



The Case for Cycling in Large Scale Transport Models

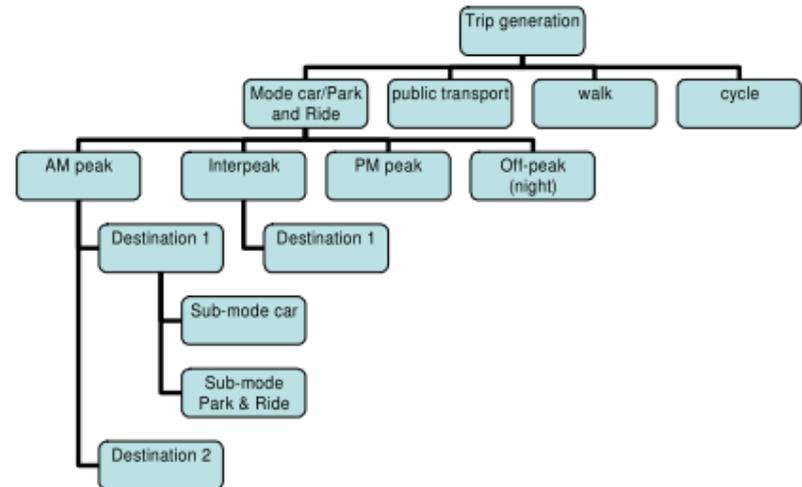
22 January 2014
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Overview

- The Means: can cycling fit into a multi-modal model?
- The Motive: how do clients view cycling objectives?
- The Opportunity?

Cambridge Sub Regional Model

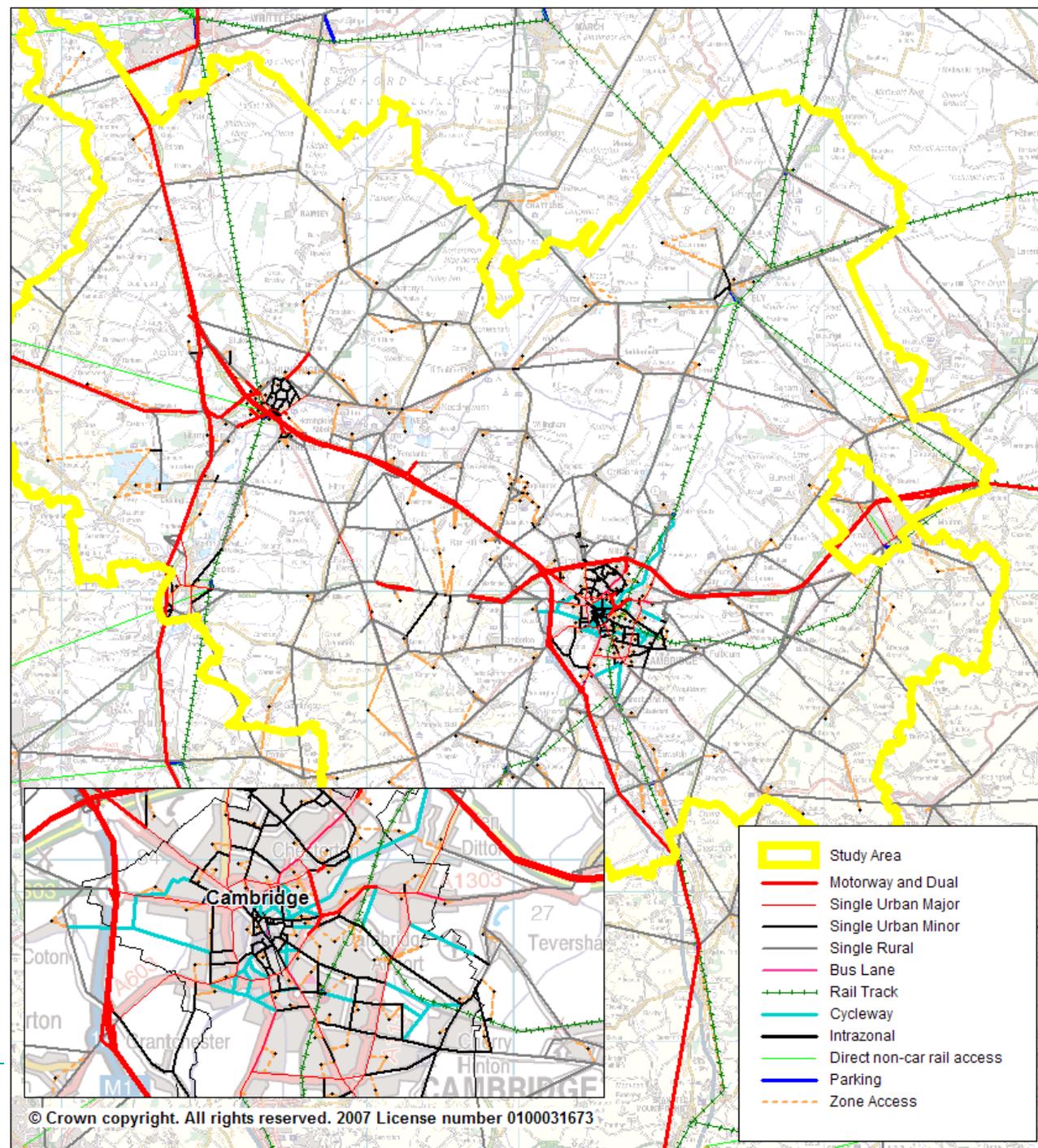
- A 'four-stage' model with some innovations:
 - A Land Use Model, showing location preference
 - Highway assignment in SATURN
 - Cycling separated from walk, and assigned in the model as a 'main mode'



