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Effectiveness and equity impacts of town-wide cycling initiatives in England: a longitudinal, controlled natural experimental study

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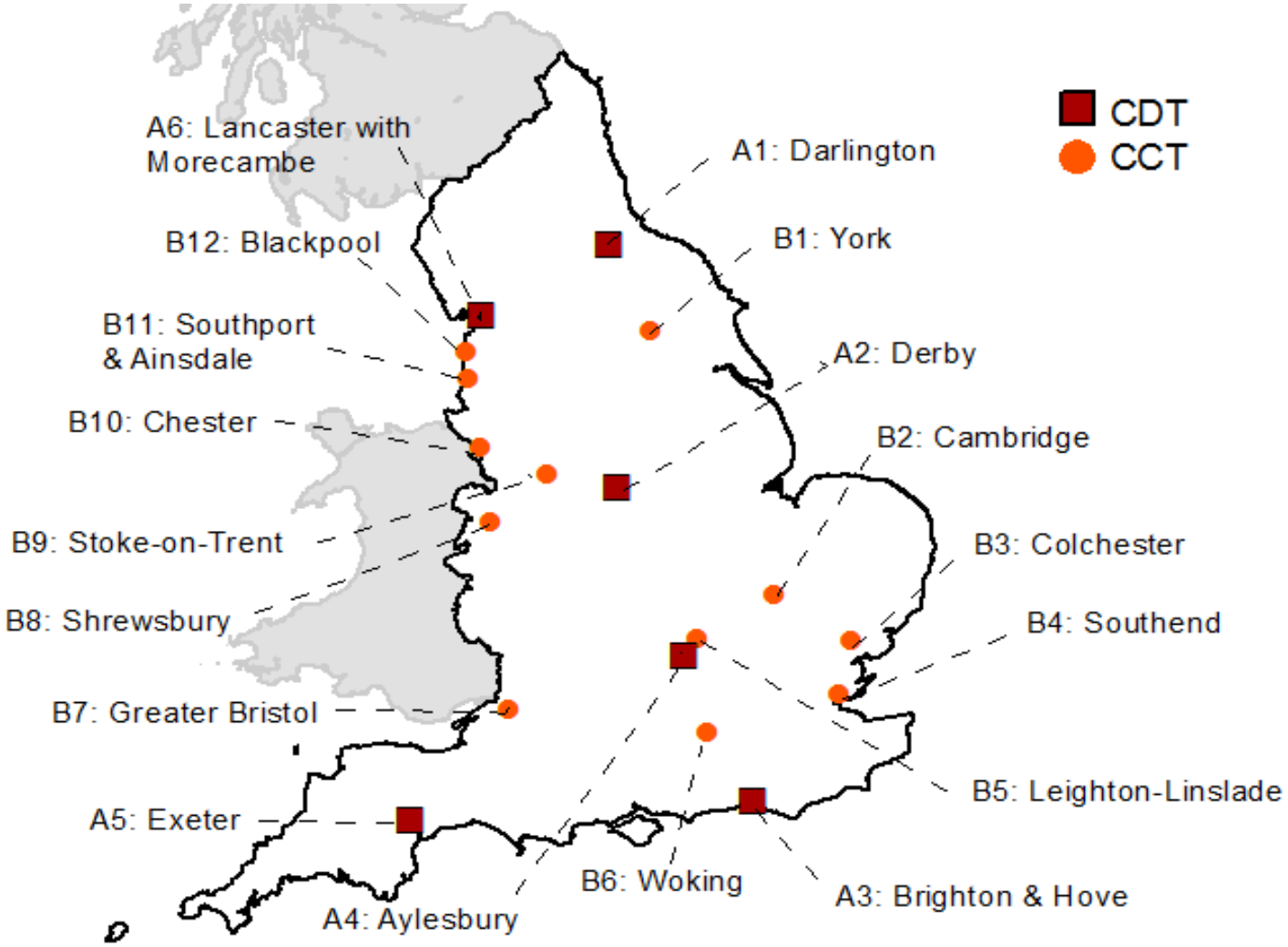
Cycling towns programme



CDT = 'Cycling Demonstration Towns', funded 2005-2011
CCT = 'Cycling Cities and Towns', funded 2008-2011

Cycling towns programme

- Town-level initiatives aiming to ‘get more people cycling, more safely, more often’.

- 18 towns increased cycling spending to an average of around £15 per person per year, for three to six years
  - Much higher than the average of £1 per person per year for England as a whole, and comparable to many high-cycling European cities.

