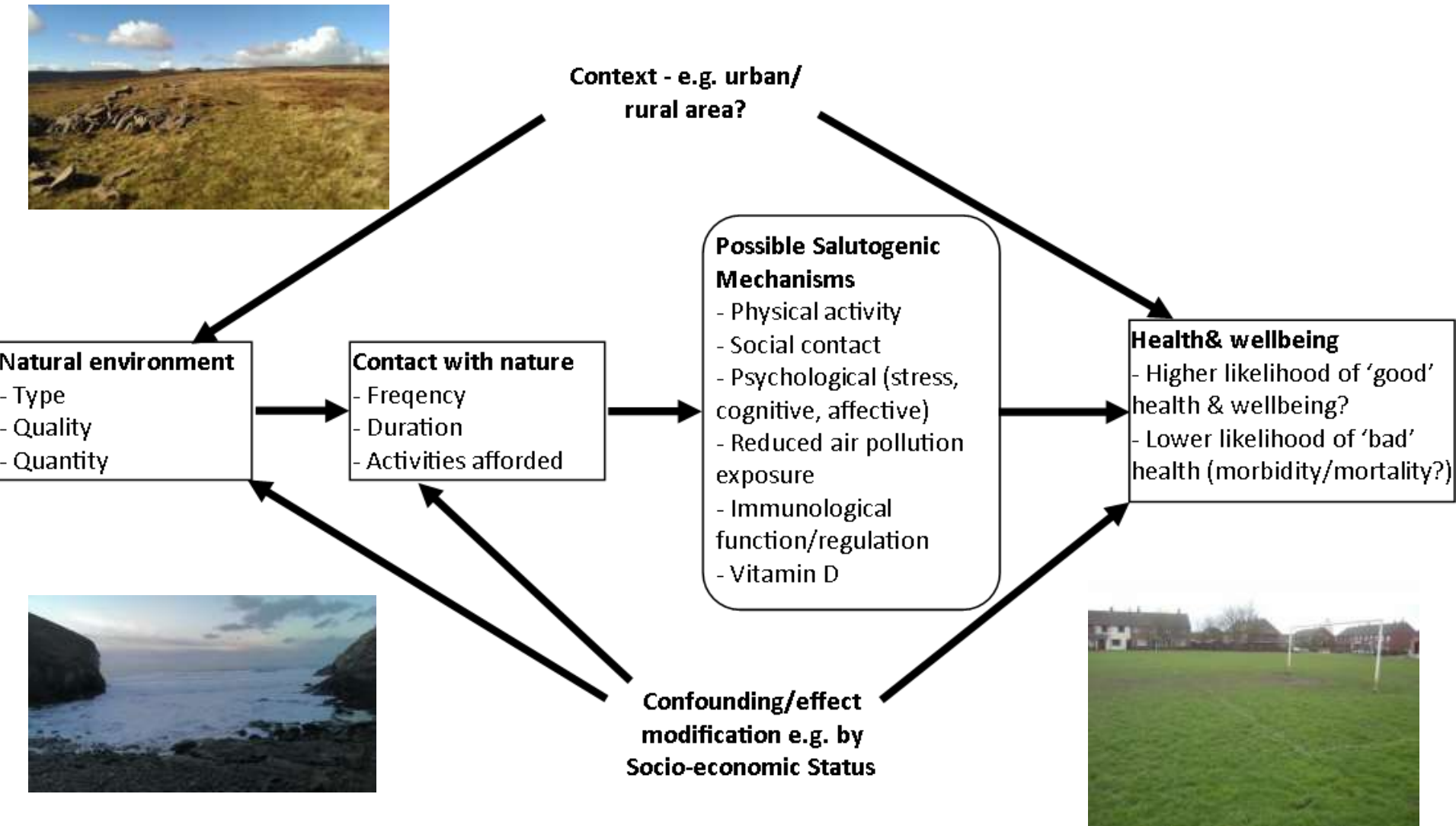


**Are natural environments good  
for your health and wellbeing?  
What does the evidence say, and  
why do we need it?**