- Considered important by clients and modellers for Cambridge due to high mode share
- Separate LOGIT parameters were derived from experience in the Netherlands, though more local data would be ideal
- This allows sensitivity of cyclists to distance & time to be considered separately
- Increased the size and cost of the model, and required extra steps to calibrate

Transport Connections in the Cambridge Sub Regional Model

- Cycles assumed to use most road types (not the A14 or M11!)
- Additionally a network of cycle paths, providing short routes and some exclusive links



Estimates available with cycling as a separate mode

- As population increases in SPECIFIC locations, how will the numbers cycling change?
 - A factor of the cycling distance from the 'home' location to desired destinations.
- With 'push' factors (e.g. fuel price rises, congestion), how much will cycling grow?
 - Mode switching when existing residents consider trade-offs
- With improved road/PT facilities, could cycling market shrink?
 - The general public can be attracted AWAY from cycling by alternatives
- BENEFITS of cycling: WebTAG provides benefits based on health + value of time which can very positively value cycling schemes.

What a multi-modal model DOESN'T do well

- Estimate changes due to 'attitudes' and travel planning:
 - Values and preferences of individuals generally fixed through time. Attitudes of different segments (e.g. old / young) can be separated but this may not be best segmentation for cycling.
 - Hence representing external factors which encourage cycling is difficult
- Impact of improved cycling facilities vs roads:
 - A network model finds the 'least cost' route by each mode, based on time and money. For cars, choice between routes can be based on speed vs distance
 - There is no established 'value' for an on-road route vs an off-road route, or a destination with/without secure cycle parking, showers etc.

Motives: Do clients need cycling in their models?

- Many LAs have initiatives which focus on cycling
- Many of those LAs have multi-modal models of some form.
- VERY few of them would insist on cycling as a separate mode in the model

- WHY?

- Benefits of incorporating cycling:
 - Mode shift to/from cycling **always** considered
 - WebTAG values for cycling can be included in scheme appraisal

- Practical reasons:
 - Emphasis on the best understood aspect of the problem
 - Not pitched by consultant
 - Increase in cost/complexity of model

Motives: What are model owner's top objectives?

Development Planning:

- In broad terms, key issues are:
 - Maximising employment growth
 - Providing sufficient housing, of the right type

Transport Strategies:

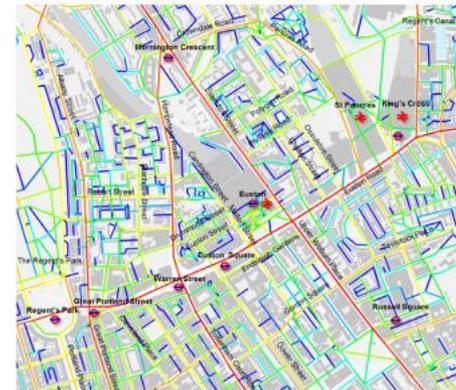
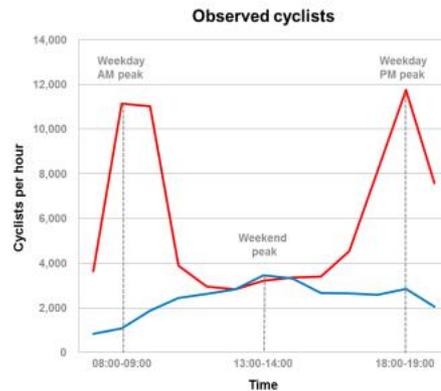
- Mixed strategies widely embraced, but 'hard' items dominate:
 - Maximising commuting capacity
 - Easing traffic bottlenecks
 - Making business cases for MAJOR investment schemes
- There is a natural emphasis on these objectives, and the elements seen as crucial to overcome them.
- So case for cycling as part of the solution needs to be clear.