Cycling towns programme

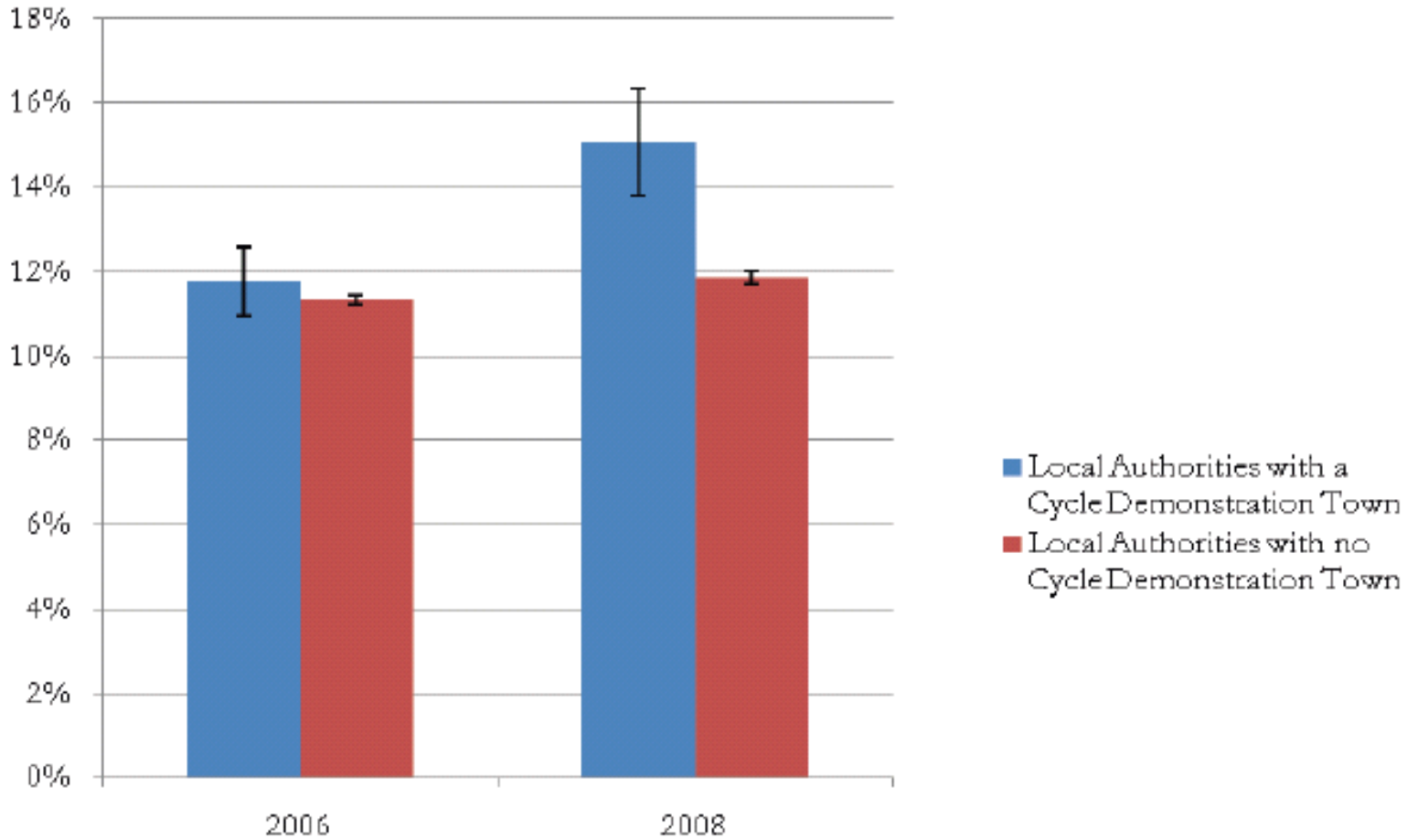
- Each town designed a tailored programme of interventions, involving mixtures of capital investment (e.g. cycle lanes) and revenue investment (e.g. cycle training). Average capital:revenue ratio of 3:1.

- Tried to take a 'whole town' approach. Emphasis often on one of 5 themes:
  1. General infrastructure improvements
  2. Cycling to work
  3. Cycling to schools/colleges
  4. Cycling to stations
  5. Targeting specific areas/groups (e.g. deprived areas).

Analysis and synthesis of evidence on the effects of investment in six Cycling Demonstration Towns
November 2009

Sloman et al., DfT and Cycling England 2009

Figure 6: Proportion reporting cycling for at least 30 minutes, once or more per month (CDT local authorities compared to all other local authority areas)



Source: Active People Survey. 2006 total n= approximately 1,000 per local authority; 2008 total n=approximately 500 per local authority

