•Researching active travel – data needs.

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8th November 2015

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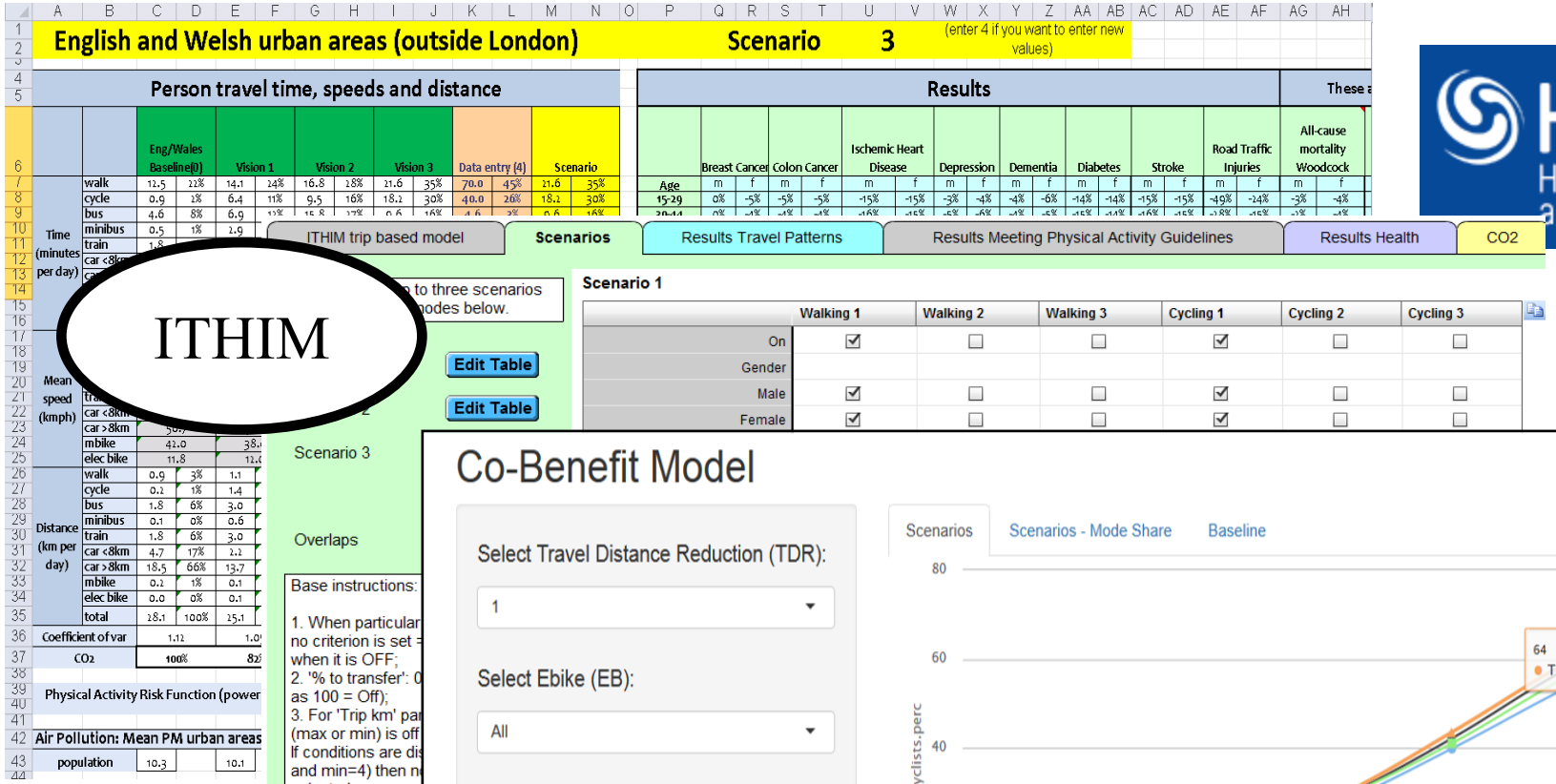
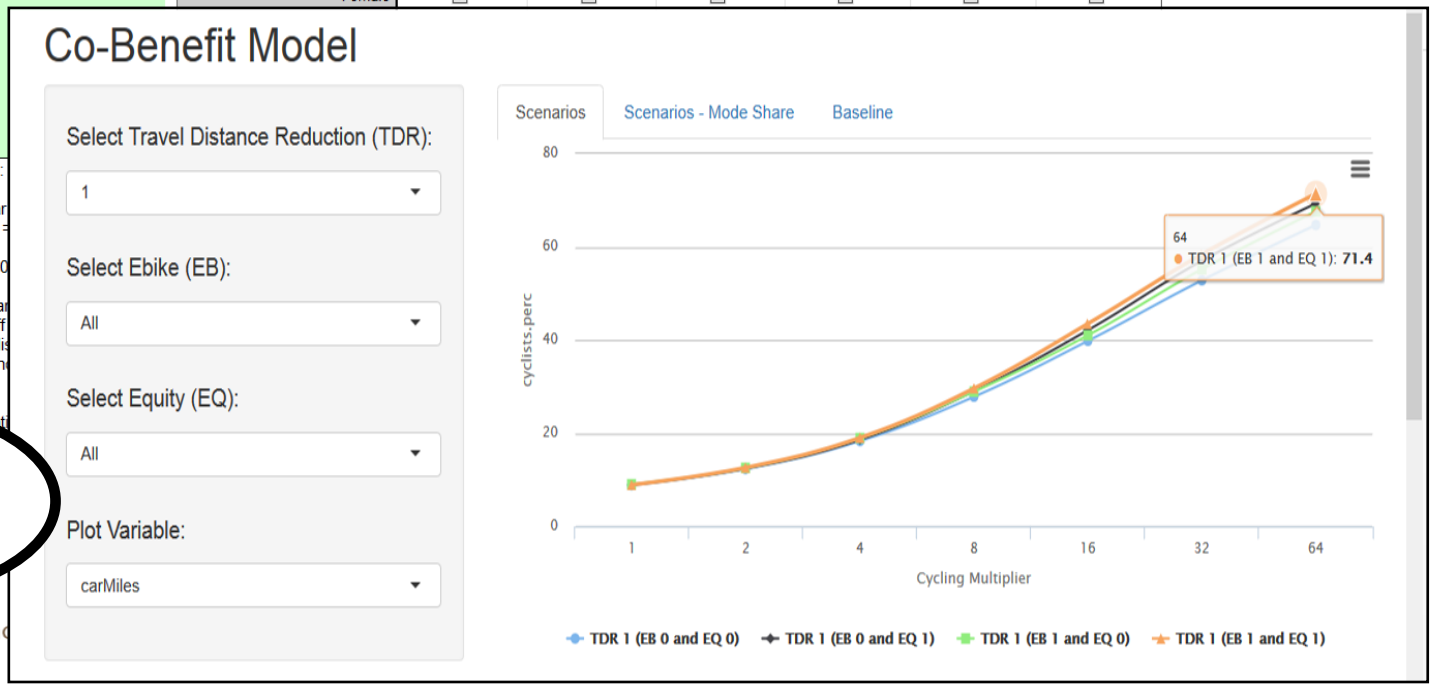
Modelling Health Impacts of Cycling



