Linking landscape planning and health – Green space and quality of life

UN Sustainable Development Goals

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”

Martial: the virtues of *rus in urbe*

Urban parks were first labelled “the lungs of the city” in London in the 18th century

Birkenhead Park, Joseph Paxton, 1843

"A park in the East End [of London] would diminish the annual deaths by several thousand, and add several years to the lives of the entire population" 1839.

It will benefit artisans' and labourers' health "and that of their families, by inhaling the fresh air at least once a week, at a distance from their own confined and wretched habitations" 1847

The artificial conditions of the town produce “a harmful effect, first on (a man’s) entire mental and nervous system and ultimately on his entire constitutional organisation” – the antidote is pleasing, rural scenery. *F L Olmsted 1886*

Prospect Park, Brooklyn, New York City, Olmsted & Vaux, 1866

Prospect Park, Long Meadow

“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,* 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,* 2016

Green/blue space is salutogenic

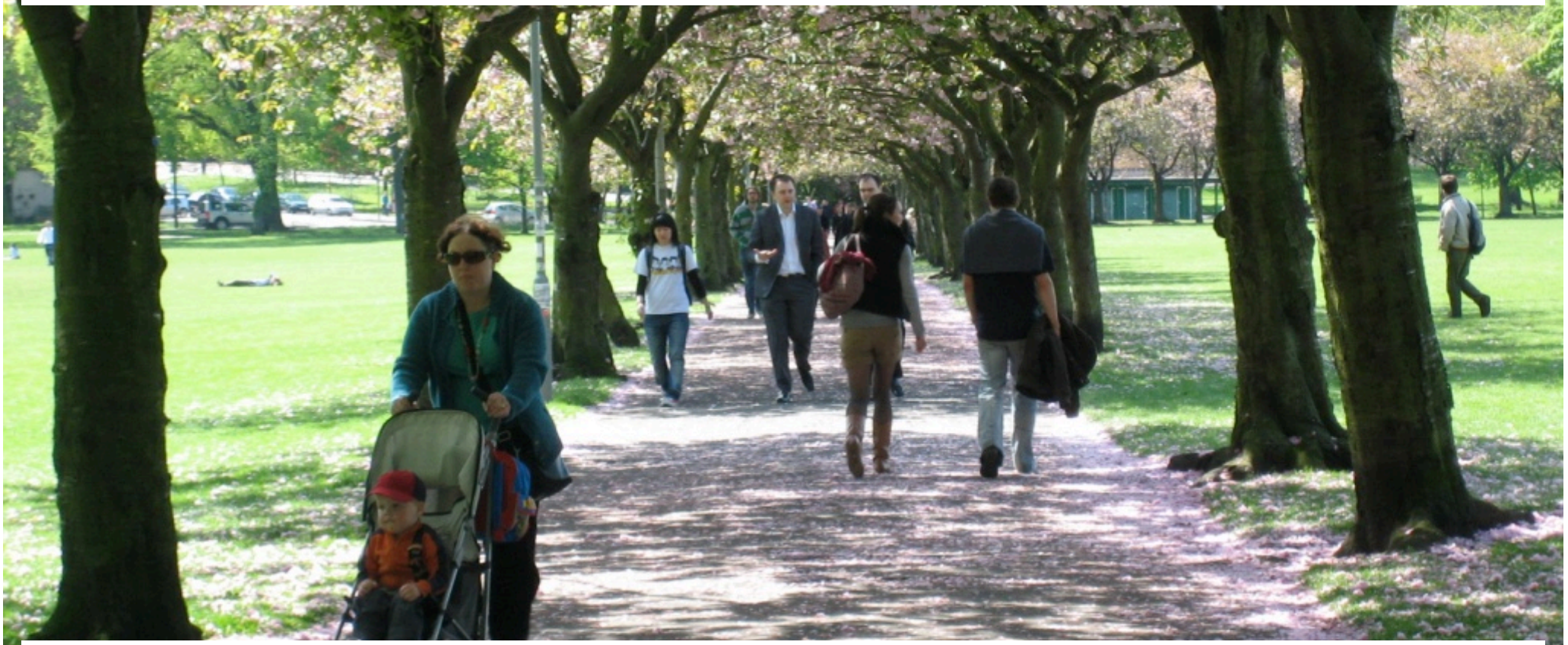
Urban studies from Japan, England, Lithuania, Canada, USA and Australia show that having green space near where you live is associated with reduced mortality rates, especially from circulatory diseases, even when income level is taken into account.