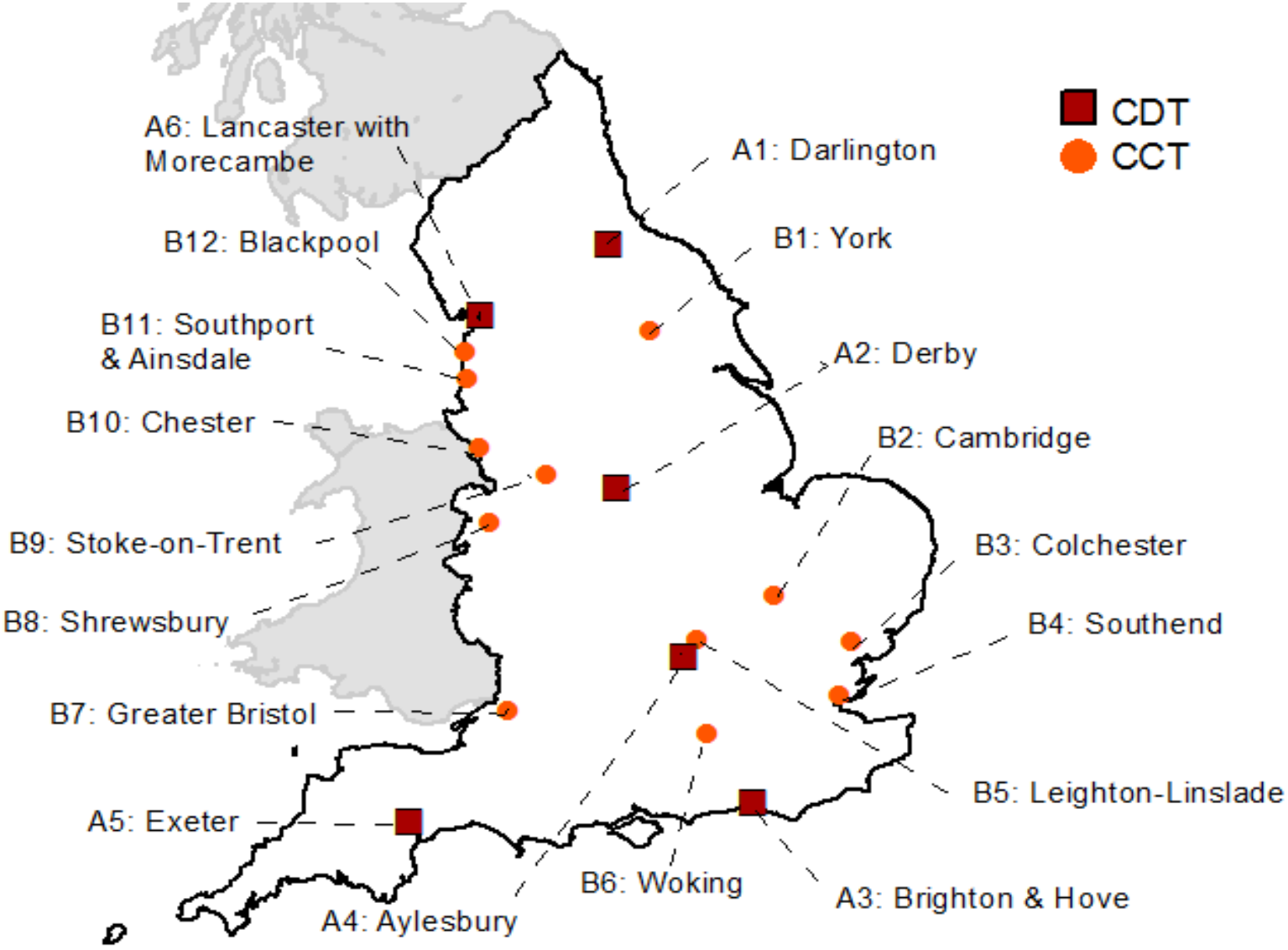
Sloman et al., DfT and Cycling England 2009

Aims

- To examine whether the prevalence of cycling to work increased in intervention towns relative to matched comparison towns.

- And to examine:

  1. Whether effects differed by deprivation.
  2. Changes in walking and driving to work.
  3. Whether effects differed between towns.



CDT = 'Cycling Demonstration Towns', funded 2005-2011
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Selection of controls