**Tywardreath and Par Parish Neighbourhood Plan  
Blue Green Health Workshop 2018**

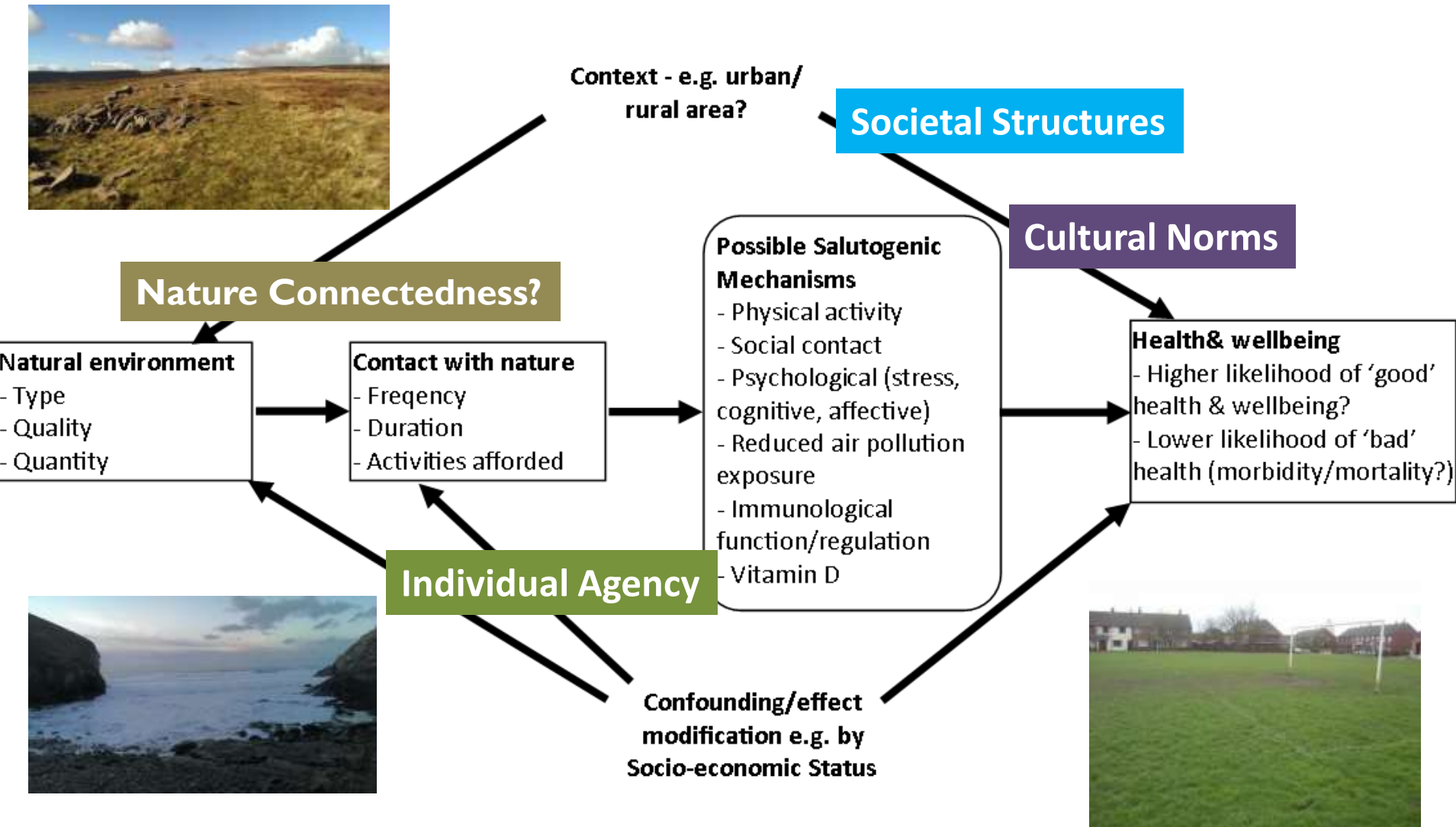
**Ben Wheeler, Senior Research Fellow**

# Nature – Health & Wellbeing Pathways



Adapted from Hartig et al 2014  
Nature & Health. Ann Rev PH

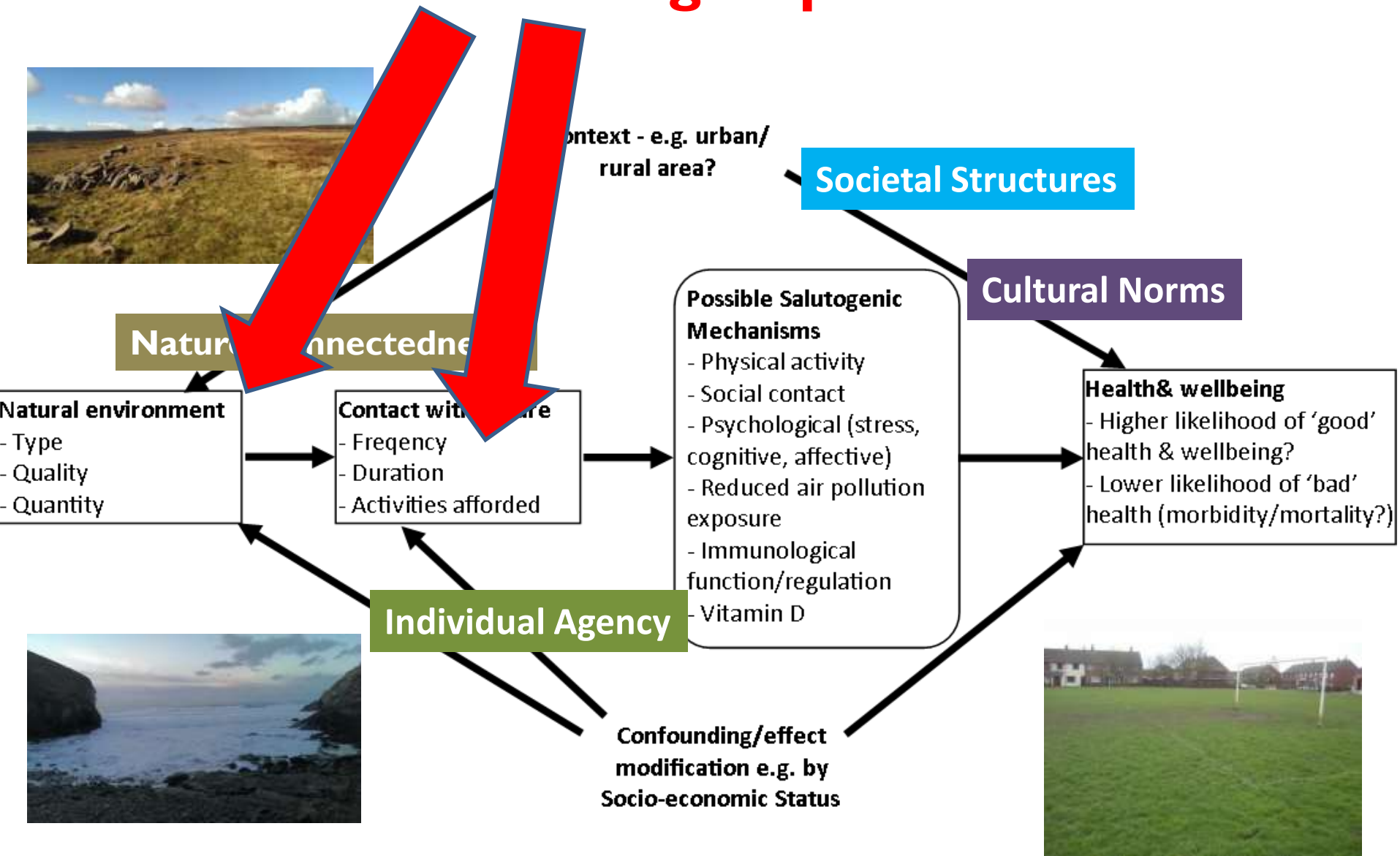
# Nature – Health & Wellbeing Pathways



Adapted from Hartig et al 2014  
Nature & Health. Ann Rev PH



# Planning Impacts?



Adapted from Hartig et al 2014  
Nature & Health. Ann Rev PH

# What do we know?



# Green space, mental health & wellbeing





## British Household Panel Survey (1991-2008)



Each year 5,000 households (n > 10,000) surveyed

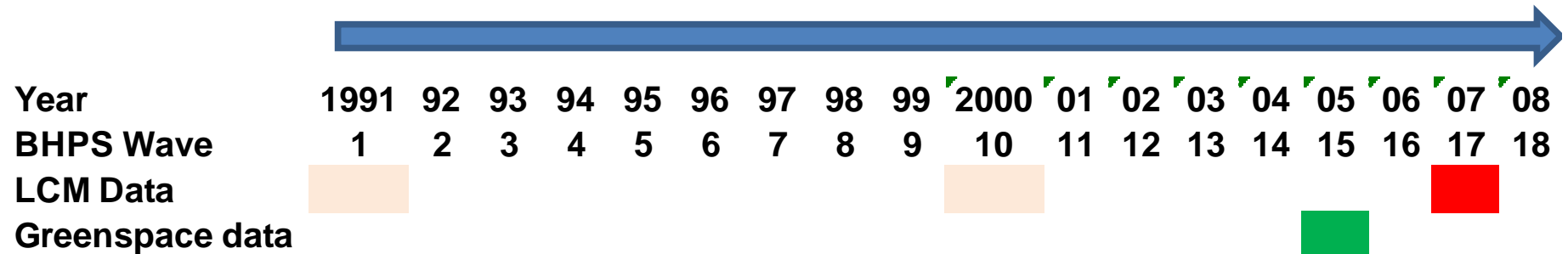
Focused on 84% of households in “urban” areas

Mental Ill-health: General Health Questionnaire (GHQ-12) “Compared to usual how have you been feeling in the last few weeks” e.g. “able to cope”, “stressed”. The higher the score, the higher the mental distress.

Subjective well-being: Life Satisfaction (LS): “How dissatisfied or satisfied are you with your life overall?” with responses ranging from 1 (Not satisfied at all) to 7 (Completely satisfied).