Green space is also equigenic

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

‘Green exercise’ is better for your mental health

In a UK study, using natural environments for physical activity at least once a week was associated with about *half the risk* of poor mental health among those who don’t visit



Each additional use of *any* natural environment per week was associated with c. 6% lower risk of poor mental health

Mitchell, R. 2013 *Social Science and Medicine,* 91, 130-134.

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

% green space in the neighbourhood predicted a healthier diurnal cortisol pattern, both for men and women

Ward Thompson, C. Roe, J., Aspinall, P., Mitchell, R., Clow, A. & Miller, D. 2012. *Landscape and Urban Planning* 105

Roe, J.J., Ward Thompson, C., Aspinall, P.A., Brewer, M.J., Duff, E.I., Miller, D., Mitchell, R., Clow, A. 2013. *IJERPH 10*,

Attention restoration and/or psychophysiological stress relief?

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 *International Journal of Environmental Research and Public Health 13*(4)

Green space and gardening

Access to a garden or allotment also predicted lower stress and was linked with place belonging and social connectedness

Ward Thompson et al., 2016 *International Journal of Environmental Research and Public Health 13*(4)

Green space and reduced air pollution

Gases and particulate matter can be filtered by vegetation: living in greener areas can lower exposure to air pollution (Dadvand et al, 2012)

