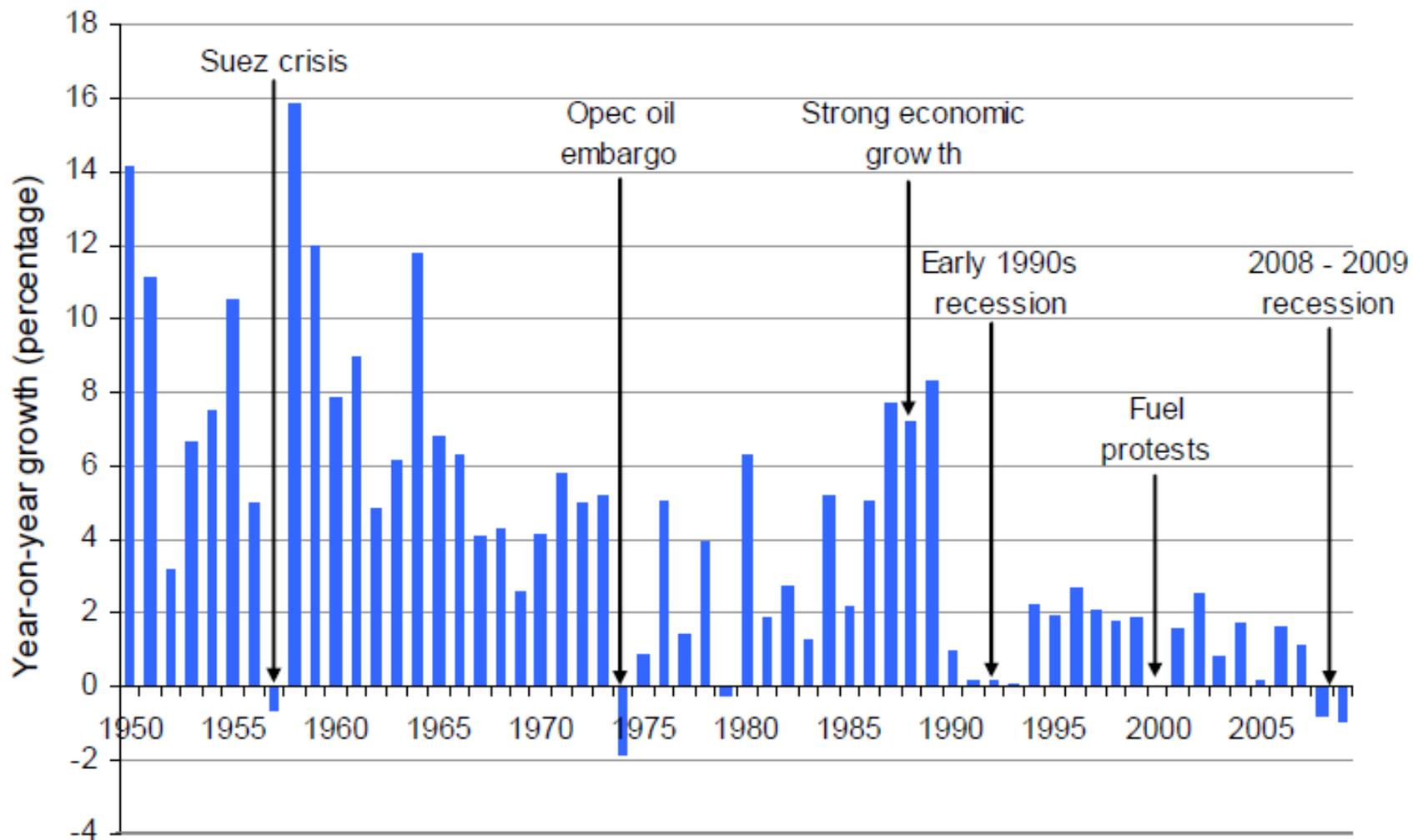


# Huge growth in cars and car use in Great Britain

- In 2009, the overall motor vehicle traffic volume in Great Britain was 313.2 billion vehicle miles
  - Cars account for 249 billion vehicle miles (79.5% of all motor traffic)
  - traffic levels in 2009 were 7.9 %higher than in 1999 (cars 6.2% higher)



Source: National Road Traffic Survey, Department for Transport

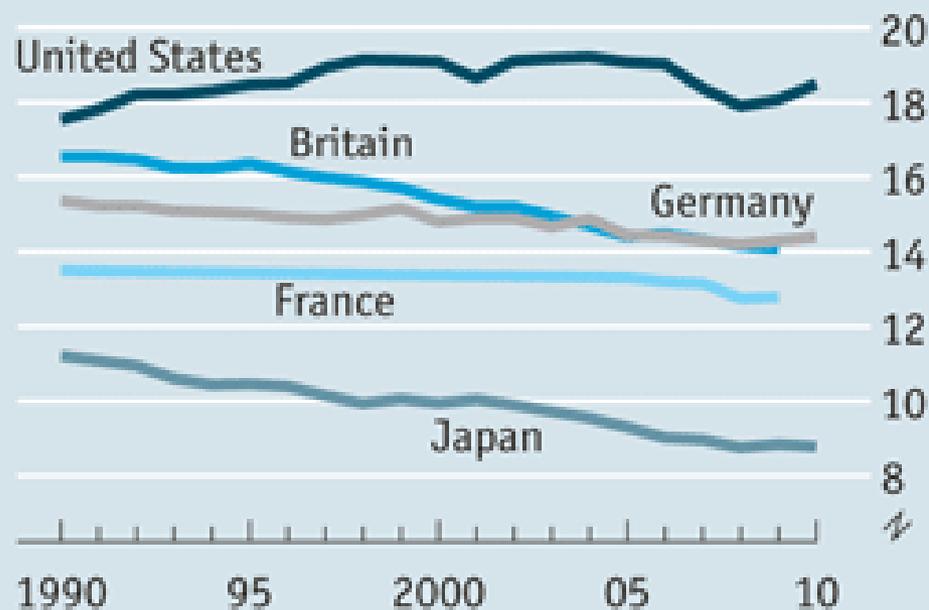


Source: National Road Traffic Survey, Department for Transport

## No particular place to go

1

Average kilometres travelled per car\*, '000

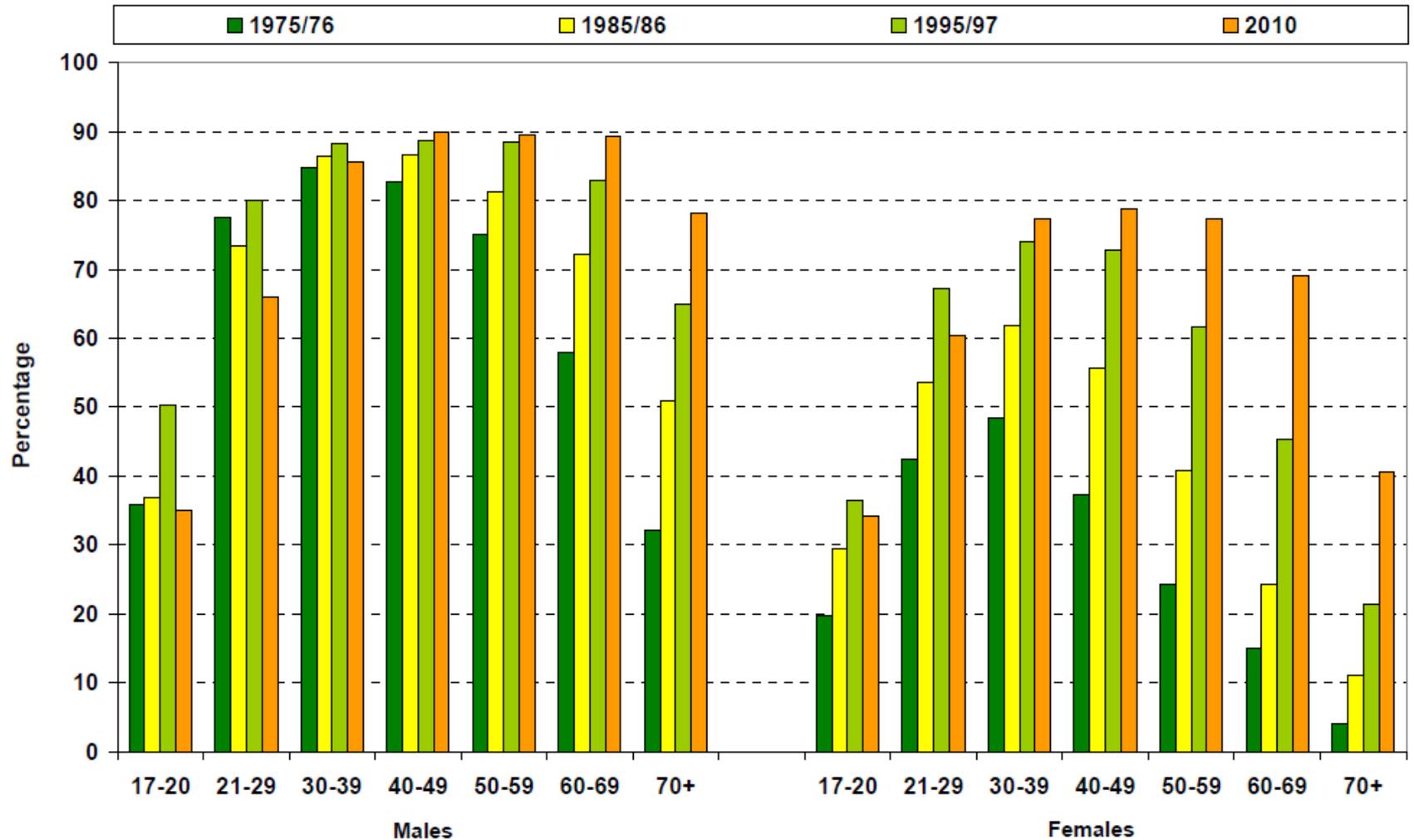


Sources: Department of Infrastructure and Transport, Australia; US Department of Transport; *The Economist*

\*includes light-commercial vehicles

- The NTS estimates that 35 million residents in Great Britain held a full car driving licence in 2010. Since 1995/97 the proportion of men with a full **driving licence** has remained relatively stable at around 80%, but it has continued to increase among women, from 57% to 66% in 2010. Licence holding has also continued to increase among older people.