ITHIM

NPCT

HEAT
Health economic assessment tool



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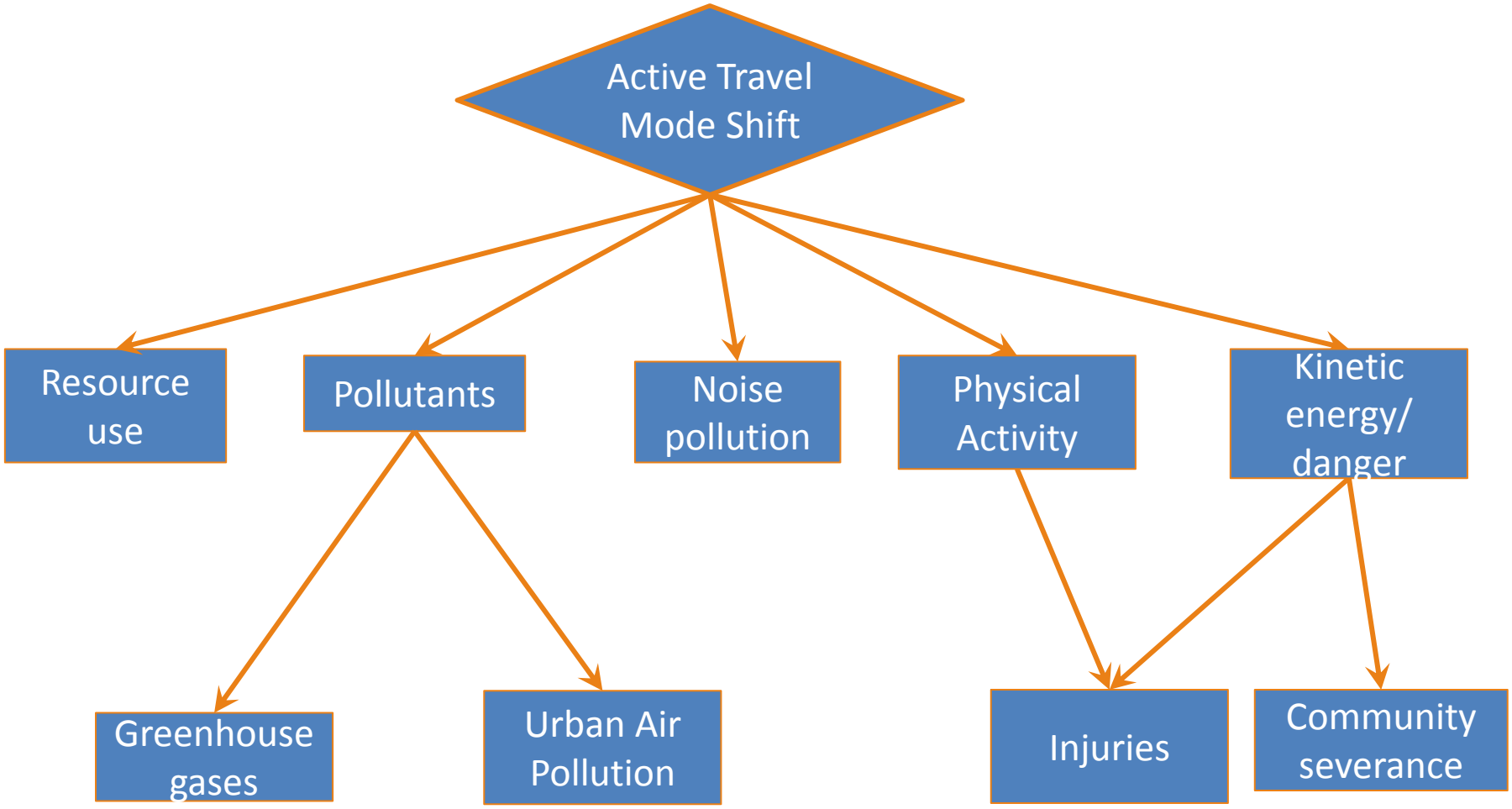
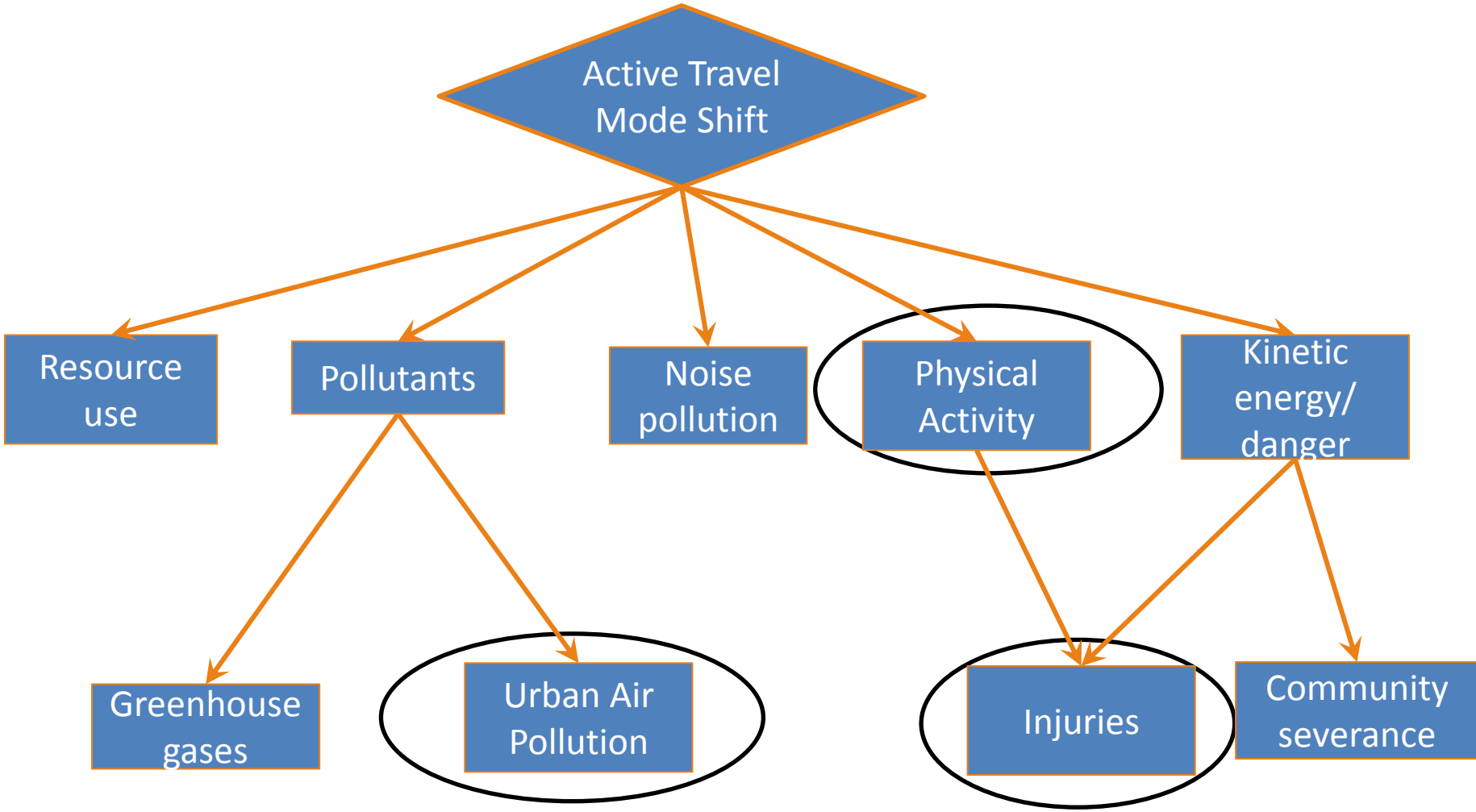