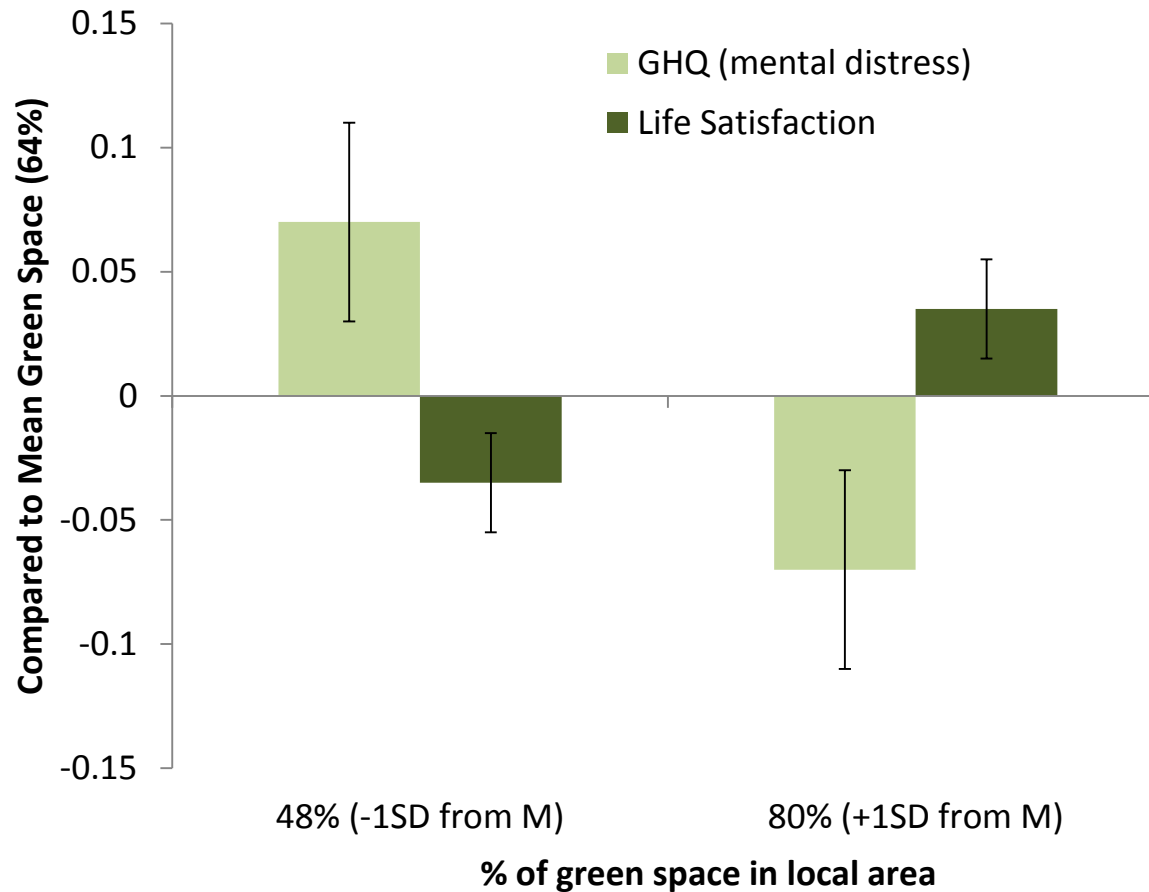
$$r_{(\text{GHQ/LS})} = -.50$$

## British Household Panel Survey (1991-2008)



- Do people report better mental health in years when they live in greener urban areas?





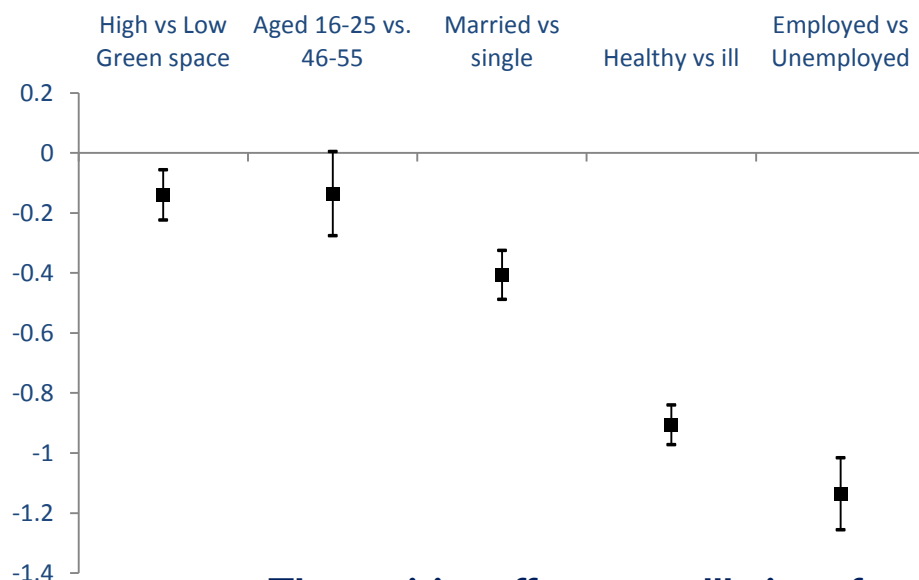
**People reported lower mental distress and higher life satisfaction in years when they lived in greener urban areas**

**Controlling for: individual age, income, education, health, employment status, marital status, children, commute, house type, house size and area level Income, Employment, Education, Crime,**

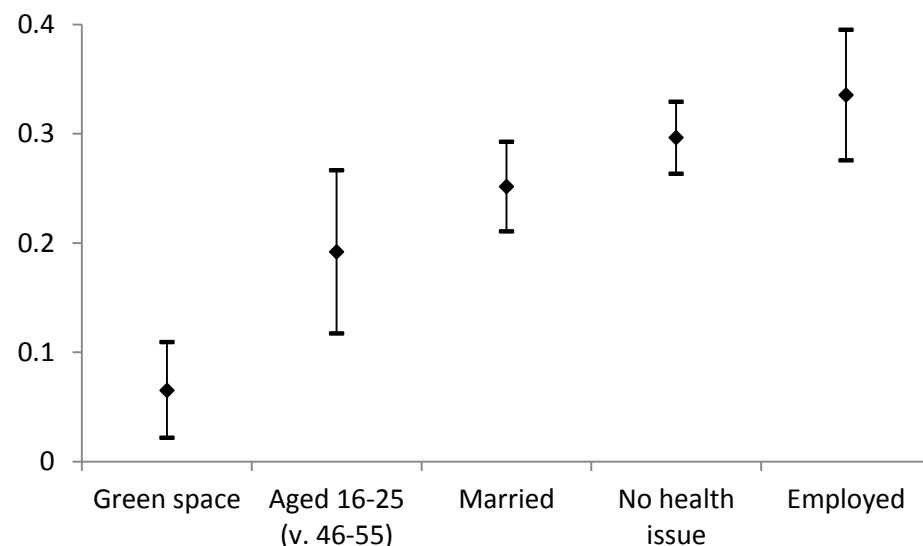
## British Household Panel Survey (1991-2008; 27,284 Urban LSOA)

Modelling the impact of moving from an LSOA  $ISD < M$  Green cover (48%) to one  $ISD > M$  green cover (81%)

Mental well-being (Inverse GHQ: 1-12)  
(N = 12,818; Obs = 87,573)



Life Satisfaction (1-7)  
(N = 10,168; Obs = 56,574)



**The positive effect on wellbeing of moving to a much greener urban area was about:**  
**1/3 the positive impact of being married vs single**  
**1/6 the positive effect of not having a limiting long standing illness**  
**1/10 the positive effect of having a job vs being unemployed**

# What about 'blue space'?

## Evidence on coastal environments





# CONVALESCENCE ON THE COAST\*

BY R. FORTESCUE FOX, M.D., F.R.C.P.

