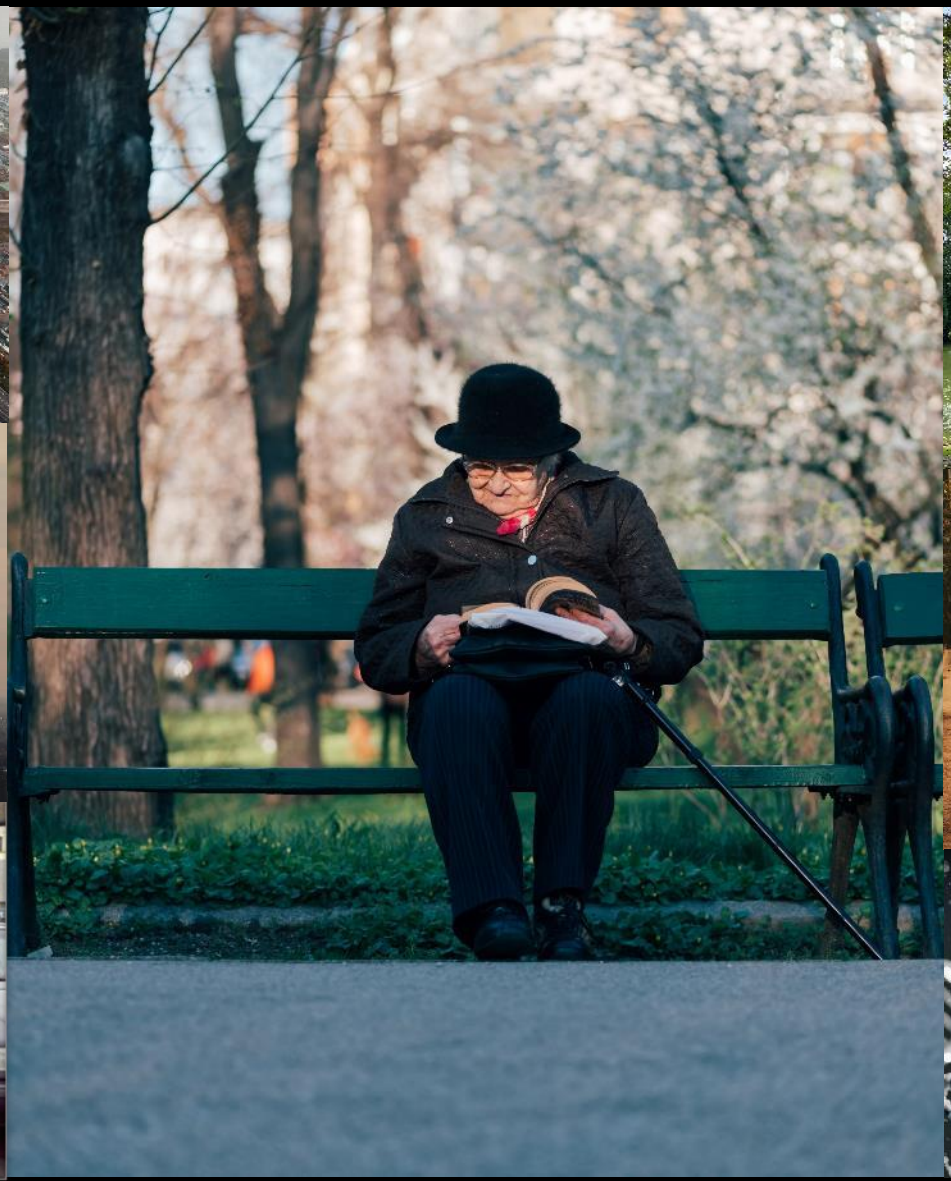
Causal loop diagram of the complex causal mechanisms between urban environment and mild cognitive impairment and dementia

Ione Avila-Palencia, Leandro Garcia, Claire Cleland, Bernadette McGuinness, Conor Meehan, Ruth Hunter on behalf of the SPACE team



SPACE Project

- Aim:
  - **to investigate the impacts**, and possible mechanistic pathways, **of urban environments on healthy ageing and the cognitive health** of diverse individuals and communities, through the novel integration of multi-omics, behaviours, environmental exposures, and urban environment, to create healthy active places that are supportive, attractive, and accessible to people as they age across the life course.

- This research builds on several projects:

HULAP
Healthy Urban Living and Ageing in Place

NICOLA
Understanding Today for a Healthier Tomorrow

HCAP NETWORK

Research questions

1. **What are the plausible causal pathways within the environment-based systems perpetuating cognitive decline, including those between the urban environment, its related environmental exposures, lifestyle behaviours (i.e. social engagement, physical activity), biological factors and cognitive health?**

2. Using newly curated environmental NI exposure data, what is the effect, and mechanistic pathways, of urban environment and related environmental exposures on cognitive health and lifestyle behaviours?