Green space mitigates urban heat island

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

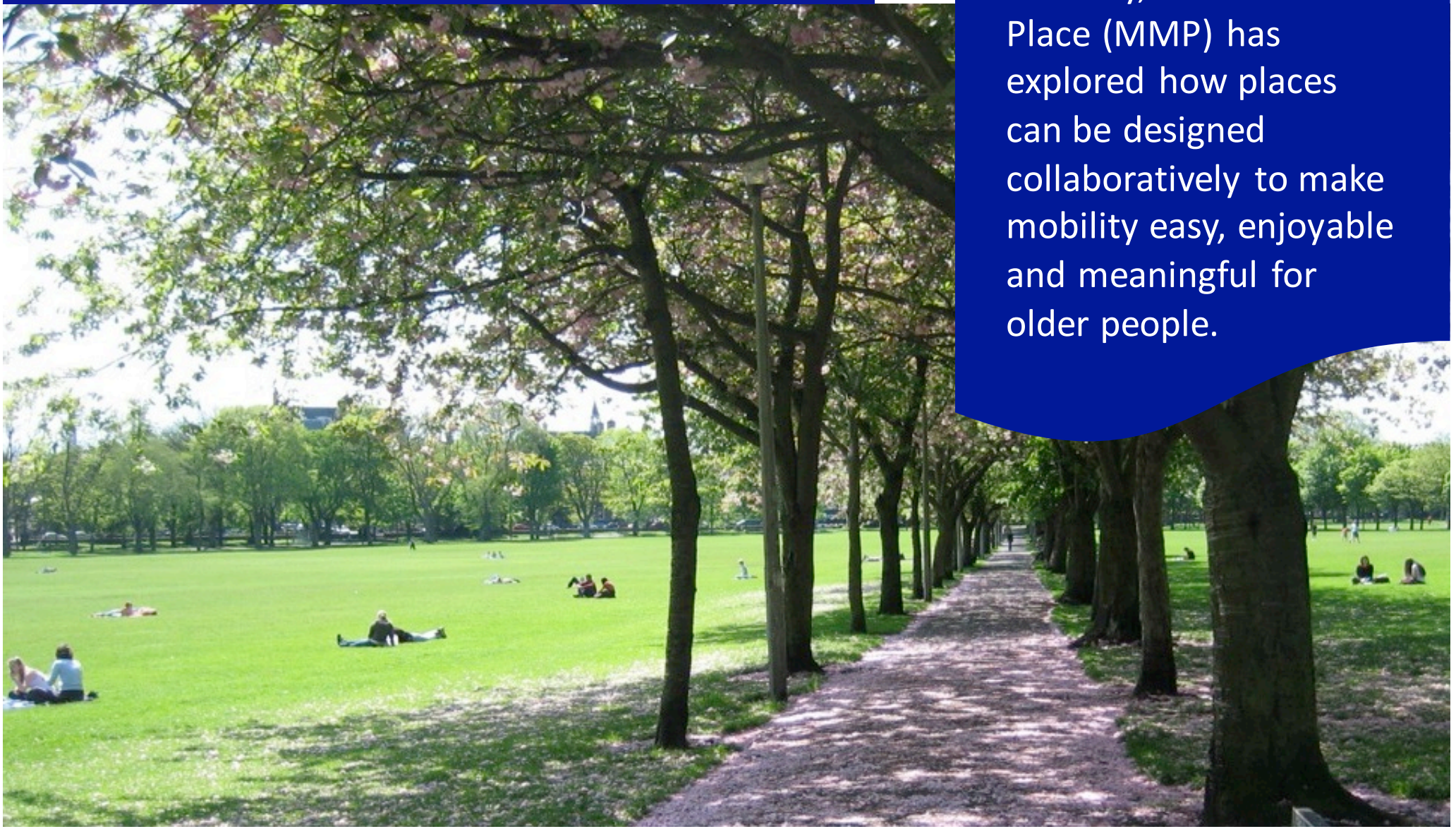
Green space offers shade and helps reduce the demand for air conditioning, all particularly important for low-income groups, especially children and older people (Jenerette et al, 2011)

What might encourage us to get out more?

In a study across Britain, older people (aged 65+) living in an environment that makes it easy and enjoyable to go outdoors were more likely to be **physically active, healthier** and more **satisfied with life**.

Sugiyama et al. 2009. Associations between neighborhood open space attributes and quality of life for older people in Britain. *Env & Behavior*, *41*, 3-21

Our latest research project …



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

Lifelong Health & Wellbeing
Research for Healthy Ageing

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

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Environment and affect: measuring mood

We've been working with older participants to test neural imaging and ethnographic approaches to understanding emotional response to different environments

Real-time emotional responses to place during short urban walks:

1. Measuring EEG outputs
2. Ethnographic study - walking interviews
3. Mixed methods – case studies of EEG outputs

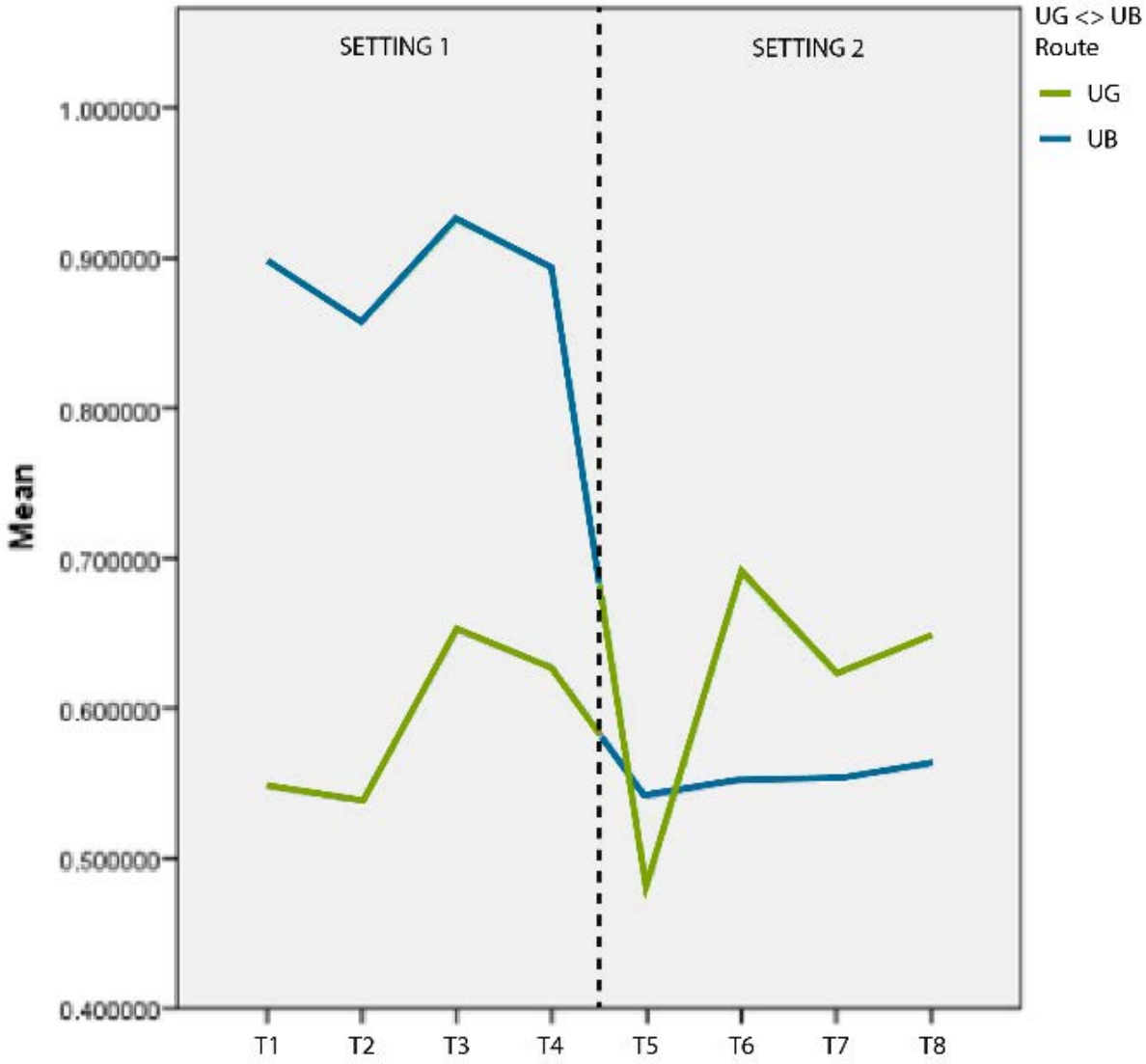
In our study with older participants, do we get different patterns of brain activity response in different environments?

Urban Green

Urban Quiet

Urban Busy

Low beta (associated with alert states) is a predictor in transitioning between Urban Green <> Urban Busy