The Opportunity? – is there one?

- Based on these considerations, is cycling likely to feature more in large scale modelling in the future?
- Conditions in which this might occur:
 - **Means:** Modelling approaches which incorporate cycling in a robust way, addressing current weaknesses
 - **Motive:** Problems to be solved in which cycling plays a key role, or large benefits which will accrue to the client
 - **Opportunity:** The right time to put all this together.

Do we have the Means?

- Does it matter if we treat cycling separately from other modes, in small bespoke models?
- Elements we DO need to address in large models:
 - Segmenting responses to cycling. Probably NOT the segments we currently use
 - Quantify attraction of new cycle infrastructure / facilities and influence of incentives to cycle



- Cycle lane/track
- Cycle route intermittently marked
- Combined bus/cycle lane (signed)
- Off-road routes (canal / park routes)
- Shared surface

- Weekday
- Weekend

- Spatial Accessibility
- High
 - Low

Space Syntax



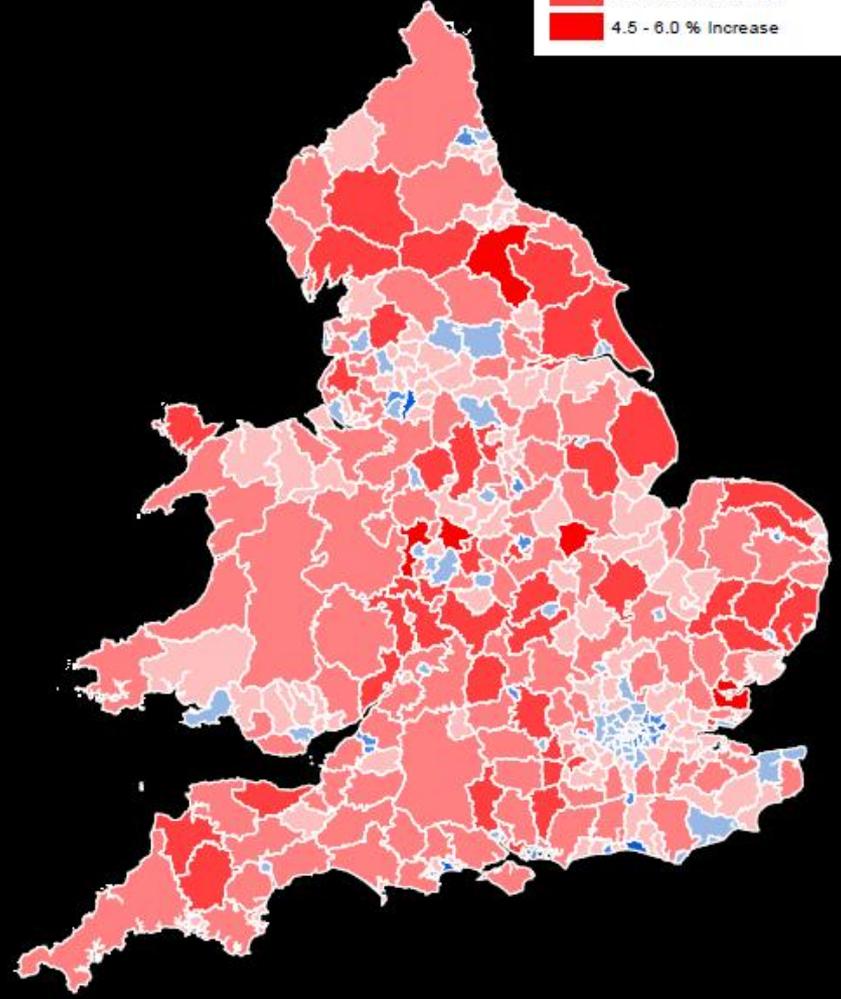
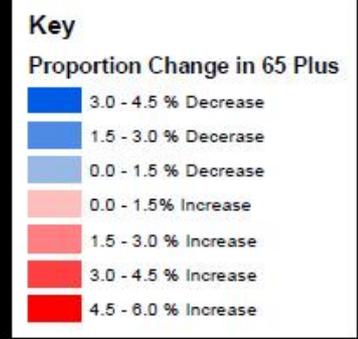
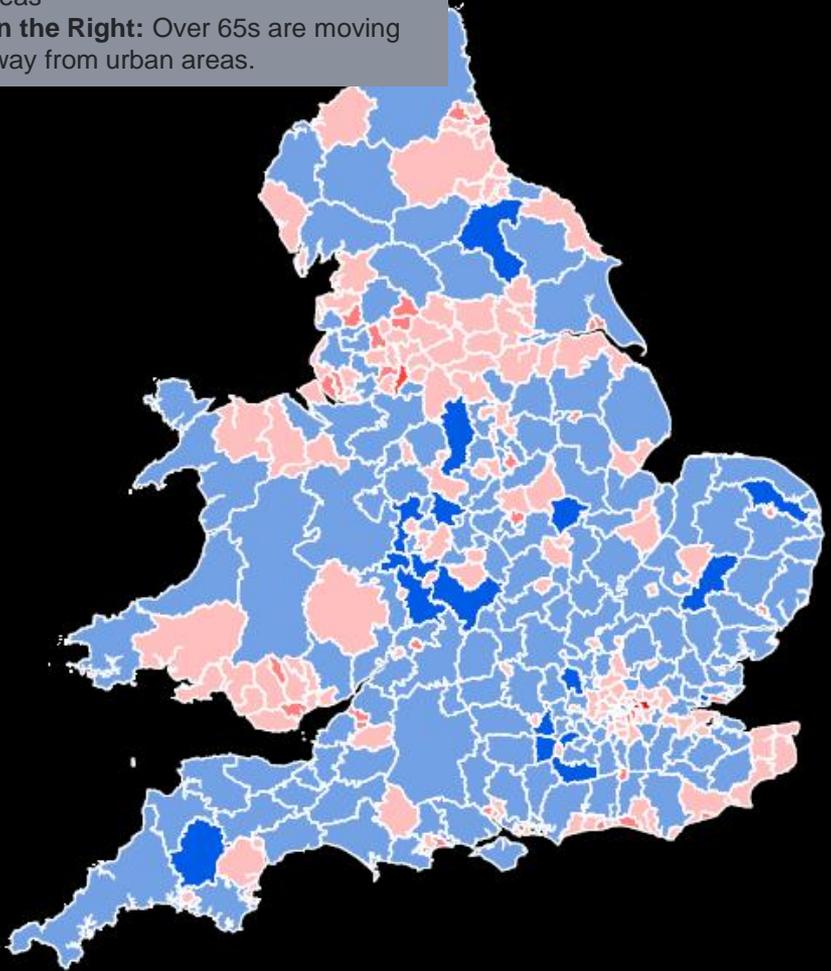