Active Travel Mode Shift
Resource use
Pollutants
Noise pollution
Physical Activity
Kinetic energy/ danger
Greenhouse gases
Urban Air Pollution
Injuries
Community severance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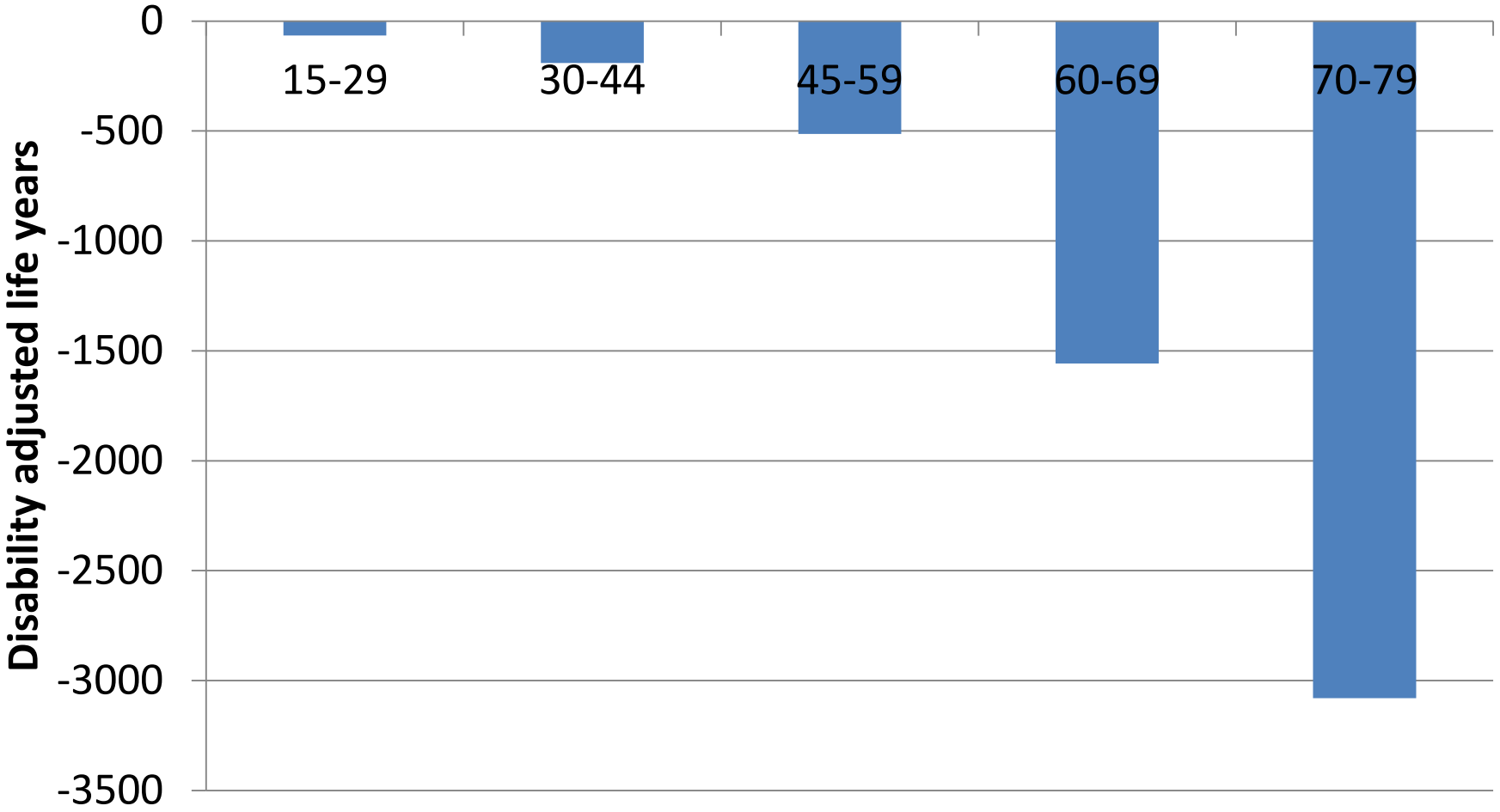
Who & Where?