Such evidence may support attention restoration theory

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

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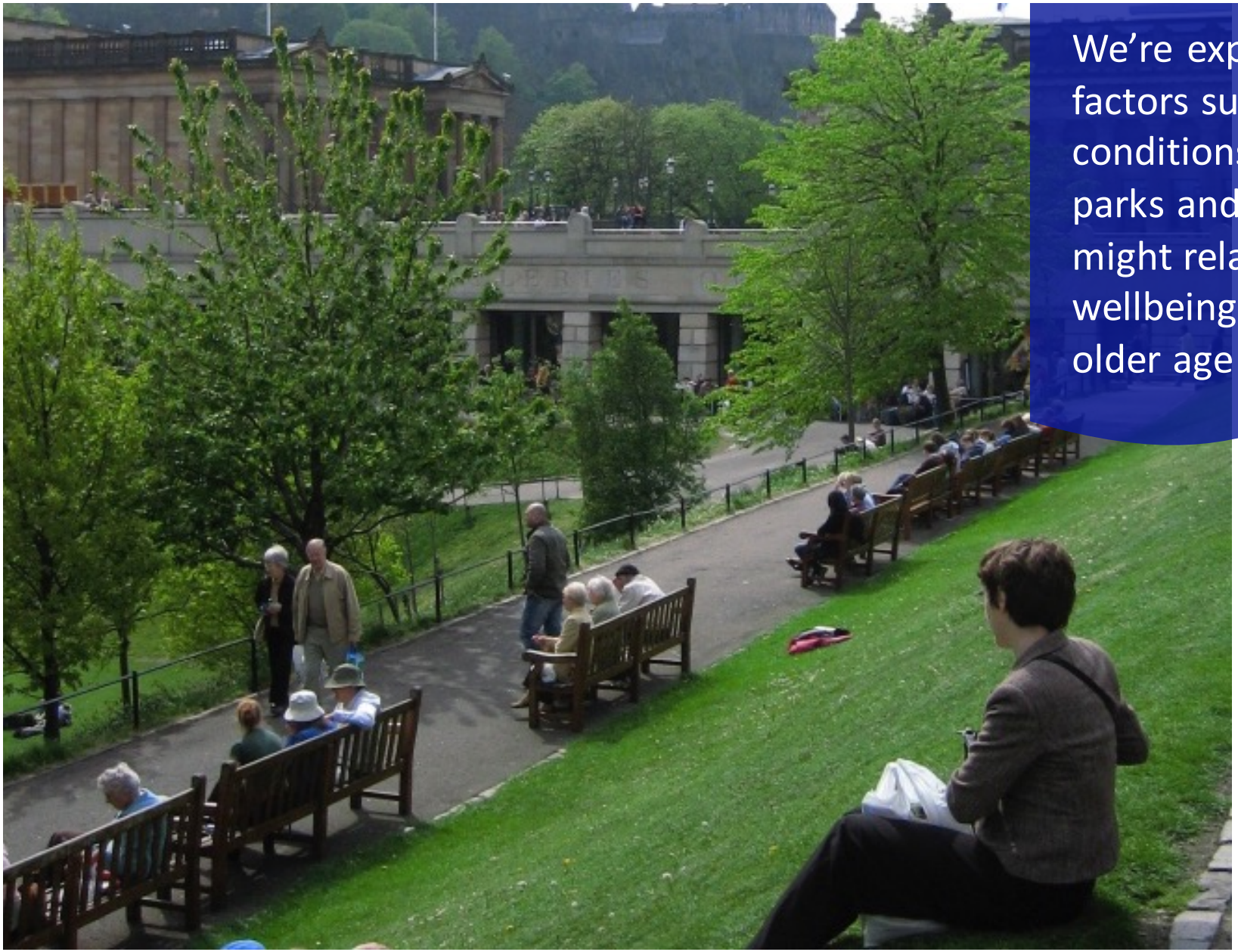

We're exploring how factors such as housing conditions or access to parks and green space might relate to health, wellbeing and mobility in older age