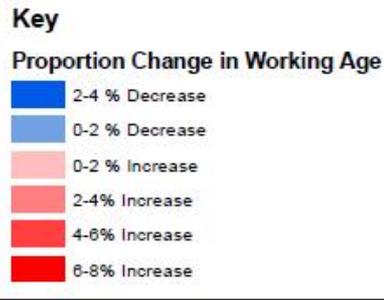
Do we have the Motive?

- Health and happiness benefits are high, clients targeted on these value cycling!
- Current modelling clients will seek out cycling when:
 - the population is highly urban and trip patterns are likely to support cycling;
 - other solutions may reinforce existing issues (e.g. congestion relief moves the problem);
 - cycling fits into a wider sustainability strategy.
- Densification and urban extensions : cycling becomes more relevant
- Other incentives:
 - Young populations are urbanising
 - Peak car?

2001 vs 2011: Working Age and 65+ Population

On the Left: People in Urban Areas are increasingly likely to be working age. There are absolute FALLS in the number of working age in many rural areas

On the Right: Over 65s are moving away from urban areas.



Do we have the Opportunity?

- All 2011 Census data should be delivered this year
- Clients will look to refresh old models, and perhaps consider new ones
- Will small scale approaches reap lessons for large scale models? (I'm here to learn!)



Thank you

Tim Gent, WSP
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