

Reviewing the co-benefits of active travel: What do we know?

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Transport-related health and environmental effects: at a glance

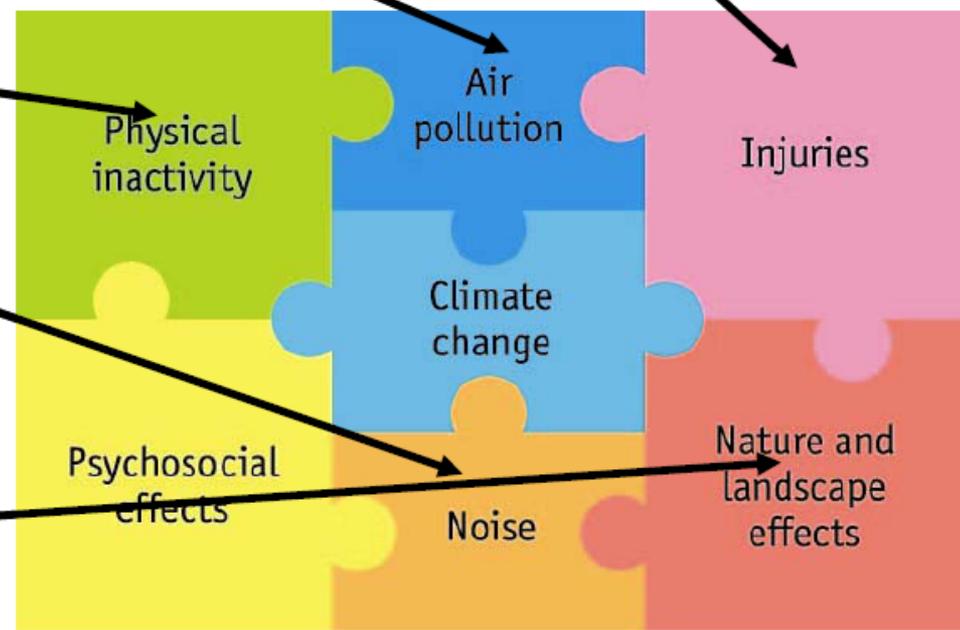
Tens of thousands of premature adult deaths are estimated to occur each year

Physical inactivity is associated to about 1 million deaths/year

At least 1 million healthy life years are lost every year from traffic-related noise in the western part of Europe

The overall land-use of one km of motorway is up to 20 ha.

120,000 deaths and 2.5 million injuries/year



EDITORIAL

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Solving the global climate crisis: the greatest health opportunity of our times?

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Abstract

Today's substantial global health gains are being undermined by the threat of climate change. Ironically, the actions required to confront the climate crisis represent possibly the largest public health opportunity in more than a century. Health benefits from improved air quality may far outweigh the cost of clean energy investments. Upward trends in chronic diseases are now occurring throughout the world. Herein lies even more golden opportunities for public health through the following: first, adopting more alternative modes of transportation, especially those that promote "active transport" by foot or by bicycle, in combination with effective public transportation; and second, by reducing meat in the diet. In essence, there is no better time to focus on health as central in the climate negotiations; and in so doing, may we move faster and further with effective actions on climate change and the subsequent health benefits that will arise from a low-carbon society.

Keywords: Public health, Climate change, Carbon policy, Active transport, Diet, Co-benefits



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John Lauder, Sustrans deputy CEO, 'It is essential that politicians highlight the importance of changing the way people travel when tackling climate change. So we are delighted at Nicola Sturgeon highlighting walking and cycling as a measure to tackle climate change.' Yes & yes.