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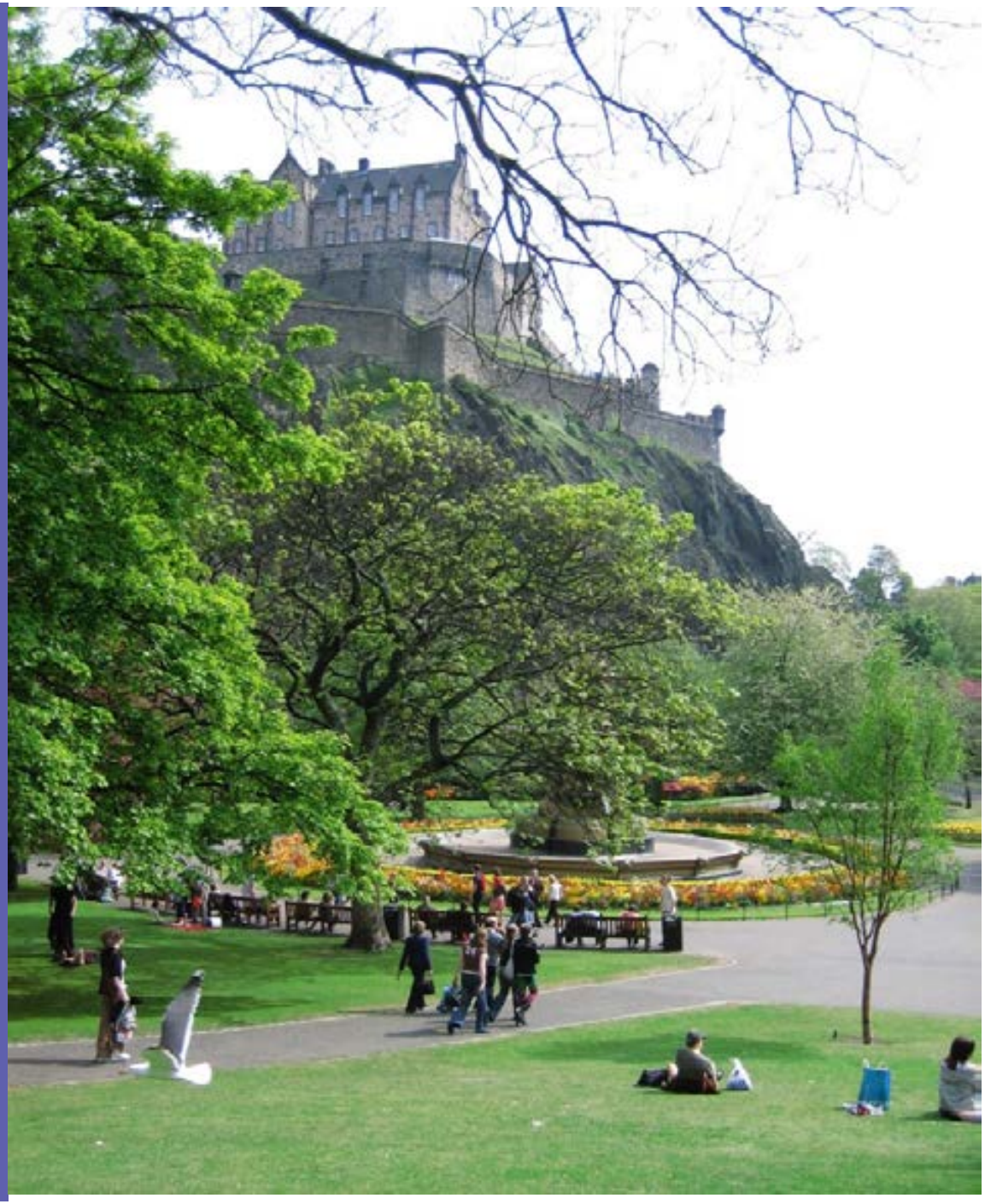
Green space across the lifecourse

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



Pearce, J., Shortt, N., Rind, E. and Mitchell, R. 2016. 'Life Course, Green Space and Health: Incorporating Place into Life Course Epidemiology', *International Journal of Environmental Research and Public Health 13*(3), 331

So what *types* of green space does a city need?

Nearby greenery, easily visible from most places

Important for mood, stress relief and mental restoration

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For children's play, schools, older people's access, shaded outdoor living, especially in hot weather, gardening, etc.

