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Urban Transport Policy-making – changing perspectives and consequences

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Overview

- Changing urban transport policy perspectives
  - From 'car-based' to 'place-based' cities
  - Triggers and drivers
  - Implications for levels of car use
- Analytical implications
  - Modelling
  - Appraisal
- Future city challenges

……Drawing on work carried out in the EU 'CREATE' project

Different Dominant Policy Perspectives

C: CAR-ORIENTED CITY

M: SUSTAINABLE MOBILITY CITY

P: CITY OF PLACES

Associated with Different Policy Measures

CAR-ORIENTED CITY = **Road building, car parking, decentralisation**

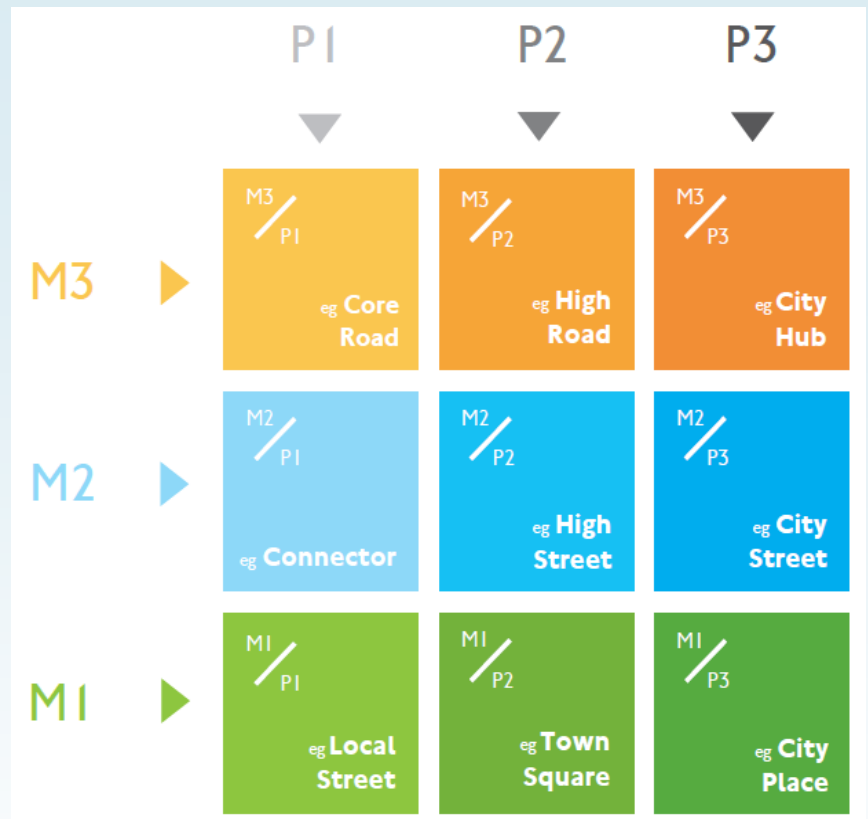**SUSTAINABLE MOBILITY CITY** = **Public transport, priority lanes, cycle networks**

CITY OF PLACES = **Public realm, street activities, traffic restraint**
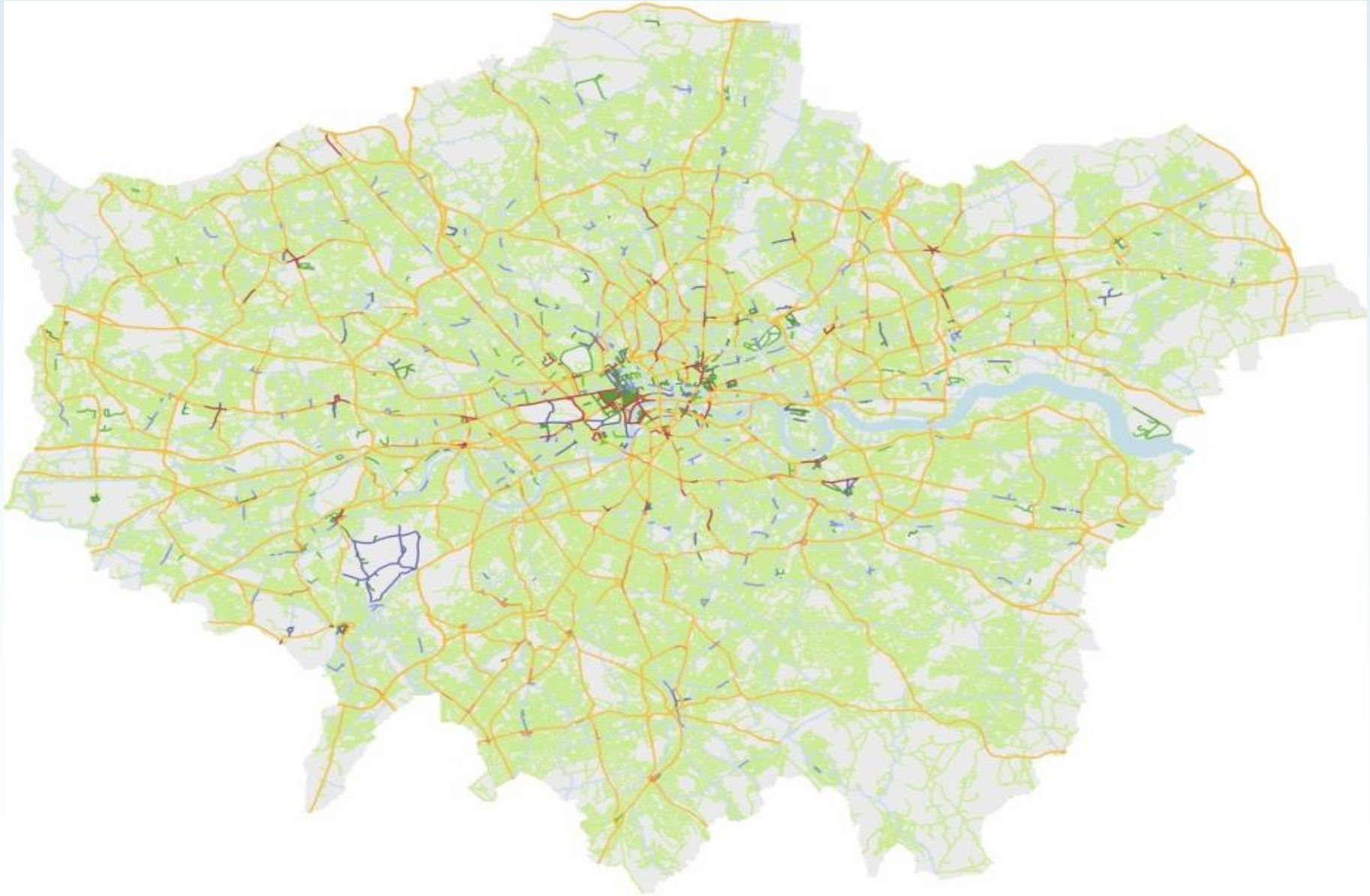
Source: EU 'CREATE' project

- Under a 'Place-based' emphasis, urban roads/ streets are seen as having two distinct sets of functions:

  - ➢ Movement (of people/ goods – not vehicles)
  - ➢ Place = non-movement street and frontage activities

- London has used a '3 x 3' matrix (see above)

- Sydney, Melbourne, Auckland have adopted a modified version of this classification

