Research by

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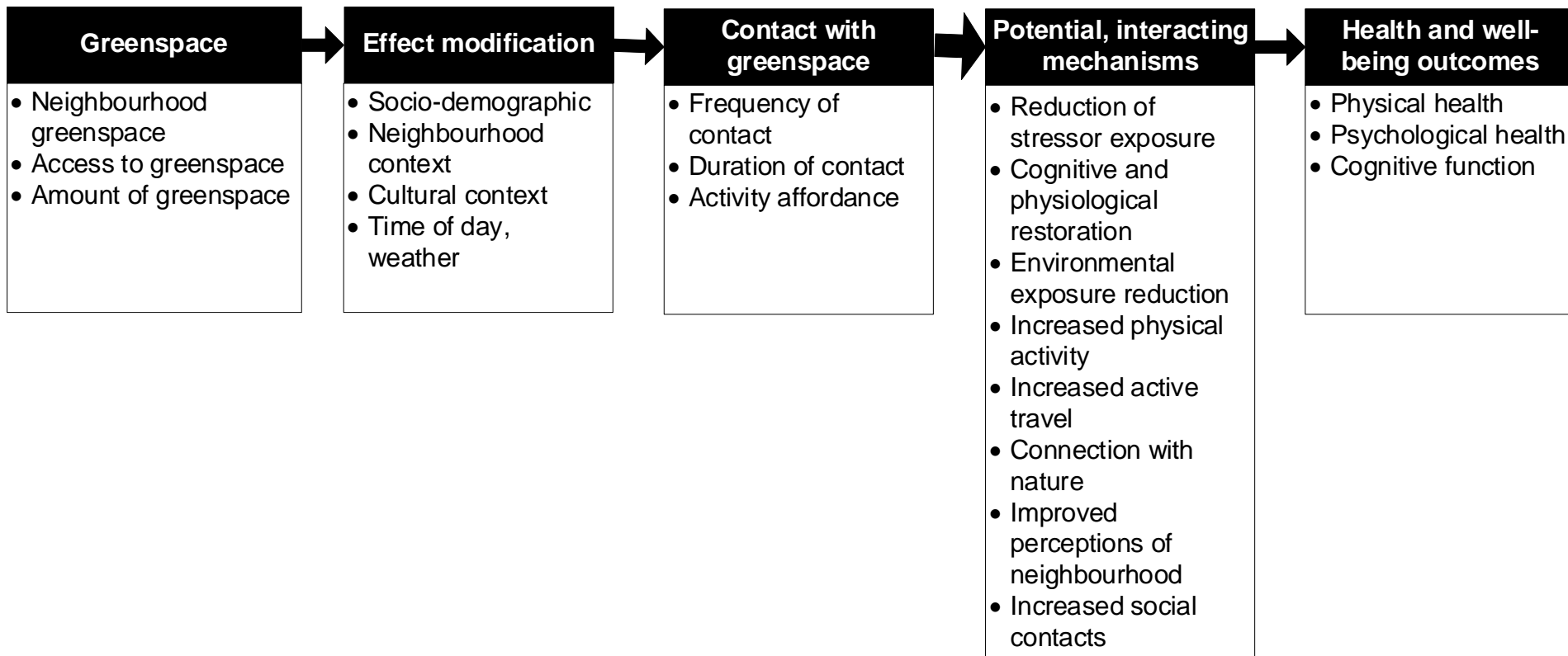
Greenspace use under lockdown in the West of England

22nd June 2022

Background

- How did Covid-19 lockdowns change greenspace use, and what impact did this have on health and wellbeing?

- Systematic reviews have shown that in urban areas there are beneficial associations between greenspace and health.

- But the relationship is often inconsistent.

- **Measures of greenspace** exposure are inconsistent across studies and understanding which measure best predicts health outcomes needs development.

- Also, the **mechanisms that explain how green space has a beneficial association with health** are not fully understood.

