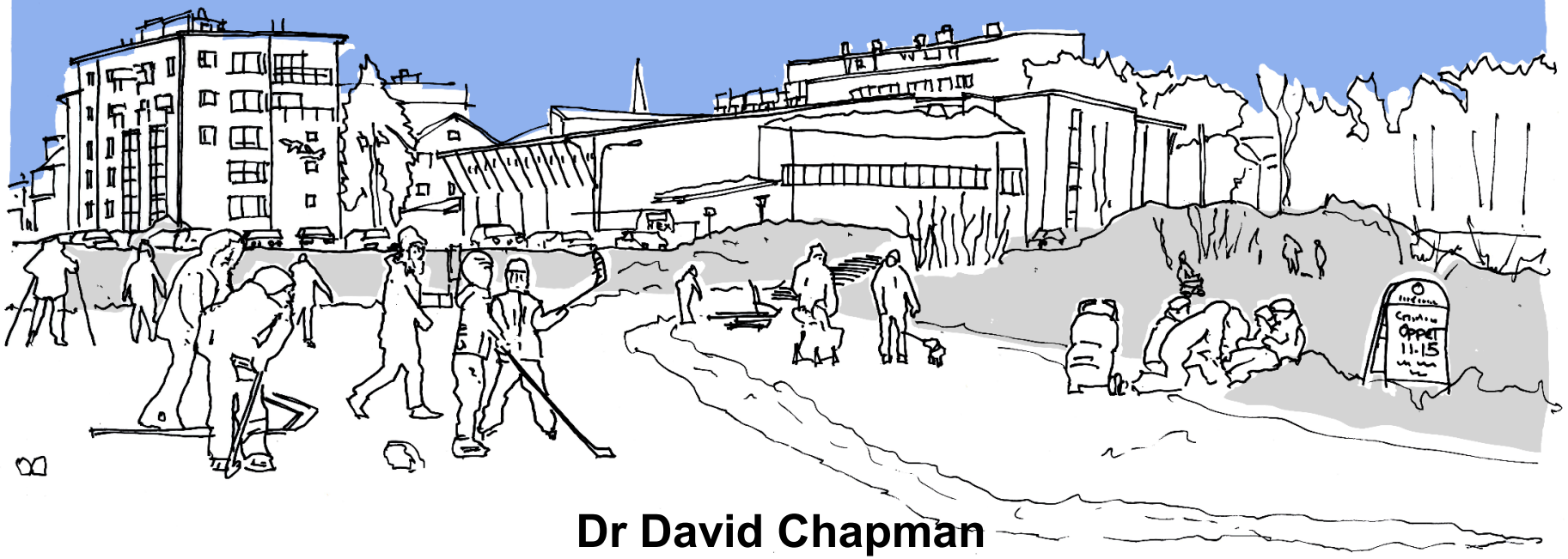
Winter City Urbanism: Enhancing outdoor activity

Age-friendly winter cities and communities



Dr David Chapman
University of Stavanger/ Luleå University of Technology

Well-being and Urbanism

- Little recent research has been undertaken for cold climate settlements
- Growing practical interest in well-being and active ageing as a part of urban design
- Growing propositions for ‘green-blue-white’ plans in Sweden

Definitions

Porsön, Luleå in winter and summer

Oulu, Finland in summer and winter

Porsön, Luleå in winter and summer

Global goals

UN. (2018). Sustainable Development Goals. UN. Retrieved: 2018-10-05. https://www.un.org/sustainabledevelopment/sustainable-development-goals/

Physical activity

- Insufficient physical activity is one of the leading risk factors for death worldwide.
- Globally, 1 in 4 adults is not active enough.

WHO. (2017). Physical Activity. Retrieved: 2017-12-02. http://www.who.int/en/news-room/fact-sheets/detail/physical-activity

- Create Active Environments, Action 2.1. deliver connected neighbourhoods to enable and promote walking,cycling, other forms of mobility.

WHO. (2018). Global action plan on physical activity 2018–2030: more active people for a healthier world, WHO.

- Clear need to address issues for enabling walking and cycling.