Application to London

Hoe Street, Walthamstow town centre

Before

After

Bonnington Square, Lambeth

Before

After
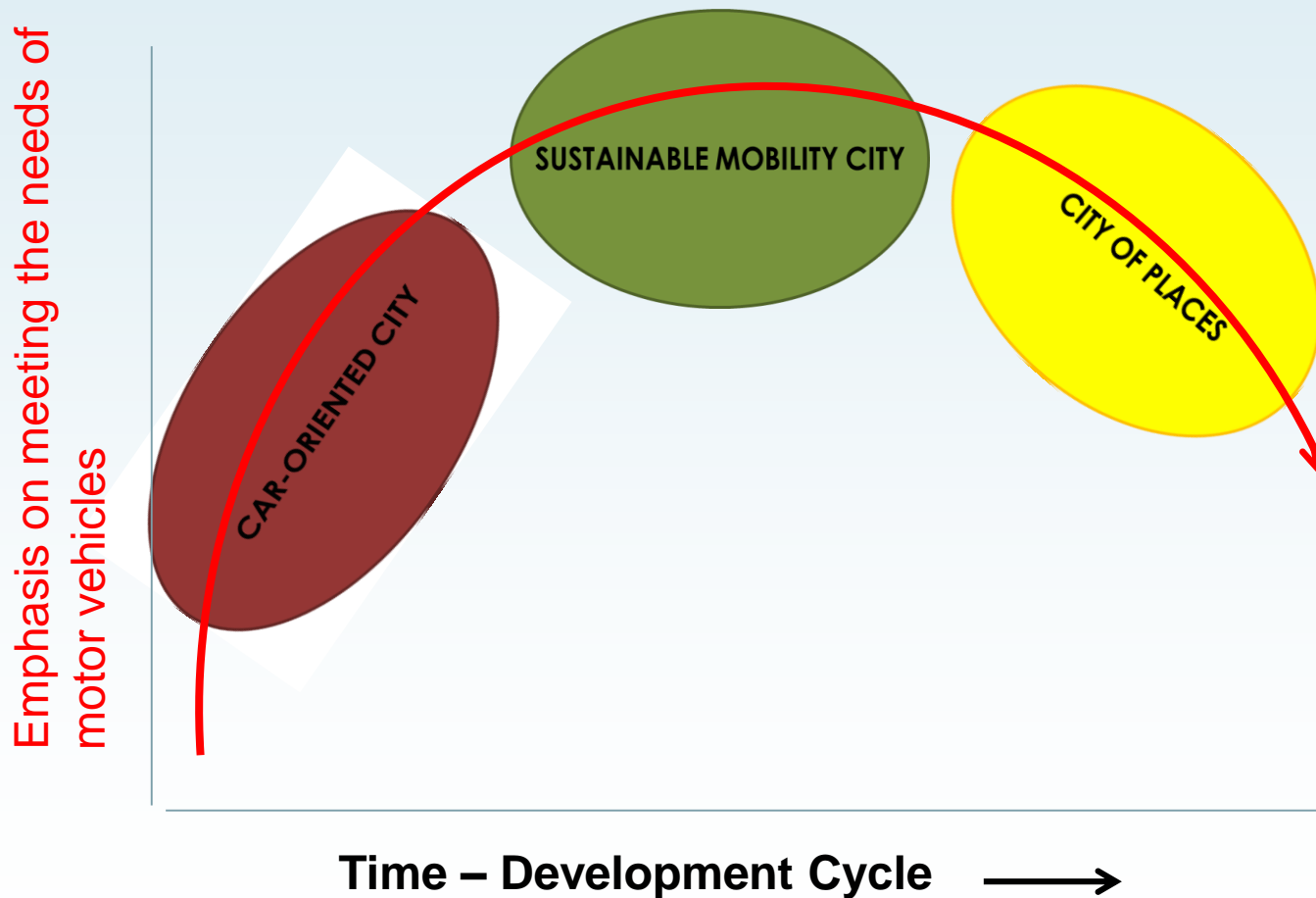
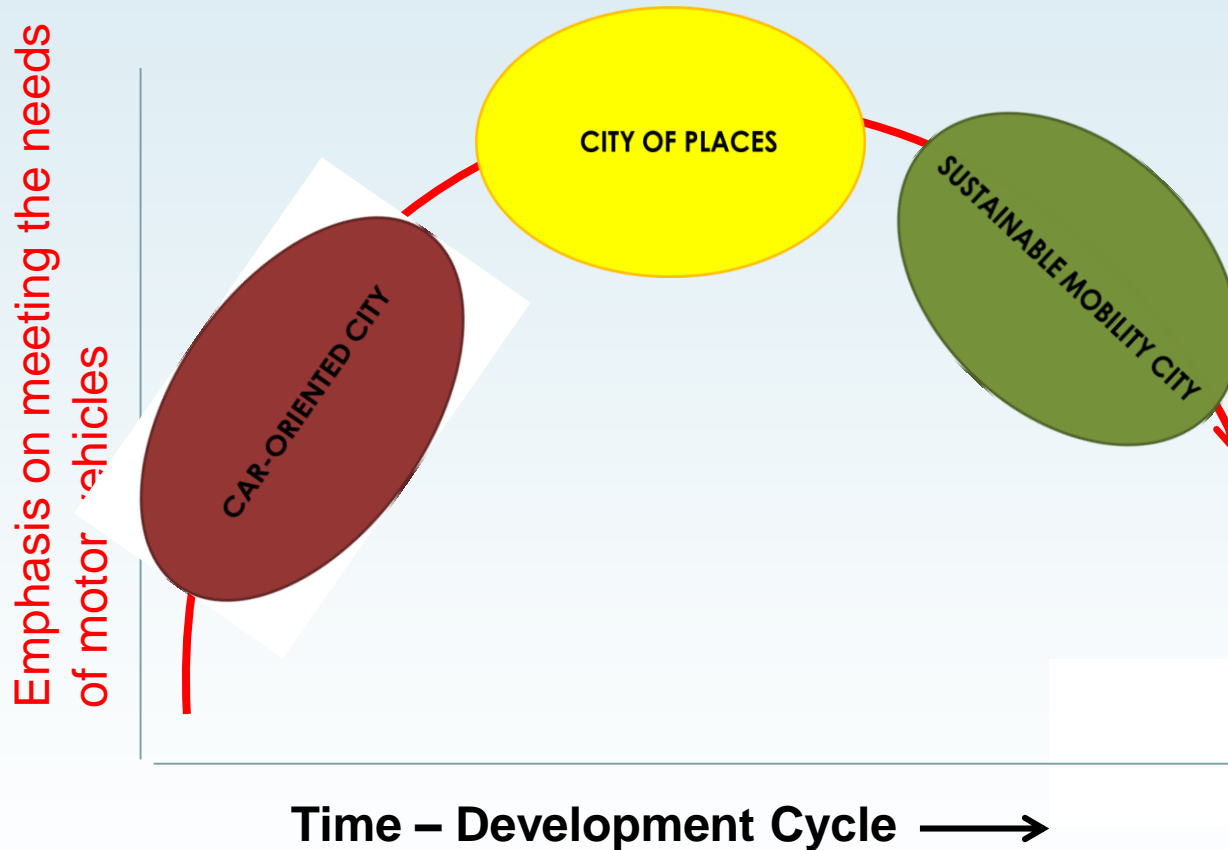# Much more focus on streets as places: Aldgate Gyratory

Before

City of London

After

Typical Sequence of Policy Perspectives

….but it can vary (e.g. historic city)…….

