



Health benefits offered by forests

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UN Sustainable Development Goals and WHO Health 2020 policy for Europe

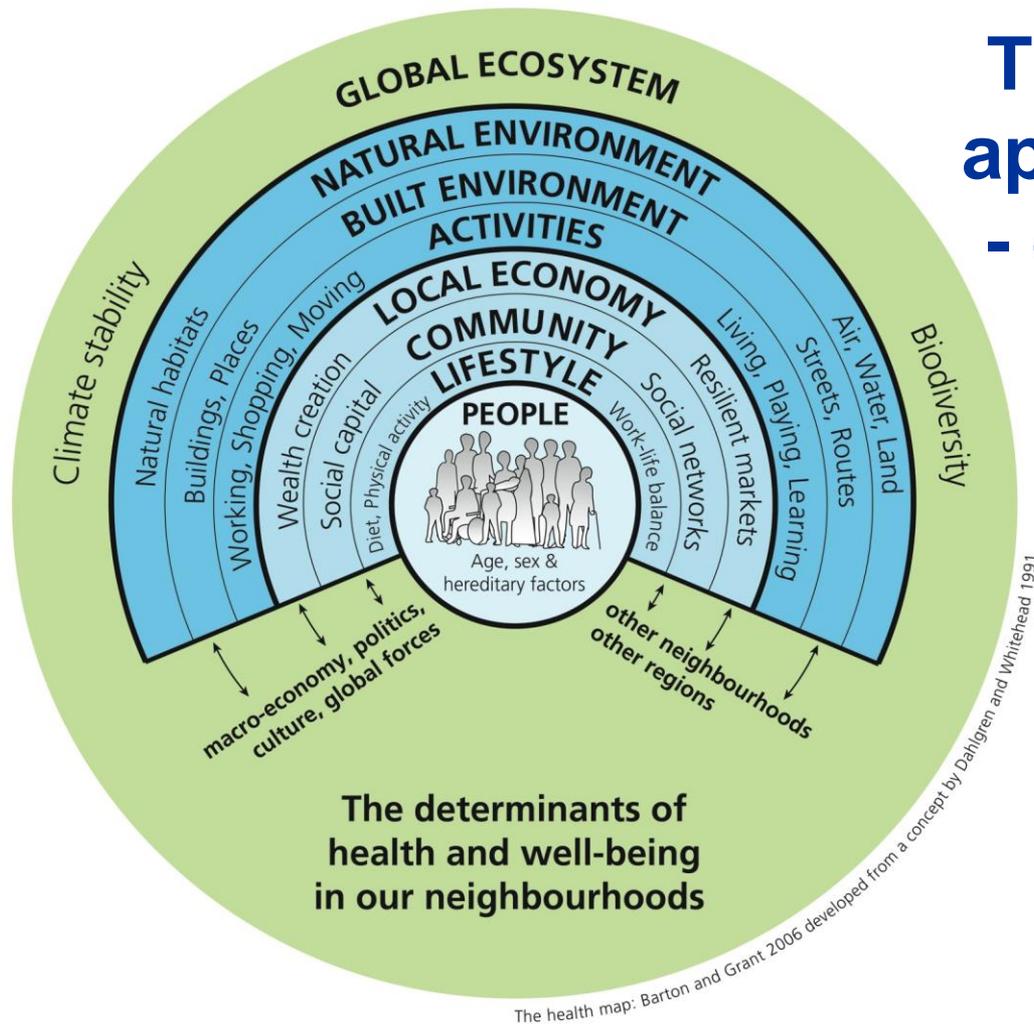


SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD



Goal 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”

The socio-ecological approach to wellbeing - everything matters!



Barton, H. & Grant, M. (2006). A health map for the local human habitat. *The Journal for the Royal Society for the Promotion of Health*, 126, 252-253



“While a new environmental conceptualisation of health (Ecological Public Health) might seem a difficult and complex task, that is the 21st century’s unavoidable task”

Rayner & Lang, *Ecological Public Health*, Routledge/Earthscan 2012

“Investing in environmental interventions pays off for governments; it reduces the transfer of hidden costs from other sectors to the health sector.”

Prüss-Ustün et al., *Journal of Public Health* 39(3): 464–475, 2017

The good news: green/blue space can be salutogenic

Urban studies from many parts of the world show that having green space near where you live is associated with reduced mortality rates, especially from circulatory diseases, even when income level is taken into account.



Green/blue space is also equigenic

Associated with reducing the difference in health between the most economically deprived people and those better off.



Potential mechanisms linking landscape and health: Physical Activity



Many people walk when in natural landscapes – physical activity has positive effects on physical health, mood and stress

Potential mechanisms linking landscape and health: Social Engagement



Social contact when in natural environments – relieves social isolation (a health risk) and may enhance activity or mood

Potential mechanisms linking landscape and health: Attention Restoration



Psychological response to perceiving natural environments
Attention Restoration Theory (Kaplan & Kaplan)