- **Primary comparator**

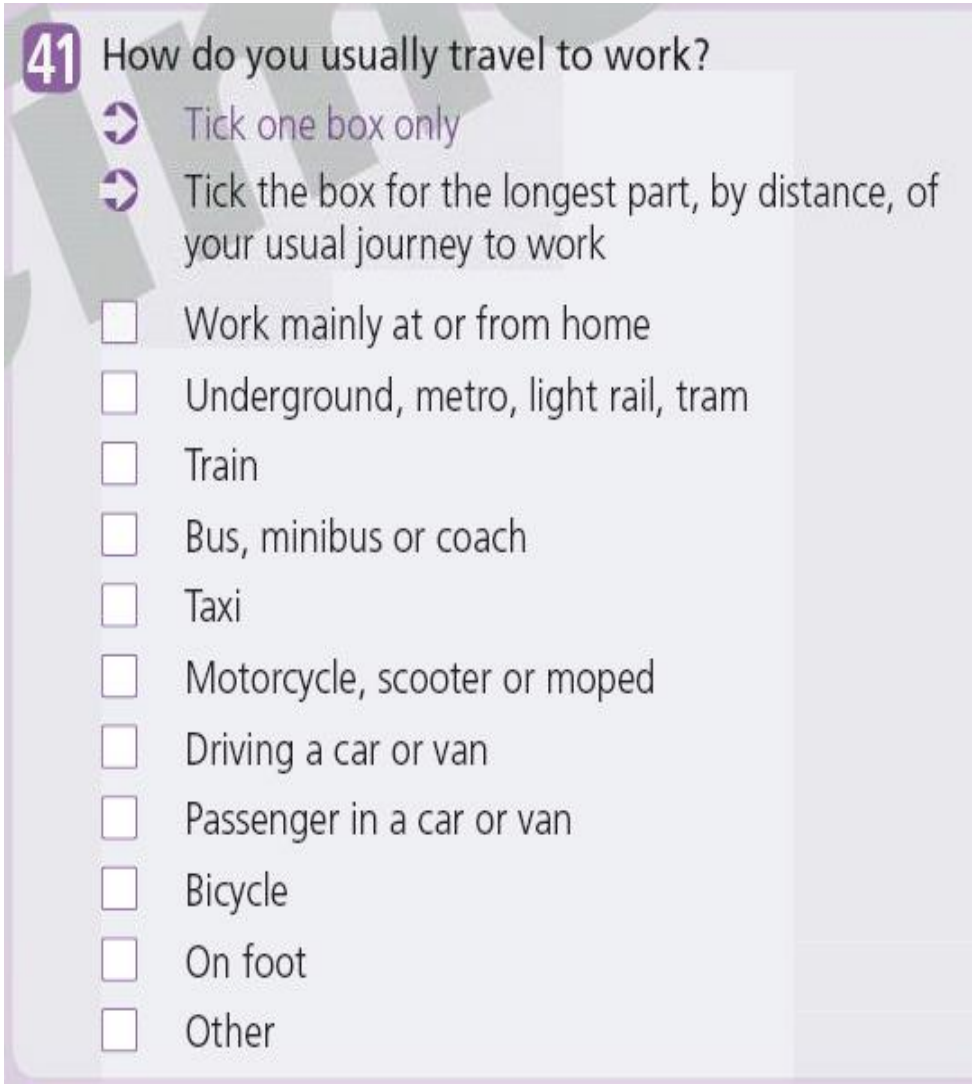
  Matched towns (‘most similar local authority’)

- **Secondary comparators**

  1. Unfunded towns
  2. National (all towns in England except London)

Outcomes derived from Census data

Prevalence of cycling as usual mode of travel to work among all adults aged 16-74 with a current job and not working at home



Approach to analysis

- Before-and-after controlled design, 2001-2011
  - 'Difference in differences' (absolute)

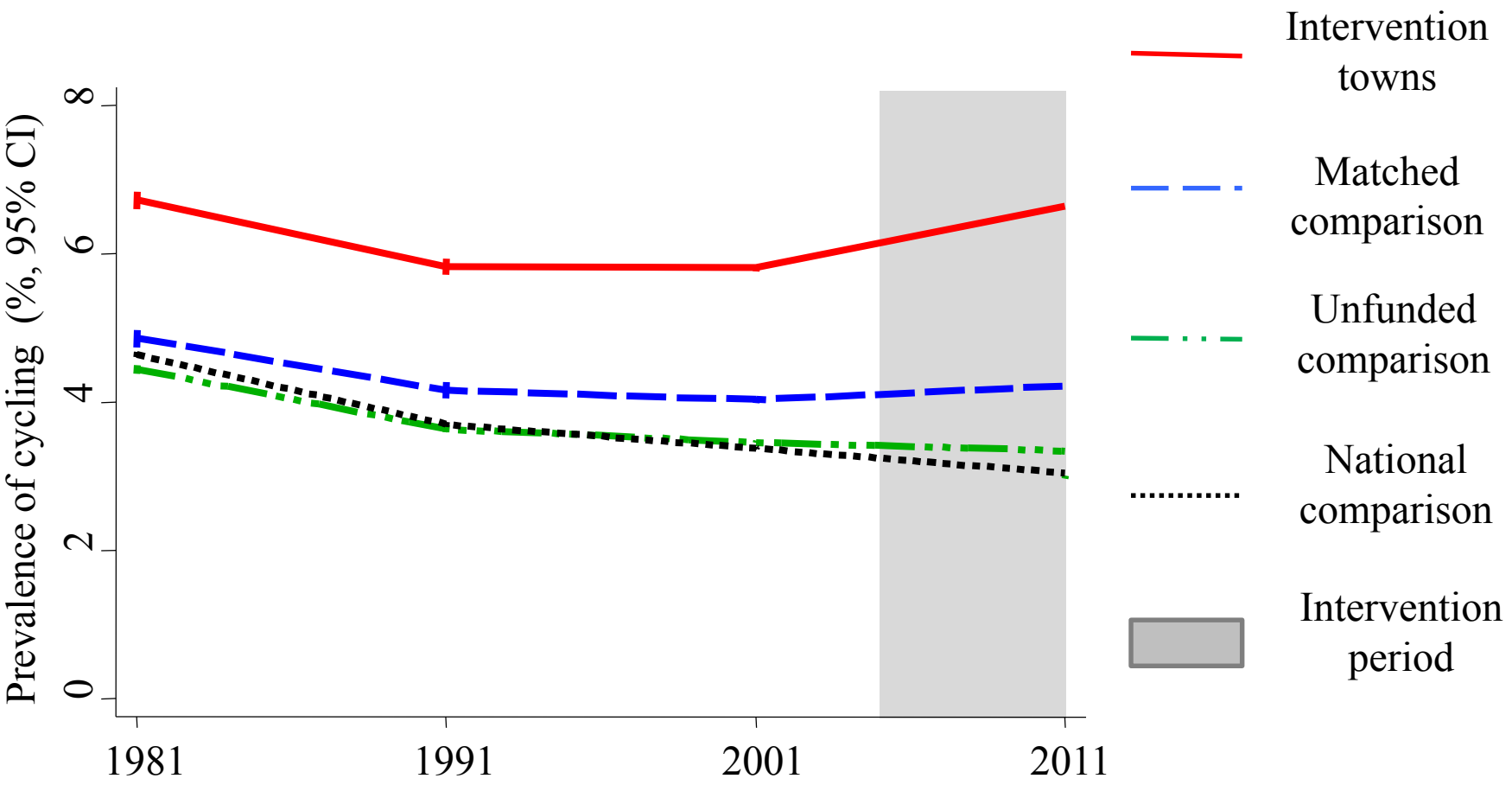
$$\text{Change in intervention towns} - \text{Change in comparison towns}$$