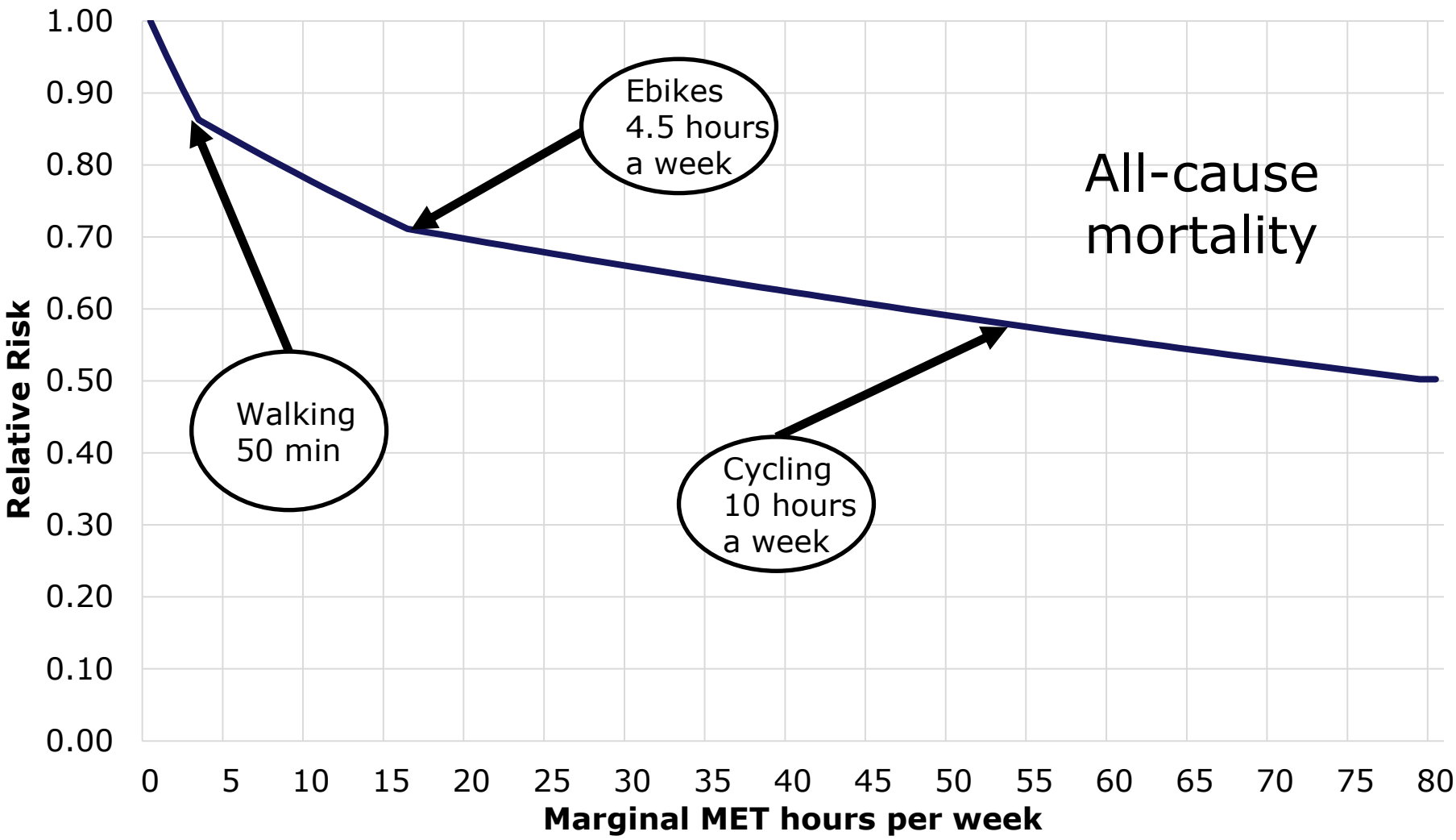
- When estimating the health impacts of mode shifts in the transport sector it matters who is doing the activity and where.
- The better we can represent this the better our models