AND

WYNDHAM E. B. LLOYD, M.R.C.S., D.P.H.

THE value of medical treatment on the coast was first seriously brought to the notice of the profession by Dr. Richard Russell of London in 1750.<sup>1</sup> Mainly as a result of his advocacy and that of Drs. Lettsom and Fothergill, the practice of sea-bathing was established in England before the end of the century at many seaside resorts. The Royal Seabathing Infirmary at Margate, foun



Margate Sea Bathing Hospital

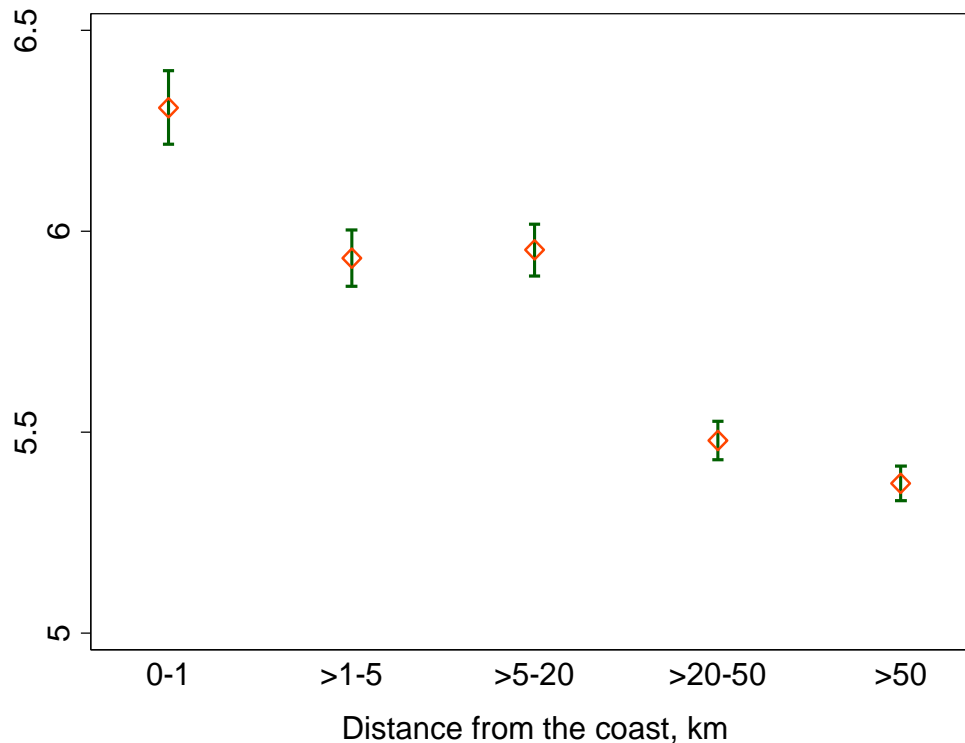


## STIMULANT AND SEDATIVE MARINE CLIMATES

A broad distinction must be drawn between the medical values of the east and west coasts. On the eastern aspect of the British Islands the climate as a whole is stimulant or tonic; in the south-west and west it is sedative. The physiological reactions of these two forms of climate have been roughly and generally described as *accelerating* in the east, that is to say stimulating and increasing metabolism, circulation, and nervous energy, and *retarding* in the west, that is to say slowing the various vital processes and so economising the energy of the body.



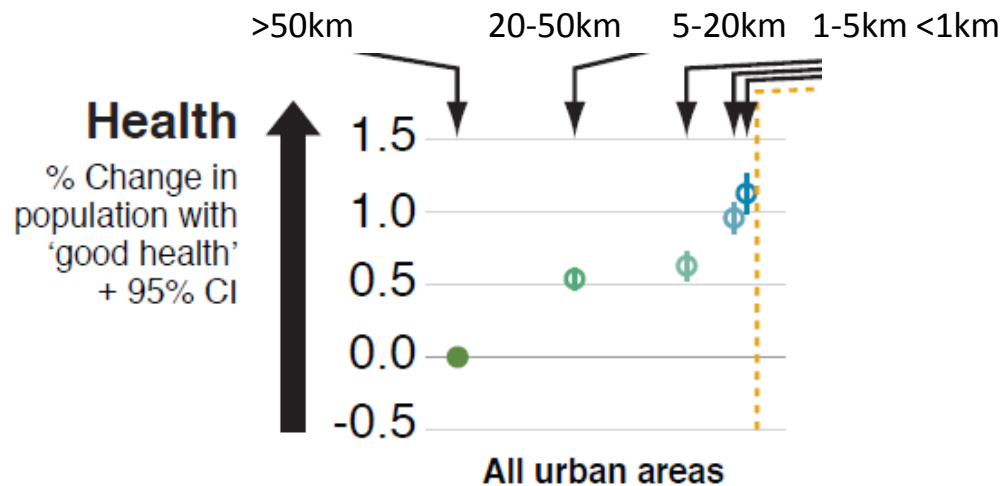
# Health of coastal populations



- Looking at raw data on population health (from the Census 2011 for England)
- Coastal populations are more likely to report bad health
- But – we know that coastal populations are:
  - Older
  - More likely to experience socio-economic deprivation

Depledge, M., Lovell, R., Wheeler, B., Morrissey, K., White, M., Fleming, L., 2017. Future of the Sea: Health and Wellbeing of Coastal Communities. London: Gov Office for Science

# Health at the coast – after accounting for age & socio-economic status



- After we account for age and socio-economic status, coastal populations are healthier than we would expect
- Maybe through pathways such as physical activity and opportunity for rest and relaxation

Adjusted for population age, sex, Indices of Deprivation, greenspace

# BlueHealth

Linking environment, climate & health



BlueHealth is a pan-European research initiative investigating the links between environment, climate and health.

The programme is specifically focused on understanding how water-based environments in towns and cities can affect health and wellbeing.

<https://bluehealth2020.eu/>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 666773.