  - 'Ratio of ratios' (relative)

$$\frac{\text{Change in intervention towns}}{\text{Change in comparison towns}}$$

- Random-effects meta-analysis

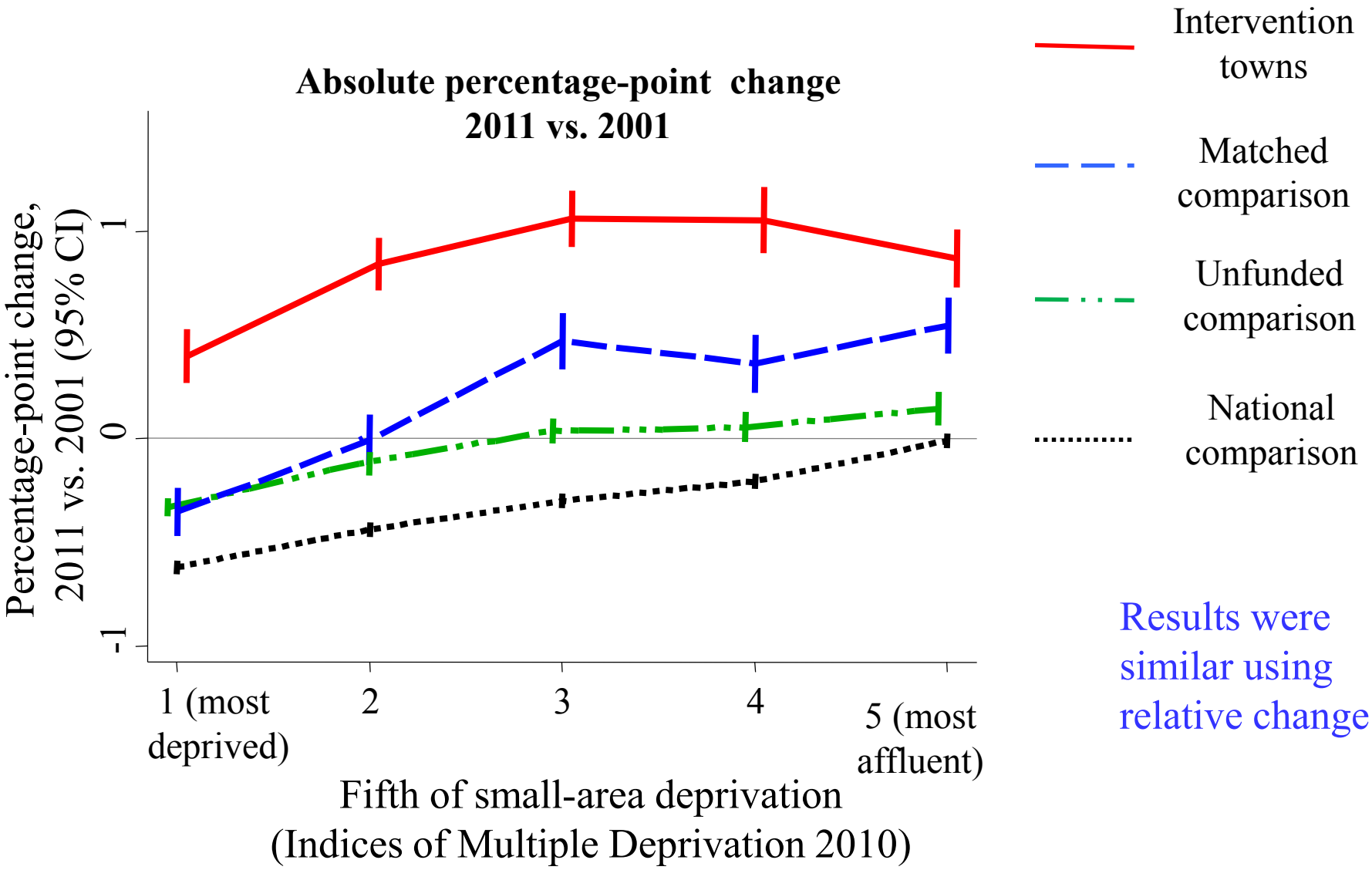