3. Using exploratory multi-omic approaches, what are the biological responses to the urban environment and related environmental exposures influencing measures of cognitive health?

4. What prevention strategies, policies and interventions might help prevent cognitive decline, promote cognitive health, and reduce cognitive health inequalities?

Group Model Building

A process in which team members exchange their perceptions of a problem

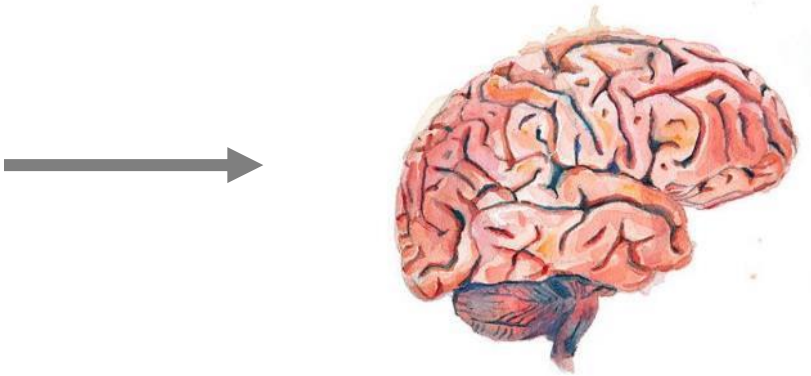
A participatory method for involving people in a modelling process

A space where experts co-create a shared understanding of the complex system influencing cognitive health

Participatory Group Model Building workshop

Problem of interest

Better understand the mechanistic pathways by which urban environment impacts cognitive health in older adults



Participatory Group Model Building workshop

Objectives

1. To enable the SPACE team experts **to develop a system-based**, evidence-informed knowledge synthesis **diagram** to identify established and potential determinants of MCI and dementia in older adults

2. **To identify the underlying mechanisms**, including direct and indirect pathways, between urban environment factors and MCI and dementia in older adults

3. **To build a shared understanding** of the complex system influencing MCI and dementia in older adults.

Participatory Group Model Building workshop

Structure:

Session 1: 6th December 2021, 13-15h

Session 2: 7th December 2021, 13-15h

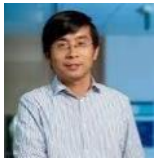
Kumu.io

Prof Bernadette McGuinness

Prof Peter Passmore

Prof Frank Kee

Prof Geraint Ellis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Dr Claire Cleland