# What about actual visits to nature?

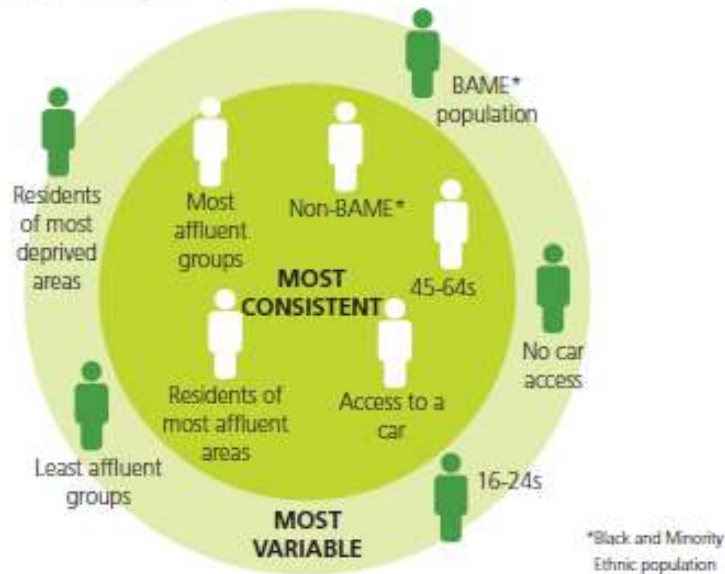




# Monitor of Engagement with the Natural Environment

## VISITS: WHO, WHAT, WHERE?

Visit levels (last 4 years)



\*Black and Minority Ethnic population

Places visited (year 4)



Top 3 specific destinations visited

Parks in towns / cities **25%** of all visits  
Paths/ cycleways / bridleways **16%** of all visits  
Woodlands / forests **13%** of all visits

Top activities undertaken (year 4)



Walking with a dog

1.4 bn  
visits



Walking without a dog

769m  
visits



Playing with children

235m  
visits



Eating/ drinking out

173m  
visits

Any type of walking undertaken on 76% of visits.

Year 4

Countryside:  
walking  
a dog

58%

Coastal  
destinations:  
walking with  
a dog

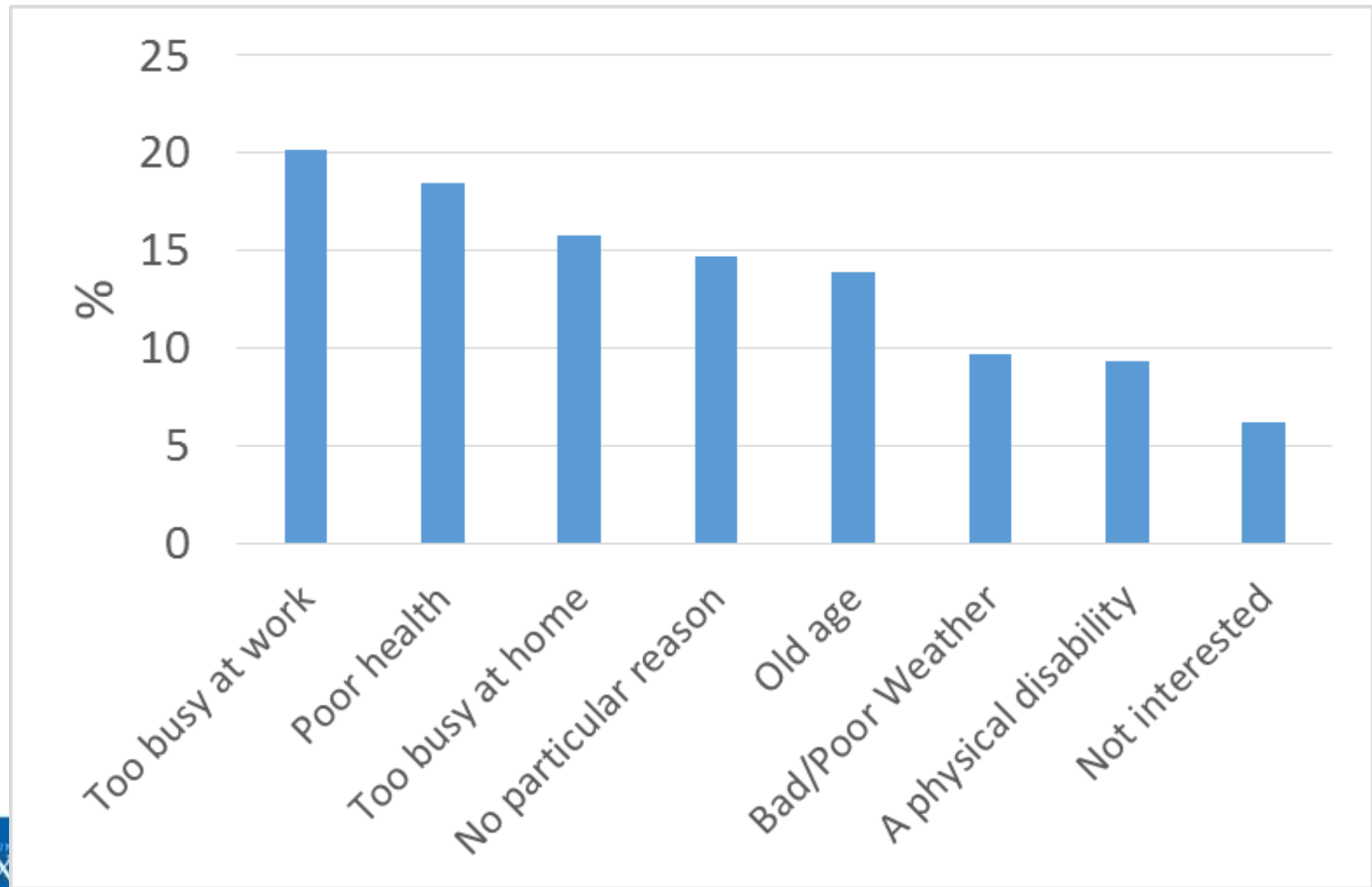
45%

# Who doesn't visit nature (including urban)?

- Survey data (n~60,000)
- a quarter of the population reported visiting natural environments < once a month ('infrequent' visitors)
- Infrequent visitors more likely to be:
  - Female
  - Older
  - In poor health
  - Lower socioeconomic status
  - Ethnic minority
  - Live in relatively deprived areas
  - Reside in areas with less neighbourhood greenspace