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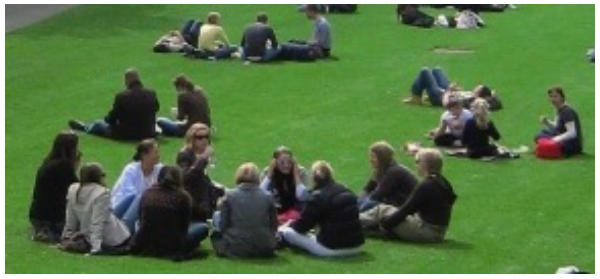
Large parks and natural areas, readily accessible for all
For sports pitches, active recreation, big family gatherings, environmental education, nature study, biodiversity



Where does a city need green space?

Green space close to where you live and work and play

BUT …
Does *quality* of green space matter?

A study of urban green space quality and use by different BME groups in English urban areas with high levels of deprivation

CABE Space 2010

Cross-sectional study of three urban areas

High levels of deprivation (IMD)

High percentages of black and minority ethnic populations

With same percentages of urban green space but varying quality

6 ‘paired’ case study areas

- Greater Manchester A & B
- West Midlands A & B
- London A and B

Quality of, access to and the use of local urban green space were all significant predictors of general health for the poorest health BME groups (African-Caribbean, Bangladeshi, Pakistani and other BME)

Issues:

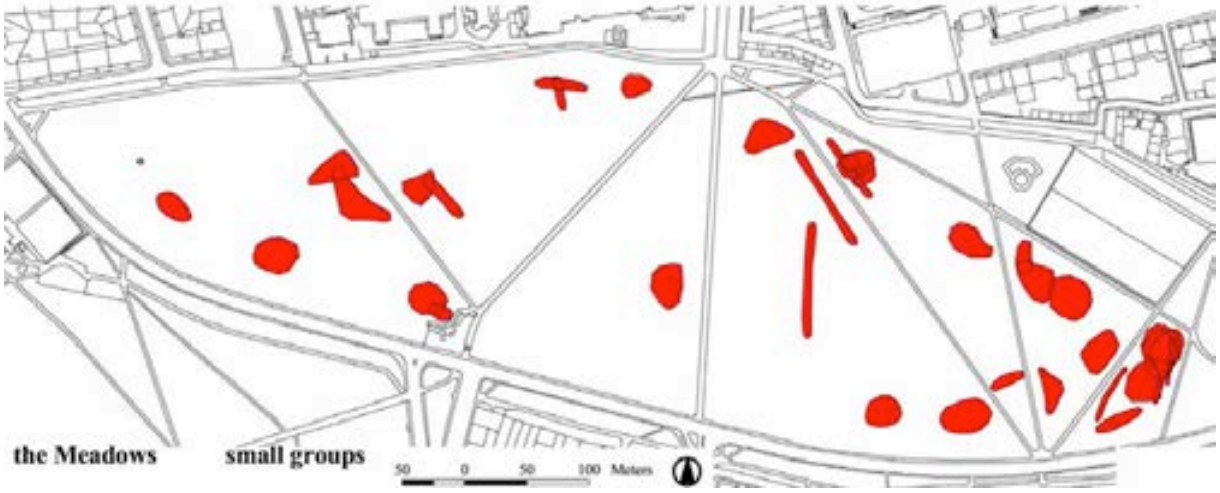
- Fear: anti-social behaviour, drugs, ‘gang land’, personal attack
- Dogs.
- Design: high perimeter walls, vegetation, lack of lighting, lack of informal surveillance.
- Poor maintenance: litter, graffiti.
- Protocol (gender issues).
- No facilities/removal of facilities. ‘Nowhere to go’ for kids

Roe, J., Aspinall, P. & Ward Thompson, C. 2016. Understanding Relationships between Health, Ethnicity, Place and the Role of Urban Green Space in Deprived Urban Communities. *IJERPH*13*(7):* 681

Aspirations

Across all groups, 60% thought better quality green space could improve their physical health and 45% perceived it could improve mental health.