8:23 AM - 20 Oct 2019

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Co-benefits (of actions to address climate change): A definition

“By linking health, transport and climate change, there has been increasing interest in harnessing interventions that reduce carbon emissions in the transport sector and improve population health. Mitigation policies can potentially avoid the long-term health effects of climate change and affect health determinant such as physical activity in the short term. **The positive effects on health as a result of some mitigation policy options are known as co-benefits.**”

Shaw, et al 2014. Health co-benefits of climate change mitigation policies in the transport sector, *Nature Climate Change Perspective*, | DOI: 10.1038/NCLIMATE2247

The rationale of co-benefits

- ▶ “Theory, common sense and modelling studies suggest that some interventions to mitigate carbon emissions in the transport sector can also have substantial short-term benefits for population health. **Policies that encourage active modes of transportation such as cycling may, for example, increase population physical activity and decrease air pollution, thus reducing the burden of conditions such as some cancers, diabetes, heart disease and dementia.**”
- ▶ Shaw, et al 2014. Health co-benefits of climate change mitigation policies in the transport sector, *Nature Climate Change Perspective*, | DOI: 10.1038/NCLIMATE2247



Health and Climate Change 2

Public health benefits of strategies to reduce greenhouse-gas emissions: urban land transport

James Woodcock, Phil Edwards, Cathryn Tonne, Ben G Armstrong, Olu Ashiru, David Banister, Sean Beevers, Zaid Chalabi, Zohir Chowdhury, Aaron Cohen, Oscar H Franco, Andy Haines, Robin Hickman, Graeme Lindsay, Ishaan Mittal, Dinesh Mohan, Geetam Tiwari, Alistair Woodward,

The societal benefits of even a modest increase in those who are physically active could be large.

This includes carbon reduction, and other potential benefits such as improved academic attainment as a result of increased physical activity time.

However, combination of active travel and lower-emission motor vehicles would give the largest benefits (7439 DALYs in London, 12995 in Delhi), notably from a reduction in the number of years of life lost from ischaemic heart disease (10–19% in London, 11–25% in Delhi). Although uncertainties remain, climate change mitigation in transport should benefit public health substantially. Policies to increase the acceptability, appeal, and safety of active urban travel, and discourage travel in private motor vehicles would provide larger health benefits than would policies that focus solely on lower-emission motor vehicles.

Lancet 2009; 374: 1930–43

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See [Comment](#) pages 1869
and 1870

See [Series](#) page 1917

This is the second in a [Series](#) of
six papers about health and
climate change