# And Why?

- Main reason for not visiting nature



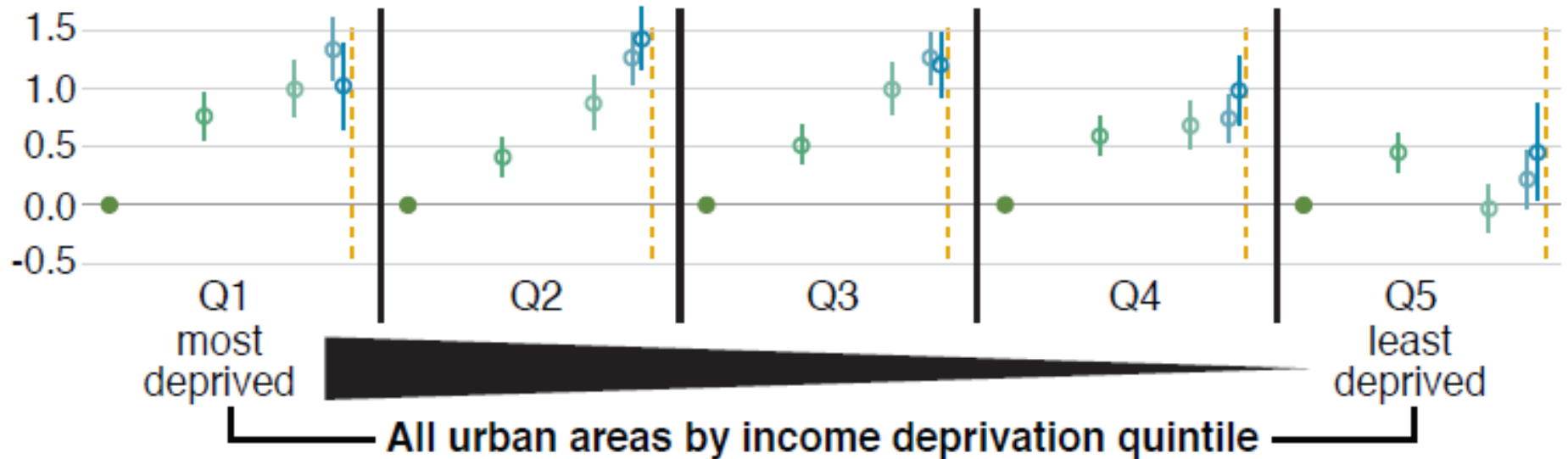
# Green/blue space and health inequality?

- Do good quality environments have the potential to mitigate adverse health impacts of poverty and socio-economic deprivation?



# Health at the coast: is it just the healthy wealthy?

Urban areas only



OLS regression coefficients; all models adjust for age, sex, 5 deprivation domains, and greenspace

**Probably not:** We find the strongest link in the poorest urban areas; in wealthier areas there's almost no evidence of a connection.

# Potential Environmental Risks

- Nature won't be beneficial for everyone – and could be harmful, e.g.
  - Pollen – allergies
  - Ticks and other disease vectors
  - Accidents – injuries, drowning
- Context: wider climate change impacts
- But we need to keep risks in perspective



# What about all the other evidence?

Wheeler et al. International Journal of Health Geographics (2018) 17:186

DOI 10.1186/s12942-018-0009-5

RESEARCH

Open Access

## Beyond greenspace: an ecological study of population general health and indicators of natural environment type and quality

Benedict W Wheeler<sup>1\*</sup>, Rebecca Lovell<sup>1</sup>, Sahran L Higgins<sup>1</sup>, Mathew P White<sup>1</sup>, Ian Alcock<sup>1</sup>, Nicholas Kerryn Husk<sup>2</sup>, Clive E Sabel<sup>3</sup> and Michael H Depledge<sup>1</sup>

**Abstract**

**Background:** Many studies suggest that exposure to natural environments ('greenspace') enhances

Research | Children's Health

## Surrounding Greenness and Pregnancy Outcomes in Four Spanish Birth Cohorts

Payam Dadvandi<sup>1,2,3</sup>, Jordi Sunyer<sup>1,2,3,4</sup>, Xavier Basagaña<sup>1,2,3</sup>, Ferran Ballester<sup>1,2,3</sup>, Aitana Lertxundi<sup>1,2</sup>, Ana Fernández-Somoano<sup>1,2</sup>, Marina Estarlich<sup>1,2</sup>, Raquel Garcia-Esteban<sup>1</sup>, Michelle A. Mendez<sup>5</sup> and Mark J. Nieuwenhuijsen<sup>1,2,3</sup>

<sup>1</sup>Centre for Research in Environmental Epidemiology (CREAL), Barcelona, Spain; <sup>2</sup>IMM (Hospital del Mar Research Institute), Barcelona, Spain; <sup>3</sup>IBER Epidemiology y Salud Pública (IBERESP), Spain; <sup>4</sup>Department of Experimental and Health Sciences, Pompeu Fabra University, Barcelona, Spain; <sup>5</sup>University of Valencia, Valencia, Spain; <sup>6</sup>Center for Public Health Research CSISP, Valencia, Spain; <sup>7</sup>Department of Preventive Medicine and Public Health, (EHU-UPV), University of the Basque Country, Gipuzkoa, Spain; <sup>8</sup>University of Oviedo, Asturias, Spain; <sup>9</sup>Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA

Contents lists available at SciVerse ScienceDirect

**Health & Place**

journal homepage: [www.elsevier.com/locate/healthplace](http://www.elsevier.com/locate/healthplace)

RESEARCH ARTICLE

## The Relationship between Natural Park Usage and Happiness Does Not Hold in a Tropical City-State

Contents lists available at SciVerse ScienceDirect

**Social Science & Medicine**

journal homepage: [www.elsevier.com/locate/socscimed](http://www.elsevier.com/locate/socscimed)

Streetscape greenery and health: Stress, social cohesion and physical activity as mediators

Sjerp de Vries<sup>a,\*</sup>, Sonja M.E. van Dillen<sup>b</sup>, Peter P. Groenewegen<sup>c</sup>, Peter Spreeuwenberg<sup>c</sup>

<sup>a</sup> Alterra/Cultural Geography, Wageningen UR, Wageningen, the Netherlands  
<sup>b</sup> Communication Science, Wageningen University, Wageningen, the Netherlands  
<sup>c</sup> NIVEL (Netherlands Institute for Health Services Research), Utrecht, the Netherlands

Participation in environmental enhancement and conservation activities for health and well-being in adults (Protocol)

Husk K, Lovell R, Cooper C, Garside R

Contents lists available at SciVerse ScienceDirect

**Health & Place**

journal homepage: [www.elsevier.com/locate/healthplace](http://www.elsevier.com/locate/healthplace)

Review article

## Residential green spaces and mortality: A systematic review

Mireia Gascon<sup>a,b,c,d,e</sup>, Margarita Triguero-Mas<sup>b,c,d</sup>, David Martinez<sup>b,c,d</sup>, Payam Dadvandi<sup>b,c,d</sup>, David Rojas-Rueda<sup>b,c,d</sup>, Antoni Plasencia<sup>a</sup>, Mark J. Nieuwenhuijsen<sup>b,c,d</sup>

<sup>a</sup> IGHG, Barcelona City and Health Area (CSG), Hospital Clinic – University of Barcelona, Barcelona, Spain  
<sup>b</sup> IGHG, Barcelona City and Health Area (CSG), Hospital Clinic – University of Barcelona, Barcelona, Spain  
<sup>c</sup> IGHG, Barcelona City and Health Area (CSG), Hospital Clinic – University of Barcelona, Barcelona, Spain  
<sup>d</sup> IGHG, Barcelona City and Health Area (CSG), Hospital Clinic – University of Barcelona, Barcelona, Spain  
<sup>e</sup> IGHG, Barcelona City and Health Area (CSG), Hospital Clinic – University of Barcelona, Barcelona, Spain

Contents lists available at ScienceDirect

**Environment International**

journal homepage: [www.elsevier.com/locate/envint](http://www.elsevier.com/locate/envint)