## Full car driving licence holders by age and gender: Great Britain, 1975/76 to 2010 (NTS web table NTS0201)



Does it matter – The  
negative externalities  
of private vehicles



# 1. Pollution and effects on the environment

Figure 2.4  
Carbon emissions by sector: 1970 to 2005 (by source)

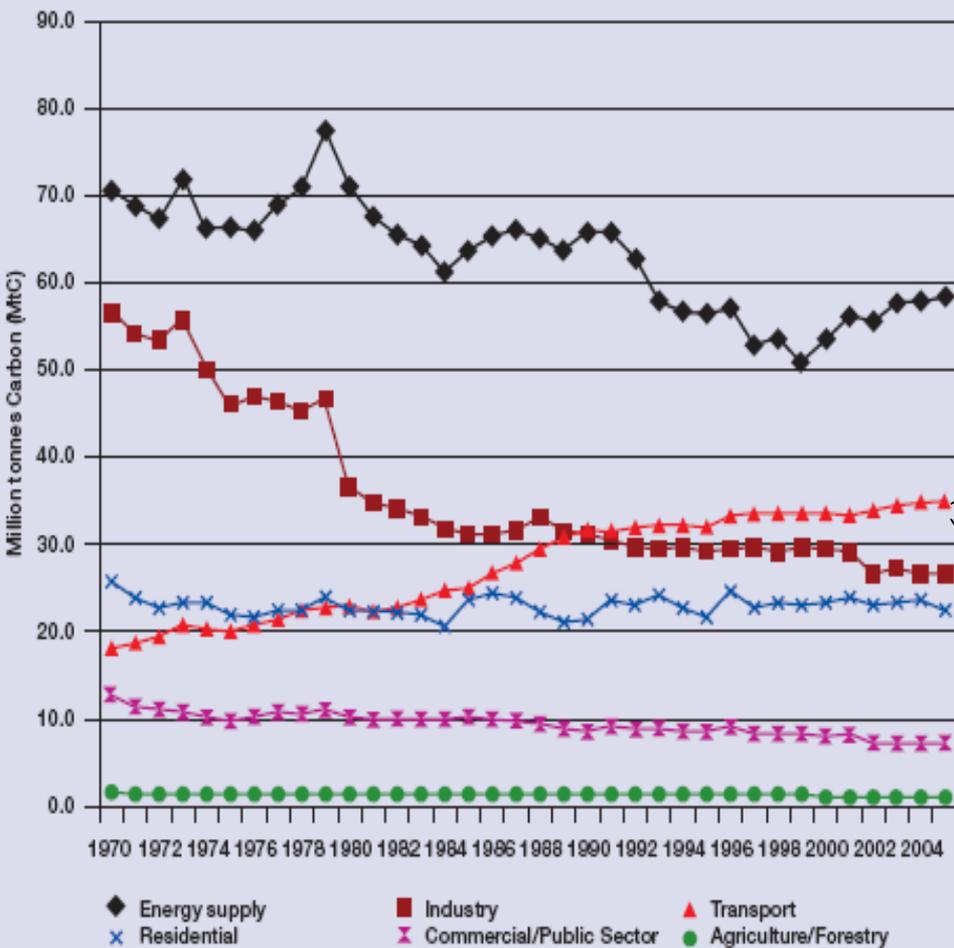
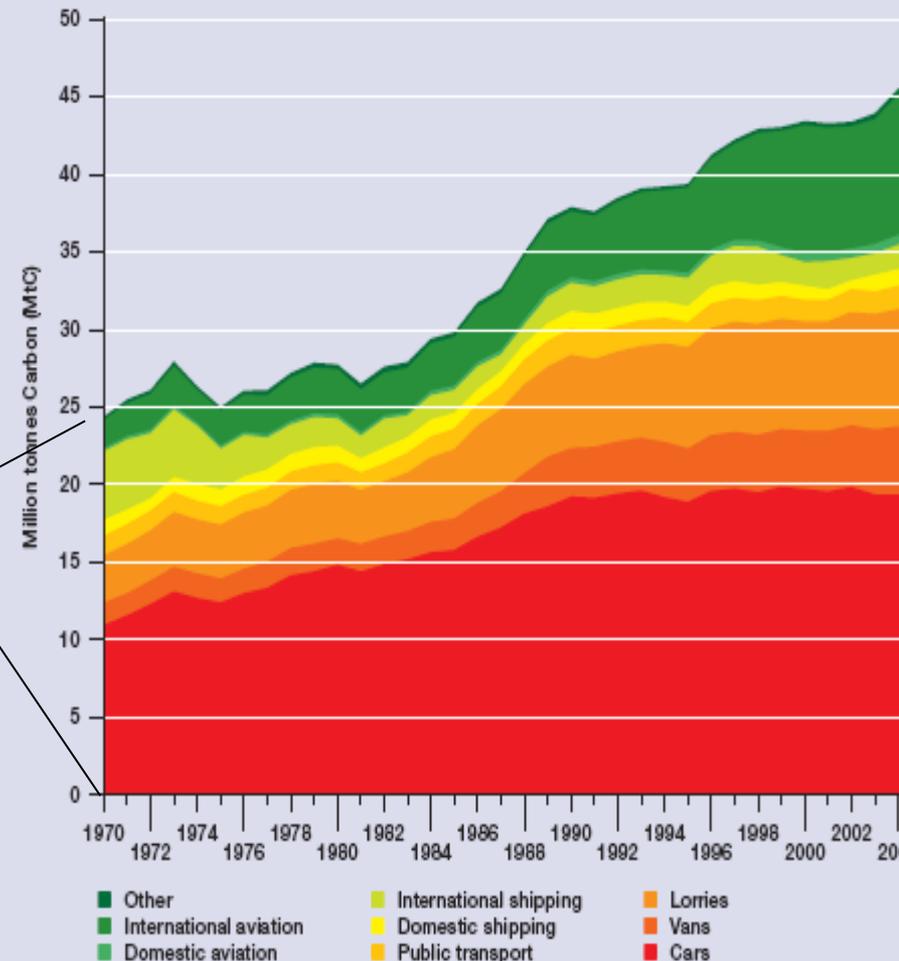
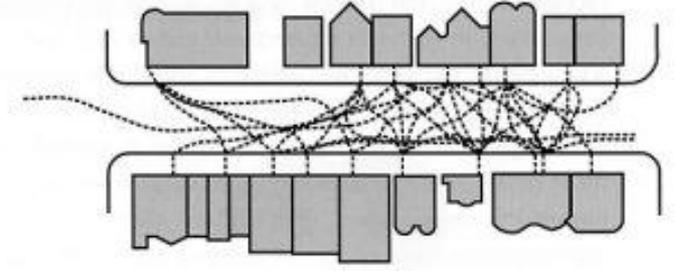


Figure 2.5  
UK transport CO<sub>2</sub> emissions 1970–2005 (by source)<sup>10</sup>

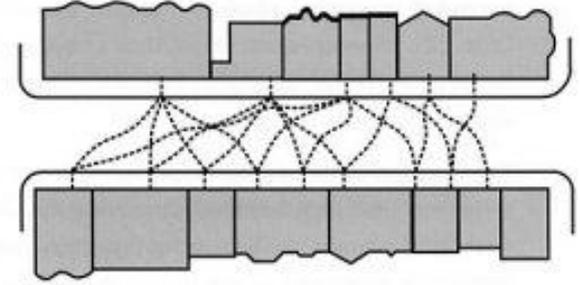


# 2. Severance - hindrance to community interaction from traffic

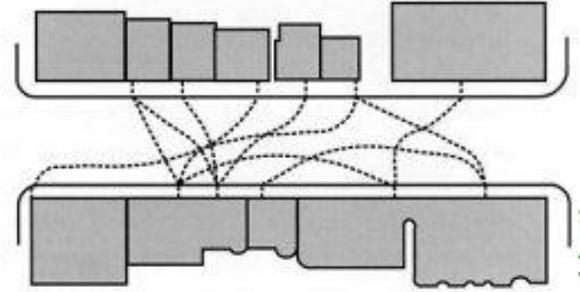
**Light Traffic**  
3.0 friends per person  
6.3 acquaintances



**Moderate Traffic**  
1.3 friends per person  
4.1 acquaintances



**Heavy Traffic**  
0.9 friends per person  
3.1 acquaintances



Appleyard and Lintell (1972) studied three San Francisco streets with different levels of road traffic and asked residents about the number of friends and acquaintances they had on street

# Street as Home

- For centuries, people have felt that the street in front of their house was an important part of their 'home territory'.
- Home territory was a place where people 'came home' - a safe haven where their identity was reconfirmed.
- 'Home' was not just the dwelling in which they ate, slept and procreated. Home embraced the street and the entire city.
- In the map of their minds, the street was part of their home territory - their outdoor living room.
- Traffic does more than just take over space physically. It psychologically invades the street, the sidewalk, our front yard, even the front rooms of our house. In the map of our mind, these spaces cease being part of our home territory.



SALFORD PARK ROAD.