Department of Epidemiology
and Population Health

(J Woodcock MSc, P Edwards PhD,
Prof I Roberts PhD) and

Department of Public Health

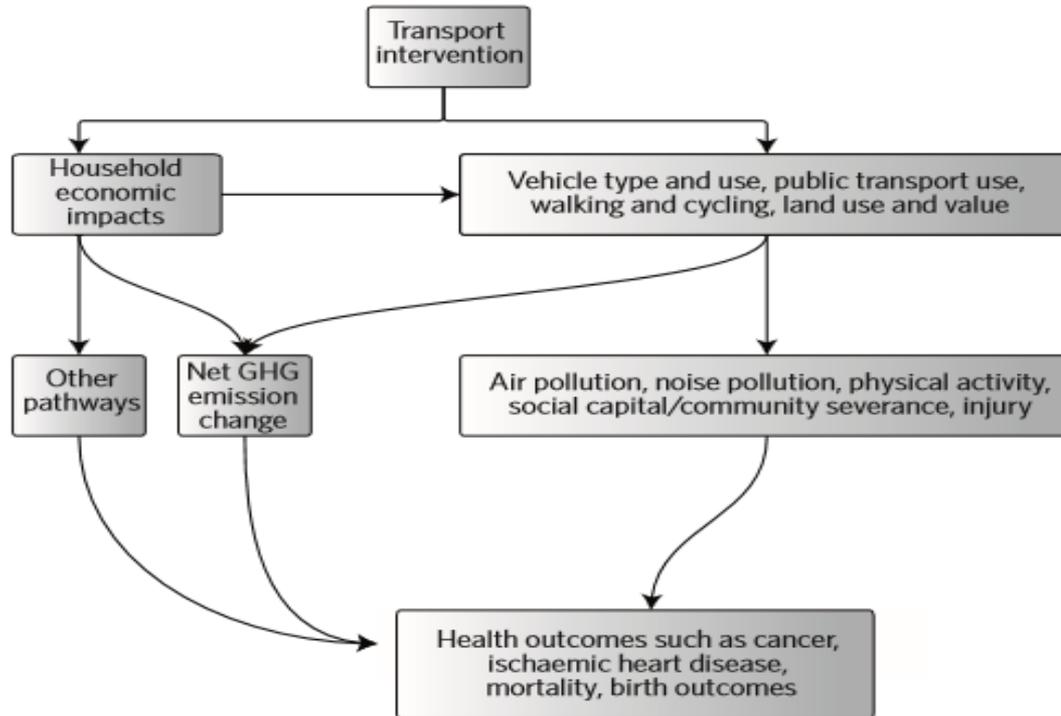


Figure 2 | Theoretical model of pathways from transport interventions to health and GHG emission changes.

Utilising Co-benefits

Issue	Impact of active travel
Traffic congestion	Reduces
Local air quality	Improves
Carbon emissions	Reduces
Road casualties	Reduces
Social cohesion	Improves
Public realm	Improves
Quality of life	Improves

Source: Revised from National Obesity Observatory, 2013 A Briefing for Local Authority Elected Members.
London: Public Health England.



BRISTOL
2015 EUROPEAN
GREEN CAPITAL

**Physical activity
through active travel
Briefing Note:
A best available
opportunity for
enhancing academic
attainment among
school pupils?**

A Summary of the Evidence

Dr Darshana Bhattacharjee, Registrar in Paediatrics and
Public Health, Bristol City Council
Dr Adrian Davis, Public Health support to City Transport,
Bristol City Council (Supervisor)

Next steps

We would recommend the following actions to be taken as a result of the findings outlined in this paper:

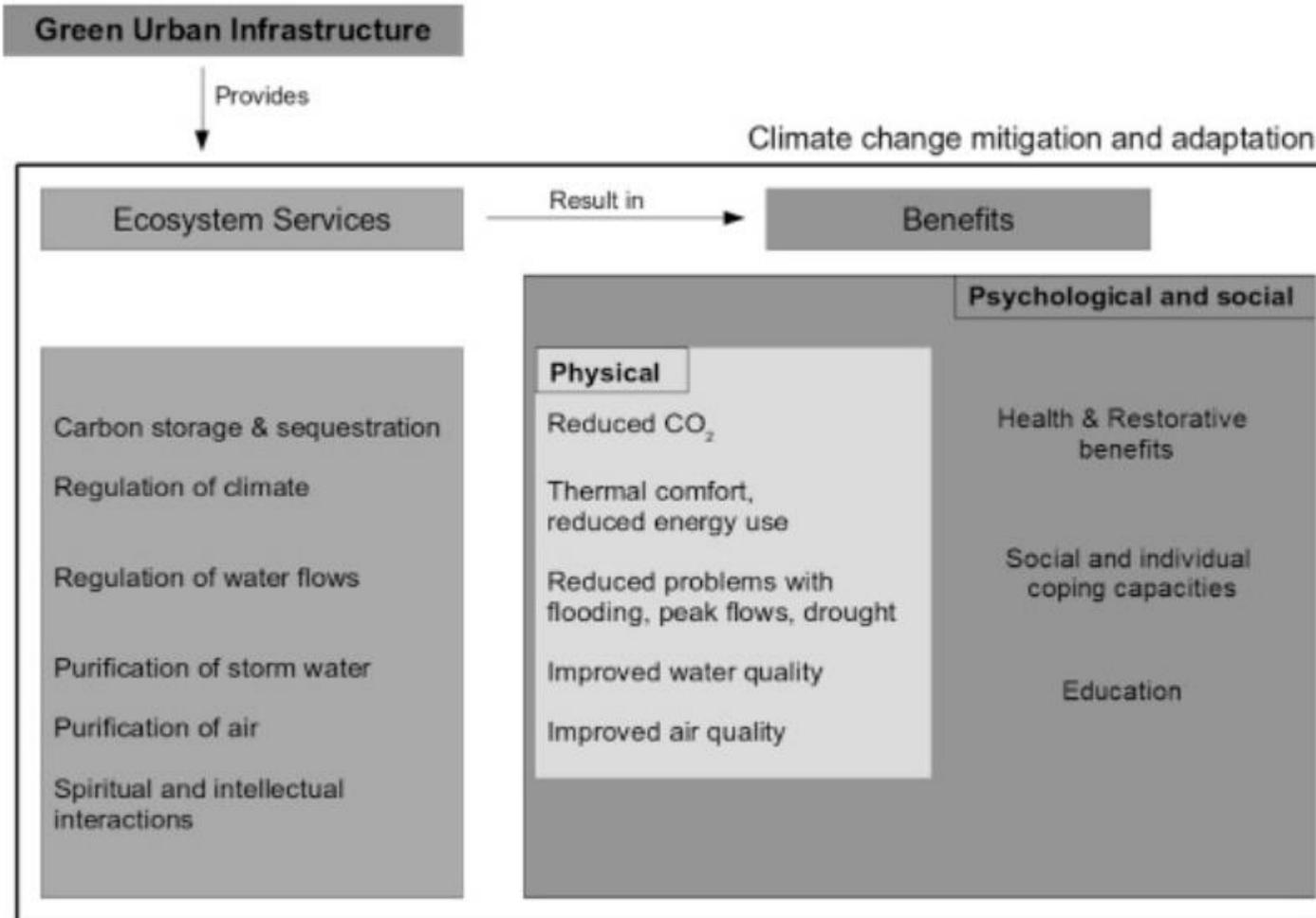
- Further meetings with Transport and Education departments, to include the following key individuals: Service Director for Education & Service Director for Transport
- Presentation of briefing paper to Members meeting, again to include the following key executive members: Councillor Brenda Massey, Assistant Mayor for People Directorate, Councillor Mark Bradshaw, Assistant Mayor for Place Directorate