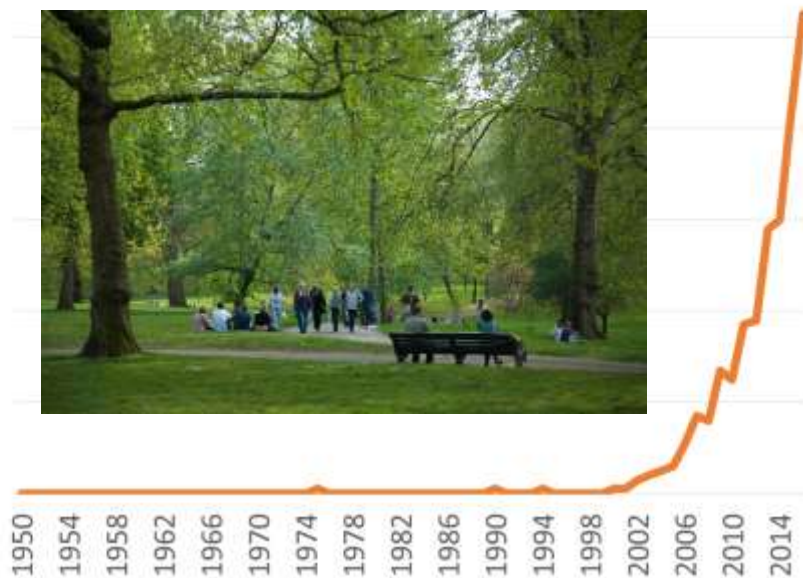
		Quality of evidence	
		Evidence largely from peer-reviewed systematic or non-systematic reviews or meta-analyses	Evidence largely from mixed evidence sources, individual journal articles and reports, or grey literature
<b>Strength and consistency of links between green spaces and human health</b>	<b>Strong evidence</b>	<ul style="list-style-type: none"> <li>• Mental health and wellbeing</li> <li>• Mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Variation between social and demographic groups</li> <li>• Development and maintenance of a healthy immune system and reduction of inflammatory-based diseases</li> </ul>
	<b>Generally positive links</b>	<ul style="list-style-type: none"> <li>• Landscape, ecosystem and city scale linkages</li> <li>• Physical activity (in selected groups)</li> </ul>	<ul style="list-style-type: none"> <li>• Perceived health status</li> <li>• Maternal health, pregnancy outcomes and children's cognitive development</li> <li>• Other physiological outcomes</li> <li>• Social contact and community cohesion</li> </ul>
	<b>Evidence is mixed or unclear</b>	<ul style="list-style-type: none"> <li>• Global ecosystem services, biodiversity and health</li> <li>• Physical activity (at population level)</li> <li>• Obesity</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental quality</li> <li>• The type of natural environment</li> <li>• Dose and responses</li> </ul>

Maxwell, S., Lovell, R., 2017. DEFRA & European Centre for Environment and Human Health: Evidence Statement on the links between natural environments and human health. DEFRA, London.



# How much evidence do we need?

Trend in total Medline citations with "green space" or "greenspace"

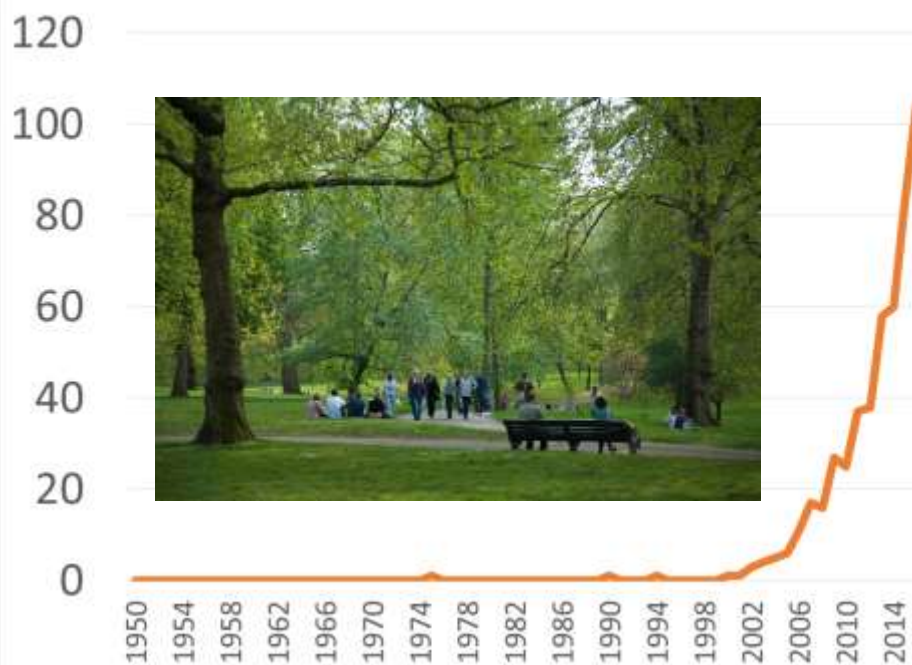


Trend in total Medline citations with "air pollution"

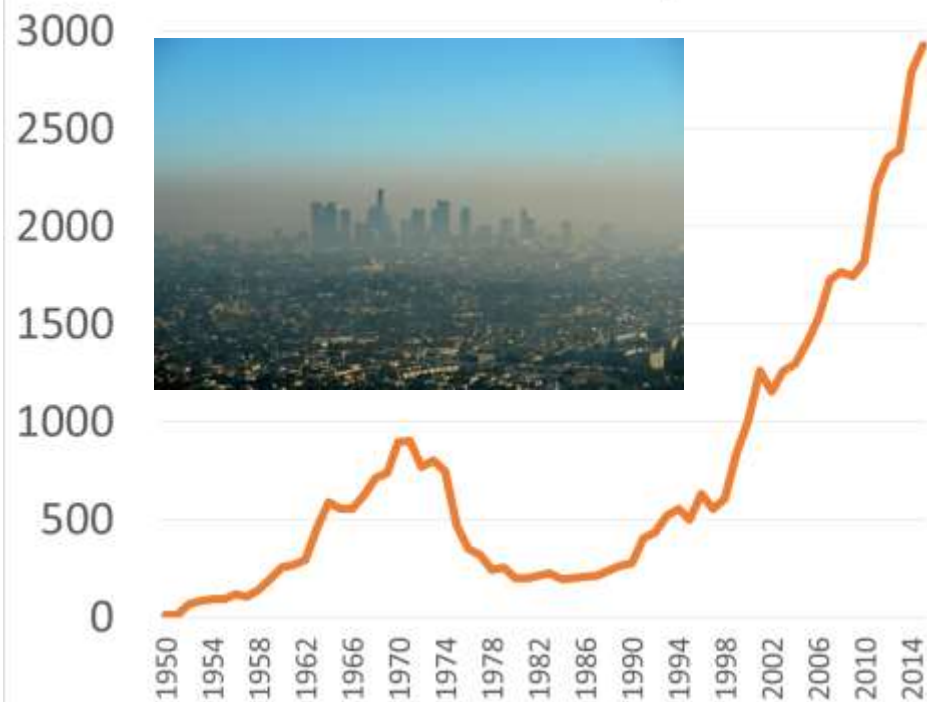


# How much evidence do we need?

Trend in total Medline citations with "green space" or "greenspace"



Trend in total Medline citations with "air pollution"



# Policy & Action – National & International

## DEFRA 25 Year Plan for the Environment

Chapter 3: Connecting people with the environment to improve health and wellbeing.