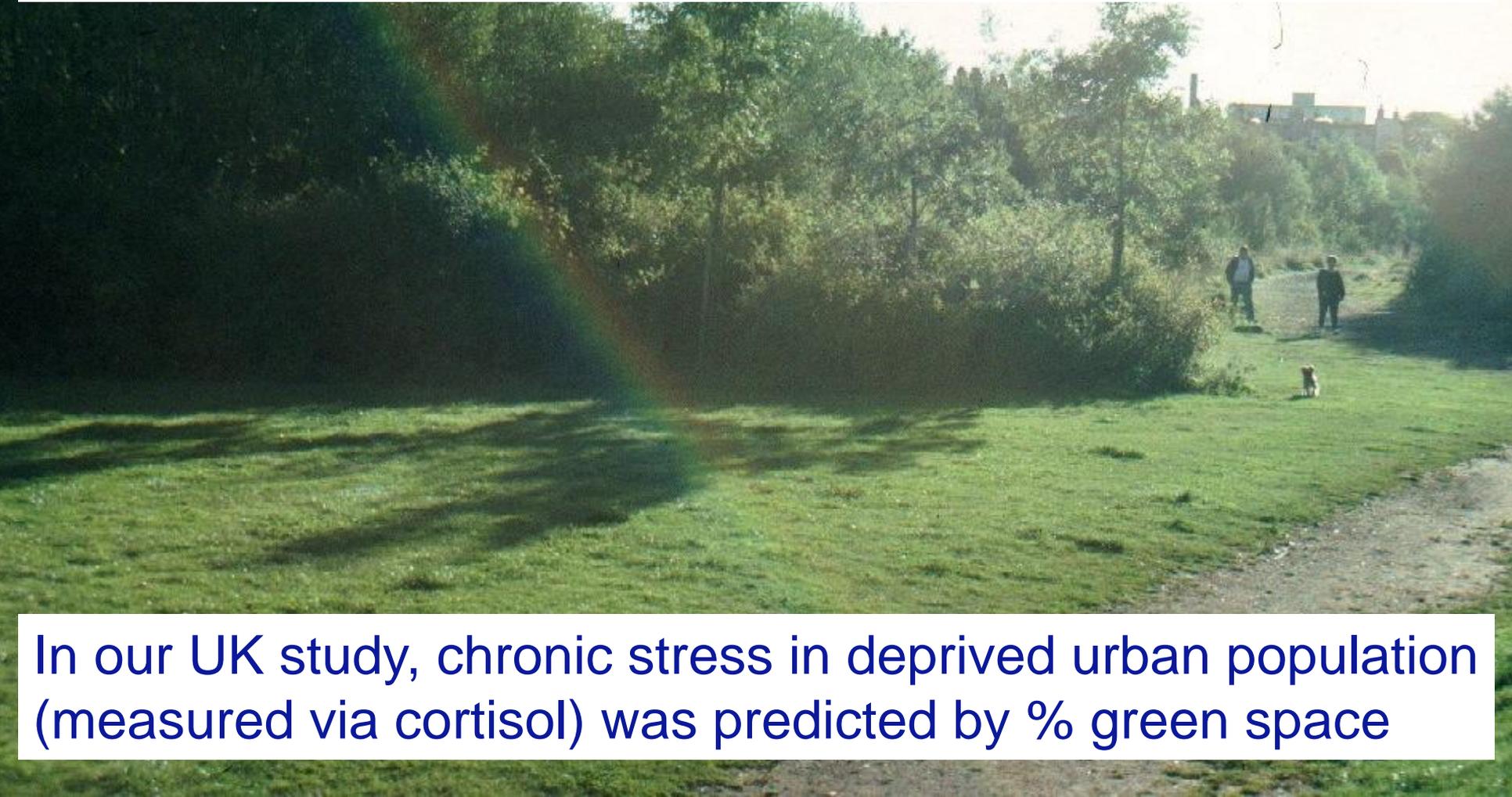
Potential mechanisms linking landscape and health: Independent Physiological Responses



Independent physiological response: psychoneuroendocrine mechanisms (Ulrich et al., Hartig et al, Ottoson & Grahn, Park et al)

The importance of biological pathways

Chronic stress leads to 'wear and tear' on the body; if green space reduces or buffers this allostatic load, it will influence physical as well as mental health



In our UK study, chronic stress in deprived urban population (measured via cortisol) was predicted by % green space

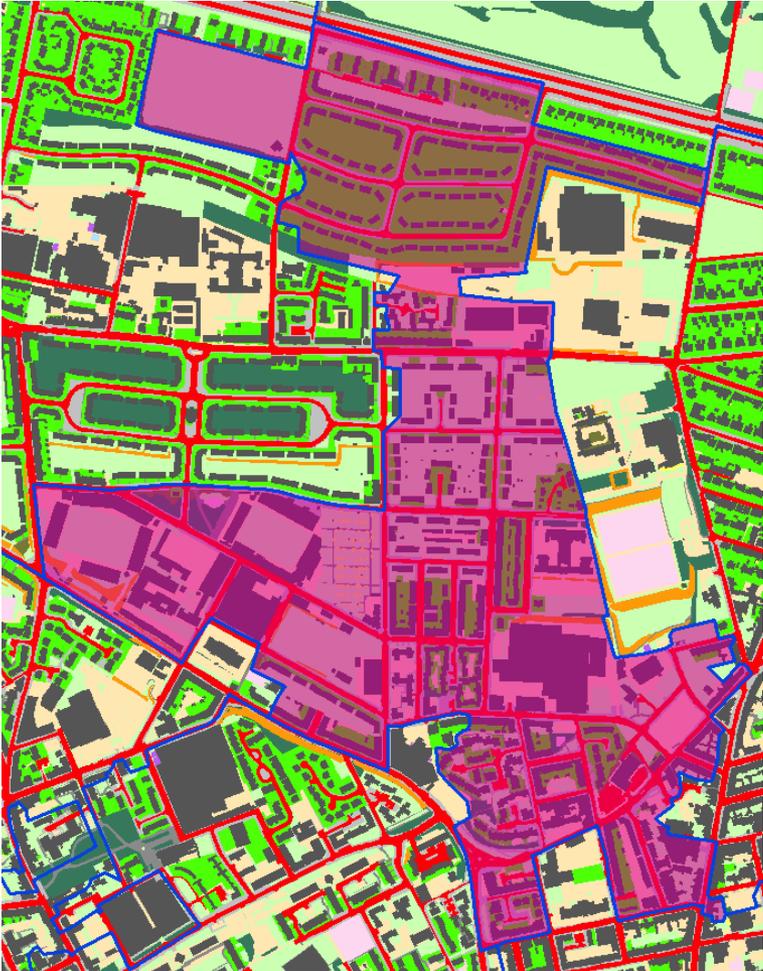
GreenHealth: relationships between green space and health and wellbeing for residents of deprived urban areas

A study for the Scottish Government



Catharine Ward Thompson, Jenny Roe, Lynette Robertson, Peter Aspinall, Mark Brewer, Betty Duff, Richard Mitchell, Angela Clow, David Miller:
Universities of Edinburgh, Heriot-Watt, Glasgow & Westminster; James Hutton Institute & Biomathematics & Statistics Scotland.

Green space measured using Census Wards - includes parks, woodlands, scrub and other natural environments, but not private gardens



Low green space



High green space

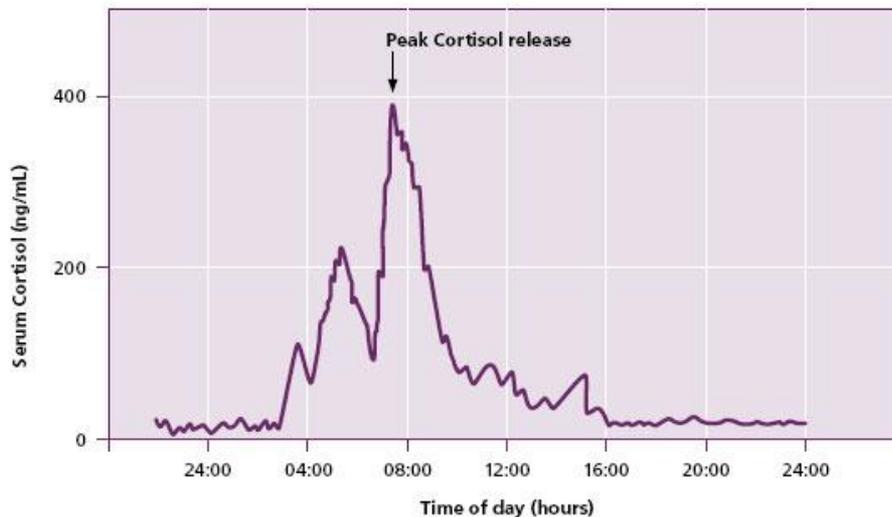
Measuring stress using salivary cortisol

