How transport can contribute to achieving green and healthy cities – making the journey

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Transport, Sustainability and Health in Cities

• Urban transport policy priorities have changed over time – we have been ‘on a journey’

• This has had implications for sustainability and public health:
  ➢ Early car-based policies were harmful for public health and well-being (e.g. air pollution from conventionally fuelled motor vehicles; community severance from busy roads)
  ➢ More recent policies have promoted sustainability and public health (e.g. ‘Green’ transport, TfL ‘healthy streets’)
  ➢ While levels of transport provision affect access to health services
Characterising ‘the Journey’*

• Many economically advanced Western European cities have tended to follow a ‘transport policy development process’, as car ownership and use increase

• Three ‘stages’ can be identified, associated with different perspectives/priorities – including towards sustainability and health

• Key question: what future direction will cities take?

*See the EU H2020 CREATE project: www.create-mobility.eu
Simplified ‘Transport Policy Development Process’

Stage 1

Stage 2

Stage 3

Emphasis on meeting the needs of motor vehicles

Time – Development Cycle

Number of motor vehicles (esp. cars)
Simplified ‘Transport Policy Development Process’

Stage 1: Planning for vehicle movement: road building, parking

Stage 2

Stage 3

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Time – Development Cycle
Re-conceptualisation: seeing things differently......

Edgar Rubin, 1915
Simplified ‘Transport Policy Development Process’

Stage 1:
- Planning for vehicle movement: road building, parking

Stage 2:
- Planning for people movement: public transport, walking & cycling; road space reallocation

Stage 3:
- Emphasis on meeting the needs of motor vehicles

Time – Development Cycle
Re-conceptualisation: seeing things differently......

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Stage 1
Planning for vehicle movement: road building, parking

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Planning for people movement: public transport, walking & cycling; road space reallocation

Stage 3
Planning for city life: transport as ‘place; active traffic restraint; remove some obtrusive road infrastructure, support other objectives (e.g. health)

Emphasis on meeting the needs of motor vehicles

Number of motor vehicles (esp. cars)

Time – Development Cycle
Alternative global city trajectories

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

UITP data 1995
Stage 3: Motorway Removal and Place Making

Portland

Seoul
Stage 3: Street Redesign
Stage 3: TfL’s London-wide Street Classification

M3
- eg Core Road
- eg High Road
- eg City Hub

M2
- eg Connector
- eg High Street
- eg City Street

M1
- eg Local Street
- eg Town Square
- eg City Place
TfL: Healthy Streets Indicators

Source: Lucy Saunders
## Indicators by Stage

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
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<tbody>
<tr>
<td>• Average network speeds</td>
<td>• PT frequency and reliability</td>
<td>• Time use in transport modes</td>
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<tr>
<td>• Day-to-day variability</td>
<td>• Access to bus stops &amp; stations</td>
<td>• Intensity of street activities</td>
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<tr>
<td>• Vehicle congestion</td>
<td>• Safety and security</td>
<td>• Time spent in local area</td>
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<tr>
<td>• Car parking availability</td>
<td>• Seamless travel</td>
<td>• Value of high quality public space</td>
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<tr>
<td>• Road traffic accidents</td>
<td>• PT modal split</td>
<td>• Health of the population</td>
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<tr>
<td>• Noise</td>
<td>• Walking/cycling modal shares</td>
<td>• Social interaction</td>
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<tr>
<td>• Air pollution</td>
<td>• Door-to-door travel times by mode</td>
<td>• Social equity and inclusion</td>
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<td></td>
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<td>• <strong>Community severance</strong></td>
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Street Mobility project @ UCL

Survey to quantify the impacts of busy roads on local residents

845 respondents in 4 areas: 2 in London, 1 in Birmingham, 1 in Southend
Wellbeing of residents affected by road vs. others

(Warwick-Edinburgh Mental Well-Being Scale (Stewart-Brown 2009))
Scale from 7 (min) to 35 (max)

<table>
<thead>
<tr>
<th></th>
<th>Average Score</th>
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<tbody>
<tr>
<td>All 845 respondents in the 4 case studies</td>
<td>25.9</td>
</tr>
<tr>
<td>73 respondents in case study areas who:</td>
<td></td>
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<tr>
<td>Perceive traffic volume on main road as heavy AND Perceive traffic volume on main road as fast AND Perceive traffic as a barrier to walking AND Avoids main road because of traffic AND</td>
<td>23.5 (significantly lower than sample average, at 1% level)</td>
</tr>
<tr>
<td>National Average (from other studies)</td>
<td>26.1</td>
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</tbody>
</table>
New indicator: severance caused by different types of roads

Provisional unpublished results
Severance index vs. willingness to pay

Provisional unpublished results

\[ y = 0.0535x - 0.0679 \]
\[ R^2 = 0.988 \]
The Future: a possible ‘Stage 4’?

• Many cities are experiencing rapid population growth, and fear that all transport networks will become overloaded – ‘Stage 3’ is not enough

• CREATE is exploring a possible ‘Stage 4’
  – Maybe with a stronger emphasis on optimising infrastructure use through cross-sector planning (e.g. retail, health)
  – ‘systems of ‘systems’ approaches
A Progression to ‘Stage 4’?

Stage 1
Planning for vehicle movement: road building, parking

Stage 2
Planning for people movement: public transport, walking & cycling; roadspace reallocation

Stage 3
Planning for city life: transport as ‘place’; active traffic restraint; remove some obtrusive road infrastructure, support other objectives (e.g. health)

Stage 4?
Mobility densification: Planning for city accessibility: cross sector planning and operation?

Emphasis on meeting the needs of motor vehicles

Number of motor vehicles (esp. cars)

Time – Development Cycle
8421 people aged 65+
less than 30min by PT
to a hospital
5390 people aged 65+ less than 30min by PT to a hospital

Relocate services
Example: Health Facilities Relocation

Health Centre Moves to Edge-of-Town Site

Build consolidated health centre at edge-of-town

• Better health care
• Efficiency savings

Easier journey and parking, by car

• Increased car use:
  - More congestion
  - More CO² Emissions

• Reduced access by bus and on foot/cycle

• Reduced economic vitality
• Reduced social interaction

• Less walking/cycling

• More difficult bus journeys
• Interchange

• Less likely to book appointment
• More no shows

Located away from other market town facilities

Reduced access by bus and on foot/cycle

Reduced economic vitality
• Reduced social interaction

Reduced access by bus and on foot/cycle

Reduced physical exercise

Less walking/cycling

Less likely to book appointment
• More no shows

Consequences

SECTORS:

Health
Economy/Society
Transport

KEY:

Benefit to Sector
Disbenefit to Sector

More difficult bus journeys
Interchange

Less likely to book appointment
More no shows

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The Future: a possible ‘Stage 4’?

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  – ‘systems of ‘systems’ approaches
• BUT will AVs take us back to Stage 1?!!
The Future: On-going Developments of Stages 1 and 2...

Stage 1

Stage 2

Stage 3

Time – Development Cycle

Number of motor vehicles (esp. cars)

Emphasis on meeting the needs of motor vehicles

AVs

MaaS
Potential impact of AVs – do we repeat history?

Stage 1

Stage 2

Stage 3

Stage 4?

AV-dominated cities??

...OR?

Emphasis on meeting the needs of motor vehicles

Time – Development Cycle
Alternative city trajectories

Reversion to Stage 1?
Stage 2 -> Stage 3

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UITP data 1995
Thank you!

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