Prof Jenny McKinley

Prof AJ McKnight

Prof Dermot O'Reilly

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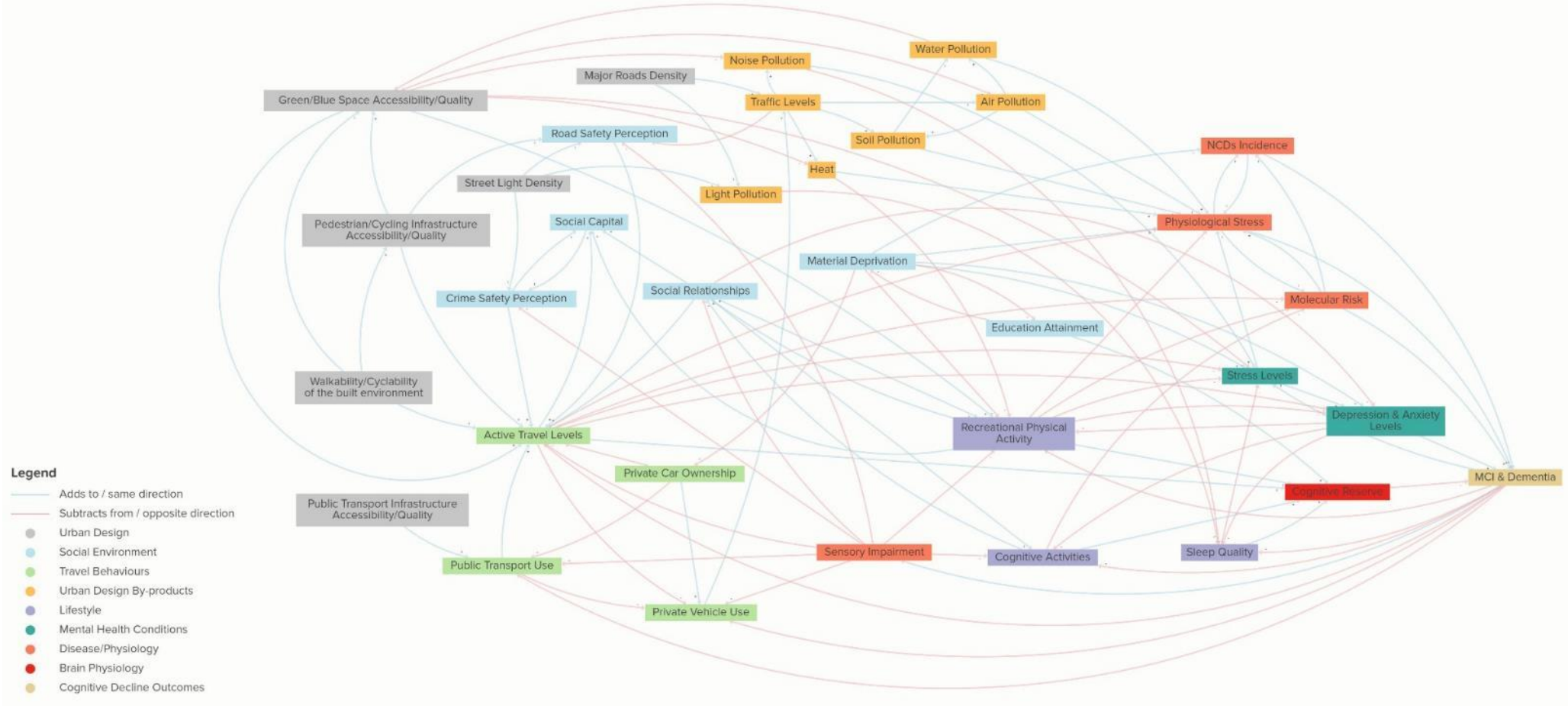
Dr Leandro Garcia

Dr Ione Avila-Palencia

Conor Meehan

Roisin Corr

SPACE Causal Loop Diagram



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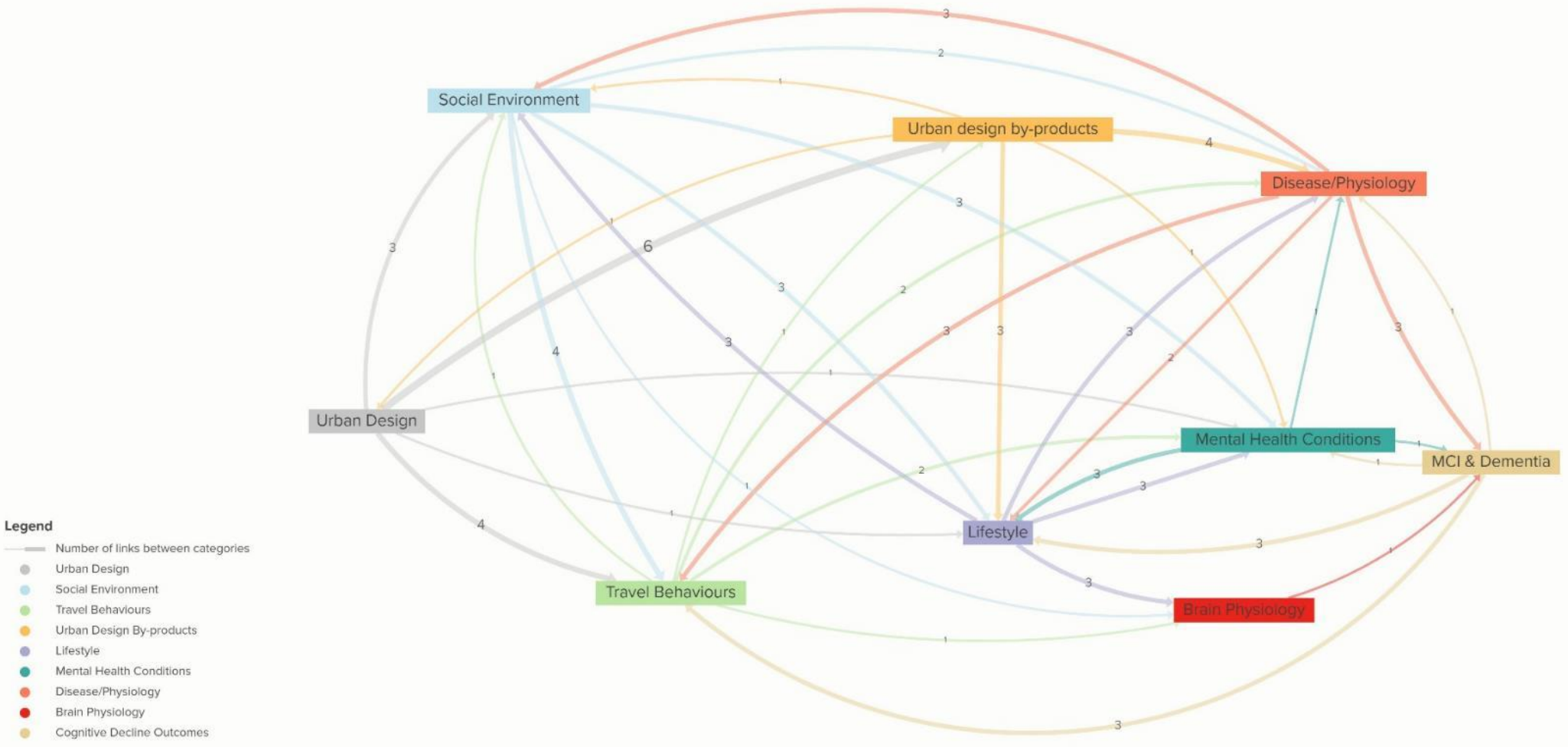