Cortisol – vital for orchestrating healthy body functioning around the 24 hour cycle

Its diurnal pattern reflects functioning of the hypothalamic pituitary adrenal (HPA) axis – a steep slope soon after awakening is a healthy sign



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- Cortisol plays a key role in responding to acute stress
- A biomarker responding to everyday life of participants in their usual surroundings

Green space and social wellbeing

Higher levels of green space in the neighbourhood were linked with a sense of place belonging, and both predicted lower stress

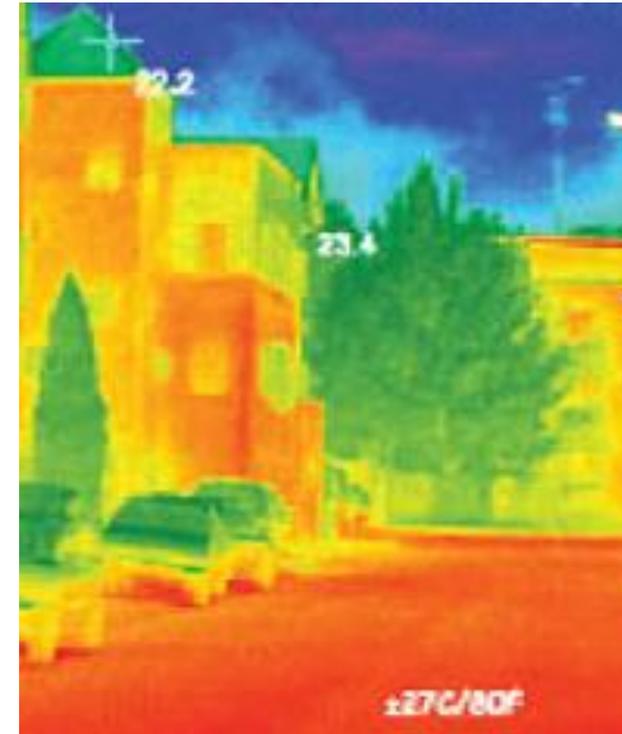


Ward Thompson et al., 2016, Mitigating stress and supporting health in deprived urban communities: the importance of green space and the social environment. *International Journal of Environmental Research and Public Health* 13(4): 440

Green space mitigates urban heat island

Excessive heat can be very damaging, even lethal, for health

Green space offers shade and helps reduce the demand for air conditioning, all particularly important for low-income groups, especially children and older people (Jenerette et al, 2011)



Pregnant women and healthy birth outcomes



In Israel, UK and Lithuania, positive associations have been found between surrounding greenness or close access to city parks and babies' birth weight or level of gestational development at birth

Phytoncides, 'natural killer' cells and the microbiome



Plants can offer phytoncides (antimicrobial volatile organic compounds) which reduce blood pressure, boost immune functioning; forests/nature enhance “Natural Killer” cells – the immune system’s anti-cancer cells

The less good news:

It's not always easy to enhance deprived urban communities' experience of nature



How does design encourage or deter new users?



Does good, inclusive design increase woodland use or are additional social interventions needed in very deprived communities?



Does a woodland intervention programme improve psychological wellbeing in deprived communities? A 5-year study (2012-2017) for NIHR Public Health Research programme

Image courtesy of pecalua.com

Catharine Ward Thompson, Eva Silveirinha de Oliveira, Sara Tilley, OPENspace research centre, U. Edinburgh

Rich Mitchell, Alastair Leyland, Aldo Elizalde, Medical Research Council/Chief Scientist Office Social and Public Health Sciences Unit and **Andrew Briggs, Willings Botha**, Institute of Health and Wellbeing, U. Glasgow

Steve Cummins, Dept of Social & Environmental Health Research, London School of Hygiene & Tropical Medicine

Jenny Roe, Stockholm Environment Institute, U. York and **Peter Aspinall**, Heriot-Watt U.

Partnered by: **Forestry Commission Scotland**



Poor mental health affects 1 in 4 adults



= 83 million people across Europe.