Emphasis on meeting the needs of motor vehicles

CITY OF PLACES

SUSTAINABLE MOBILITY CITY

CAR-ORIENTED CITY

Time – Development Cycle →

…but comprising a varying mix of all perspectives
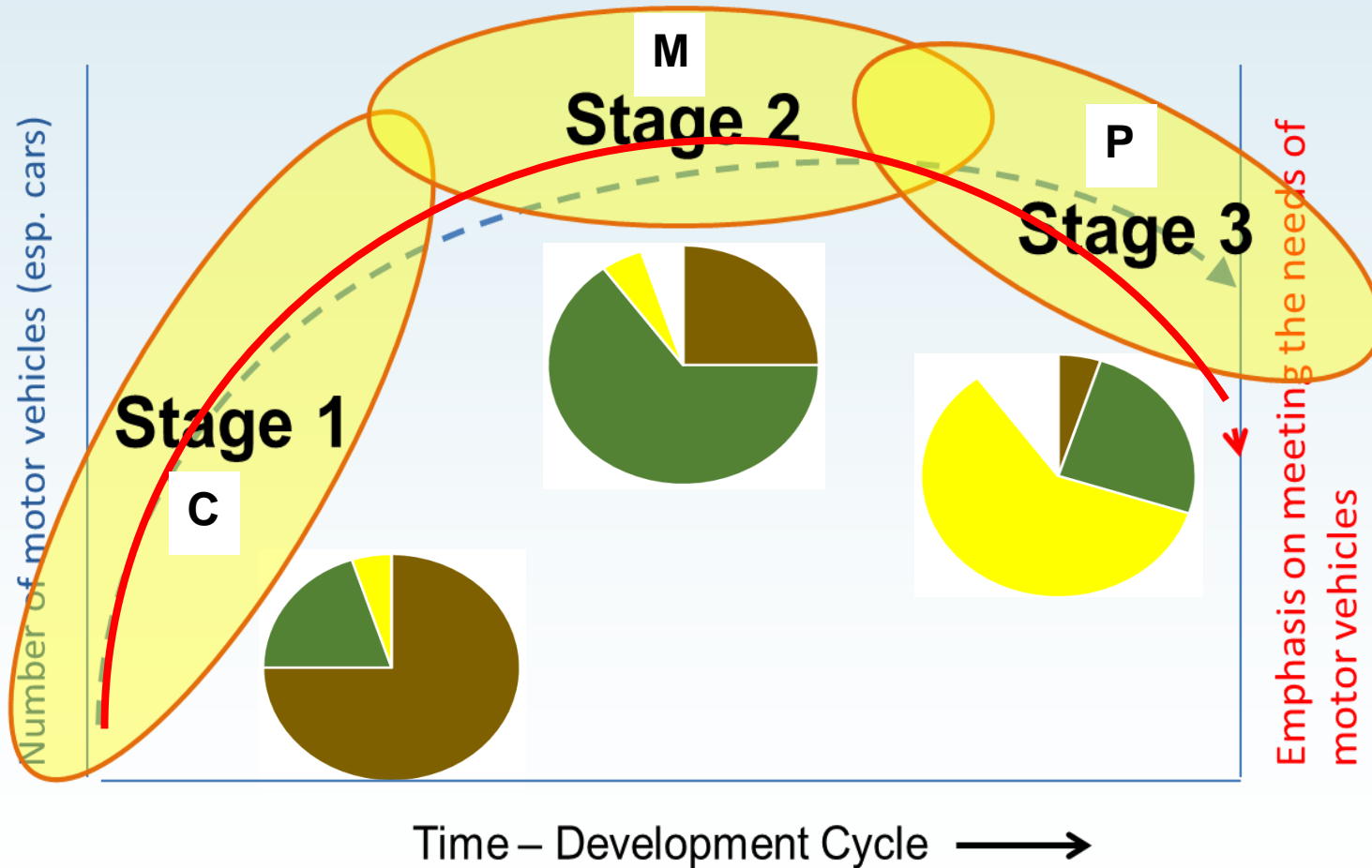
And varying emphasis, spatially too

Motorway Removal: S1 -> S3

Portland   **Seoul**
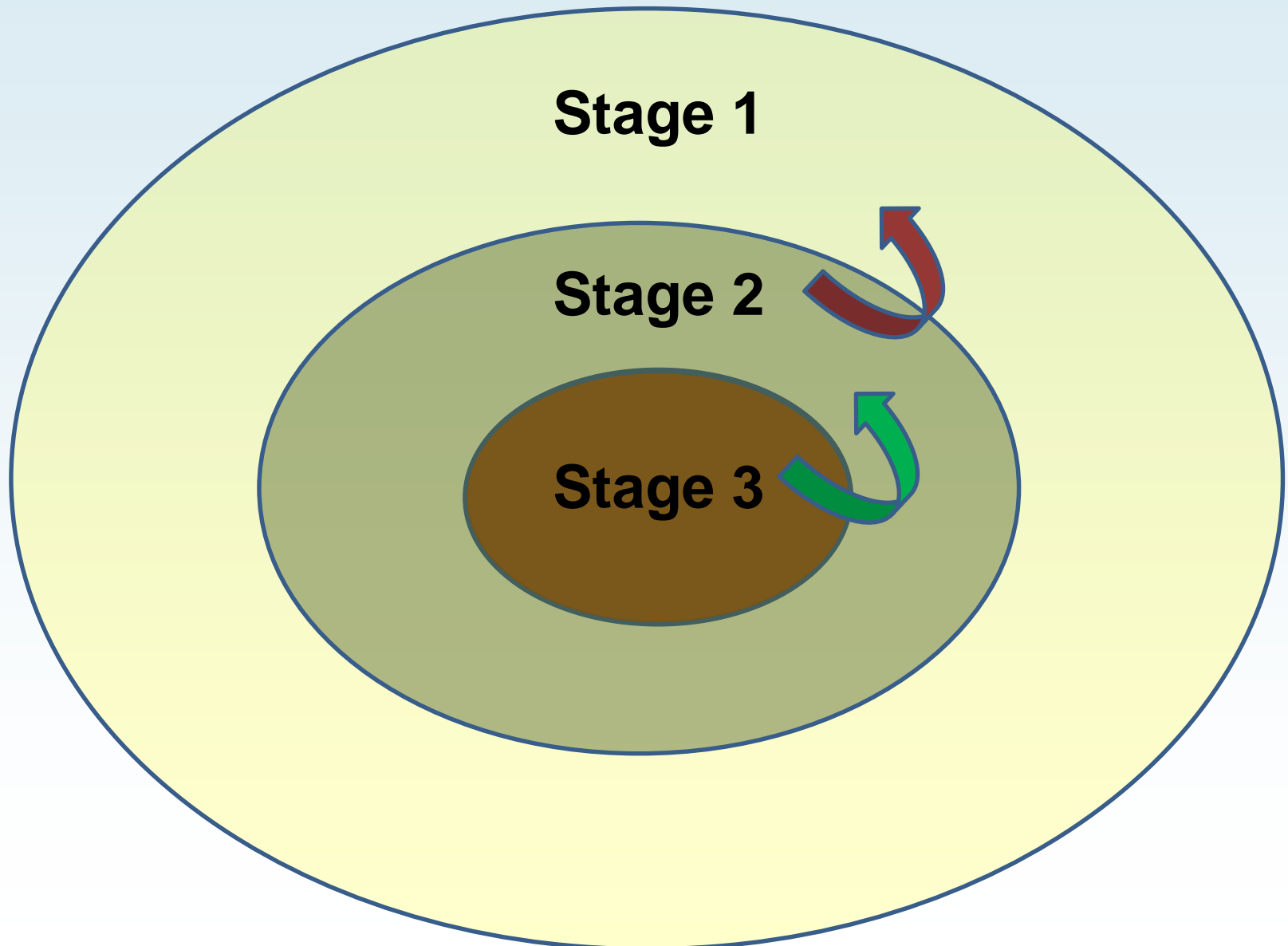
Stage 1

Stage 3

Stage 1 -> 3: Local Street Redesign

TRIGGERS FOR CHANGE

What triggers change in dominant perspective?