Other Sectors

- ▶ Present findings provide new information to decision-makers in numerous sectors that could change the perceived benefits of activity-friendly designs. Benefits were found for environmental sustainability, economics, and multiple dimensions of health.
- ▶ Sallis, J. et al, 2015 Co-benefits of designing communities for active living: an exploration of the literature, *Int. J. of Behavioural Nutrition & Physical Activity*, 12:30.

Table 11 Best evidence of environmental features with strong multiple benefits (at least “moderate” evidence of three benefits)

Setting	Built environment attribute	Evidence
Open Spaces/ Parks/Trails	Park presence/ proximity	3 strong, 2 good
	Programs, promotion, and events	4 moderate
Urban Design/ Land Use	Mixed land use	3 strong, 1 moderate (1 strong negative)
	Greenery	3 strong, 2 good
	Streetscale pedestrian design	4 moderate
	Accessibility and street connectivity	1 strong, 2 good, 1 moderate (1 good evidence of negative)
Transportation	Pedestrian/bicycle infrastructure	2 strong, 2 moderate
	Reduced traffic speed and volume	1 strong, 2 moderate
Schools	School siting	1 strong, 2 moderate
	Shared use agreements	3 moderate
Buildings/ Workplaces	Building design	1 strong, 2 good
	Physical activity policies and programs	1 strong, 2 good



Demuzere, M. et al, 2014. Mitigating and adapting to climate change: Multi-functional and multi-scale assessment of green urban infrastructure, Journal of Environmental Management, 146(15).

Monetising co-benefits

- ▶ “The consideration of co-benefits in new market mechanisms or in municipal financial planning are two ways to incorporate the value of co-benefits into low carbon infrastructural decisions and urban planning, which can enable to select those projects in a pipeline that deliver the highest co-benefits.”
- ▶ Rashidi, Stadelmann, Patt, 2017. Valuing co-benefits to make low carbon investments in cities bankable, *Sustainable Cities and Society*, 34: 69-78.