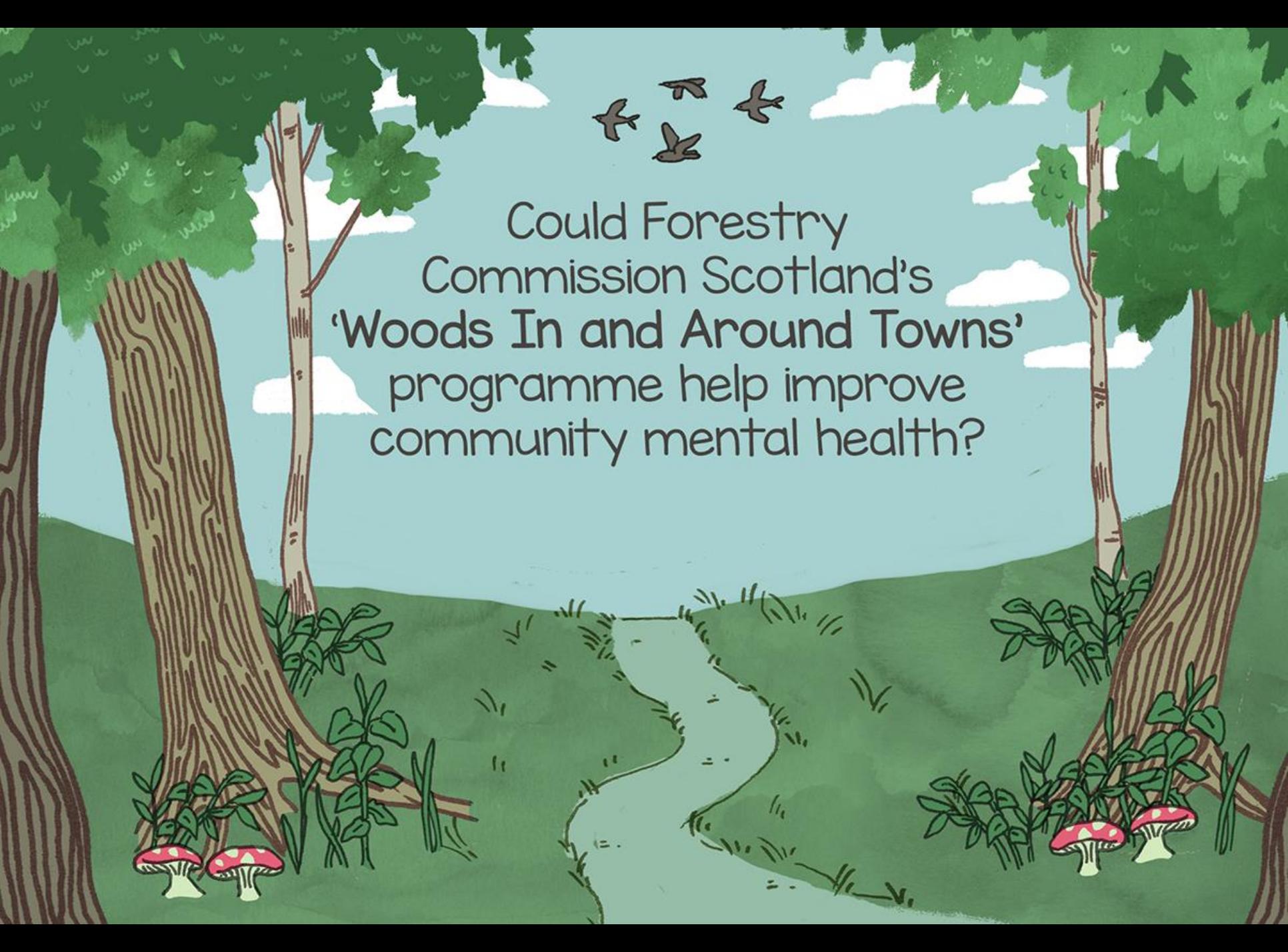


People living in the most deprived areas are twice as likely to suffer depression or anxiety.



If engagement with the natural environment can support better mental health, how should we intervene so that such environments benefit health in deprived urban communities?





Could Forestry
Commission Scotland's
'Woods In and Around Towns'
programme help improve
community mental health?

Currently
500,000
hectares of
land near towns
are eligible for
WIAT funding.

That's **6%** of
Scotland's
total land mass.



“ There is just something about going into the forest which makes me feel so good. ”