Conceptual framework

Greenspace	Effect modification	Contact with greenspace	Potential, interacting mechanisms	Health and well-being outcomes
• Neighbourhood greenspace • Access to greenspace • Amount of greenspace	• Socio-demographic • Neighbourhood context • Cultural context • Time of day, weather	• Frequency of contact • Duration of contact • Activity affordance	• Reduction of stressor exposure • Cognitive and physiological restoration • Environmental exposure reduction • Increased physical activity • Increased active travel • Connection with nature • Improved perceptions of neighbourhood • Increased social contacts	• Physical health • Psychological health • Cognitive function

Adapted from original fifty shades of green conceptual framework.
Nieuwenhuijsen et al. 2017

Objectives

1. Explore which measures of greenspace exposure provide the best predictive value for health outcomes

2. Understand the mechanisms which explain the association between green space and health by including potential confounding or mediating factors in a single analysis

Methods: Recruitment

- An online cross-sectional survey was administered via Qualtrics from 22nd May to 14th July 2020. Residents were recruited from the West of England Combined Authority (WECA) (3 Local Authorities; Bristol, Bath and North East Somerset, and South Gloucestershire) and North Somerset.

- In the survey two time points were asked about – during the lockdown, and before the lockdown.

- The primary outcome measured was self-rated health. Additional measures included: **Physical Activity, Quality of Life**, Social Contact and **Nature Connectedness**.

- Participants were invited through a combination of two of the Local Authorities' Citizens Panels, general invitations on social media platforms, and targeted invitations via WECA's networks.

# Baseline characteristics

- 631 participants
- Over-representation:
  - White residents
  - Females
  - Higher levels of education
  - Own their homes outright
  - Access to a private outdoor space

Objective 1: Exposure measures

1. NDVI (Normalised Difference Vegetation Index)

2. Closest greenspace access point by Euclidean distance

3. Shortest network distance to the nearest greenspace access point

4. Distance to nearest greenspaces using Natural England's Accessible Natural Greenspace standard (ANGSt)

5. Greenspace use

Results: Descriptive
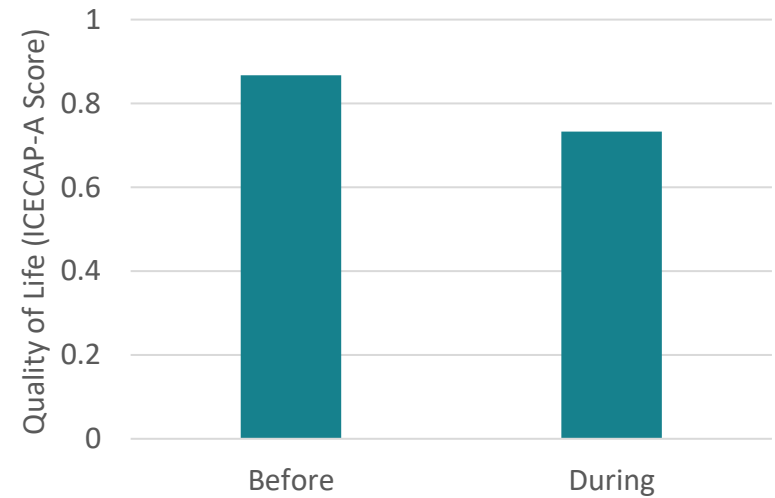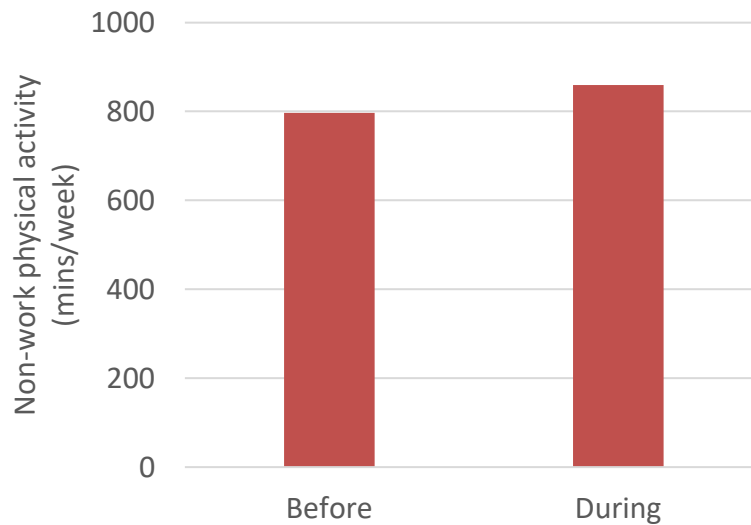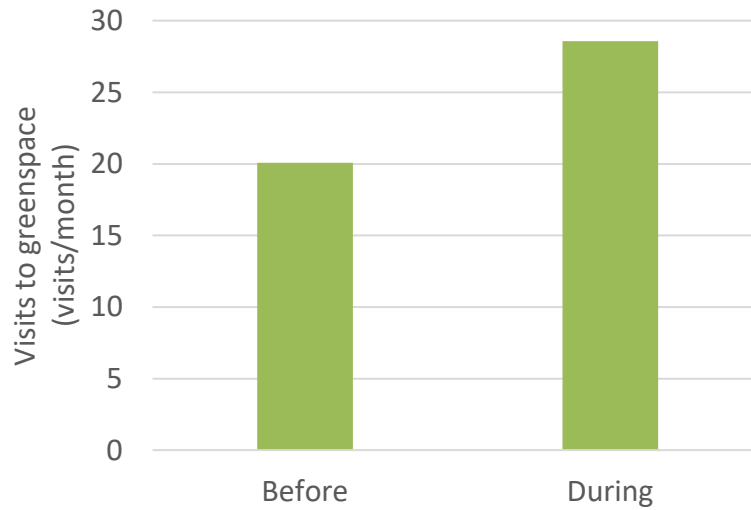
Objective 1: Greenspace measures