Boverket. (2012). Samhällsplanering som stimulerar till fysisk aktivitet. Slutrapportering av ett regeringsuppdrag, Rapport 2012:22, Boverket.

(photo: Kristina L. Nilsson)

Soft-mobility

What is the current state of knowledge and practice relating to the urban design of winter cities?

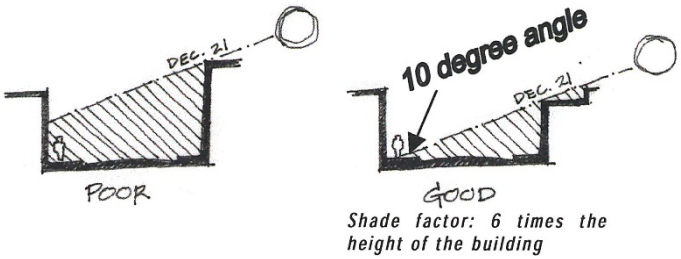
Chapman, D., Nilsson, K. L., Rizzo, A., & Larsson, A. (2018). Updating winter: the importance of climate sensitive urban design for winter settlements. Arctic Yearbook.

- **Main documented principles of urban design in winter cities are mostly design for solar access, wind defense, and snow management.**

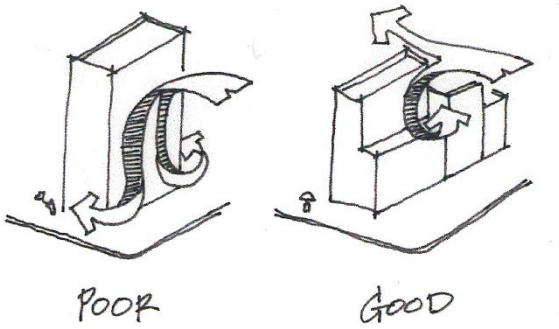
- **Concluded that at that time neither 'climate change' or 'human wellbeing' was on the planning agenda.**

- **New research is needed to integrate these agendas into urban design for winter cities.**