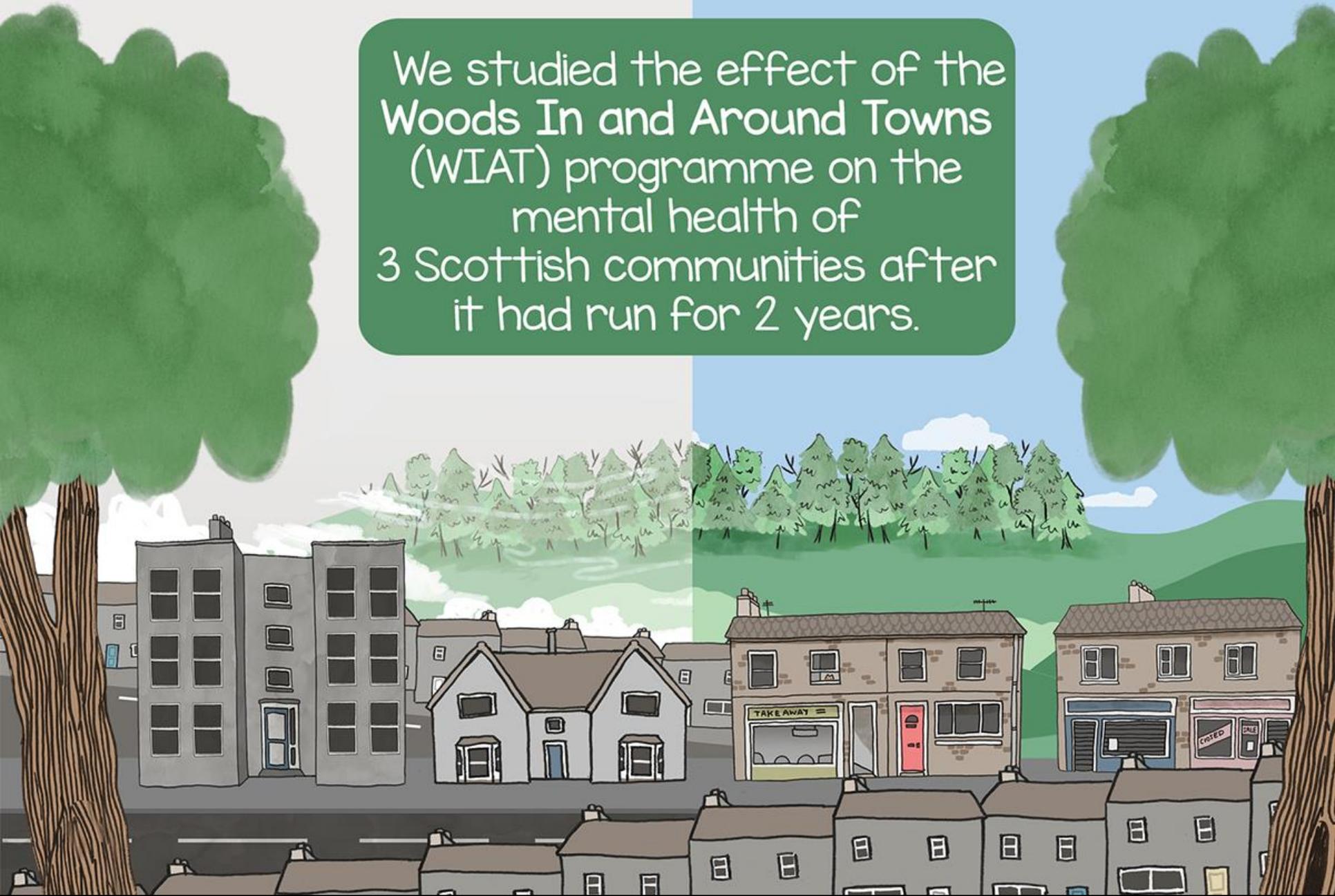
Drumchapel resident

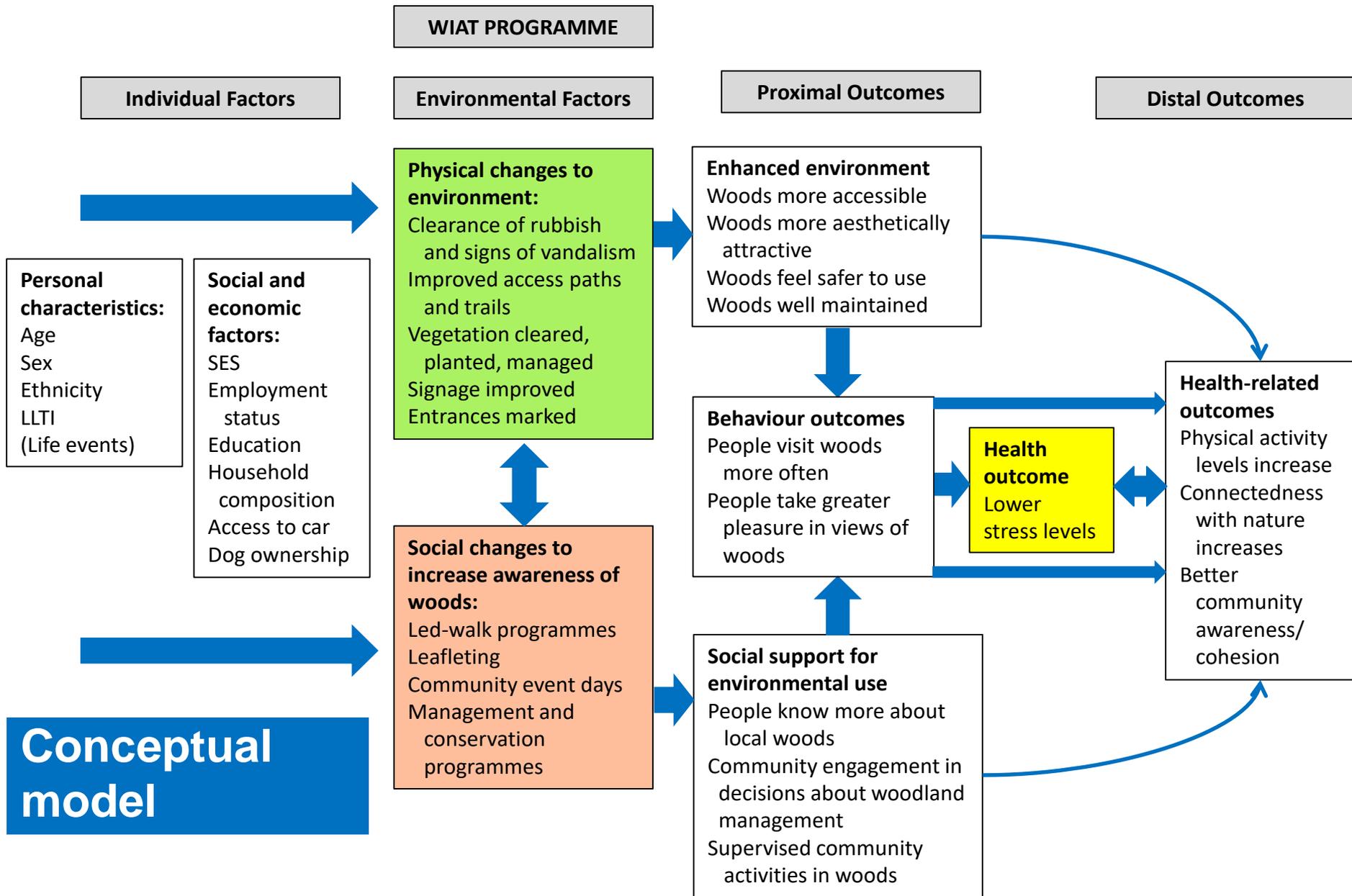
WOODS IN AND AROUND TOWNS PHASE III WHAT IS THIS ABOUT?

Woods In and Around Towns (WIAT) is one of the most significant initiatives ever undertaken by Forestry Commission Scotland (FCS). In summary it aims to improve the quality of life of people living and working in Scotland's towns and cities. Since the launch of WIAT in 2005, FCS has made a major investment of over £50 million in this programme. For this – the third phase (2011–2014) – FCS will continue to treat WIAT as a priority initiative.

From <http://www.forestry.gov.uk/wiat>

We studied the effect of the Woods In and Around Towns (WIAT) programme on the mental health of 3 Scottish communities after it had run for 2 years.