For Example….

Cycling: Physical Activity Benefits by Age



Who: The Sedentary Benefit More



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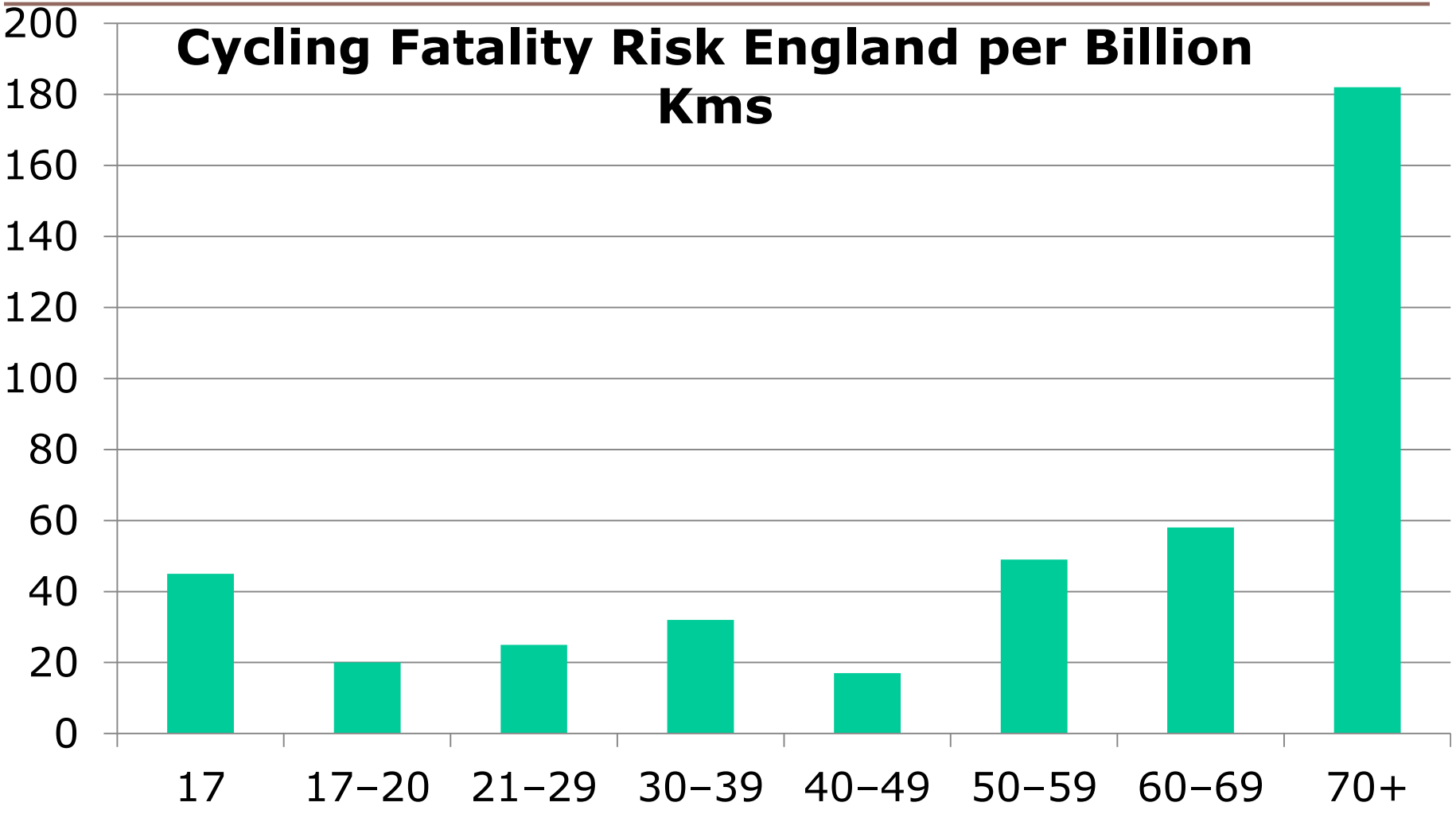
Wen et al. *Lancet* 2011; 378: 1244–53