Exposure measure	Visits to greenspace (visits/month)		Total non-work physical activity (mins/week)		Quality of life (ICECAP-A Score)	
	BEFORE	DURING	BEFORE	DURING	BEFORE	DURING
NDVI within 200m		p=0.003 ↗	p=0.018 ↘		p=0.032 ↗	
NDVI within 300m		p=0.001 ↗	p=0.005 ↘		p=0.049 ↗	
NDVI within 1000m			p<0.001 ↘			
NDVI within 2000m			P=0.002 ↘			
NDVI within 500m network			p=0.031 ↘		p=0.010 ↗	
Shortest Euclidean distance to greenspace	p=0.010 ↘	p=0.027 ↘				
Shortest Network distance to greenspace	p=0.018 ↘	p=0.004 ↘				
Shortest Euclidean distance to Doorstep Green (0.5ha)	p=0.017 ↘	p=0.002 ↘		p=0.044 ↗		
Shortest Euclidean distance to Local Greenspace (2ha)				p=0.037 ↗		
Shortest Euclidean distance to Neighbourhood Greenspace				p=0.002 ↗		
Shortest Euclidean distance to Wider Neighbourhood Green.				p=0.044 ↗		

Objective 1: Greenspace use

Exposure measure	Total non-work physical activity (mins/week)		Quality of life (ICECAP-A Score)		Nature Connectedness (Score)	
	BEFORE	DURING	BEFORE	DURING	BEFORE	DURING
Visits to greenspace (visits/month)	p=0.001 ↗	p=0.001 ↗			p<0.001 ↗	p<0.001 ↗

Conclusions

- Greenspace behaviours changed during lockdown compared with before

- Most predictive greenspace measure varies by outcome of interest:
  - Physical activity – during lockdown – access to greenspaces
  - Physical activity and nature connectedness – use of greenspace

- The reason some studies have found no relationship between greenspace and health **may** be because of chosen greenspace measure

- Not controlling for the complex range of confounding and mediating factors may mean relationships are missed – NEXT STEP

Thank you

Any questions?