Two sets of factors:

1. INTERNAL: Recognised limitations of the current, dominant approach

2. EXTERNAL Contextual factors that re-enforce the case for change

1. 'Internal' triggers: recognised limitations

TRIGGER

IT1: Rapid growth in car household ownership

IT2: Congestion grows – cannot provide enough road capacity for all to drive

IT3: Movement-dominated and ugly cities

RESPONSE

- **C** = Provide for private vehicle movement

- **M** = Provide for more efficient person movement, promoting sustainable mobility

- **P** = Recognise 'Place' component of transport infrastructure

2. 'External' triggers: contextual factors

TRIGGER

RESPONSE

ET1: 'Oil crisis' in the 1970s

- Strengthened case to move away from car dependency **-> M**

ET2: Growing concerns in 1990s about cutting CO_2 emissions

- Further promotion of non-car, sustainable modes **-> M**

ET3: Growing concerns about public health: poor air quality and obesity

- Encourage walking, cycling and neighbourhood planning **-> M/P**

ET4: International competitiveness, based on high quality city environments

- Strong focus on high quality city places and amenities **-> P**

CHANGING PATTERNS OF CAR USE

Resulting in a U-shaped trajectory of car use intensity

Number of motor vehicles (esp. cars)

M Stage 2

P

Stage 3

Stage 1

C

Levelling off in car use

Declining car use

Growing car use

Emphasis on meeting the needs of motor vehicles

Time – Development Cycle →
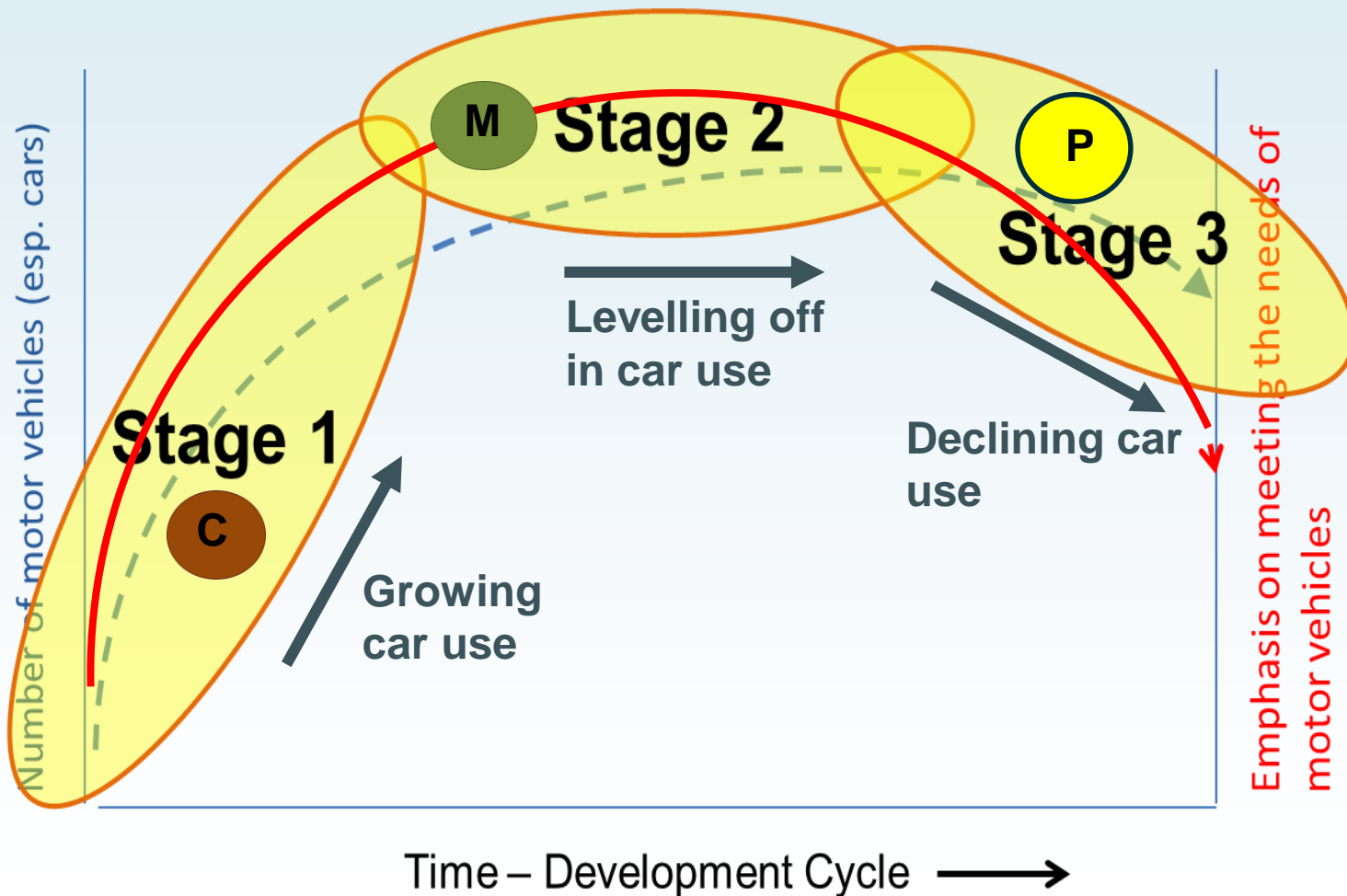
# Evidence: Car Driver Modal Shares over Time
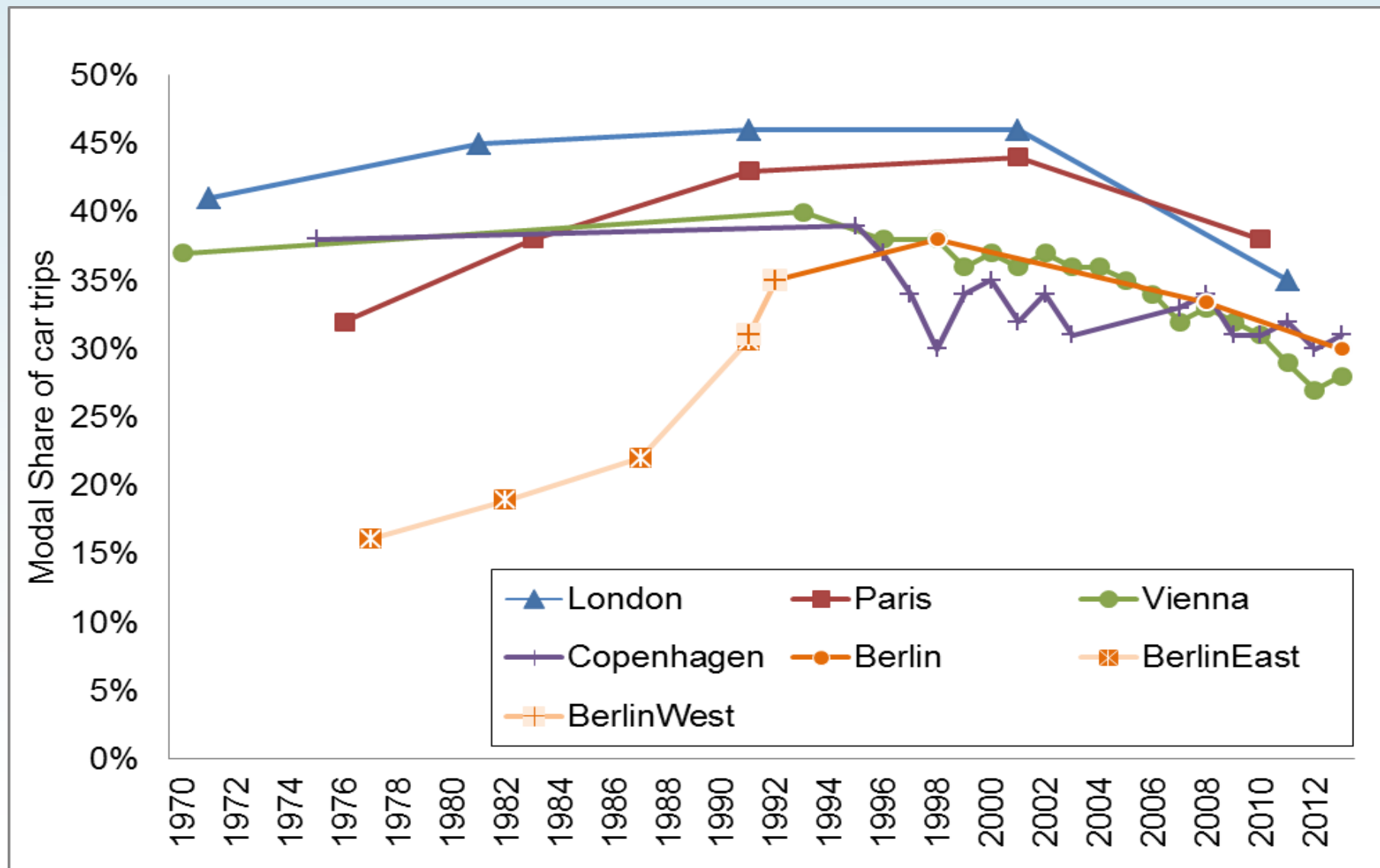
Causes of declining car modal share: Micro