Injury Risk: Who- Age



Exposure-Based, 'Like-for-Like'

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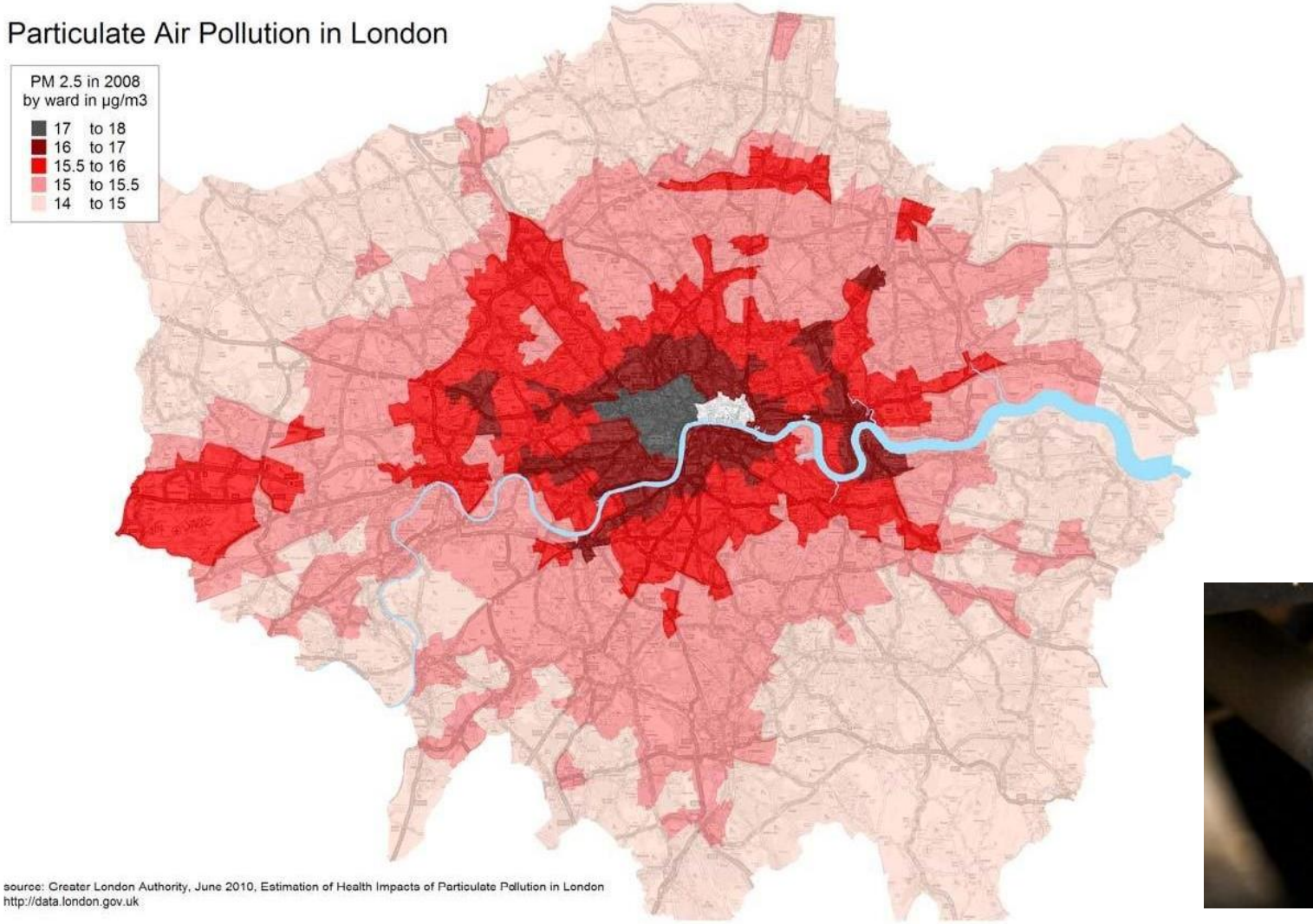
Assessment of Road Safety by Travel Mode Using Routine Health Data Mindell et al 2013