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- EXAMPLE APPLICATIONS
- HEAT USER GUIDE
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Welcome to the Health Economic Assessment Tool (HEAT) for walking and cycling by WHO/Europe

>> [May 2019: Update to HEAT v4.2 with new data input page, several bug fixes, and substantially revised underlying code \(see \[News\]\(#\) for details\).](#) <<

The HEAT tool is designed to enable users without expertise in impact assessment to conduct economic assessments of the health impacts of walking or cycling. The tool is based on the best available evidence and transparent assumptions. It is intended to be simple to use by a wide variety of professionals at both national and local levels. These include primarily transport planners, traffic engineers and special interest groups working on transport, walking, cycling or the environment.

The HEAT estimates the value of reduced mortality that results from specified amounts of walking or cycling, answering the following question:

If x people regularly walk or cycle an amount of y , what is the economic value of the health benefits that occur as a result of the reduction in mortality due to their physical activity?

In addition, HEAT can now also take into account the health effects from road crashes and air pollution, and effects on carbon emissions.

The tool can be used for a number of different assessments, for example:

- **assessment of current (or past) levels of cycling or walking**, e.g. showing what cycling or walking are worth in your city or country.
- **assessment of changes over time**, e.g. comparisons of “before and after” situations, or “scenario A vs. scenario B” (e.g. with or without measures taken).
- **evaluation of new or existing projects, including benefit-cost ratio calculations.**

What kind of results can you produce with your data?

[Examples...](#)



Article

A Cost Benefit Analysis of an Active Travel Intervention with Health and Carbon Emission Reduction Benefits

Ralph Chapman ^{1,2,*} , Michael Keall ^{2,3} , Philippa Howden-Chapman ^{2,3} , Mark Grams ¹, Karen Witten ^{2,4}, Edward Randal ^{2,3}  and Alistair Woodward ^{2,5}

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Abstract: Active travel (walking and cycling) is beneficial for people's health and has many co-benefits, such as reducing motor vehicle congestion and pollution in urban areas. There have been few robust evaluations of active travel, and very few studies have valued health and emissions outcomes. The ACTIVE before-and-after quasi-experimental study estimated the net benefits of health

An NZ study is one of the few cost-benefit studies to date of the results of an intervention already implemented.

- Leaving other benefits aside, health (predominantly) and carbon emission benefits fully justify the investment in active travel.
- Benefit/cost ratios were found to be around 11:1. This ratio was little reduced when we applied a lower price of NZ\$50 for carbon dioxide emissions (the 'social cost of carbon').



■ research article

Health and environmental co-benefits and conflicts of actions to meet UK carbon targets

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Many actions to reduce GHG emissions have wider impacts on health, the economy, and the environment, beyond their role in mitigating climate change. These ancillary impacts can be positive (co-benefits) or negative (conflicts). This article presents the first quantitative review of the wider impacts on health and the environment likely to arise from action to meet the UK's legally-binding carbon budgets. Impacts were assessed for climate measures directed at power generation, energy use in buildings, and industry, transport, and agriculture. The study considered a wide range of health and environmental impacts including air pollution, noise, the upstream impacts of fuel extraction, and the lifestyle benefits of active travel. It was not possible to quantify all impacts, but for those that were monetized the co-benefits of climate action (i.e. excluding climate benefits) significantly outweigh the negative impacts, with a net present value of more than £85 billion from 2008 to 2030. Substantial benefits arise from reduced congestion, pollution, noise, and road accidents as a result of avoided journeys. There is also a large health benefit as a result of increased exercise from walking and cycling instead of driving. Awareness of these benefits could strengthen the case for more ambitious climate mitigation action.

Policy relevance

This article demonstrates that actions to mitigate GHG emissions have significant wider benefits for health and the environment

Co-benefits should be viewed in the context of the wider socio-economic impacts of climate policy including impacts on competitiveness, fuel poverty, energy security, trade, and employment.

Thank you

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