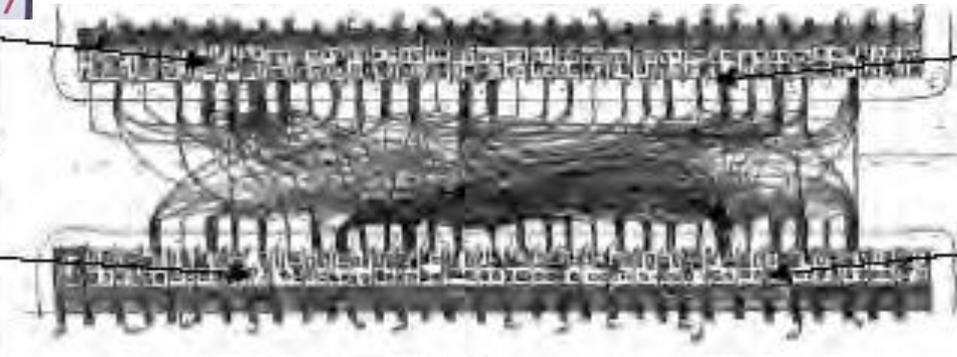
Sefton Park Road  
Bristol 2010

# DOVERCOURT RD. BS7



"people stay for a while and put down roots"

"there is really a sense of community- we look after each other"



"we have some good neighbourhood friends"

"there's good communication between the houses and a feeling of togetherness"

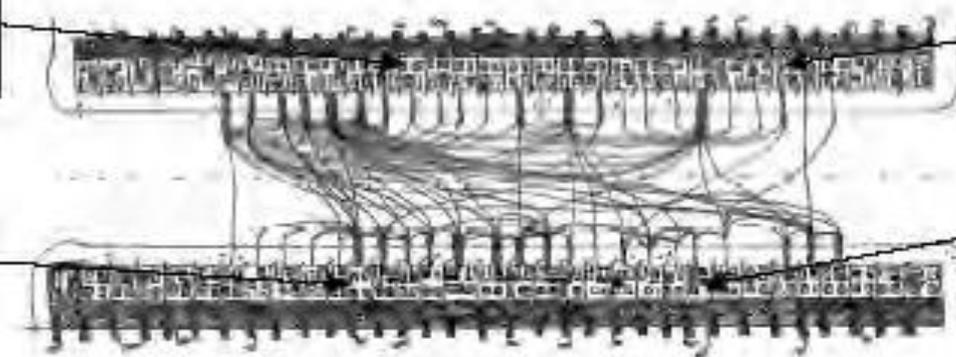
LIGHT TRAFFIC: 140 VEHICLES PER DAY  
5.35 friends per person/ 6.1 acquaintances

# FILTON AVE. BS7



"people don't trust one another like they used to"

"local chatting is quite a thing"



"it's not so friendly- you barely see anyone"

"we tend to only know people who live near us, because it's busy"

MEDIUM TRAFFIC: 8,420 VEHICLES PER DAY  
2.45 friends per person/ 3.65 acquaintances

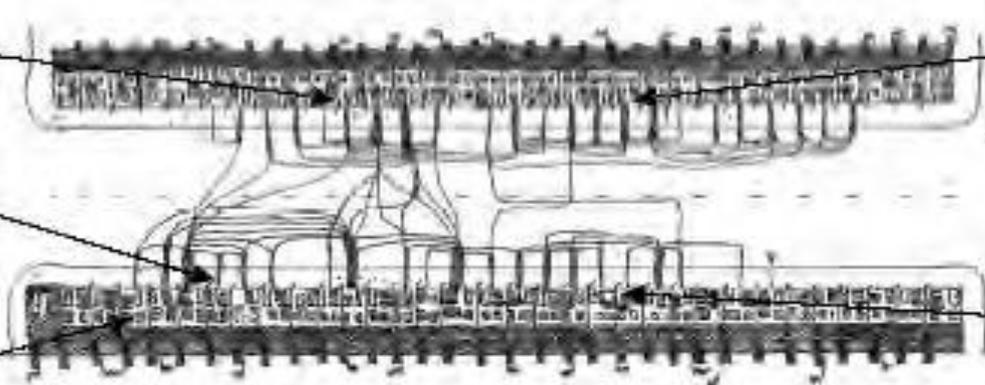
# MULLER RD. BS7



"People don't communicate unless they have to"

"quite anonymous- we only know our immediate neighbours"

"ordinary, quiet people"

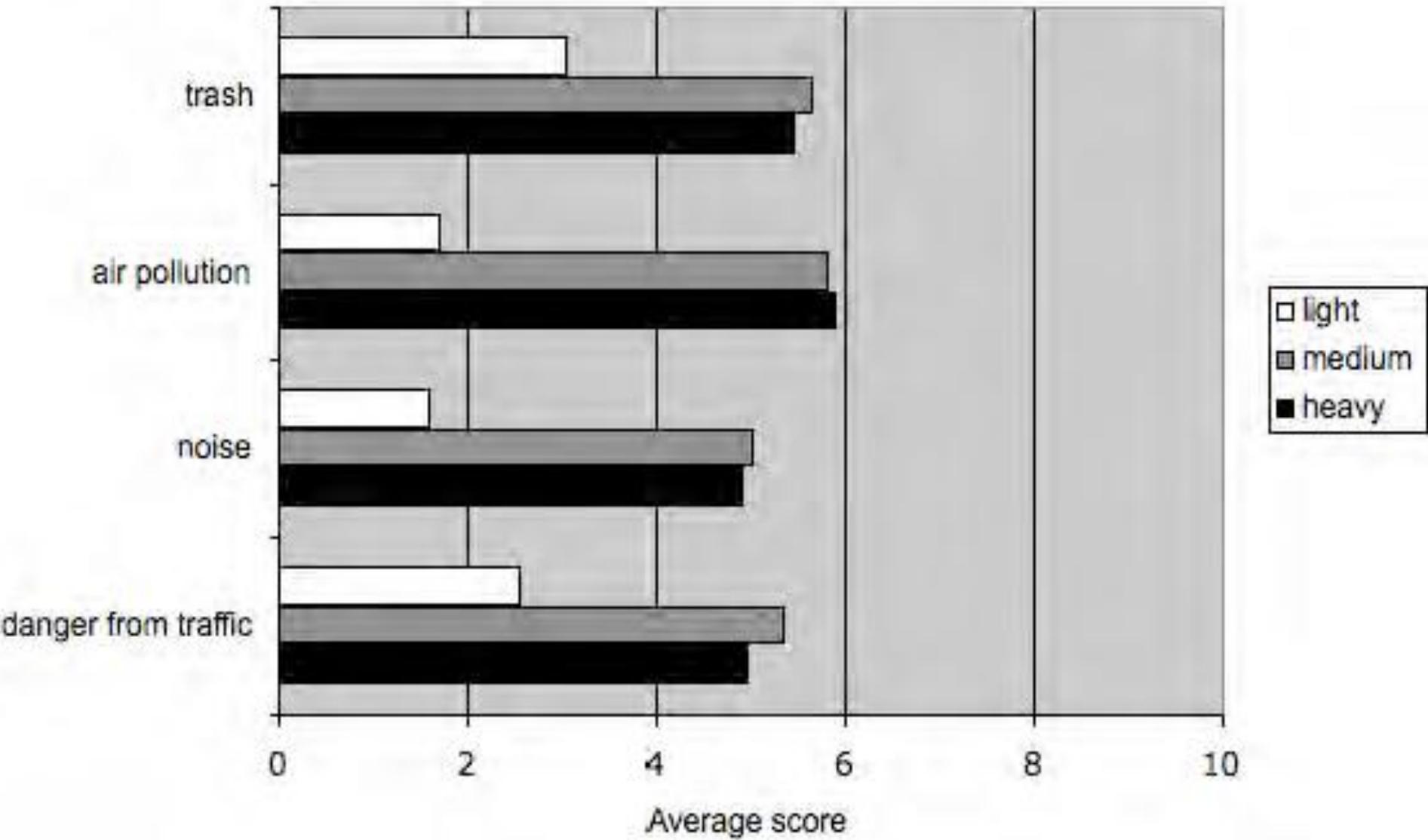


"The traffic's like a mountain range, cutting you off from the other side of the road"

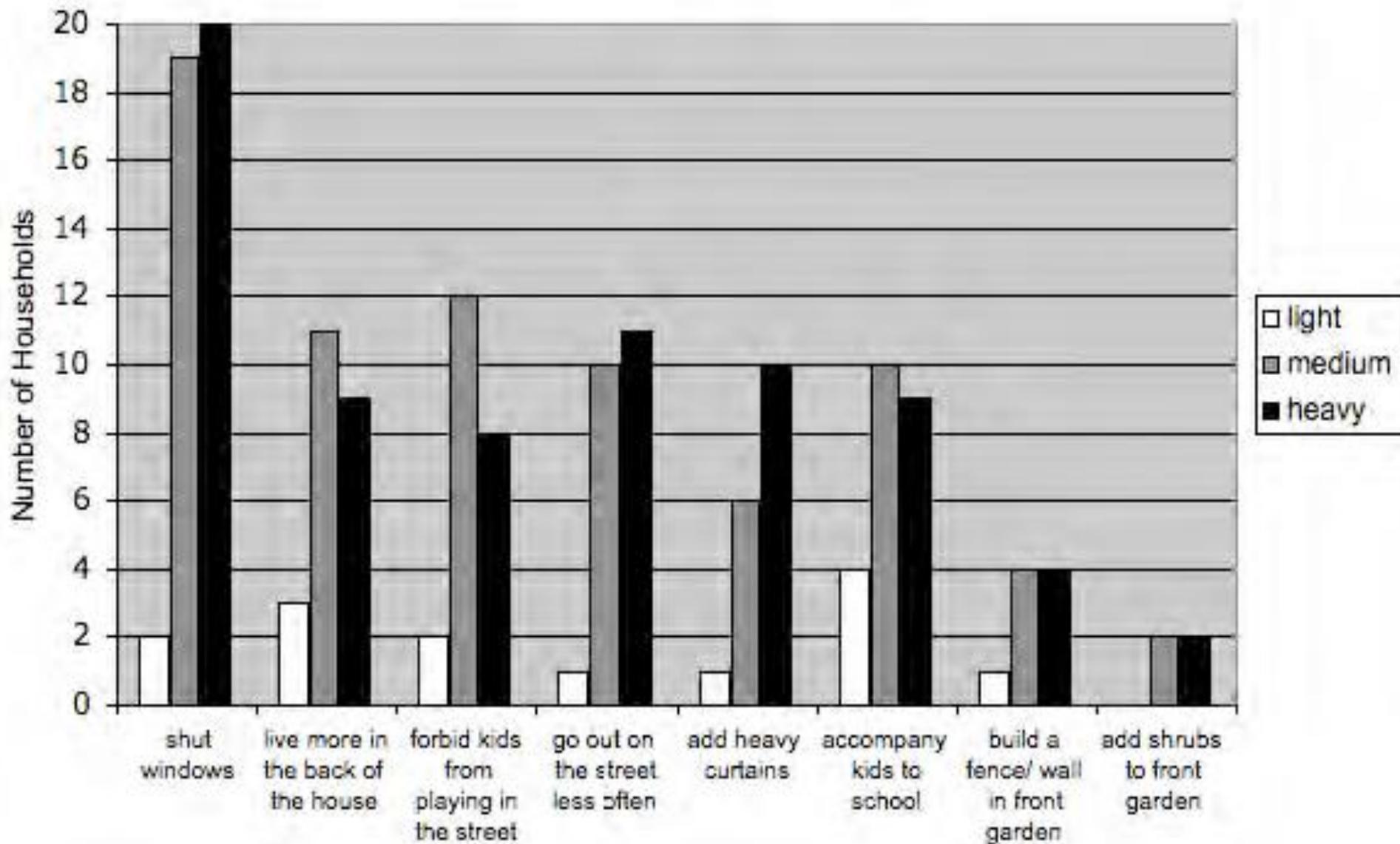
"people just go from their cars to their houses"