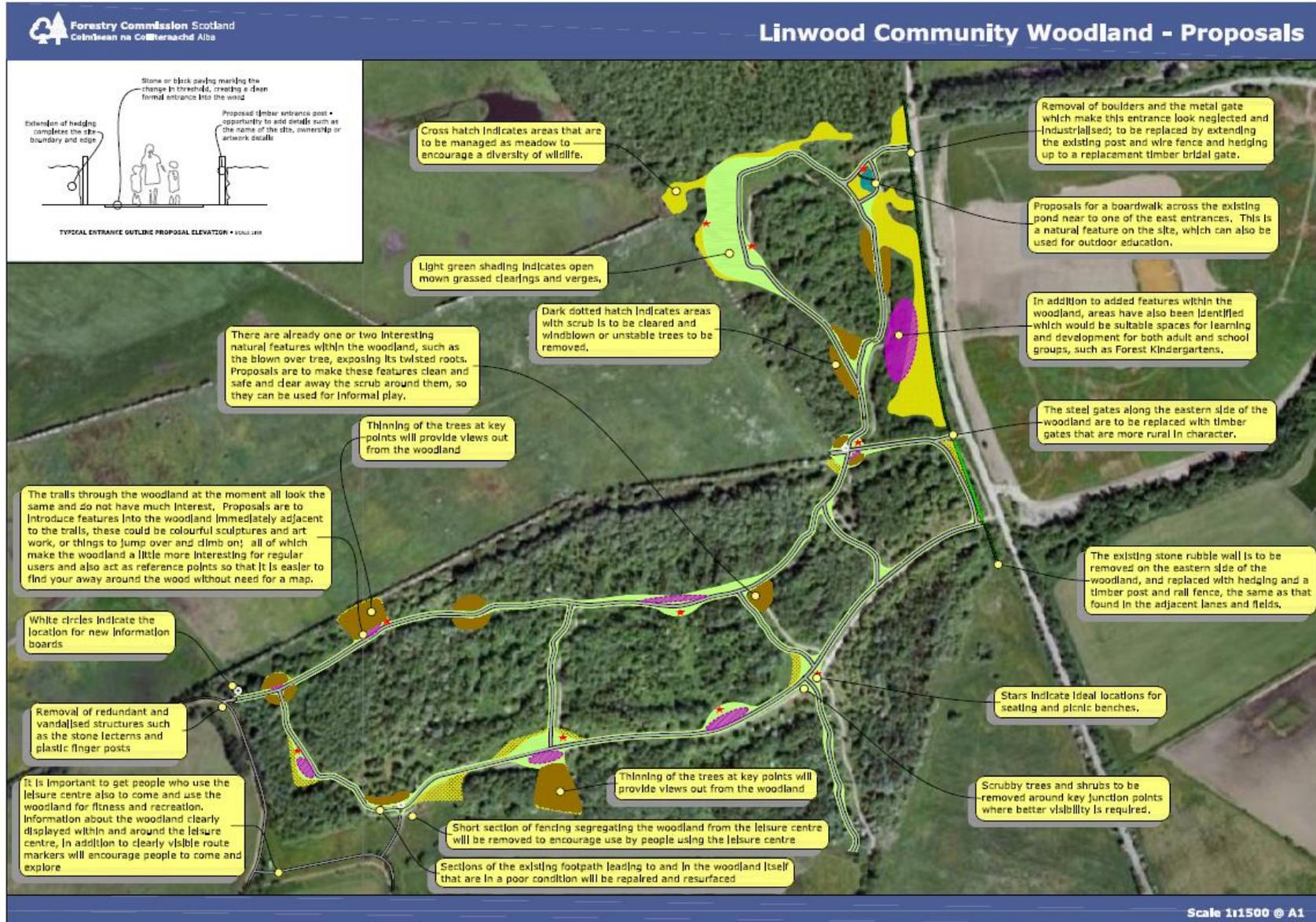
Typical site



This project was funded by the National Institute for Health Research Public Health Research (NIHR PHR) Programme (project number 10/3005/18). The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the NIHR PHR Programme or the Department of Health.

Typical site - intervention

The Plan



Typical physical (Phase 1) intervention

Before

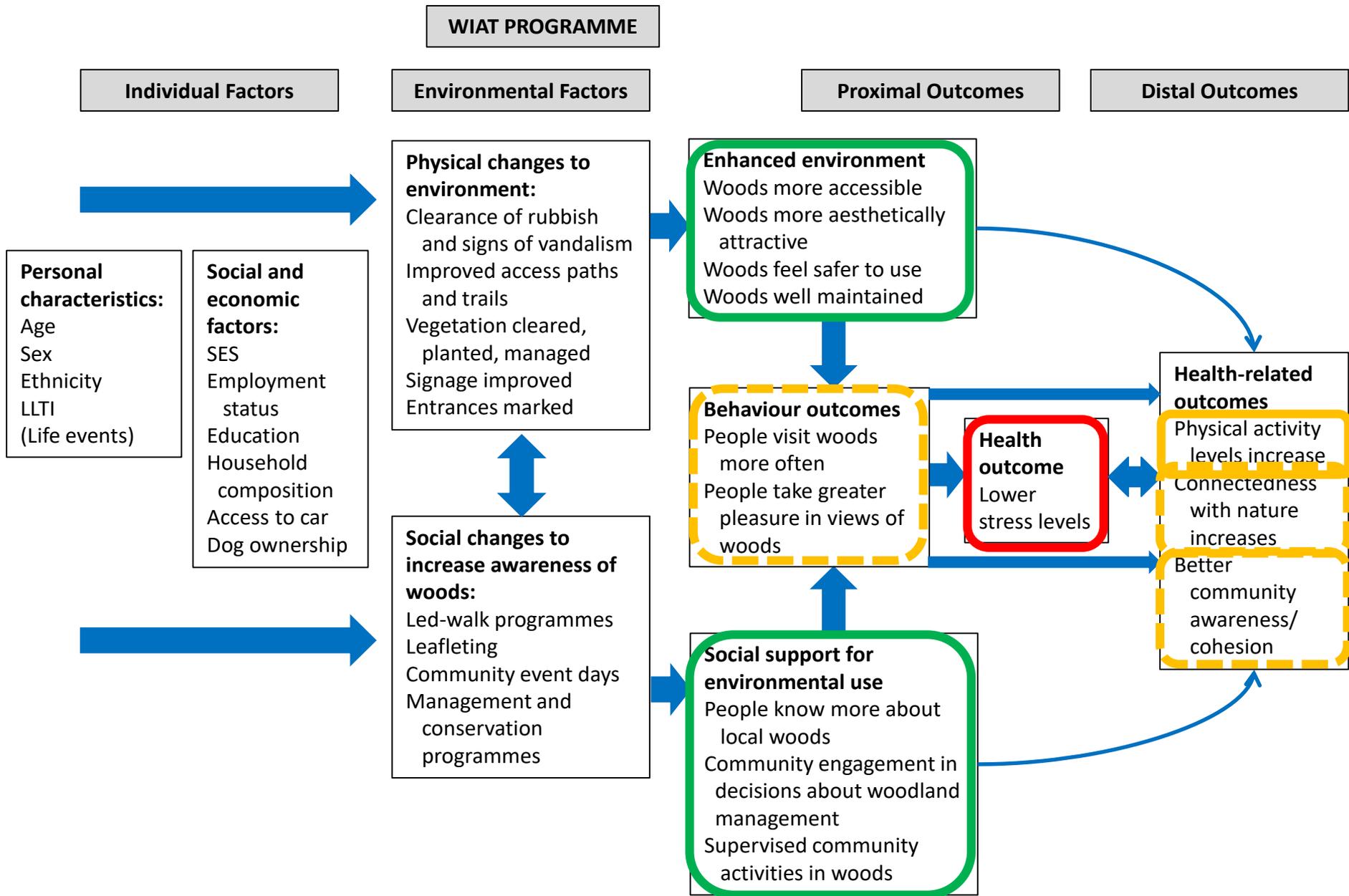


After

Community Engagement (Phase 2 interventions)



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Other outcomes for intervention vs control



Other outcomes for intervention vs control

Evidence of a distance threshold: Differences in stress between intervention and control were largest in those living furthest from the woods (500-750m and 750-1500m) and only significant for these distance bands in Panel B

Significant and very robust

- **Awareness** of the quality of the local woods
- Experience of the woods associated with **Attention Restoration Theory:** 'being away' and 'fascination'.

Significant

- An increase in **connectedness to nature**
- An increase in **social cohesion**
- For those who visited their local woods (a minority of participants),
 - an increase in **going for a walk in the woods** and
 - an increase in **visiting woods with family and/or friends.**

Is the WIAT intervention cost-effective?



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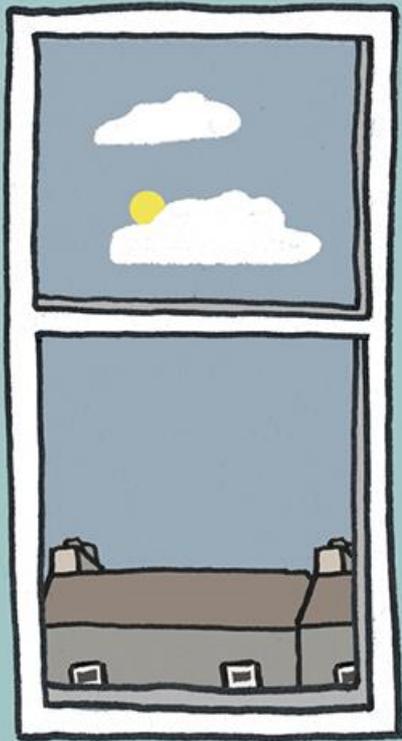
A stylized map of Scotland in a light blue color, positioned on the left side of the image. The map is semi-transparent, allowing the text to be visible through it.