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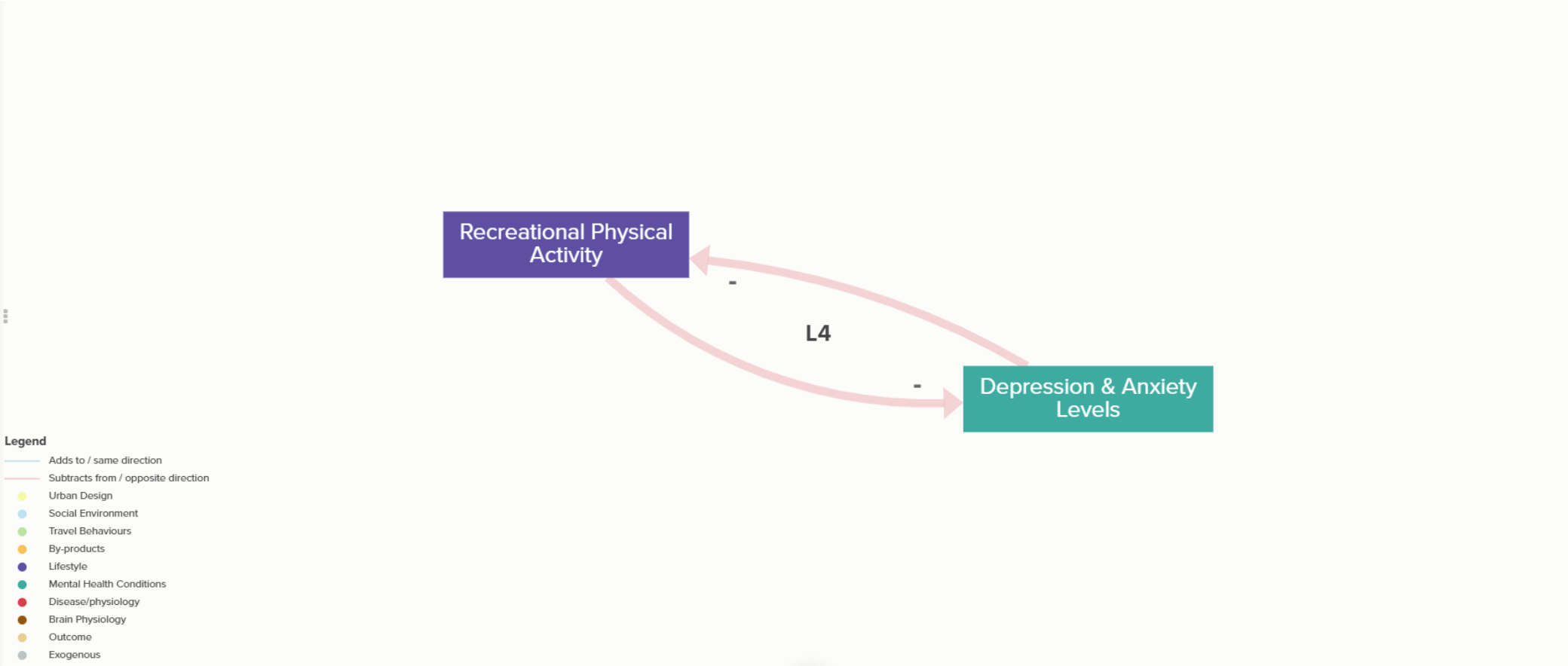
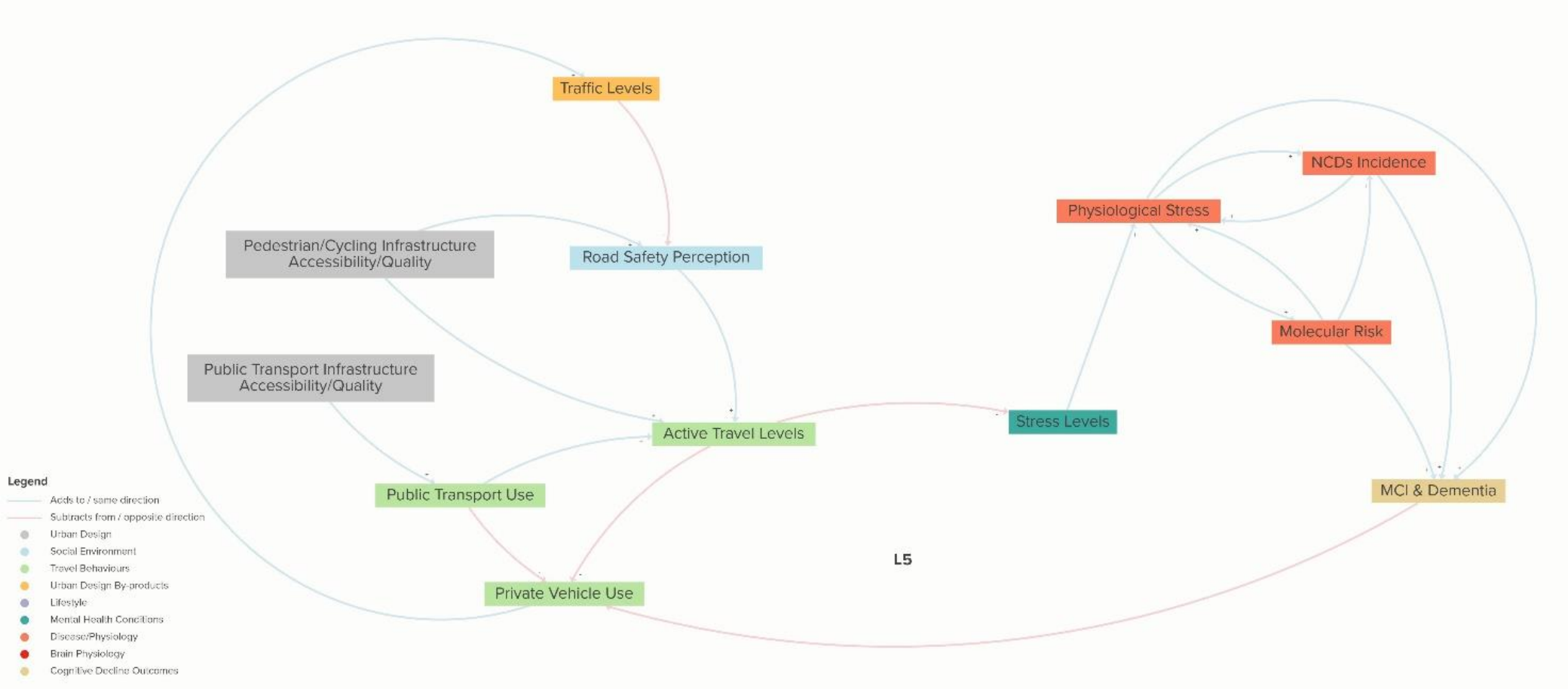


SPACE Causal Loop Diagram



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It represents a collaboration between Queen's University Belfast and partnering organisations from across health, government, third sector, private and public organisations, the NICOLA Advisory Research Group and the SPACE Project Team, without whom the research would not have been possible. Full details are available on our website: qub.ac.uk/sites/space

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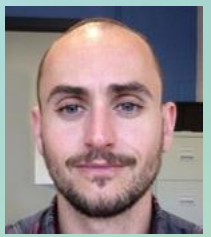

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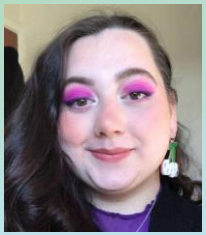

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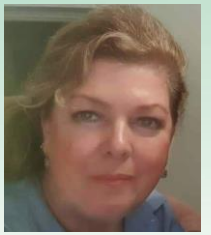

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Economic and Social Research Council

Healthy Ageing Challenge Social, Behavioural and Design Research