HEAVY TRAFFIC: 21,130 VEHICLES PER DAY  
1.45 friends per person/ 2.6 acquaintances

# On a scale from 1-10, how bothered are you by the following on your street?



## Adaptations to Traffic



# Street as Exchange Space formal or informal



Ponte Vecchio,  
Florence, Italy

# Street as Spontaneous and Diverse Exchange



Less chaos, theatre, drama  
and life – all good for mental  
wellbeing

# Streets for Learning About Life



# Streets for Learning About Life

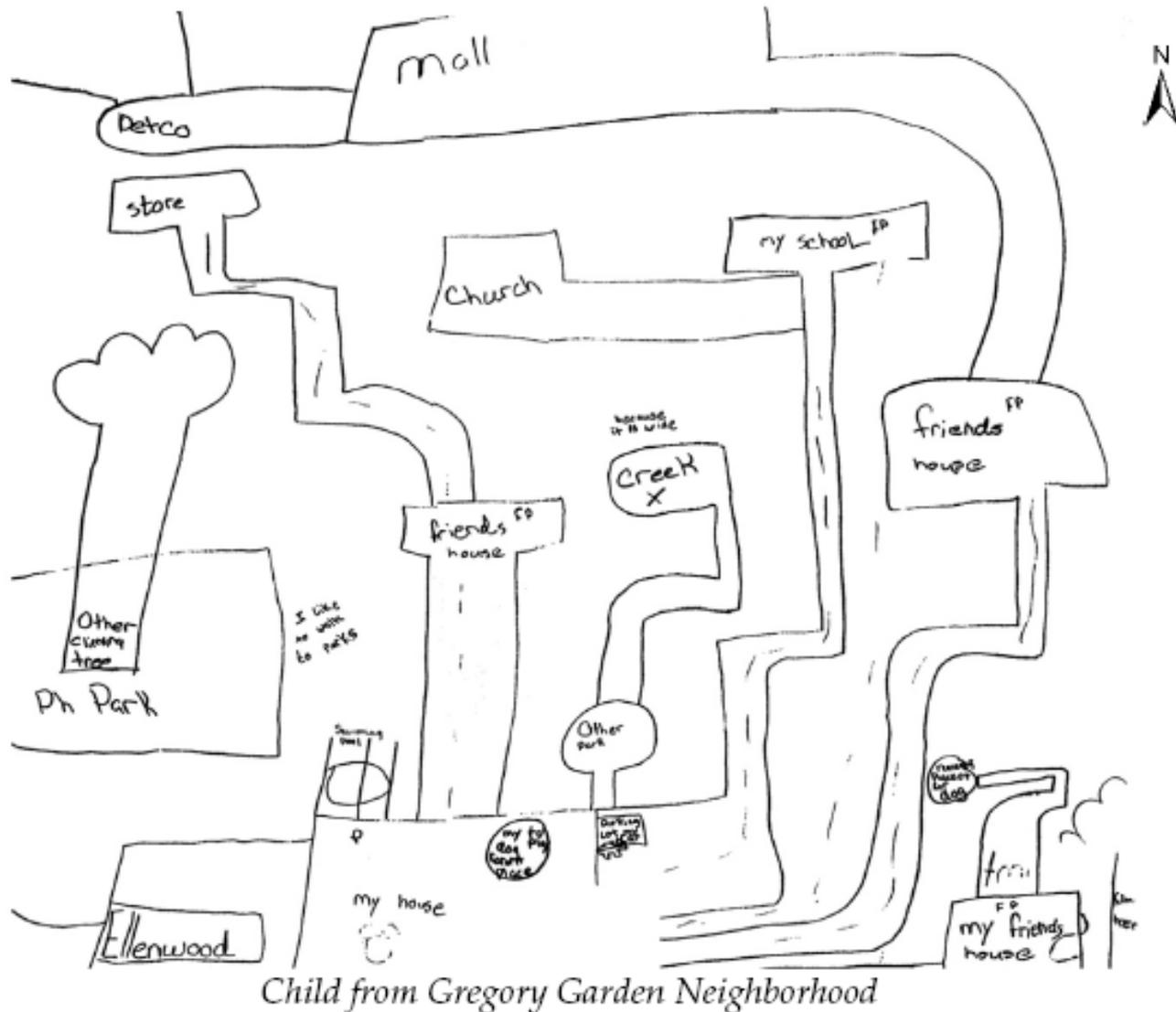


Figure 3: A map drawn by a 10-year-old child who was driven everywhere. The result is a series of disconnected paths that lead separately from home to school, friends, or the mall, with little detail or connection with the community.

# Streets as a Place for Street Wisdom

- Older people less likely to use streets
- Less likely to pass on wisdom
- Less understanding and tolerance between age groups



# The Loss of a Local Economy

- Large urban areas are an invention to exchange opportunities and minimise travel.
- Vibrant local community with local businesses
- Severed by the motor vehicle
- Costs of travel paid for by travellers – “second generation costs”

# The loss of democracy

- Streets and public squares were the birthplace of democracy.
- The Greek word for city was 'civitas' meaning a collection of citizens.
- The city was a 'collective enterprise' and the street was the lifeblood of this collaborative effort.
- The street was the marketplace of ideas including political ideas.
- Traffic erodes the spontaneous exchange realm. Those who suffer most from this loss are those at the margin of the society because it removes their chief medium for meaningful participation in community life.
- Streets, and the spontaneous encounter realm, are the cornerstones of Western democracy. Planned exchanges can be controlled. But the spontaneous realm is an open forum for debate, sharing of ideas and insights.

## 3. Road traffic injuries and death

In 2011 the Road Casualties in Great Britain Annual Report states:

- There were a total of **203,950** casualties of all severities,
  - 2 per cent lower than in 2010.
  - 17 per cent lower than 2005-9 average
- **1,901 people killed**
  - 3 per cent increase from 2010,
  - 32 per cent decrease from 2005-9 average
- **23,122** were seriously injured
  - Up 2 per cent on 2010 and
  - Down 15% from 2005-9 average
- **178,927** were slightly injured
  - down 3 per cent on 2010.
  - Down 17% from 2005-9 average

## RAS41001: Key Outcome Indicators - Strategic Framework for Road Safety: GB 2011

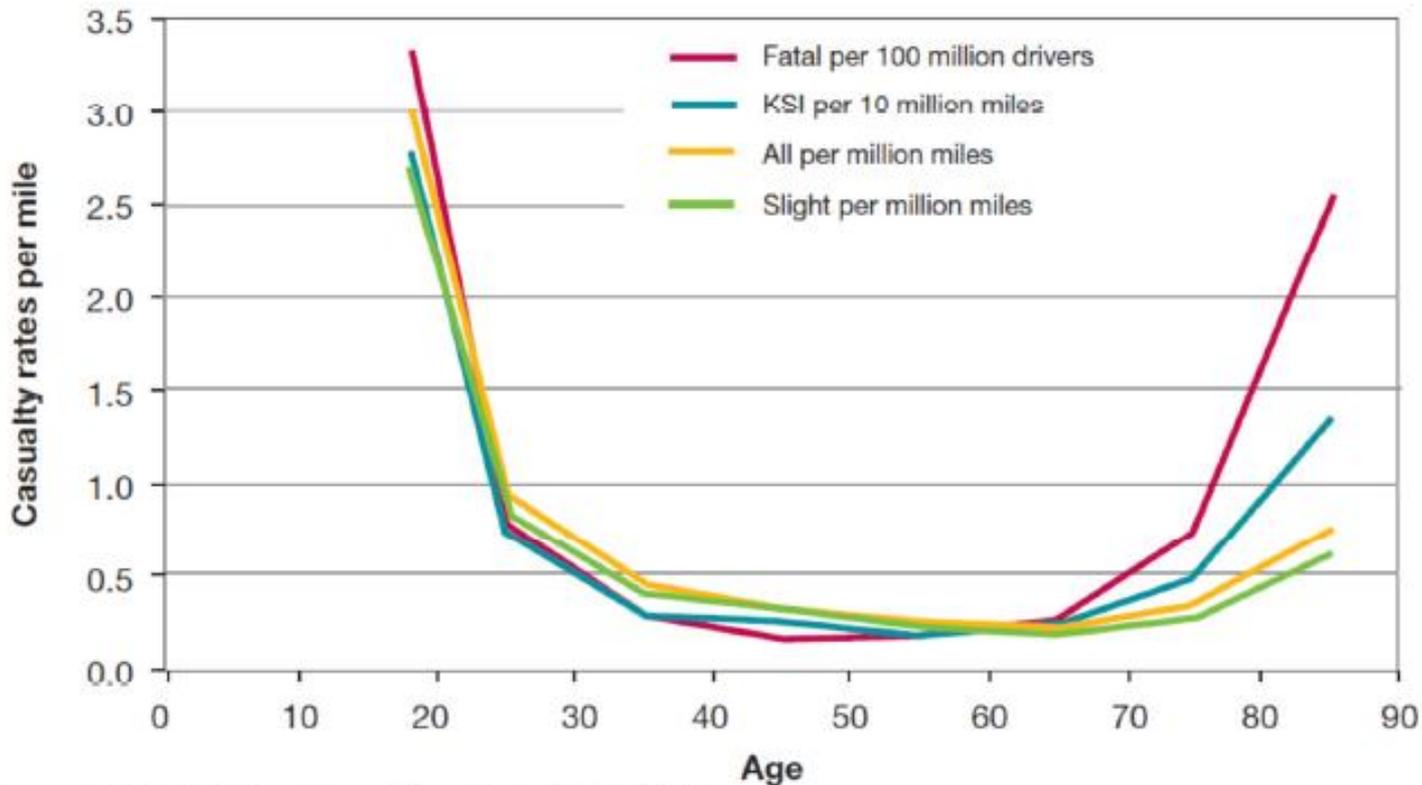
	Number			2011 Percentage change over:	
	2005-09 average	2010	2011	2010	2005-09 average
Road Deaths	2,816	1,850	1,901	3	-32
<b>Fatality rates per billion vehicle miles<sup>1</sup></b>					
Road Deaths	9	6	6	3	-31
Motorcyclists	168	141	125	-11	-25
Car Occupants	6	3	4	5	-36
Pedal cyclists	47	37	35	-6	-26
Pedestrian <sup>2</sup>	53	37	41	10	-22
Number of deaths resulting from collisions involving car drivers aged 17-24	765	437	412	-6	-46
Number of killed or seriously injured	30,041	24,510	25,023	2	-17
Rate of killed or seriously injured casualties per million population	507	405	411	1	-19
Rate of killed or seriously injured casualties per billion vehicle miles	96	80	82	2	-15