- Changing demographics: younger people own and use cars less

- Changing employment structures: 'new' jobs prefer to locate in higher density urban areas

- Changing opportunities: more attractive alternatives in cities (e.g. Uber)

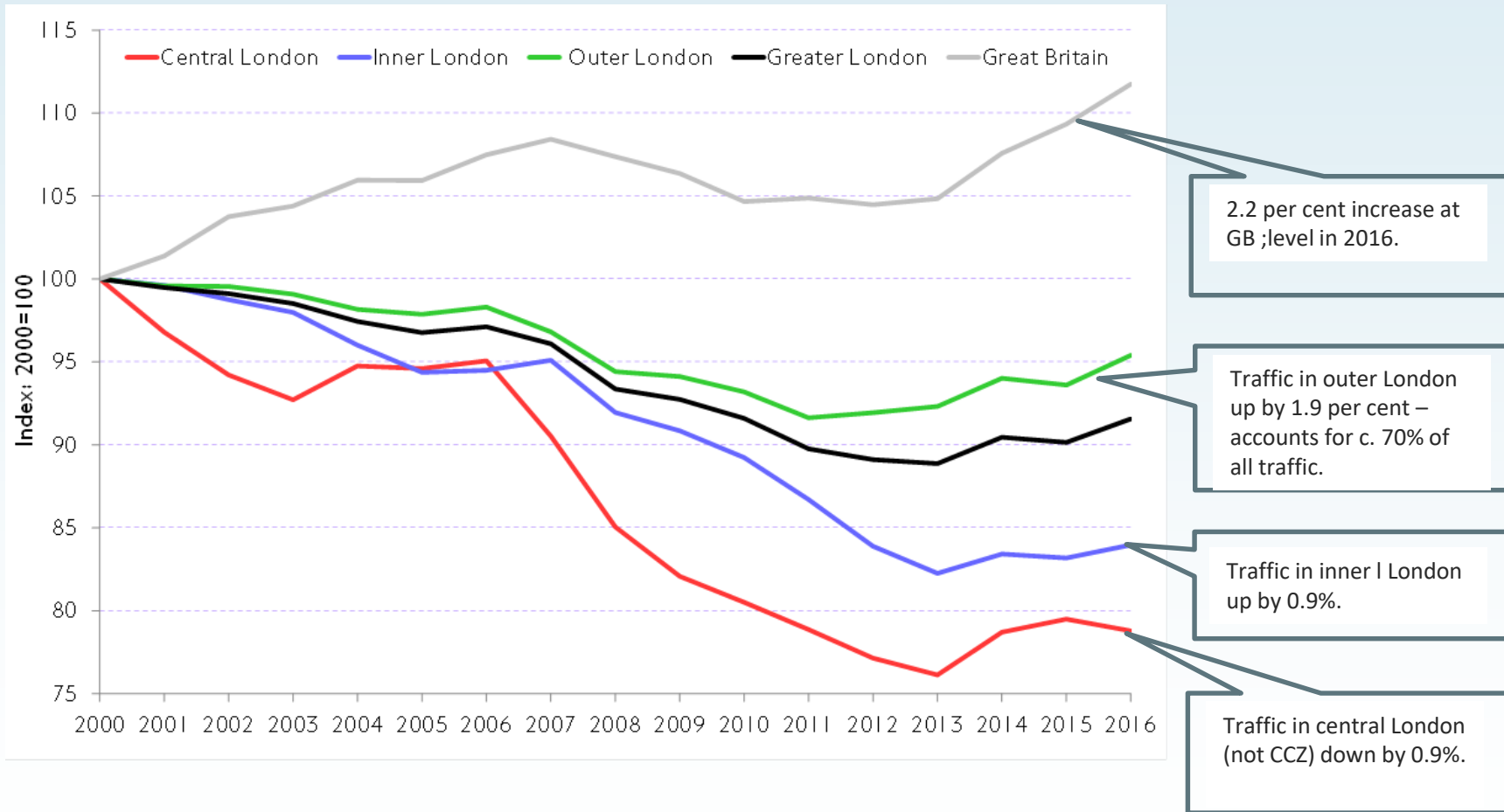# Causes of declining car modal share: Macro