### *At a glance*

#### **We will:**

- Help people improve their health and wellbeing by using green spaces including through mental health services.
- Encourage children to be close to nature, in and out of school, with particular focus on disadvantaged areas.
- ‘Green’ our towns and cities by creating green infrastructure and planting one million urban trees.
- Make 2019 a year of action for the environment, working with Step Up To Serve and other partners to help children and young people from all backgrounds to engage with nature and improve the environment.

# International Action: Parma Declaration

**Commitment** “...to provide each child by 2020 with access to healthy and safe environments and settings of daily life in which they can walk and cycle to kindergartens and schools, and to **green spaces in which to play and undertake physical activity**”

## WHO 2010: Parma declaration on Environment and Health.

Fifth Ministerial Conference on Environment and Health “Protecting children’s health in a changing environment”. Copenhagen: WHO Regional Office for Europe.





# International Action: Sustainable Development Goals

## SDG 11.7

By 2030, provide universal access to safe, inclusive and accessible, **green and public spaces**, in particular for women and children, older persons and persons with disabilities



# WHO

“The evidence shows that urban green space has health benefits, particularly for economically deprived communities, children, pregnant women and senior citizens. It is therefore essential that all populations have **adequate access to green space**, with particular priority placed on provision for disadvantaged communities”

**WHO, 2016: Urban green spaces and health - a review of evidence**

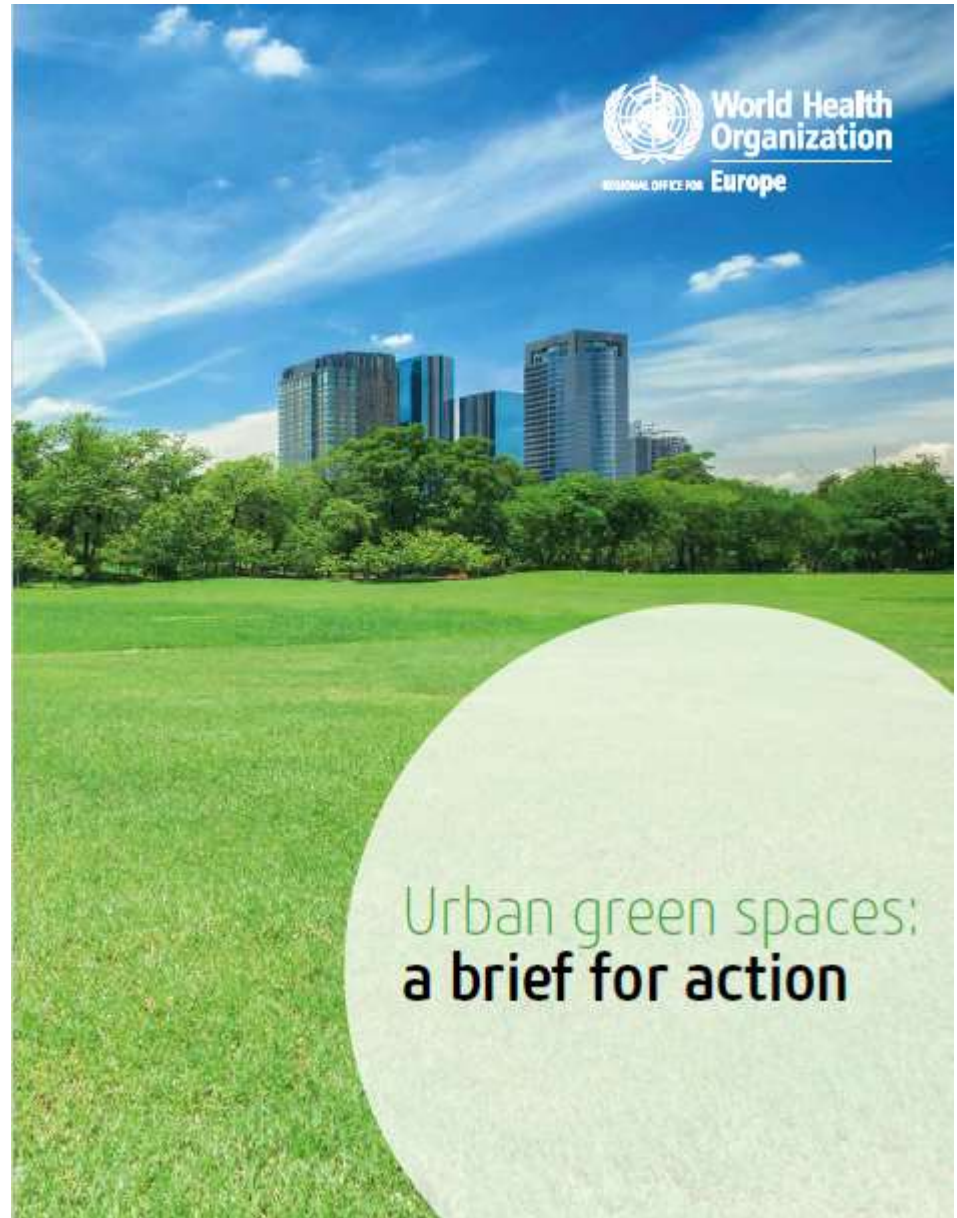


## Urban green spaces and health

*A review of evidence*



# WHO Action Brief



# 6. How to design urban green spaces

 Put the green space **close to people**.

- As a rule of thumb, urban residents should be able to access public green spaces of at least 0.5–1 hectare within 300 metres' linear distance (around 5 minutes' walk) of their homes.

[Amongst a large number of other suggestions]

- Why 300m?
  - it seems 'reasonable' based on the evidence (WHO advisory group)
  - Maybe: Grahn & Stigsdotter 2003. Landscape planning and stress. Urban Forestry & Urban Greening

<http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/publications/2017/urban-green-spaces-a-brief-for-action-2017>



# So, is nature really good for you?

1. There's growing evidence – but still mixed
2. We could be better at considering the complexity of the environment, our interactions with it, mechanisms and health impacts
3. Increasing accessibility and engagement may carry some degree of risk
4. If robust, reliable evidence supports it, can policies and programmes promote and protect both the natural environment and human health?

**Hopefully...**



# Thanks to colleagues

Mike Depledge

Lora Fleming

Mat White

Becca Lovell

Ian Alcock

& the rest of the team

**b.w.wheeler@exeter.ac.uk**

 **@benedictwheeler**

**Beyond Greenspace blog**

**<http://beyondgreenspace.net>**



**BEYOND  
GREENSPACE**

[ABOUT BEYOND GREENSPACE](#)

[LINKS AND RESOURCES](#)

[PROJECT TEAM](#)

# Links & Further Reading

- **WHO Action Brief**

<http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/publications/2017/urban-green-spaces-a-brief-for-action-2017>

- **Beyond Greenspace Site**

<https://beyondgreenspace.net/reports-summaries/>

- Evidence summaries produced for Natural England
- Evidence Report Cards produced with Cornwall Council on Biodiversity, Health and Wellbeing in Cornwall's Public Open Space
- DEFRA & European Centre for Environment and Human Health: Evidence Statement