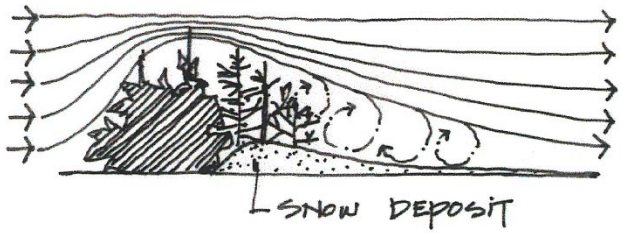
Key climate-sensitive principles



Preserve Solar access



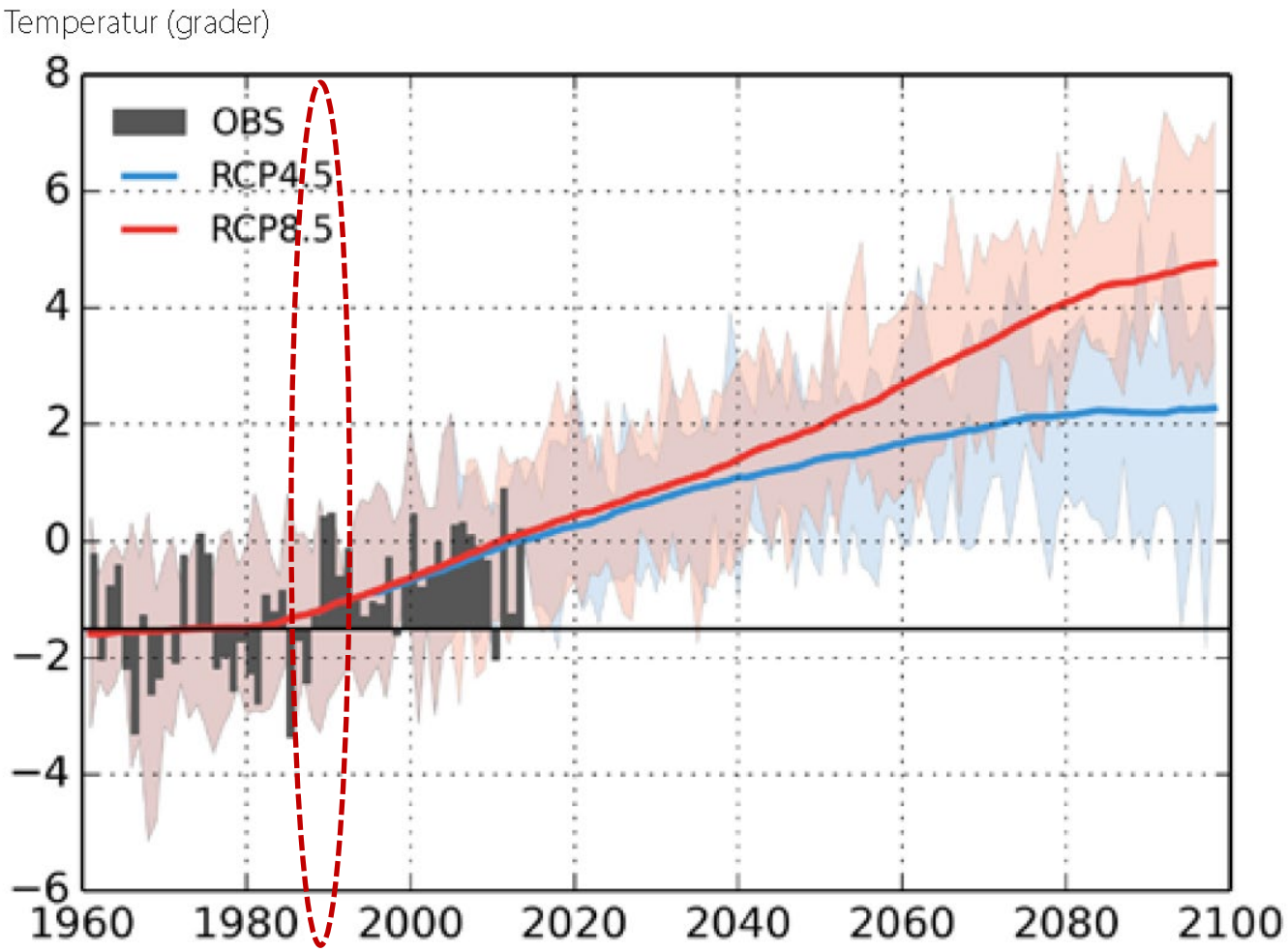
Shelter from the wind



Design for snow

Urban Systems. (2000). Winter City Design Guidelines. Urban systems Ltd.

Climate change & publications



Norrbotten County, 2016

What attractors, promoters, and hindrances to connectivity for soft mobility can be created in the public realm of winter cities?

Chapman, D., Nilsson, K. L., Rizzo, A., & Larsson, A. (forthcoming A). Climate-sensitive urban design; enabling connectivity for soft mobility in winter. Journal of Urban Design (submitted).

- **Showed the winter can alter levels of connectivity for soft mobility and change how usable and understandable the public realm is.**
- **Established that while the physical infrastructure links remained intact in summer and winter, the spatial arrangement of the streets and spaces changed.**
- **Highlighted that the winter season was significant enough to alter an areas spatial structure and townscape.**
- **The winter was seen to reduce the area of public realm available for soft mobility.**

Ice Road, *Luleå* (photo: Erik Hidman)