Evolution of car and public transport levels
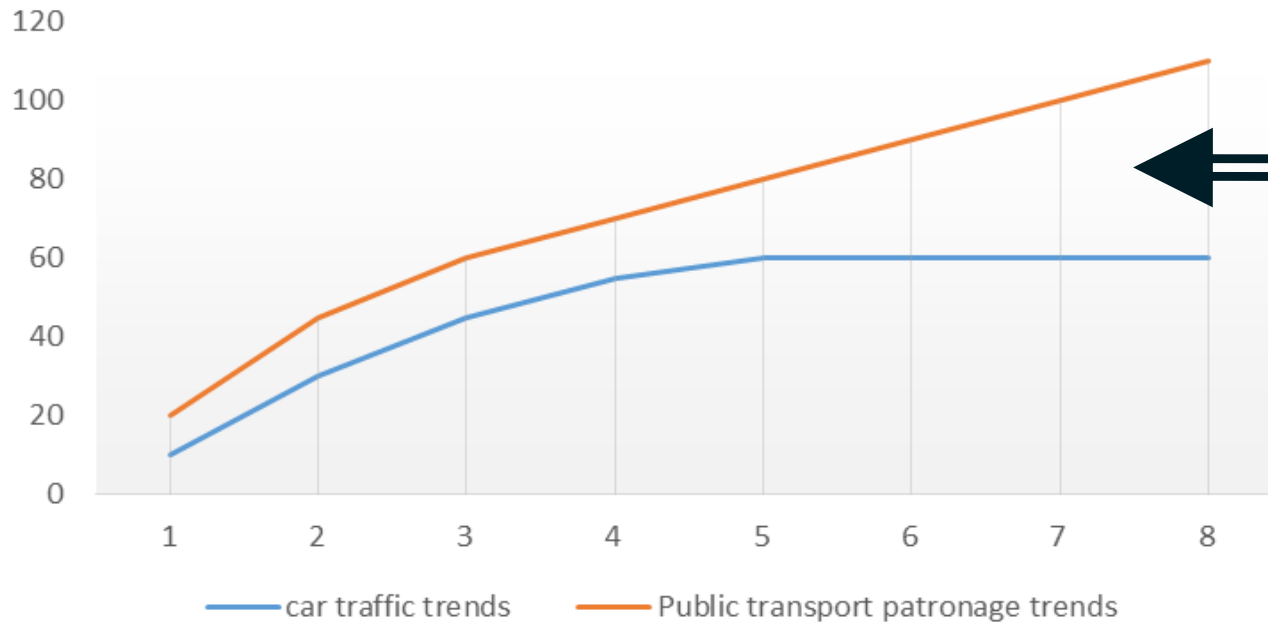
At some point road network reaches capacity and further growth is taken up by public transport

Sustainable mode share:
Road traffic levels increased by 1.6% in 2016.

2.2 per cent increase at GB ;level in 2016.

Traffic in outer London up by 1.9 per cent – accounts for c. 70% of all traffic.

Traffic in inner l London up by 0.9%.

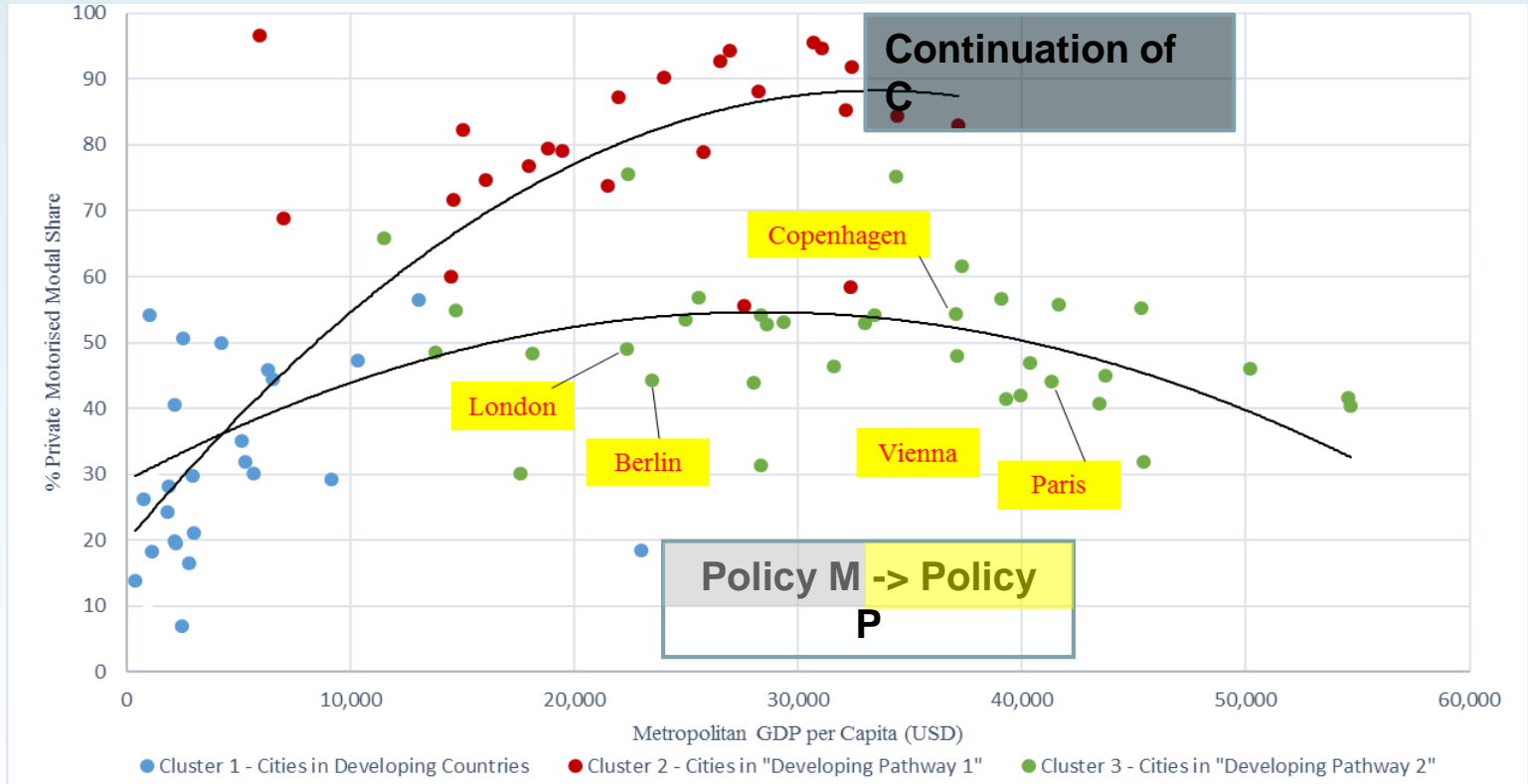Traffic in central London (not CCZ) down by 0.9%.

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Is this evolution inevitable?

- Not all economically advanced cities pass through this 3-stage process

- Many newer North American cities are still almost entirely car-based

- And car use is much more dominant in suburban and rural areas

Alternative city trajectories

Source: analysis by Roger Teoh, MSc Dissertation Imperial/UCL 2016

UITP data 1995

Core conditions for Stage C -> M/P 'evolution'?

- There are core requirements:

  - A minimum land use density and activity concentration: to support attractive PT

  - An 'equilibrium' between average door-to-door speeds by car and PT or walk/cycle

  - Strict limits on car use

  ….adapting cities during the C-Stage to accommodate more cars makes any transition to M/P more difficult!!!

