Cycling and Society Symposium 2014

Theme A - Demographics
Northumbria University at Newcastle
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PERCEPTIONS AND ATTITUDES OF URBAN
UTILITY CYCLISTS – A CASE STUDY IN A
BRITISH BUILT ENVIRONMENT

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Overview

- Brief background
- Method
- Sample characteristics and commonalities
- Results
- Conclusions
To provide evidence on perceptions and attitudes of urban utility cyclists in a British built environment

Response to research on understanding cycling by:

- investigation and discovery of cyclist’s perception and actual route choice experiences and preferences
- integrated research methods which recent technological advancements may permit (e.g. GPS+GIS+GISc+TPB)
Dissatisfaction from local campaigners:

- Lack of a coherent cycling strategy
- Negative attitudes towards cyclists
- Slow rate of cycling infrastructure provision
- Refusal of local public transport providers to allow bicycles on the METRO system (*DBahn!*)

Yeboah & Alvanides, Northumbria University
Based on: cycling is **prevalent** around the central part of the Tyneside conurbation; **practicality** and **convenience**

- Newcastle upon Tyne
- North Tyneside
- South Tyneside
- Gateshead
Data collection / methodological issues

Further work

Godwin Yeboah, Northumbria University

STUDY AREA

Area: in & around Newcastle upon Tyne

Background map: Google Maps 2012

n=79 used in this presentation
Data collection: 79 utility cyclists

- Baseline Q & 4 groups of variables
  - neighbourhood environment
  - physical activity habits and past behaviour
  - variables theory of planned behaviour (TPB)
  - habit of using cycling

- Face-to-face interview

- GPS tracking
GPS Device & Usage

Qstarz GPS device used

Usage

OFF/NAV/OF

F options

Battery status LED
(Red/Green)

GPS status LED
Power jack (mini USB type)

Charging GPS with mini USB cable to the PC/laptop/etc

Yeboah & Alvanides, Northumbria University
Example of visual inspection:

GPS raw data (left) & processed data (right)

Visual inspection of GPS raw data

Processed / refined data

Yeboah & Alvanides, Northumbria University
Methods

- Exploratory regression analysis
- Descriptive statistics

Framework for Exploratory Regression analysis

Variables
- Cultural
- Environmental
- Socio Economic
- Lifestyle
- Spatial

OLS
Tests all variable combinations for:
1. Redundancy
2. Completeness
3. Significance
4. Bias
5. Performance

Creates Output Diagnostic Report
Sample Characteristics & Commonalities
Cyclists’ perceptions about nearby area

Infrastructure:
76% disagree on use of pavements/footpaths for cycling
Limited availability bicycle lanes (77%) and signage (52%)

Safety: 37% undecided on whether it’s safe to ride a bike

Safety from traffic:
50%-50% on traffic on the streets where they cycle
50% agreed that speed of traffic is faster than 20mph
57% agreed that most drivers exceed their speed limits
Cyclists’ perceptions about nearby area

73% have been living in the same neighbourhood for over 12 months

53%: the street design has dead ends of cycling paths
66%: too many four-way road intersections in the neighbourhood.

96%: less than 10 mins cycle to nearest businesses/facilities from home
  e.g. businesses/facilities: grocery store, shopping centre, post office, library, bank, video store, bus stop, work and school.

76%: cycling constitutes about “61-100” % of their work/school trips and walking constitutes about “0-20”%. 
Attitude, Norm, Behaviour, Intention, and Habit of utility cyclists

- Attitudes on cycling: satisfying (98%), energising (92%), pleasant (83%), advantageous (87%), and useful (95%)

- Three subjective norms captured
  81% of participants agree they use bicycle regularly.
  65% most of the people who are important to them would recommend that they use the bicycle on a regular basis.
  67% reported that their people would think they should use the bicycle on regular basis.

Yeboah & Alvanides, Northumbria University
Attitude, Norm, Behaviour, Intention, and Habit of utility cyclists

Using a bicycle to commute is something:

- they did frequently (96%)
- they did without having to consciously remember (85%)
- that made them feel weird if they do not cycle (62%)
- that would require effort if they do not cycle (47%)
- belonged to their daily routine (85%)
- started doing before realised they were commuter cyclists (53%)
- they think of as “typically me” (75%)
- they had been doing for a long time (81%).

High scores on habit in line with Lemieux & Godin (2009, Canada) suggesting that habit plays an important role in cycling.
## Correlations with Exploratory Regression

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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</thead>
<tbody>
<tr>
<td><strong>-Q0201</strong>*(\text{LanesAvailable})</td>
<td><strong>-CALDIST</strong>*(\text{Calculated trip distance})</td>
<td><strong>-CALCBMI</strong>*(\text{Calculated BMI})</td>
</tr>
<tr>
<td><strong>-Q0802ORIG</strong>*(\text{PrevMonthTrips})</td>
<td><strong>-Q0802ORIG</strong>*(\text{PrevMonthTrips})</td>
<td><strong>-Q0802ORIG</strong>*(\text{PrevMonthTrips})</td>
</tr>
<tr>
<td>+Q0901***(\text{Attitude on satisfaction})</td>
<td>+Q0901***(\text{Attitude on satisfaction})</td>
<td>+Q0901***(\text{Attitude on satisfaction})</td>
</tr>
<tr>
<td>-Q0902***(\text{Attitude on energisation})</td>
<td>-Q0902***(\text{Attitude on energisation})</td>
<td>-Q0902***(\text{Attitude on energisation})</td>
</tr>
<tr>
<td>+Q1309***(\text{Habit})</td>
<td>+Q1309***(\text{Habit})</td>
<td>+Q1309***(\text{Habit})</td>
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</table>
Correlations with Exploratory Regression

- Understanding explanatory variables of significance and reducing the number of variables to a smaller size.
- Dependent variable: frequency or number of utility cycling trips (i.e. uctrips) per participant over the one survey week period.
- Three models, with a specified min/max explanatory variables of 5, were found to have the highest adjusted coefficient of determination with $R^2=0.39$.

i.e. three models in the table explain 39% of the variation in frequency of cycling trips (the dependent variable).
Correlations with Exploratory Regression

- Utility cycling in the area significantly \((p=0.01)\) correlated to habit, attitudes on satisfaction and energisation as well as past cycling behaviour.
- Significant correlations to actual (not stated preference) cycling behaviour relates to availability of cycle lanes, trip distance, and body mass index respectively.

Partly confirms Dill & Voros (2007): positive perceptions of availability of cycle lanes associated with cycling and the willingness to cycle more.
Conclusions

1. Utility cycling significantly correlated to
   - Habit
   - Attitudes on satisfaction and stimulus
   - Past cycling behaviour

Lemieux & Godin (2009) stated preference survey predicted that cycling behaviour correlates with habits, intention and age (with habit being the most significant predictor).
Conclusions (cont.)

2. Actual (not stated preference) cycling relates to
   - Lane availability
   - Trip distance
   - Body mass index (BMI)

3. Theory of Planned Behaviour (TPB)

   Utility cyclists are in favour (i.e. attitude) of this behaviour (cycling) and not under social pressure (i.e. subjective norm) to cycle.
As with Lusk et al. (2014, China): the results presented here “may not be fully generalizable to populations worldwide” or UK wide. See: historic bicycling culture in the study area.
Questions?

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