1 Rates per billion vehicle miles rounded to the nearest whole number

2 Rate per billion miles walked

# Road user casualties by age

Figure 3: Road user casualties (Slight, fatalities and KSI: Killed and Seriously Injured) per mile driven by age (after DfT, 2009)

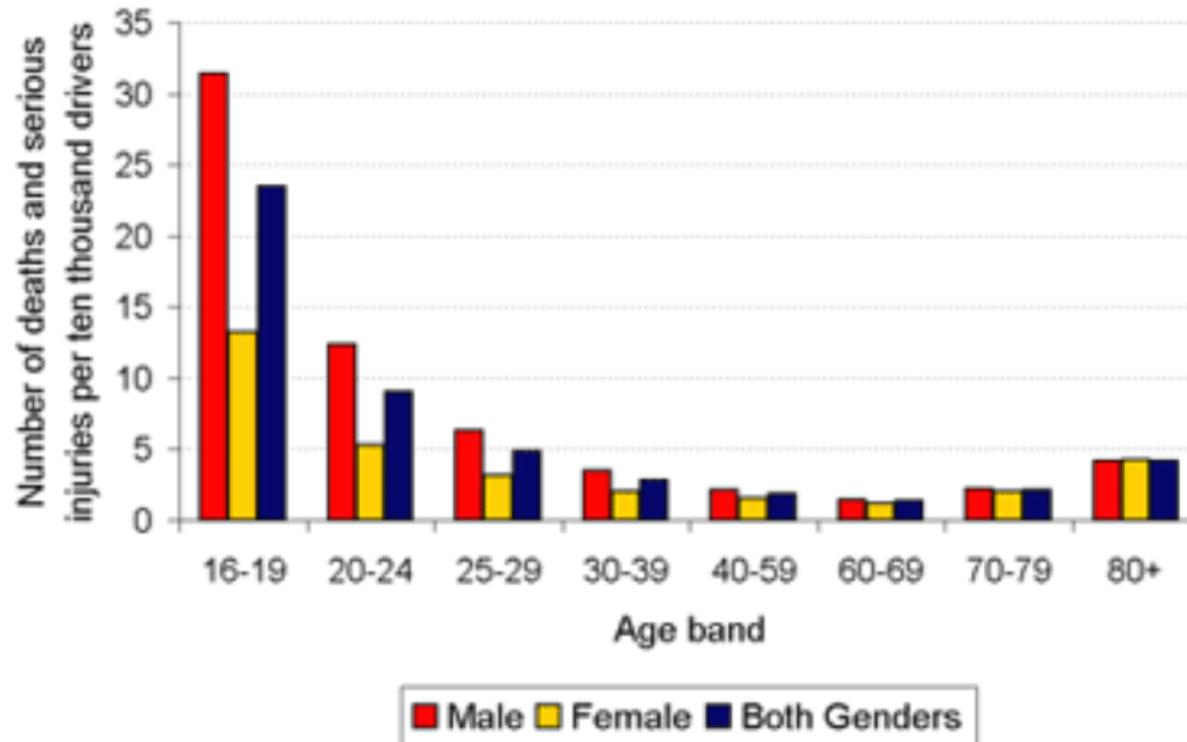


Source: DfT (2009) Road Casualties Great Britain 2008

# Road user safety and age and gender

## AGE DIFFERENCES

- The 16-29 age group accounts for over a third of all deaths on the roads
- nearly 30% of all road deaths and serious injuries involve a young driver. In fact more than 3 young drivers a day are seriously injured or killed on the road – that amounts to 1,200 a year.
- 1 in 5 drivers crash in their first year of driving, and 1 in 3 young male drivers will write off a car in their first year of driving.
- The graph shows the much greater crash rate of young drivers, especially males aged 16-19 years, compared with other age groups.

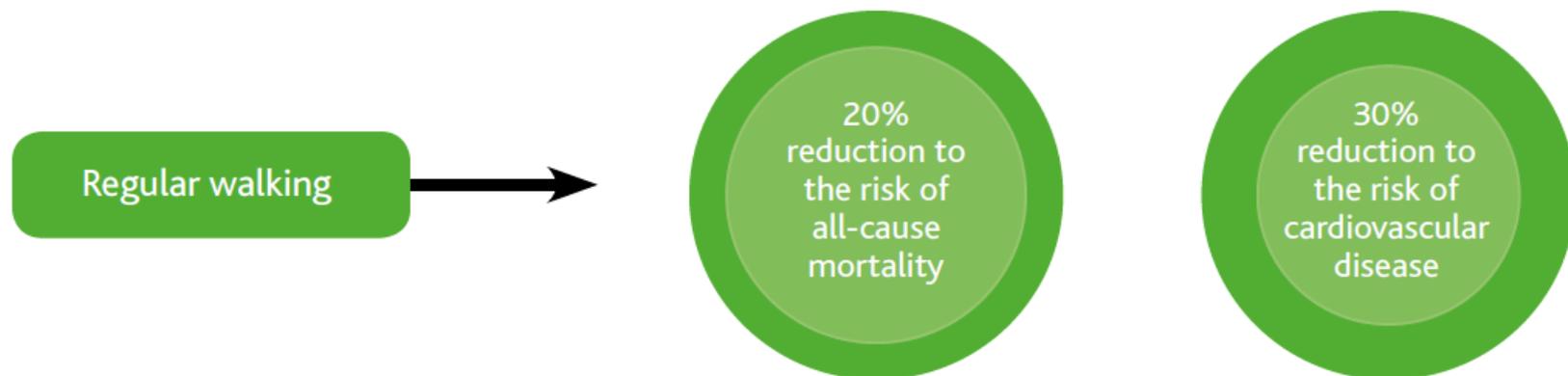


# 4. Implications for health

## Less people walking and cycling which is vital for health

### Health benefits

Walking can have a number of positive health outcomes. Walking reduces the risk of all-cause mortality by up to 20% and cardiovascular disease by up to 30%<sup>1</sup> (meaning that regular walkers are likely to live longer than non-walkers). Walking reduces the risk of high blood pressure<sup>2,3,4</sup>, stroke, and high cholesterol<sup>5</sup>. Walking expends energy and therefore can help energy balance and body composition<sup>3,6</sup> (potentially reducing obesity).



Change in  
Philosophy:  
The growth of traffic  
and transport  
psychology

# Transport studies traditions

Transport studies has traditionally been set in the context of rational and standardised model of the world. Why?

## ■ Tradition, history

- Epistemology: “positivist approach” in natural sciences into other disciplines
- (Civil) Engineering has been a dominant leader in transportation studies in the past

## ■ Seeking proof and truth

- Need to be able to prove something causes something else or that something is different to another.
- Need to prove something was worthwhile or cost-effective

## ■ Generalisation

- Does it work for everyone, everywhere?
- Don't want to miss people out

# The growth of social science in transport studies

Growing realisation that traffic and transport needs to be studied in a social context

- Growing role for social science including
  - psychology (traffic and transport psychology – Steve Stradling, Ray Fuller, Ian Walker),
  - sociology (new mobilities paradigm – John Urry, Laura Watts)
- More complex than input-throughput-output
  - People are dynamic, changing, active not reactive (e.g. Predict-provide)
  - People are not rational (e.g. can't just give them information and they will act)
  - Most journeys now made were never made by other modes (Urry)
- Perhaps engineering has come to an end – how much more can it do?
  - 3 Es (engineering, enforcement, education)
  - Safety plateaux (95% are human error)
  - Engineer our way out of problems without understanding how people use/adhere/accept such technology
  - Failure to understand the side-effects
- Change in relationship between state and people and a realisation that people need to encouraged not forced
  - Behavioural change (see <http://www.dft.gov.uk/pgr/scienceresearch/social/behaviour-changes/%20> )
  - Nudges (Thaler and Sunstein, 2008, 2009)

# Social nature of transport

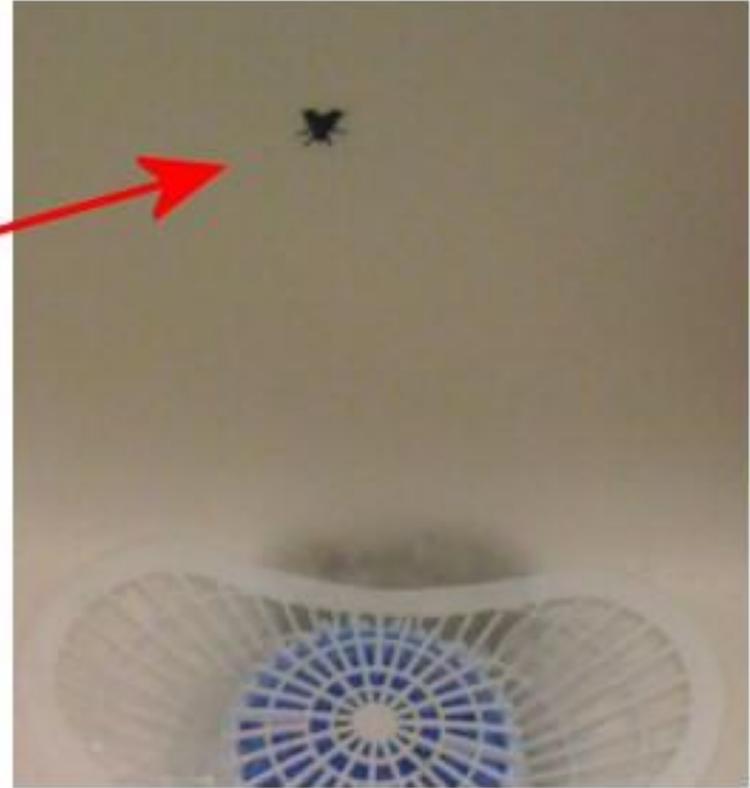
## View traffic and transport environment as a social situation

- Haglund and Aberg (2000)
  - that traffic and transport should be viewed as a social situation where drivers interact and influence each other
  
- O'Connell (2002) states the design and construction of the road and traffic system
  - “must not be based on an erroneous model of humans as abstract rational actors, isolated from their social context and operating on purely ‘objective’ criteria” (pg. 201).