ANALYTICAL ISSSUES

Measures of Success

| C: Car-based	M: SUM-based	P: Place-based
• Average network speeds • Day-to-day variability • Vehicle congestion • Car parking availability • Road traffic accidents • Noise • Air pollution	• PT frequency and reliability • Access to bus stops & stations • Safety and security • Seamless travel • PT modal split • Walking/cycling modal shares • Door-to-door travel times by mode	• Time use in transport modes • Intensity of street activities • Time spent in local area • Value of high quality public space • Health of the population • Social interaction • Social equity and inclusion • **Community severance**

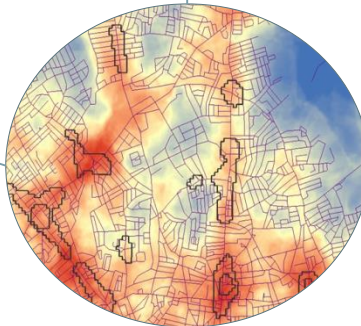# Main components

Participatory mapping
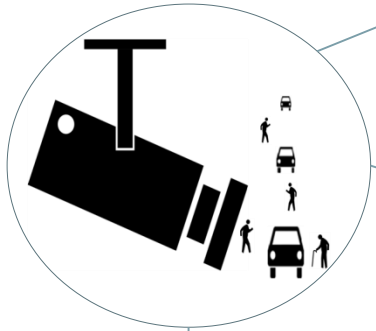
Video surveys

Household survey

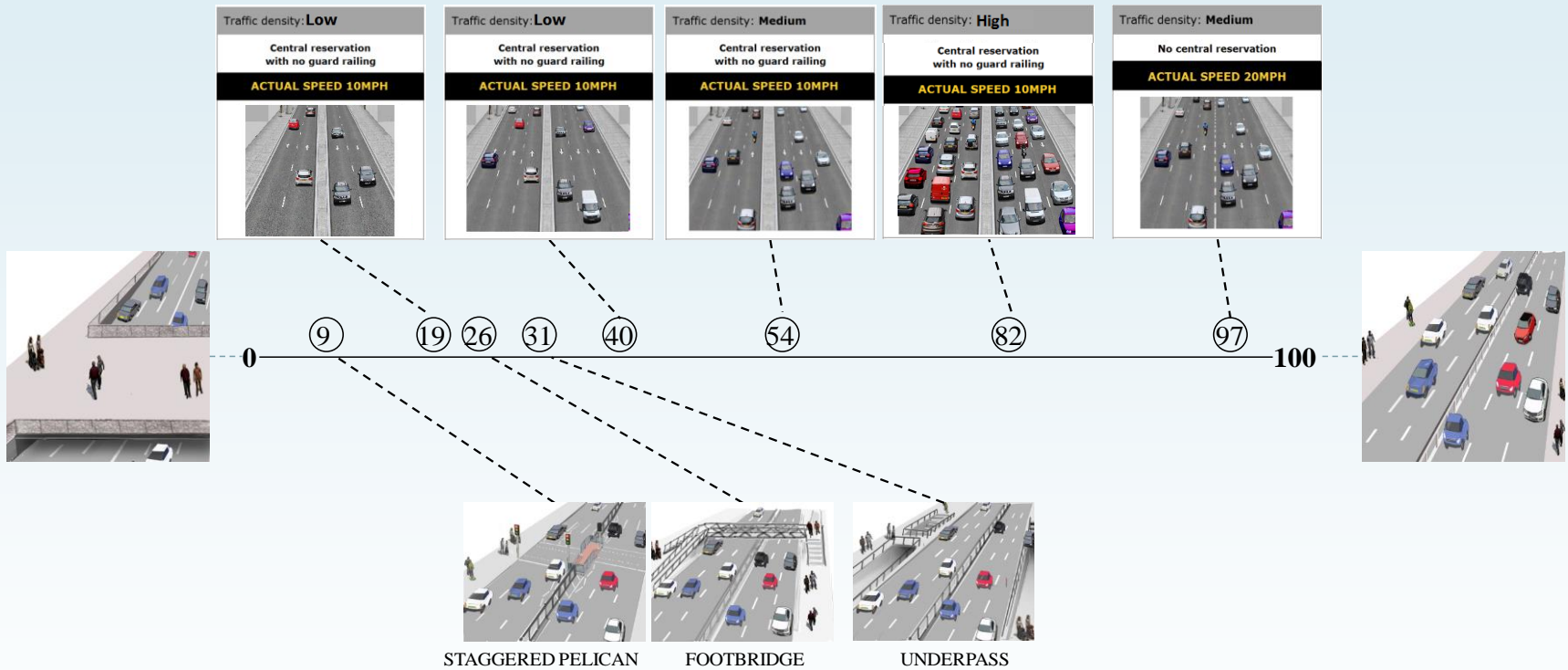**The UCL *Street Mobility* project**
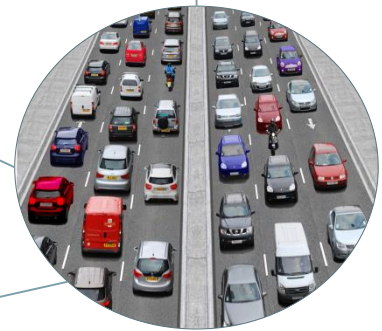
Street audits

Stated preference survey

Spatial analysis

New indicator: severance caused by different types of roads

Severance index vs. Willingness to pay (London)