Air Pollution: Exposure varies spatially



Modelling Individual level exposures

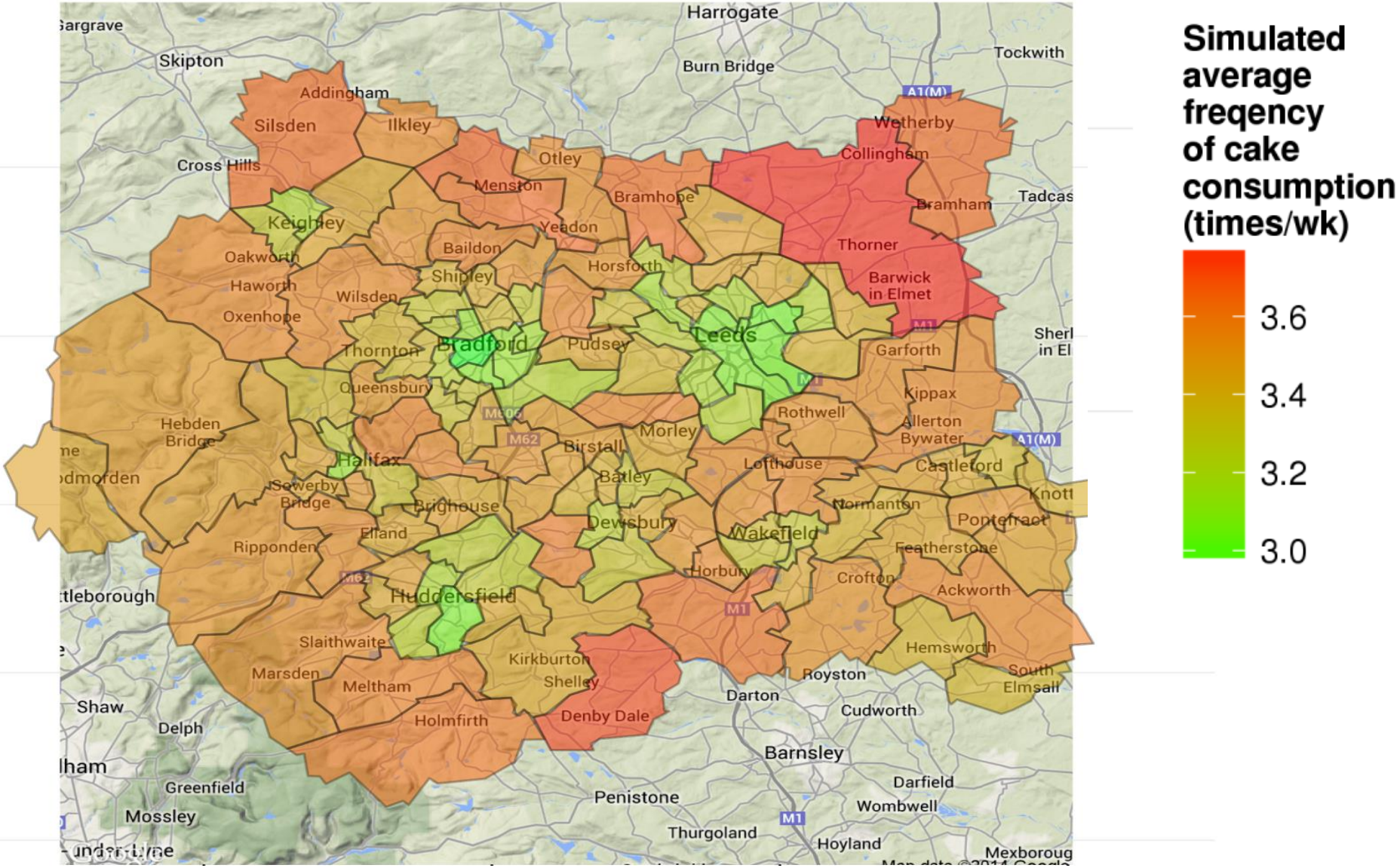
- Synthetic individuals

- One survey rarely provides sufficient inputs for our models so we create synthetic individuals by probabilistically combining individuals from different studies.
- Note this is not record linkage- they are (probably) different people.