Poor mental
health costs
Scotland
£10.7 billion
per year

=



nearly
£2,000
per person



From 2005 - 2015,
over **£70 million**
was committed
to WIAT -

that's less than
£15 per person

Is the WIAT intervention cost-effective?

Despite no significant change in health-related quality of life (EQ-5D), the cost-consequences and cost-utility analyses show that the WIAT interventions are of low cost and have the potential to provide health and wellbeing benefits, e.g. in physical activity, that are relatively cost-effective even if benefits to health are small



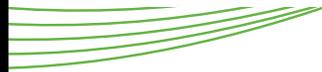
If you want to read more:

PUBLIC HEALTH RESEARCH

VOLUME 7 ISSUE 2 JANUARY 2019
ISSN 2050-4381

Health impacts of environmental and social interventions designed to increase deprived communities' access to urban woodlands: a mixed-methods study

Catharine Ward Thompson, Eva Silveirinha de Oliveira, Sara Tilley, Aldo Elizalde, Willings Botha, Andrew Briggs, Steven Cummins, Alastair H Leyland, Jenny J Roe, Peter Aspinall, Katherine Brookfield and Richard Mitchell



DOI 10.3310/phr07020



**National Institute for
Health Research**

Ward Thompson et al. 2019. Enhancing health through access to nature: how effective are interventions in woodlands in deprived urban communities? A quasi-experimental study in Scotland, UK. *Sustainability* 11(12), 3317. <https://doi.org/10.3390/su11123317>

Our latest research project with older people

Mobility, Mood and Place (MMP) has explored how places can be designed collaboratively to make mobility easy, enjoyable and meaningful for older people.



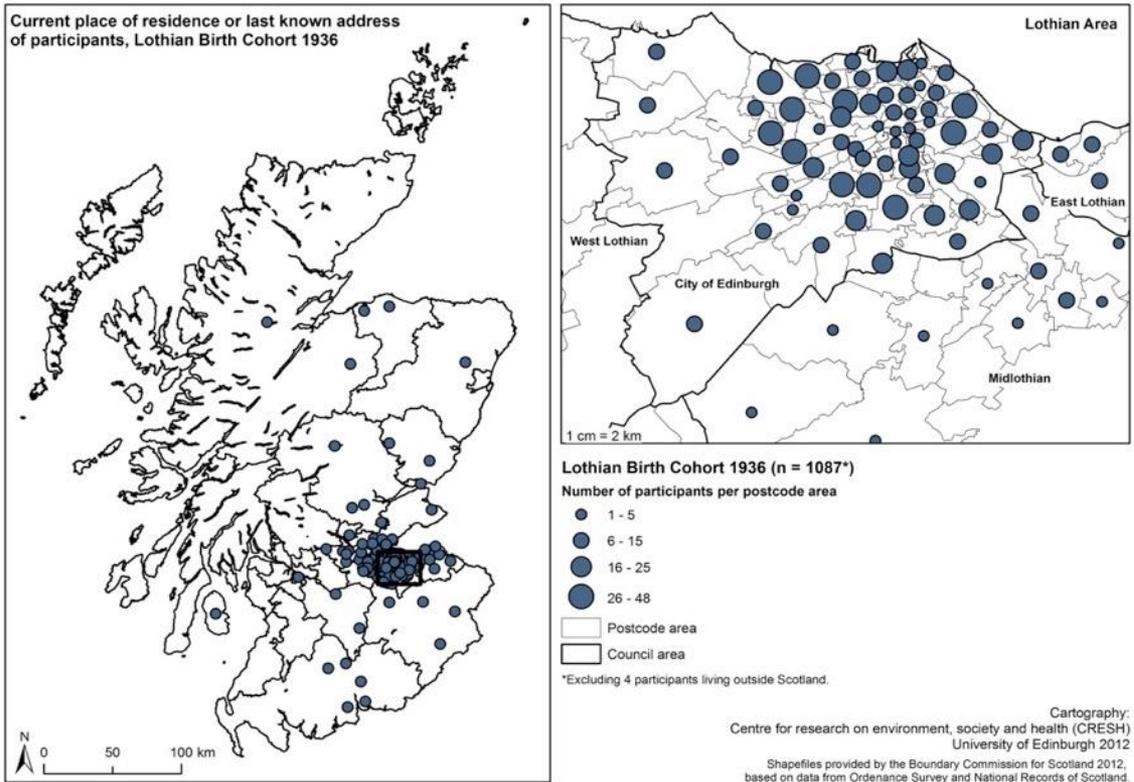
Mobility, Mood and Place is funded by Lifelong Health and Wellbeing, a cross-council initiative addressing the challenges and opportunities of an ageing population.



THE UNIVERSITY of York

Environmental histories: the influence of place over a lifetime

We have mapped life-course environments for the 1936 Lothian Birth Cohort, using GIS to integrate longitudinal environmental measures with cohort data