Cycling



Diff-in-differences relative to matched group: **0.69** (0.60, 0.77)

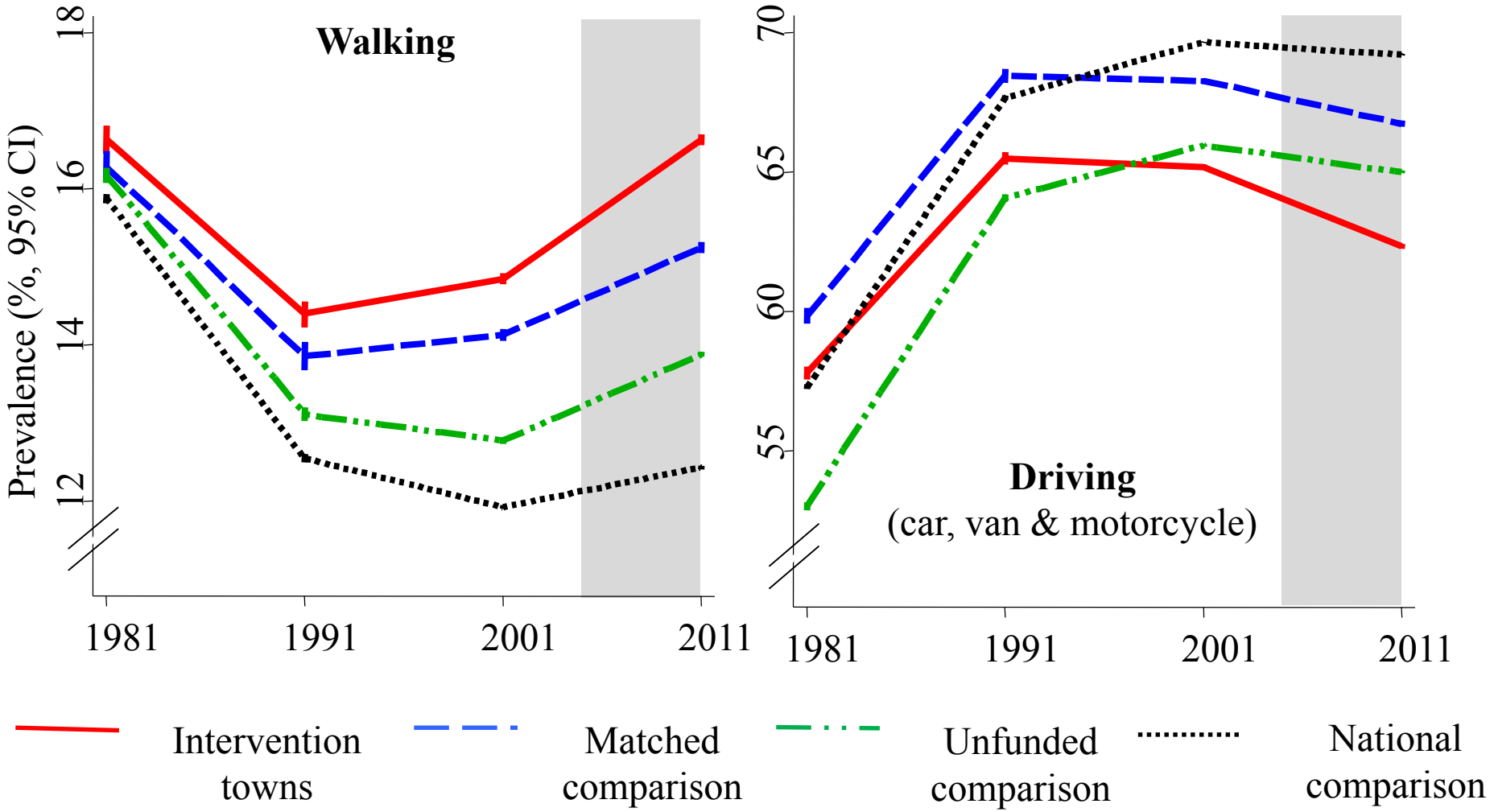
Ratio-of-ratios relative to matched group: **1.09** (1.06, 1.11)