Results from photo elicitation study

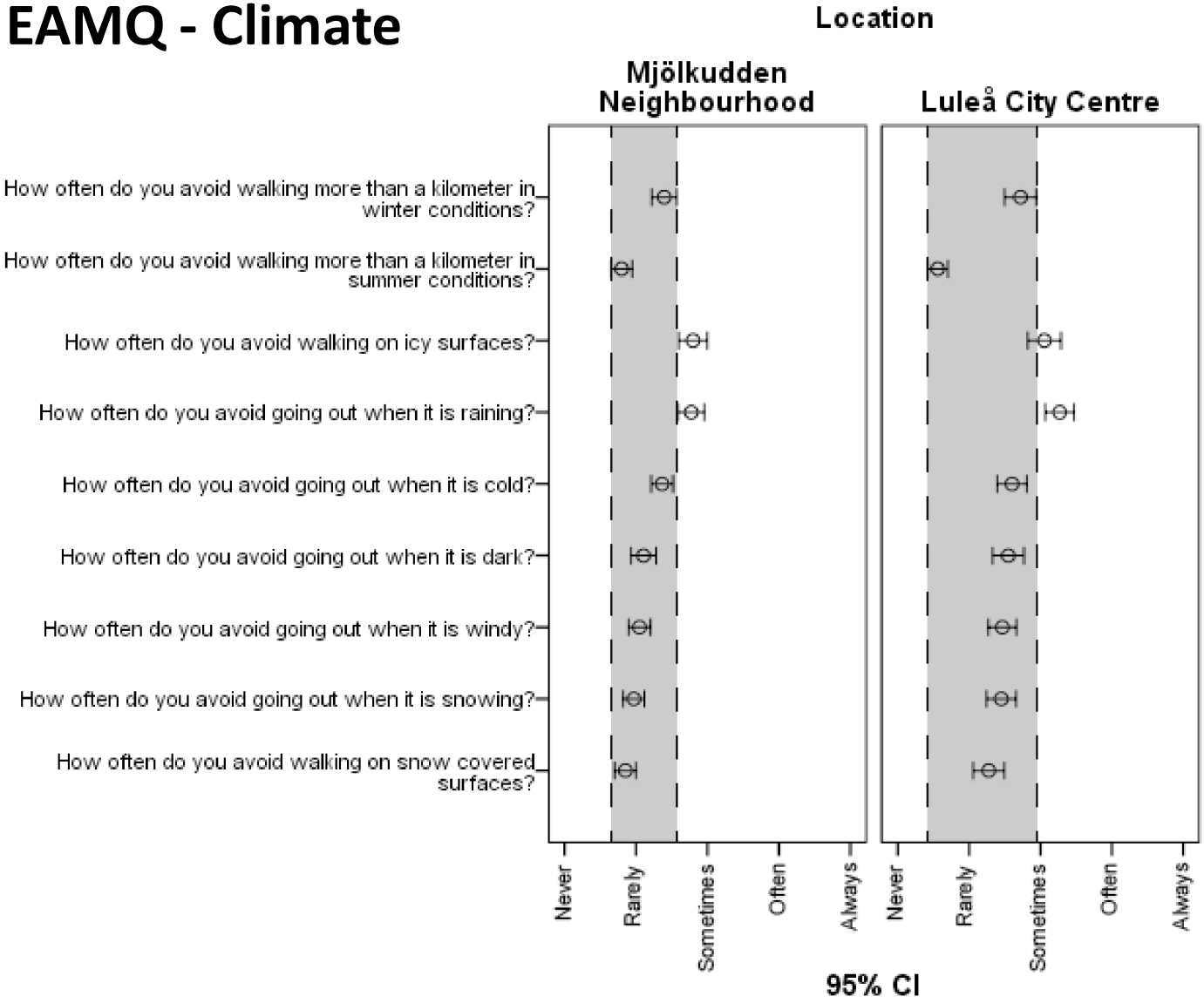
Examples of participant photographs of barriers and enablers.

What climate- and weather-based barriers and enablers to connectivity for soft mobility are created in the public realm of winter cities?

Chapman, D., Nilsson, K., Larsson, A., & Rizzo, A. (2017). Climatic barriers to soft-mobility in winter: Lulea, Sweden as case study. Sustainable Cities and Society, 35, 574-580. https://doi.org/10.1016/j.scs.2017.09.003. (Published).

- **Greater resistance to walking more than a kilometre in winter.**
- **Barriers emerged around icy surfaces, rain, coldness, darkness and wind.**
- **Today a wide range of weather that affect outdoor soft mobility.**
- **As climate change is expected to continue, urban design in winter cities will need to continue to adapt to new weather challenges.**

