Towards a Quantitative Representation of Cycling Journey Quality Impacts

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Outline

• Motivation
  • Cycling growth?
  • Cycling and social mobility

• Transport scheme appraisal

• Research aim

• Project structure

• Methods

• Next steps

• Summary
Motivation
Spending

- Cycling cities and Towns
  > £140 million
- Local Sustainable Transport Fund
  94 out of 96 schemes have a cycling element
- Cycle Safety Fund
  - £40 million
- Cycle City Ambition Fund
  - £77 million
- National Parks Grant
  - £17 million

Source: Department for Transport (2013)
New infrastructure

Photo: Felix O

Lewes Road - Brighton

CS2 - London
Cycling growth?

Cycling by age and gender

Percentage of trips

- Male, 2013
- Male, 2003
- Female, 2013
- Female, 2003

National Travel Survey: Department for Transport (2014a)
Cycling growth?

• Growth concentrated in a few areas

• Association between affluence and modal share

• No increase overall

Anna Goodman (2013)
Denmark vs. USA vs. UK

Source: Transportvaneundersøgelsen, DTU Transport. via People for Bikes
Denmark vs. USA vs. UK

Source: National Household Travel Survey, 2009. via People for Bikes
Denmark vs. USA vs. UK

UK

Mode share

Income quintile

- Private motor
- Public transit
- Walk
- Bicycle

National Travel Survey: Department for Transport (2014a)
Denmark vs. USA vs. UK

Social mobility in men born to fathers in the lowest income quintile

Source: Markus et al, 2006. via People for Bikes
Transport scheme appraisal
Appraisal process and decision making

Transport Appraisal Process

- Option Development & analyses
- Appraisal of Impacts
- Monitoring & Evaluation
- Development of business case
- Decision-making process
- Implementation

Source: Guidance for the Senior Responsible Officer - Department for Transport (2014b)
WebTAG Appraisal

**Environmental**
- Noise
- Air Quality
- Greenhouse Gasses
- Landscape
- Townscape
- Heritage
- Biodiversity
- Water

**Economic**
- Business Users
- Reliability
- Regeneration
- Wider Impacts

**Public Accounts**
- Cost
- Indirect Tax

**Social**
- Commuting and Other Users
- Reliability
- Physical Activity
  - Journey Quality
- Accidents
- Security
- Access to Services
- Affordability
- Severance
- Option Values

*Source: Appraisal Tables - Department for Transport (2014b)*
Willingness to Pay

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Bus Lane</td>
<td>0.77 p/min</td>
</tr>
<tr>
<td>On-road</td>
<td>2.97 p/min</td>
</tr>
<tr>
<td>Fully segregated</td>
<td>7.03 p/min</td>
</tr>
</tbody>
</table>

Source: Department for Transport – WebTAG Data Book (2014b)
Research aim

- Explore impact of journey quality and personal factors
- Use quantitative research methods
- Segment across socio-economic groups
- Inform early stage appraisal
Project structure

Exploratory Research
- Literature Review
- Qualitative Research

Quantitative Research
- Testing methods
- Full Field Research

Multi-Criteria Analysis
- Follow-up Survey
- Case Study
Methods
Importance – Satisfaction

- Concentrate here
- Keep up the good work
- Low priority
- Possible overkill

Crosshair "axis"

Source: Yahya 2013
Structural Equation Modelling: ECSI

- Image
- Expectations
- Perceived Quality of “Hard ware”
- Perceived Quality of “Human ware”

Perceived Value → Customer Satisfaction

Customer Satisfaction → Customer Loyalty

Source: Kristensen et al. 2010
Structural Equation Modelling: ECSI

Image → Perceived Value
Expectations → Perceived Value
Perceived Quality of “Hard ware” → Perceived Value
Perceived Quality of “Human ware” → Perceived Value
Perceived Value → Customer Satisfaction
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Source: Kristensen et al. 2010
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Perceived Value → Customer Satisfaction

Customer Satisfaction → Customer Loyalty

Source: Kristensen et al. 2010

0.38

0.20
Multi-Criteria Analysis

• Used to provide greater evidence base for early stage option appraisal

• Represent changes to a standard cycling environment

• Pairwise comparisons
Next steps

- Exploratory focus groups
- Testing survey methods
- Refine geographical focus
Summary

• Motivated by potential of inclusive cycling

• Current spending has not produced inclusive growth

• Aim for output to inform early stage appraisal

• Working on exploratory research and testing methods
Thank you for listening.
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Department for Transport (2014a), National Travel Survey statistics, Available at: https://www.gov.uk/government/collections/national-travel-survey-statistics
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People for Bikes (2013), How protected bike lanes helped Denmark win its war on inequality Available at: http://www.peopleforbikes.org/blog/entry/does-better-biking-help-poor-people-denmark-shows-the-slow-huge-payoff
Yahya, N. (2013) Assessment of Service Quality and Satisfaction from Passengers Perspective to Inform Bus Operator Decision Making, PhD, Newcastle University, UK