Haglund, M. & Åberg, L. (2000). Speed choice in relation to speed limit and influences from other drivers. *Transportation Research Part F*, **3**, 39-51

O'Connell, M. (2002). Social psychological principles: 'The group inside the person'. In R. Fuller & J.A. Santos (2002) *Human Factors for Highway Engineers*, Amsterdam: Pergamon, 201-215

# Environmental cues can change behaviour



An example of  
NUDGE

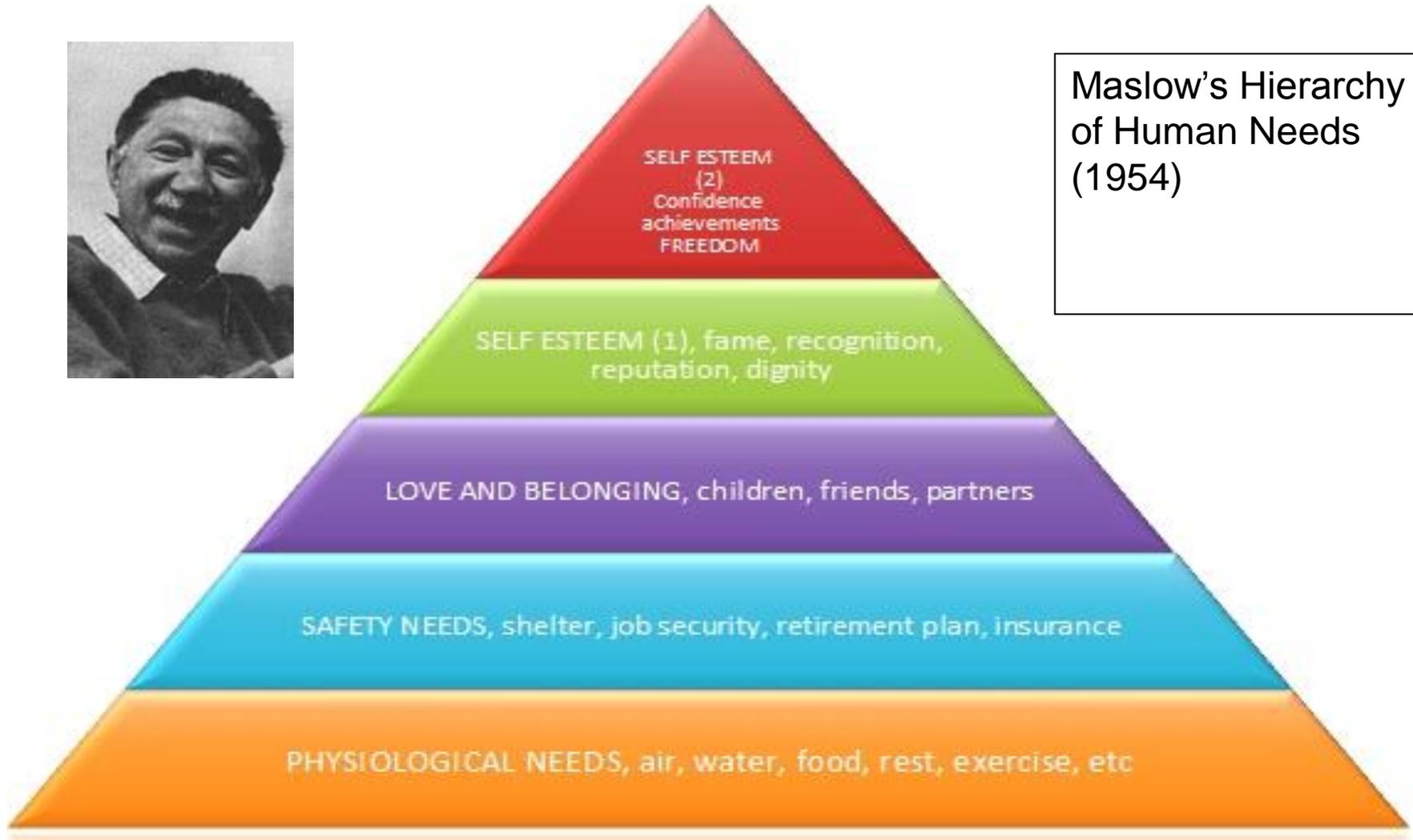


# Social nature of using cars

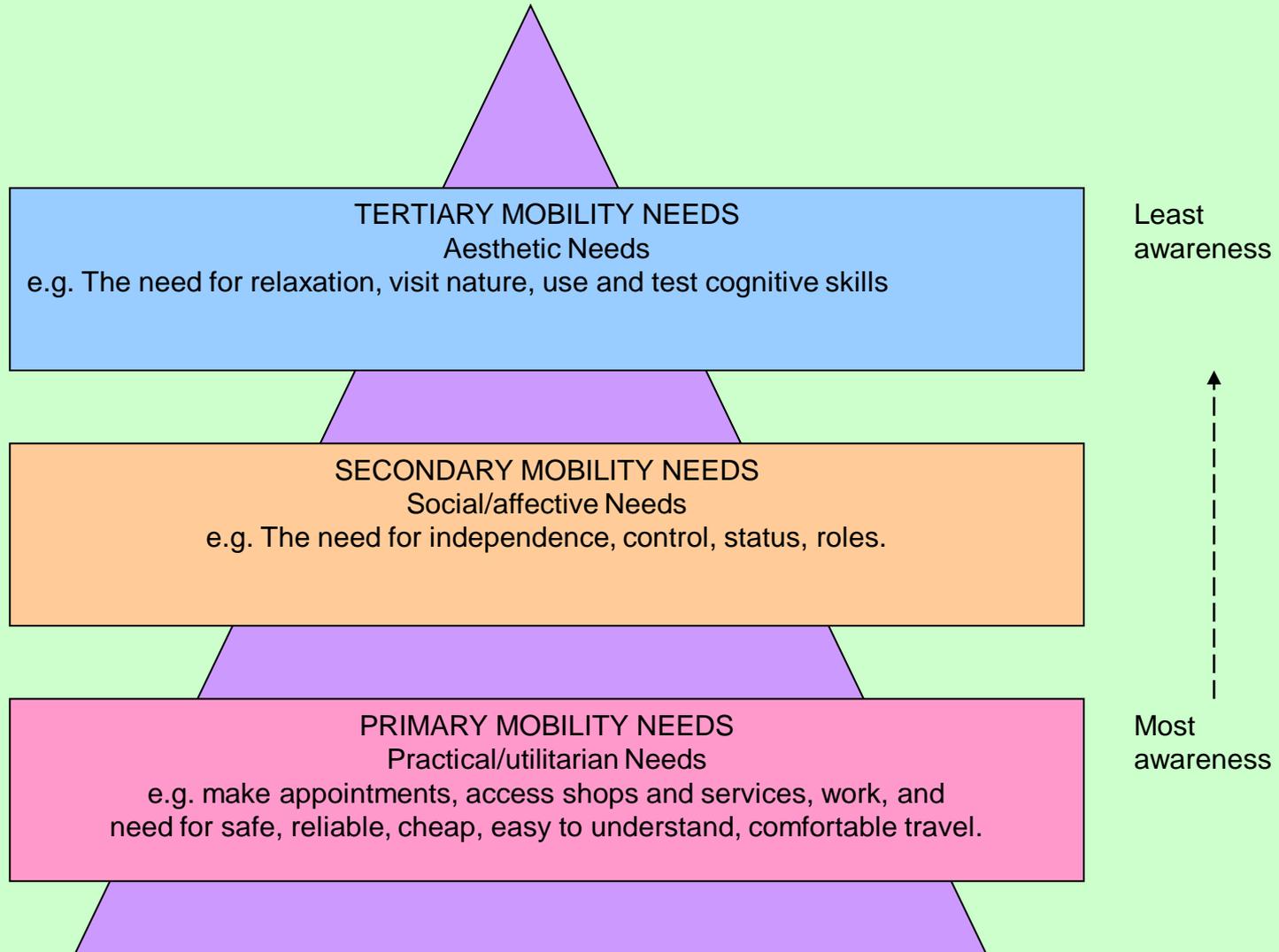
# Needs approach



Maslow's Hierarchy  
of Human Needs  
(1954)



# Mobility Needs



After Musselwhite and Haddad, submitted

&

# Practical Mobility Needs

- Get from A to B
  - Work, shops, services, social events
- “Convenience”
  - Deconstruct the term
- Financial Costs
  - Direct out of pocket – tolls, parking fees, petrol, public transport fees.
  - Indirect – insurance, road tax, cost of vehicle, depreciation, maintenance, repairs.
- Travel Time
  - Subjective impression of travel time
  - Change of mode time
  - Ability to juggle many trips
- Physical Exertion and effort
  - Change of mode effort
  - Carrying luggage, bags etc.
- Perceived safety
- Comfort
  - Crowding
  - Weather