E.G. Individual level exposures

National Travel Survey	Health Survey for England
Trips	
	Non-travel physical activity
Age, sex, socio-economic status, geographic region, walking	

We also use Spatial Microsimulation



Simulated average freqency of cake consumption (times/wk)

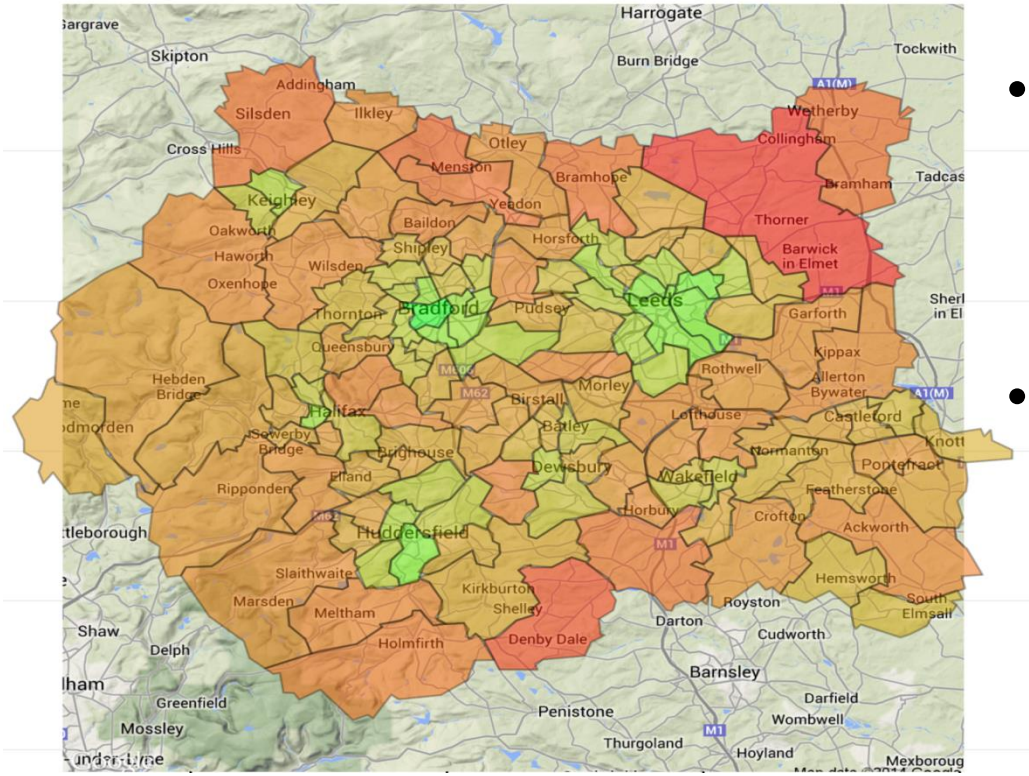
3.6

3.4

3.2

3.0

Spatial Microsimulation (SMS)



- The point of SMS is to provide a dataset of synthetic individuals at small area level.
- Usually this combines an aggregate data set (Census) with local data & a survey with individual data from a wider area.

What determines health impacts of cycling?

Key point 1: Travel Survey Data is Health Exposure Data

National Travel Survey (NTS)

- Recognise NTS as a valuable source of physical activity information.
- The detailed diary format is likely to mean that for transport activity it is more accurate than Health Survey for England (HSE)
- The collecting data over 1 week means intra-individual variation is captured much better than in most countries which only do 1 day diaries.

Key point 2: NTS could be improved by..

- Objective validation on subsample.
- Longitudinal follow-up of a subsample (as in Germany)
  - would provide strong complement to Understanding Society (which only captures commute on one day) & Census micro panel
- Duplication of questions on subsample to calibrate matching with other datasets e.g. HSE

Key point 3: NTS could be improved by part 2

- NTS is not powered to answer questions at city (or even metropolitan level)
- Therefore, lots of organisations end up doing additional city or regional level household travel surveys.
- However, these are usually not done as well and are not publicly available in same way at National Travel Survey.
  - Often hard to even find they exist!
- In addition to travel surveys household attitudinal surveys are often collected with some travel info.

Key point 4: Flexibly combining local & national

- Develop a mechanism for building on NTS with regional top ups (paid for locally- as they do in USA)
- This could substantially improve quality and access.
- If such a scheme was done flexibly it could be used to **evaluate environmental changes**.
- National surveys are almost always not dense enough to estimate effects based on local changes but if a flexible model is developed then the infrastructure could be in place to do this.

Key Travel Data Sets: Physical Activity

- National Travel Survey + local surveys
- Understanding Society (BHPS)- can offer some power at local level but commuting on one day only
- Census: powerful at small area level but only every 10 years & only cross-tabbed data available for most purposes
- Health Survey for England: useful for physical activity but merges all types of walking (questions on activity & in last month & intensity are hard to answer accurately)
- Active people survey: some power at local level- sports focused but some travel questions

ACKNOWLEDGEMENT

This work was undertaken by the Centre for Diet and Activity Research (CEDAR), a UKCRC Public Health Research Centre of Excellence.

Dr James Woodcock is an MRC Population Health Science Fellow

Funding from Cancer Research UK, the British Heart Foundation, the Economic and Social Research Council, the Medical Research Council, the National Institute for Health Research, and the Wellcome Trust, under the auspices of the UK Clinical Research Collaboration, is gratefully acknowledged.