Deprivation

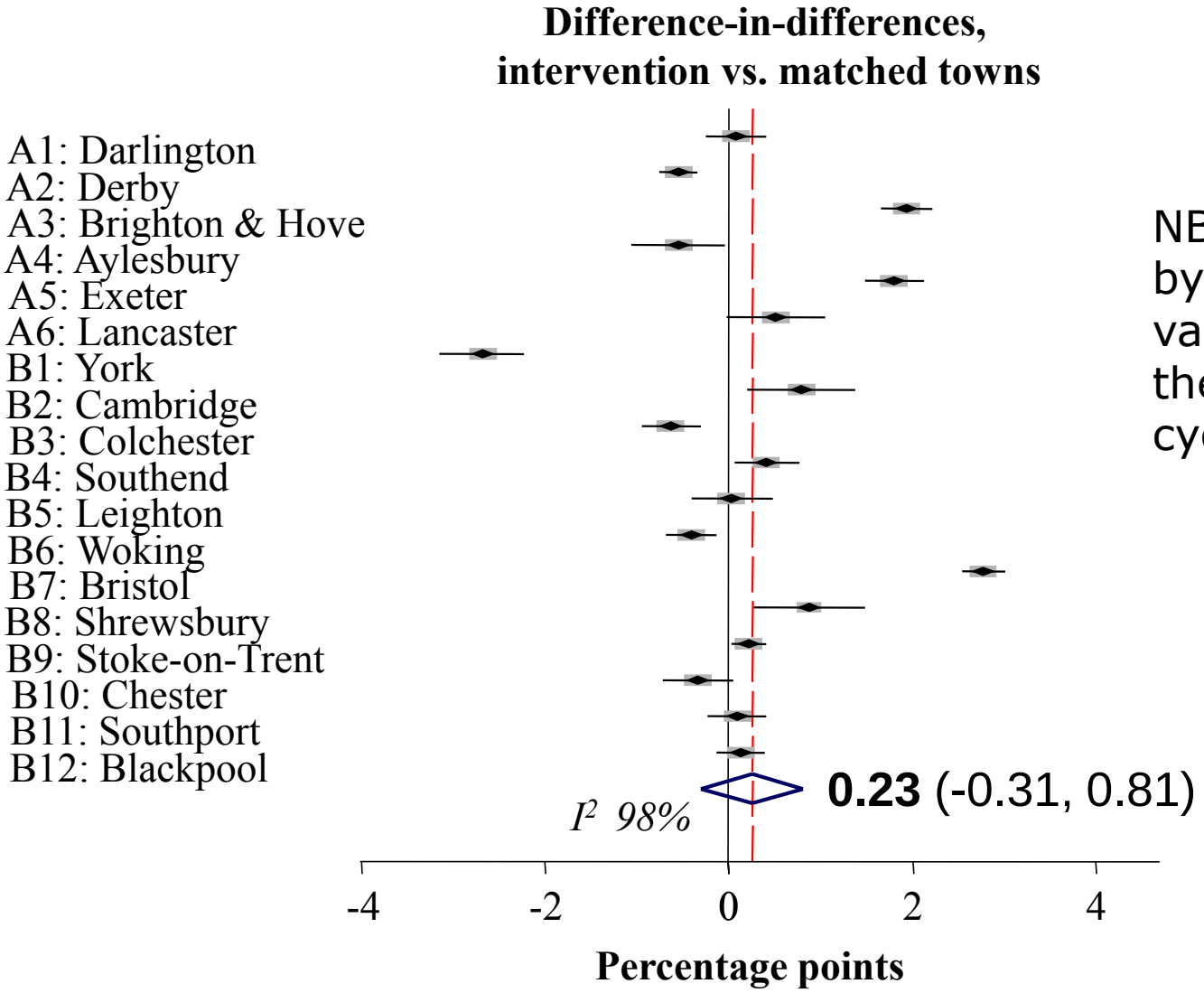


Results were similar using relative change

Walking and driving



Town by town



NB partly explained by fact that towns varied in how much they focussed on cycling to work

Discussion

- **Positive effects overall**
  - Cycling to work increased relative to comparison towns
  - Larger benefits in those living in more deprived areas
  - Cycling rose at the expense of driving, not walking
- **Comparison with previous European studies**
  - Smaller effects in absolute terms
  - Similar effects in relative terms
- **Contributes to the evidence for interventions**

Limitations

- **Are the effects generalisable?**
  - Intervention towns were self-selected
  - Positive *overall* effect was driven by a few large towns
  - Average *town-level* effect was not significant
  - What about non-commuter cycling?

- **How did the effects come about?**
  - Infrastructure vs. soft measures?