Roe, J., Aspinall, P. & Ward Thompson, C. 2016. Understanding Relationships between Health, Ethnicity, Place and the Role of Urban Green Space in Deprived Urban Communities. *IJERPH*13*(7):* 681



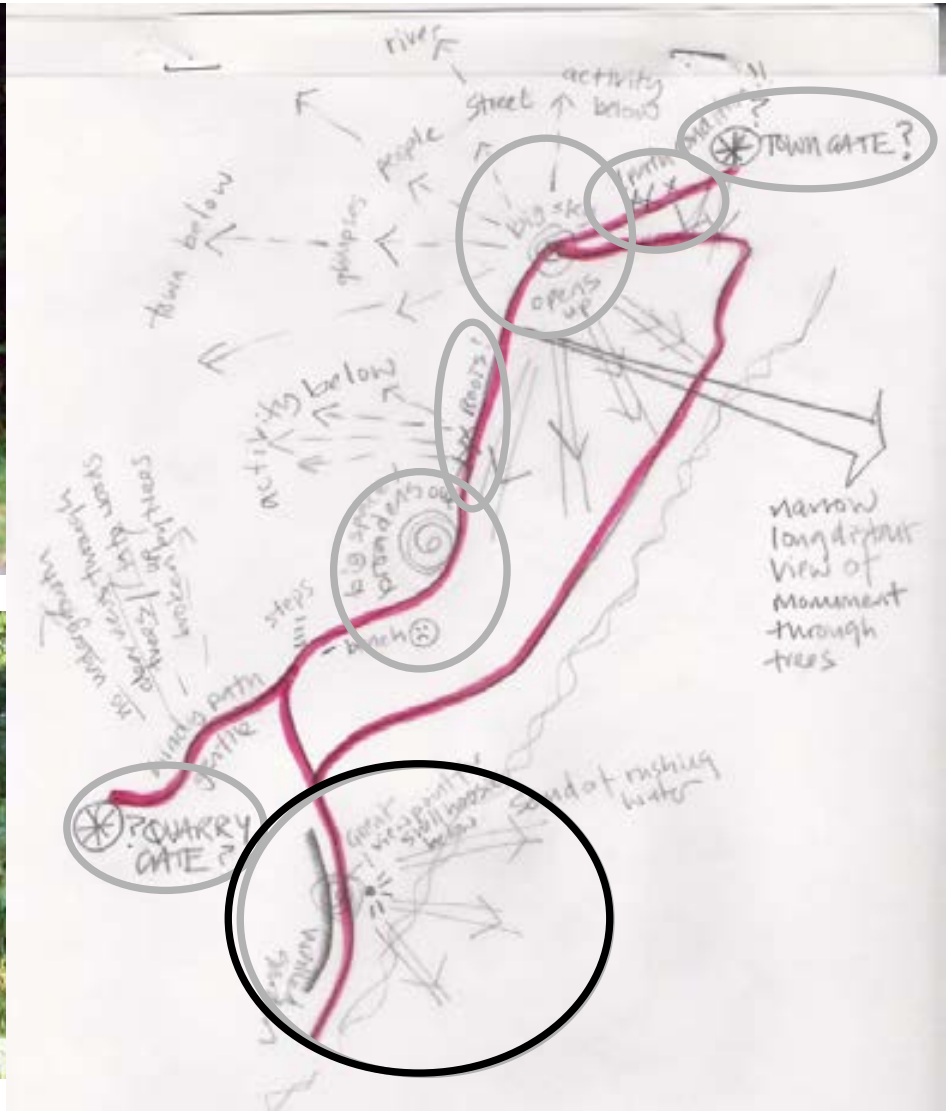
Does park *design* reflect use of public open spaces?

Using GIS mapping:

Large, medium and small groups involved in any active long–stay use – total for all observation periods in the Meadows, Edinburgh

B. Goličnik PhD study

How does design encourage or deter new users?



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Can enhanced design increase green space use or are additional social interventions needed?

What about people with no good childhood experience of nature or green/blue space?


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