$y = 0.0535x - 0.0679$
$R^2 = 0.988$
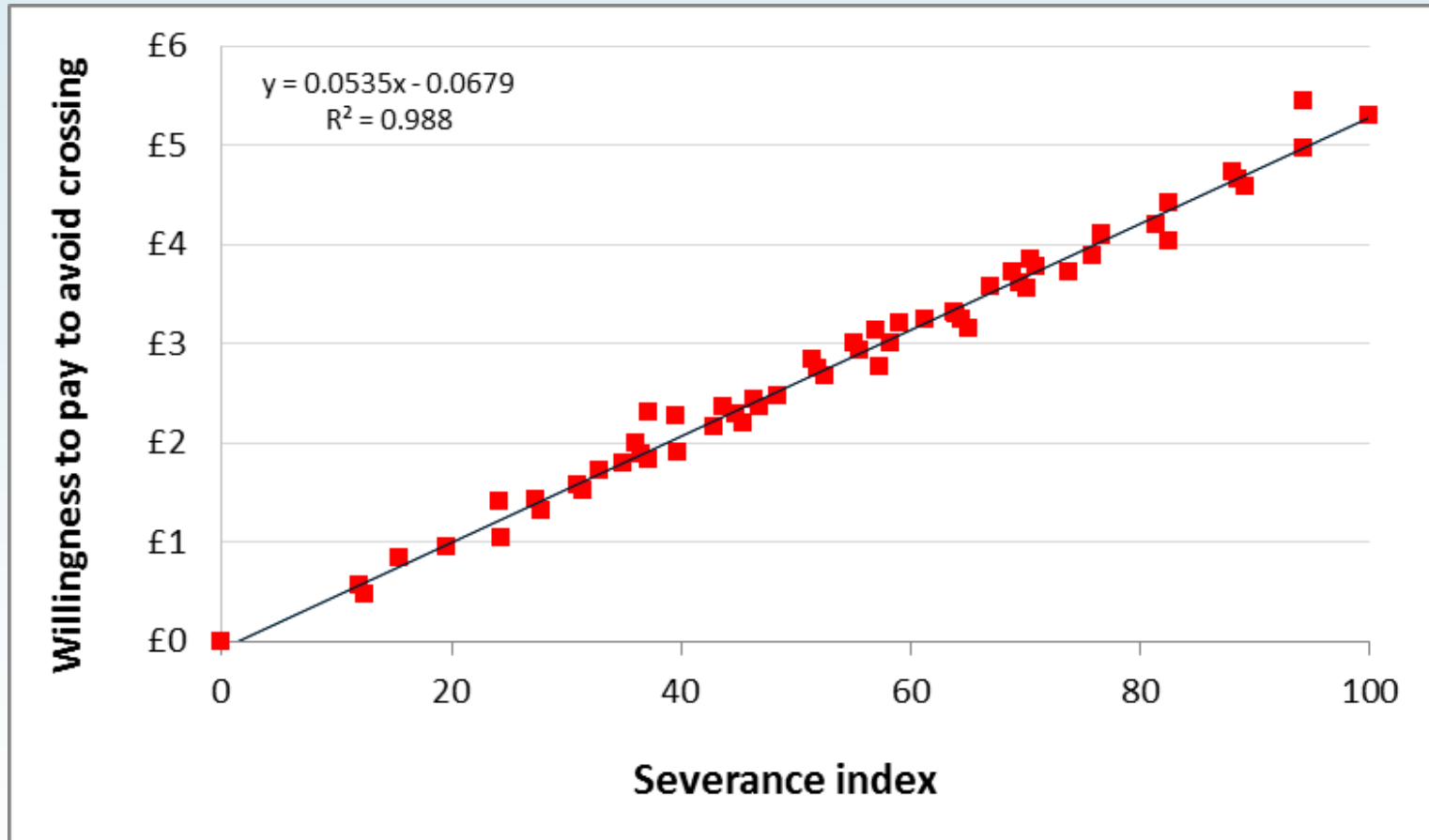
C/S1: Vehicle trip emphasis
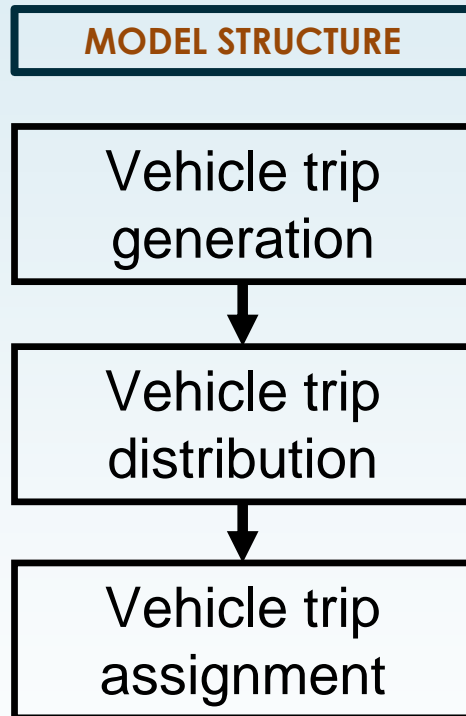
M/S2: Sustainable mode emphasis

MODEL STRUCTURE

Vehicle trip generation

↓

Vehicle trip distribution

↓

Vehicle trip assignment

MODEL STRUCTURE

Person trip/tour generation

↓

Person trip/tour distribution

↓

Mode split

↓

Trip assignment
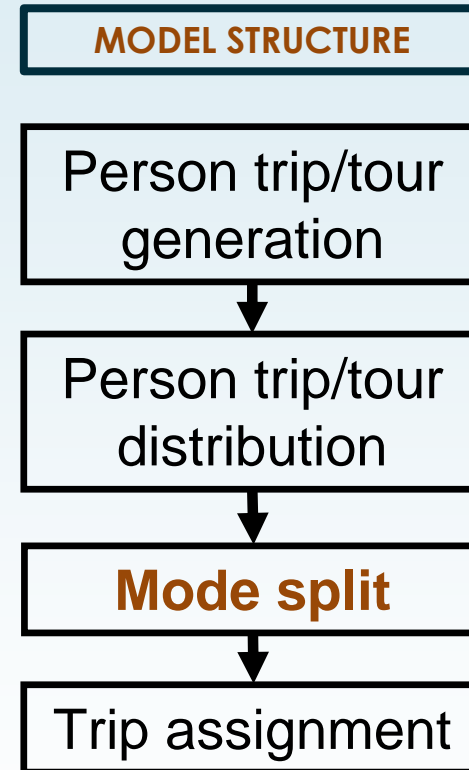
P/S3: Modelling for vision-led planning

- C/Stage 1 and M/Stage 2 policies largely based on model forecasts of future travel demand ('**Predict & Provide**'):
  - How much road capacity is needed?
  - What level of rail capacity do we need to provide?
  - Here uncertainty is 'a problem'
- P/Stage 3 starts with a city vision that embraces mobility and the public realm – the role of modelling ('**Vision & Validate**') is to:
  - Identify policy packages that will deliver desired outcomes
  - Use uncertainty to 'stress test' packages to make them as robust as possible under different futures

  …turning the modelling process 'on its head'

Policy P: Appraisal for vision-led planning - 1

- P policies are designed to meet broader outcomes

  -> so need to add new benefit types to the appraisal

- C and M policies use the 'do-minimum situation' as the baseline

- P policies use the 'vision' as the baseline:

  -> This is already partly done in some cases (e.g. 20mph zones, LEZs)

  -> This may place greater emphasis on cost-effectiveness rather than cost-benefit appraisal

…turning the appraisal process 'on its head'

Policy P: Appraisal for vision-led planning - 2

EXAMPLE: heavy traffic on inner ring road, causing severe severance and air and noise pollution

'**Traditional approach'**: Justify any measures to alter the current situation; for example, lower speed limit and surface level crossings: are the extra vehicle delays outweighed by reduced severance, noise levels, etc?

'**Vision-led approach'**: start with reduced speed limit and surface level crossings as 'meeting the standard'. If traffic conditions deteriorate and need to be mitigated, then (i) reassign traffic or, (ii) for example, build a cut-and-cover road and justify this through time savings, etc. compared to conditions if standard adopted

Future Challenges:

What sort of cities do we want to create and live in?

The Future City

- Four factors are moving cities beyond Policy **P**:
  - ➢ Continued congestion and over-crowding
  - ➢ Cross-sector responsibilities of elected mayors
  - ➢ Dealing with AVs and other technological developments
  - ➢ Pressures from 'Big data' and 'Smart city' initiatives

- Towards an emerging urban policy landscape that includes:
  - ➢ Recognition of interactions between transport and all sectors – and of travel as a 'derived demand'
  - ➢ Administrative structures enabling some cross-sector planning
  - ➢ Supported by new policy perspectives and ways of thinking

The Future City?

- C = Car-based city
- M = Sustainable-mobility city
- P = City as places
- **I = Integrated city** ???

Some early signs:
- MaaS
- Accessibility planning

New analytical methods:
- Socio-technical systems
- Activity-based modelling

I: INTEGRATED CITY

The Future City: 'Distopia'?

- But, some of these pressures may encourage the re-emerge of **C**-based policy thinking:

  ➢ MaaS may encourage vehicle-based door-to-door mobility, coupled with widespread take-up of AVs

  ➢ Electric AVs will be safe, non-polluting, etc.

  ➢ Leading to increased demands for car carriageway space – less need for bus, cycle lanes, etc.

  ➢ Renewed pressures to segregate road-space (e.g. pedestrian guard-railing), to keep AVs moving

- Suggesting that cities need to be pro-active, in shaping their future: technology-fed, not technology-led

Thank you !

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http://www.create-mobility.eu