# Social Mobility Needs

## Freedom

- Potential Travel (Metz, 2000)
- The freedom of the open road
- Go anywhere – when and where you want
- *"We all want the freedom we've been sold"*
- myth or reality?
- Perception of control (Langer & Rodin, 1976)
- Escaping from freedom (Erich Fromm, 1941)



# Social Mobility Needs

## Independence



- Doing it yourself
- Personal Space and Psychological Detachment
- Unwanted arousal (Stradling)
- Social-less travel
- *"I can do what I want when I want, I can light-up a fag, sit back and listen to the radio on what channel I want to. Nobody shouts into a mobile phone, its relaxing"*
- Proving independence



# Social Mobility Needs

## Being Normal

- Active (the need to be ordinary) vs. passive (societies impact)

- Institutional Carism

- Embedded in the culture of society

- Ordinariness of the car

- *"It is the one thing that allows me to compete with youngsters. It is something I can probably still do as well as when I was a young man. I feel able to be part of society"*

- Shows you are normal



# Norms and Popular media

	Mode appears in song title (sing365.com)	Mode appears in the plot of a movie (Imd)	Mode appears in book title (Amazon)	Mode is uploaded in video format (via google)	Total (12 pts=1; 10=2; 8=3; 6=4; 4=5; 2=6; 1=7)
1. Cars	2227 (2)	8851 (1)	229,067 (1)	9.5m (1)	46
2. Walk(ing)	31481 (1)	4843 (3)	215,772 (2)	1.49m (4)	36
3. Trains	8468 (3)	5918 (2)	143,515 (4)	2.5m (2)	34
4. Boat/Ship	3602 (4)	2027 (4)	158,408 (3)	1.05m (6)	24
5. Motorbikes	1001 (7)	698 (5)	52,917 (6)	1.96m (3)	15
6. Buses	3306 (5)	68 (8)	102,073 (5)	1.25m (5)	12
7. Rocket	1333 (6)	570 (6)	45,783 (8)	0.56m (7)	5
8. Bicycle	251 (8)	434 (7)	52,893 (7)	0.39m (8)	2

# Relationship to modal split?

■ 992 trips per person per year

- 1.63% by car (1)
- 2.22% walking (2)
- 3.7% bus (6)
- 4.3% train (3)
- 5.2% bicycle/motorcycle (8; 5)

■ 6923 annual miles per person per year

- 1.76% by car (1)
- 2.9% train (3)
- 3.5% bus (6)
- 4.3% walking (2)
- 80; 1% bike/motorbike (8; 5)

Reflects modal split quite well. More likely to use the bus than sing, make a movie, video or book about it.

# Social Mobility Needs

## Social Identity

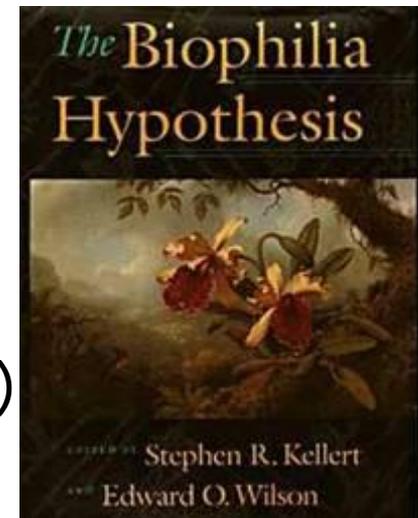
- Expression, showing status and roles (Steg et al., 2001)
- Social Identity
- Impression Management: Using mode transport to impression manage
- How “cool” is the car, the train, the bus? What does it say about the user?
- Stereotypes / labelling theory



# Aesthetic Mobility Needs

## Driving itself as a pleasure

- Interact socially about the journey
- Story-telling
- Excitement
- View nature - Biophilia (Kellert and Wilson, 1993)
- Sense of achievement for safe completion
- Test skills



So what does this  
mean for public  
transport and  
encouraging people  
out of their cars?

# Public transport initiatives almost exclusively set in a Primary Mobility Needs context



Information



Bus station improvements

Accessibility

Safety

Information



New vehicles

Comfort

Accessibility

Safety

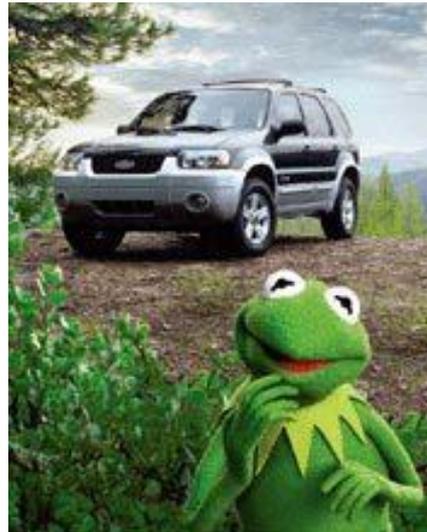
# Car adverts and Secondary and Tertiary Mobility Needs



When it comes to making an entrance, Ford Ka certainly isn't shy. From the Style model upwards, body colour bumpers give you the edge. For that extra touch of class, Ka Zetec also boasts a roof spoiler, leather-trimmed steering wheel and gear knob. Or, for the ultimate wow factor, choose Ka Luxury with its gleaming alloy wheels, chrome-effect grille and chrome exhaust trim.

FordKa is proof that good things really do come in small packages. And you don't have to break the bank to break the mould.

Model Style in Frozen White  
Options at extra cost: Alloy Wheels, Leather Pack

A woman with long dark hair is sitting in the open driver-side door of a white Ford Ka. She is wearing a dark top and high heels. The car is parked on a red carpet, and the background shows a blurred crowd of people and lights, suggesting a car show or event.

**Beetle Art**  
Personalise your New Beetle



The distinct and unique that used  
to define and shape a city



To the bland and ubiquitous

# Legitimate users

Us and them

Ingroup and outgroup

- My street

Tribes: Residents, driver, cyclists.

- Others

In a different group (driver v cyclist)

Shouldn't be there (laws, norms)

Even within group (all better than average)

# Change: Cars not so seductive?

- Increased urban living
- Settling down later (jobs, family, own home)
- Cost of insurance
- Relationship between high Internet use and lower licence holding (University of Michigan)
- Social media replacing need (TNS study, KCR)
- In Arthur Miller's 1949 play "Death of a Salesman", Happy's dream was a simple one: "My own apartment, a car, and plenty of women."
- But things seem to be changing. The buzz, status and implicit sexuality of car ownership has been taken up, even displaced, by other products and lifestyles, and not just among the young.
- Tom Worsley, formerly of Britain's Department for Transport, says that, even for oldies, "It has become a bit passé to polish your car on a Sunday morning."



# A CHANGE?



<http://www.youtube.com/watch?v=snKbU5r0pBo&feature=plcp>



**Improving the streets  
Leading to:  
Time to share the streets ?**



# Improving the streets as places

■ “People have always lived on streets. They have been the places where children first learned about the world, where neighbors met, the social centers of towns and cities, the rallying points for revolts, the scenes of repression... The street has always been the scene of this conflict, between living and access, between resident and traveler, between street life and the threat of death.”

– Donald Appleyard

“The balance is lost. Streets are now traffic corridors, literally cutting swathes through local communities. Official attention is concentrated on passing traffic, not local lives. Streets have become dirty and dangerous. Communities everywhere are affected, but more seriously in towns and cities and in low-income areas.”

Living Streets manifesto at

<http://www.livingstreets.org.uk/manifesto.htm>

# Streets used to be about...

- Home
  - Exchange
  - Learning
  - Localness and distinctness
  - Democracy
  - Diversity and spontaneity
  - Social levelling, variance and mixing
- 
- They were “rooms” to spend time in  
not “corridors” for movement



# History

- Arthur Tripp – 1930s
- Buchanan et al (1963) identified similar problems with traffic on our streets as we face today

## Problems

associated with roads identified by Buchanan

- Congestion / delay
- Fumes
- Noise
- Dirt
- Safety
- Visual intrusion



Transport impacts (after Taylor, 2000; Eddington, 2006)

- Traffic efficiency, accessibility and movement
- Environment and amenity
- Safety
- Public transport and pedestrian movement
- Road pavement and bridge life



# History

- His answer was to segregate the traffic



From "Traffic in Towns" – The Buchanan Report, 1963



# Problems with segregation

- This principle led to the development of street design elements such as
  - standardised road markings and signs,
  - pedestrian guardrailings,
  - underpasses and over-bridges
  - signalised pedestrian crossings
  - Inappropriate cycle paths
- 
- gave traffic clear domination of the carriageway.
- 
- The levels of walking and cycling have declined and the increased requirement for underpasses, bridges, traffic signs and barriers has reduced accessibility for non-motorised traffic leading to 'isolation, inequalities and a fragmented and degraded public realm'



# Blending together

- 1930s: Super segregation proposed
- 1950s-1970s: Segregation but hierarchical
- 1980/90s: Traffic calming
- Early 2000s: Home Zones
- Mid 2000s: Naked streets
- Late 2000s: Shared Space
- Late 2000s: DIY Streets
- Future: David Engwicht?
- Quality Streets?



Increasing street activity need not cost you time. Moving everyday activities into the street helps create intrigue.