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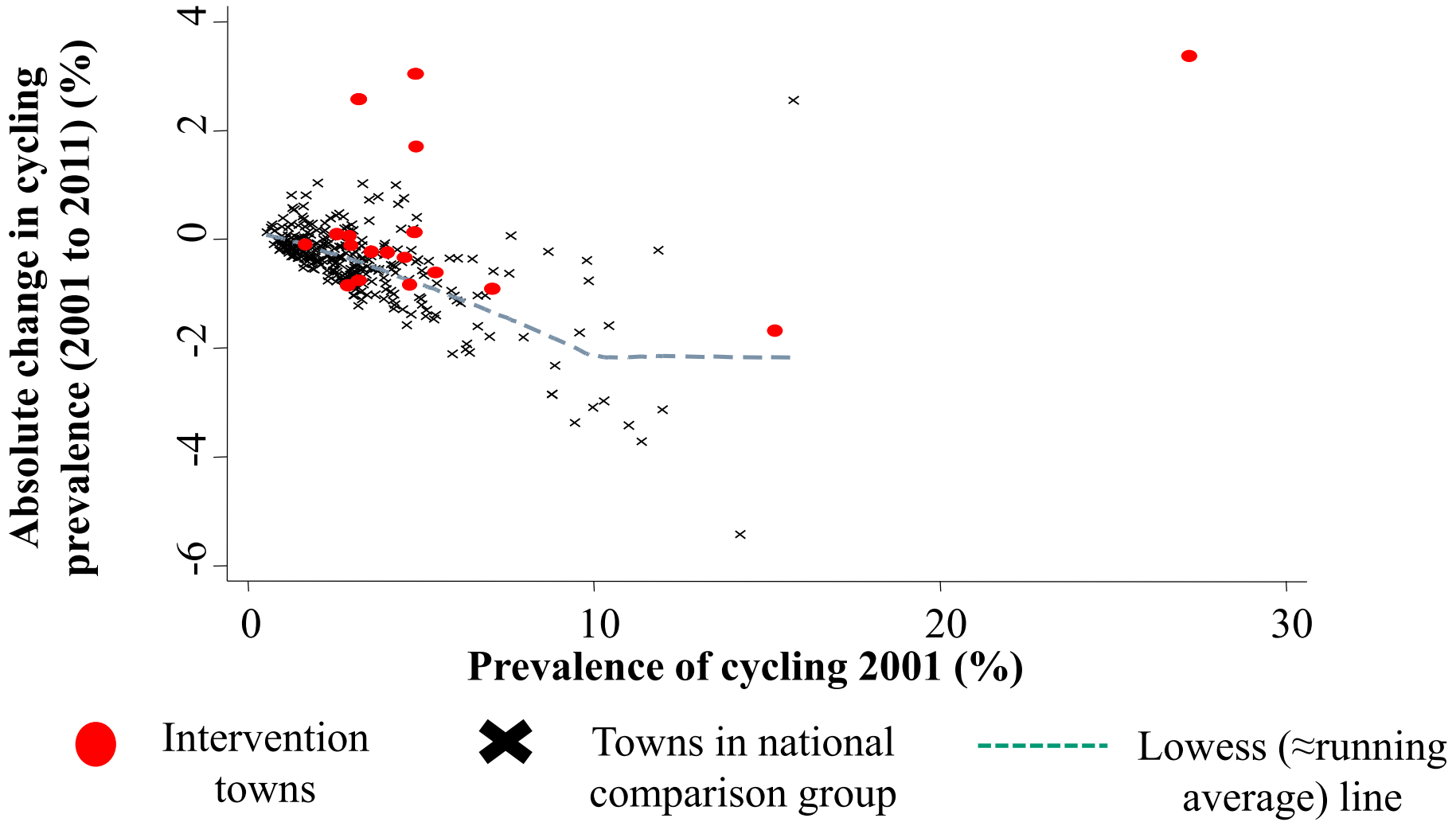
Absolute change in cycling prevalence (2001 to 2011) (%)
4
2
0
-2
-4
-6
0
10
20
30
Prevalence of cycling 2001 (%)
Intervention towns
Towns in national comparison group
Lowess (≈running average) line

Using natural experiments to evaluate population health interventions: new Medical Research Council guidance

Peter Craig,[1] Cyrus Cooper,[2] David Gunnell,[3] Sally Haw,[4] Kenny Lawson,[5] Sally Macintyre,[6] David Ogilvie,[7] Mark Petticrew,[8] Barney Reeves,[9] Matt Sutton,[10] Simon Thompson[11]

Craig et al., *J Epidemiol Community Health* 2012

Interventions to promote cycling: systematic review

Lin Yang, PhD student Shannon Sahlqvist, career development fellow Alison McMinn, career development fellow Simon J Griffin, assistant director David Ogilvie, clinical investigator scientist

Yang et al., *British Medical Journal,* 2010