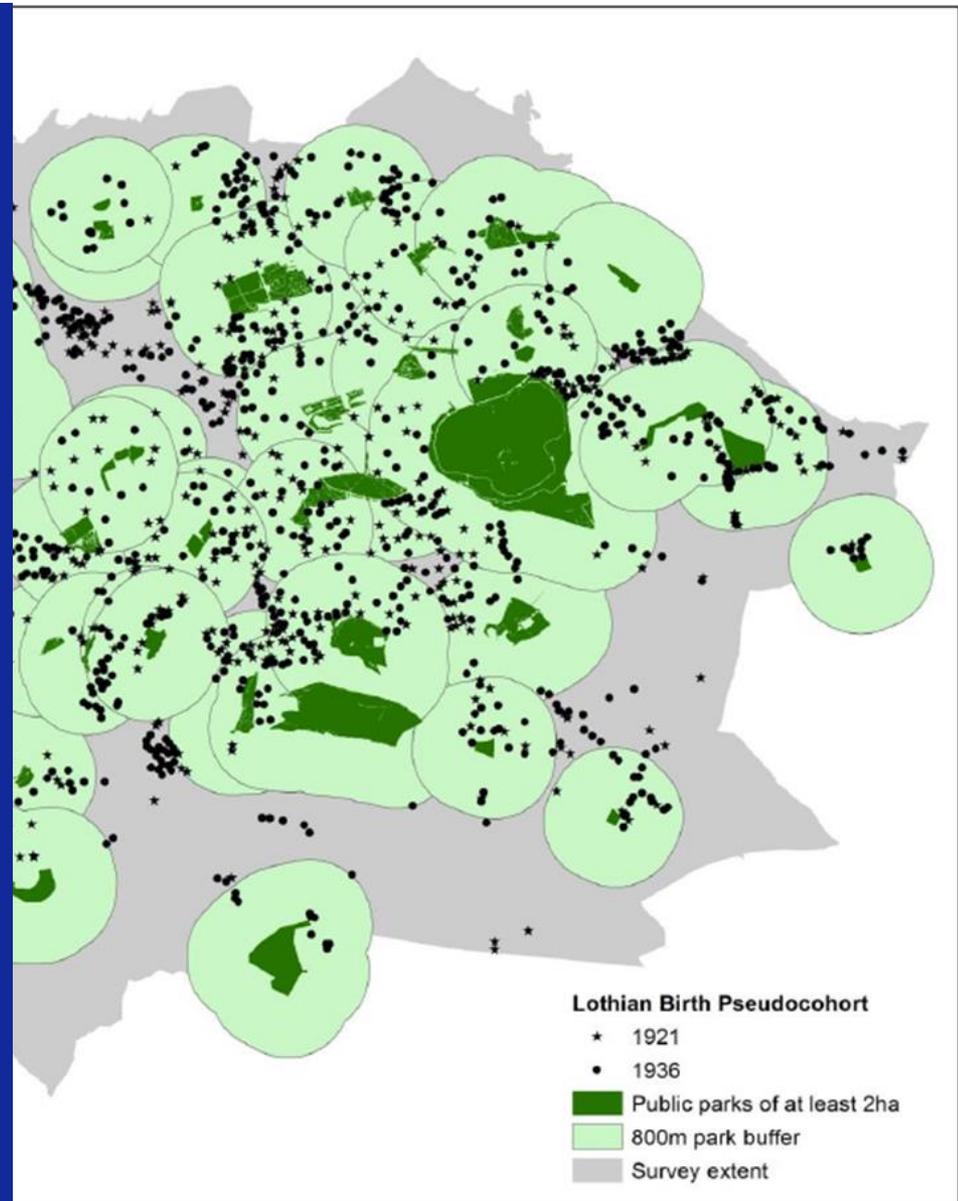
Green space across the lifecourse

No association with change in cognitive test score between ages 11-70

but

childhood access to green space makes a difference when we measured cognitive ageing over the age of 70 - enhanced by access to green space in adulthood

We find similar influences on anxiety and depression for people over 70 living in most disadvantaged neighbourhoods



Cherrie et al. 2018. Green Space and cognitive ageing: a retrospective life course analysis in the Lothian Birth Cohort 1936. *SSM* 196: 56-65

Pearce et al. 2018. Life course of place: a longitudinal study of mental health and place. *Transactions of the Institute of British Geographers* 2018;00:1- 18

Cherrie et al. 2019. Association between the activity space exposure to parks in childhood and adolescence and cognitive aging in later life. *IJERPH* 16: 632

What does this mean for kids who don't get any kind of good engagement with nature in early years?











NO PARKING
IN THIS
AREA

Evaluating a government pilot study on children, looking at:

- obesity;
- unintentional injuries;
- asthma;
- mental health and wellbeing.

Good Places Better Health for Scotland's Children

Prepared by the Evaluation Group
of Good Places Better Health

4.0 OUR VISION

A Scotland where

Homes are warm and dry with good quality space for children to play indoors and outdoors

Children play, explore and relax outdoors in streets, parks, green places, open spaces and have contact with nature in their everyday lives

The presence of children outdoors is welcomed, supported and valued by parents and the wider community

Neighbourhoods are well maintained, safe, appealing, support healthy food choices and have a strong sense of community



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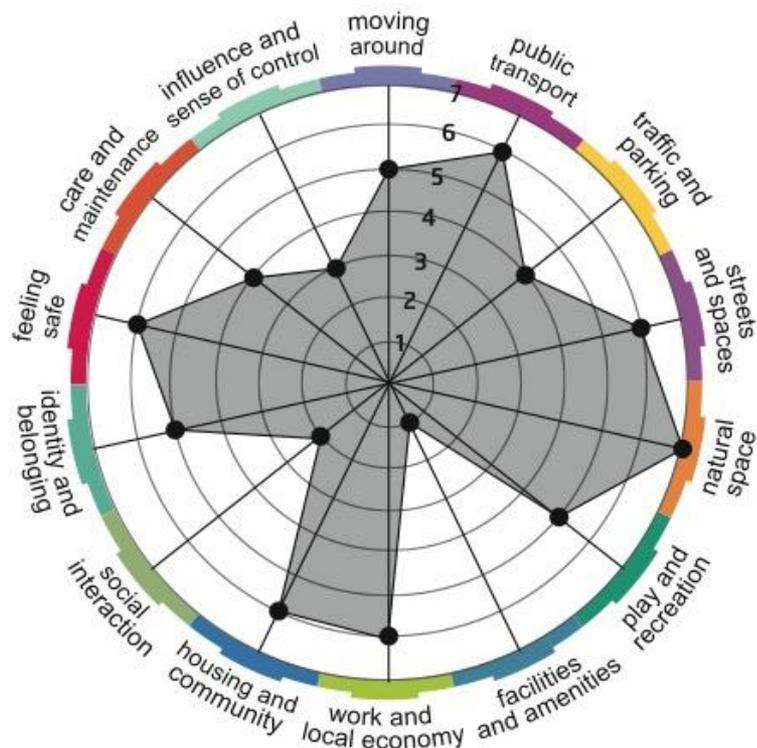
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Place Standard – How good is Our Place?

The Place Standard was
launched in December
2015 by
NHS Health Scotland
Scottish Government
Architecture & Design
Scotland



The Place Standard is a tool to evaluate the quality of a place. It can evaluate places that are well-established, undergoing change, or still being planned. The tool can also help users to identify their priorities.

The tool is simple and free to use. It consists of 14 questions which cover both the physical and social elements of a place. Prompts are provided to help users answer the questions. When all 14 questions have been completed, the results are shown in a simple diagram.

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Architecture &
Design Scotland
Aithearrachd is Dealbhadh na h-Alba

NHS
Health
Scotland

The Scottish
Government
Riaghaltas na h-Alba



Urban Green Space Interventions and Health

*A review of impacts
and effectiveness*

WHO European Region report 2017

A review of local case studies and Impact Assessment experiences, their impact on environment, health, wellbeing and equity

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