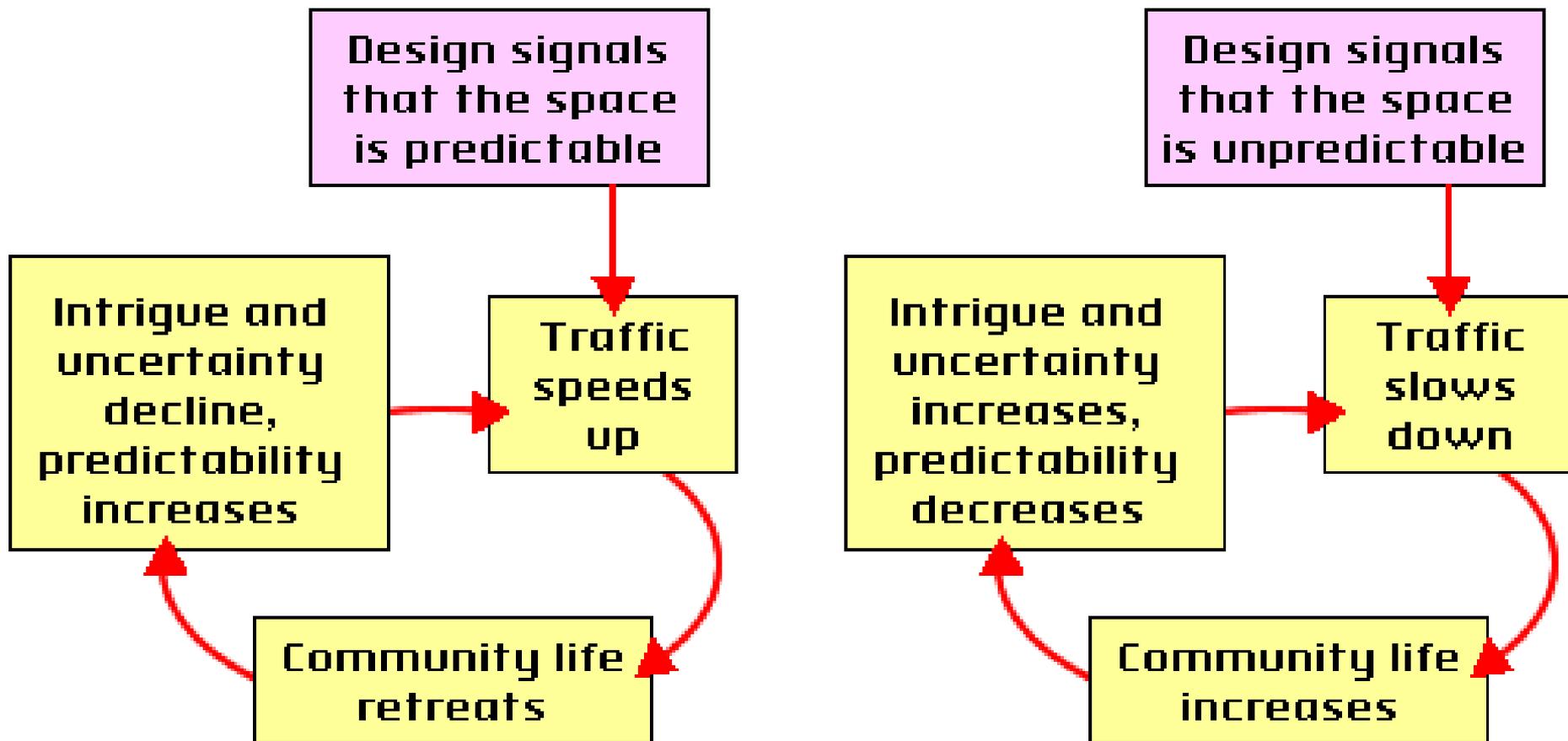
# Create uncertainty and intrigue

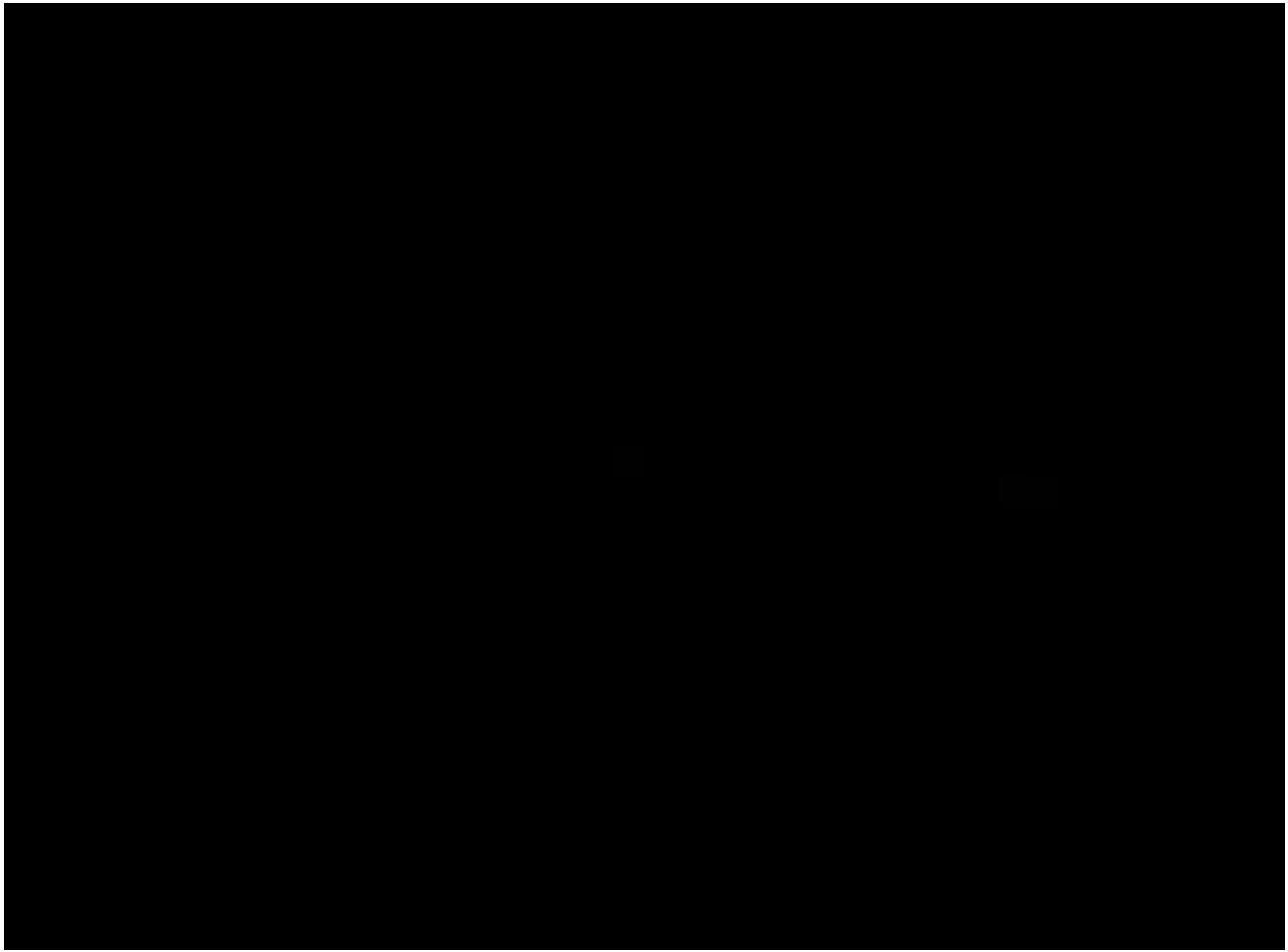
## Shared space

- A definition of Shared Space is set out *by the Commission for Architecture and the Built Environment (CABE)*:

'A design feature, which can be used in shared space. A shared surface features no demarcation of users by level. It may be uniform or differentiated by texture, colour or by the placement of street furniture. In a street with a shared surface, demarcation is absent and pedestrians and vehicles share the same surface. There are no kerbs. Shared surface schemes aim to encourage low vehicle speeds, create an environment in which pedestrians can walk or stop and chat without feeling intimidated by motor traffic, make it easier for people to move around and promote social interaction.' (CABE, 2008).

# Building intrigue and uncertainty built into a space









# Southampton



# Exhibition Road, London





# Ashford, Kent



Tom Van der Bilt  
<http://www.howwedrive.com/2009/07/28/streets-ahead-in-ashford/>

# Ashford, Kent



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# Hereford Widemarsh Street



# Do they work?

# Moody and Melia (2011)

- Elwick Square, Ashford
- Pedestrian observation
- Survey



# Moody and Melia results

- 72% of pedestrian/vehicle encounters, pedestrian gave way to vehicle, 52% had to wait to cross, 17% ran across road
- Perceptions and attitudes to area for pedestrians is poor
- Analysis suggests females and older people less positive in terms of perception and confidence of using shared space.

Table 1 summarises some of the key responses from the questionnaires:

	Yes	No	Don't Know	n
Are you ever worried about sharing space in Elwick Square?	<b>72%</b>	23%	5%	144
In this type of setting would you prefer traditional pavements and traffic light crossings?	<b>64%</b>	29%	7%	144
Do you view this square as an area in which you can stop and socialise?	33%	<b>65%</b>	2%	144
As a pedestrian would you make any changes to the layout of Elwick Square?	<b>74%</b>	24%	2%	144
	Yes	No	Same	n
As a pedestrian did you feel safer in the previous scheme?	<b>80%</b>	14%	6%	124
	More	Less	Equal	n
As a pedestrian, do you feel you have more, less or equal priority over vehicles?	19%	<b>78%</b>	3%	144

**Table 1 – responses from pedestrian interviews**

# Bishop and Musselwhite Widemarsh Street, Hereford.



- Widemarsh Street, Hereford.
- Walk throughs and focus groups with blind, partially sighted, older people and mobility impaired.
- Street survey of 100 pedestrians



# Bishop and Musselwhite

- Findings:-
- Feeling that vehicles still dominated the street and had priority but this was not a concern
- 56% not worried about sharing space. Vulnerable pedestrians no more likely to worry.
- Most state move freely about the space but:-
  - Vulnerable and older pedestrian more difficulty navigating the space (but true for any pedestrian space?)
  - People keep to (former) pavement space
  - Norms?
- Almost  $\frac{3}{4}$  prefer new design

- Can design change attitudes and behaviour or do we need something else?
- If we need something else, then what is it?
- (De) Marketing the car
- Education about transport to include wider environmental issues

# Conclusions

# Conclusions 1

## ■ Need to change behaviour

- Pollution
- Health
- Social inclusion
- Town/city severance
- Accidents
- Cost to the nation

## ■ Social context of transportation

- Non-rational
- Need to encourage rather than restrict
- Education and the person side of engineering and enforcement

# Conclusions 2

## ■ **Seductiveness of the car**

- **Practical**
- **Psychosocial**
- **Aesthetic**
- **Importance of congestion**
- **Human right**

## ■ **Encouraging people out of the car**

- **Understanding the affective side of the car**
- **Making better spaces to live and walk**
  - **Shared space**

# References

## Interesting further reading

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