EAMQ - Climate



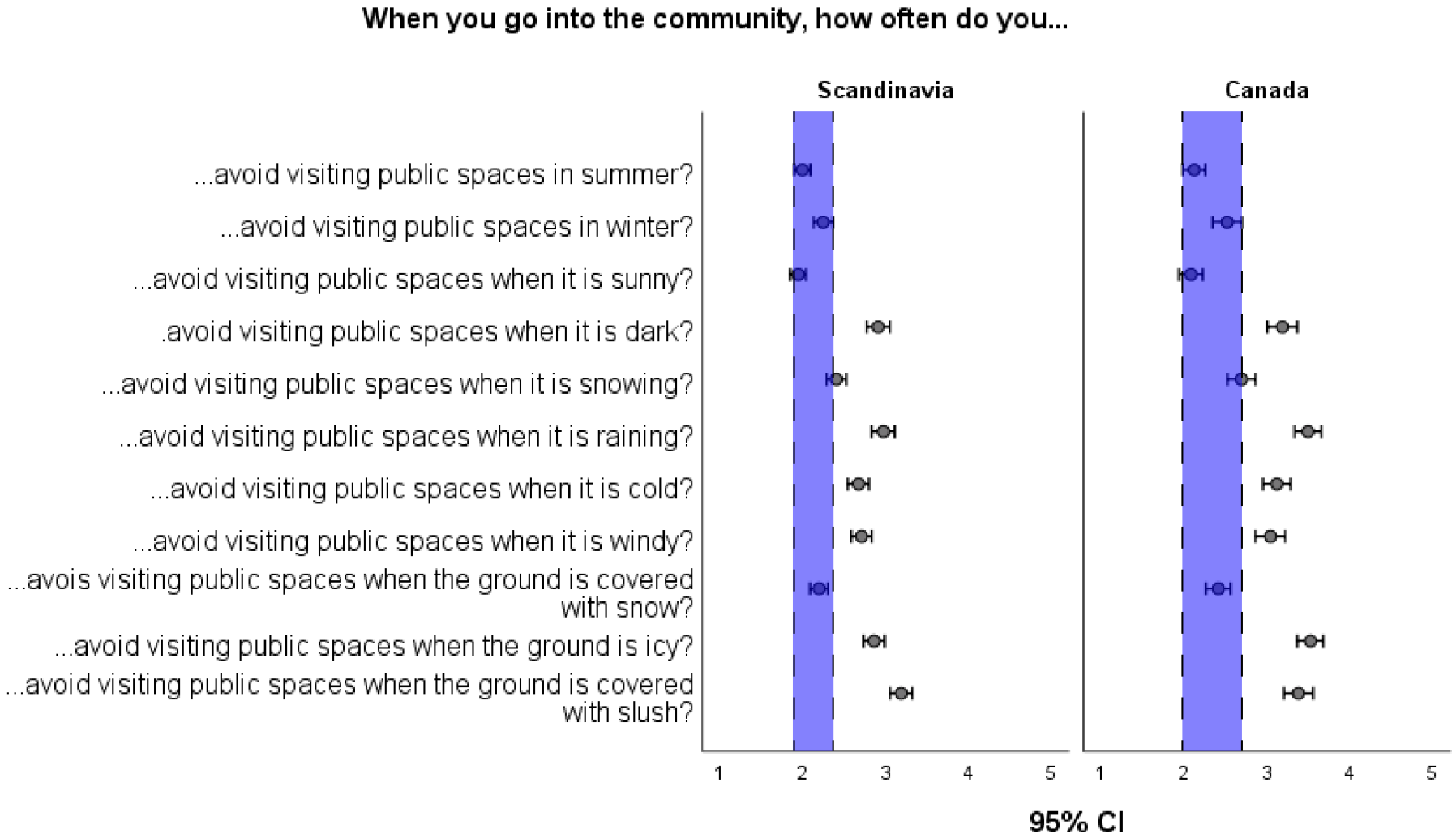
Participants responses – avoidance

How do different meteorological conditions effect people visiting/ the use of public space in winter cities?

Larsson, A., & Chapman, D. (2020). Perceived impact of meteorological conditions on the use of public space in winter settlements. International Journal of Biometeorology. https://doi.org/10.1007/s00484-019-01852-5

- **A greater resistance to using outdoor public space in winter compared to summer.**
- **Snow-covered surfaces and snowfall, were not avoided, and were perceived as positive conditions to encounter.**
- **Main barriers to the use of public space were slushy and icy ground and rainfall.**

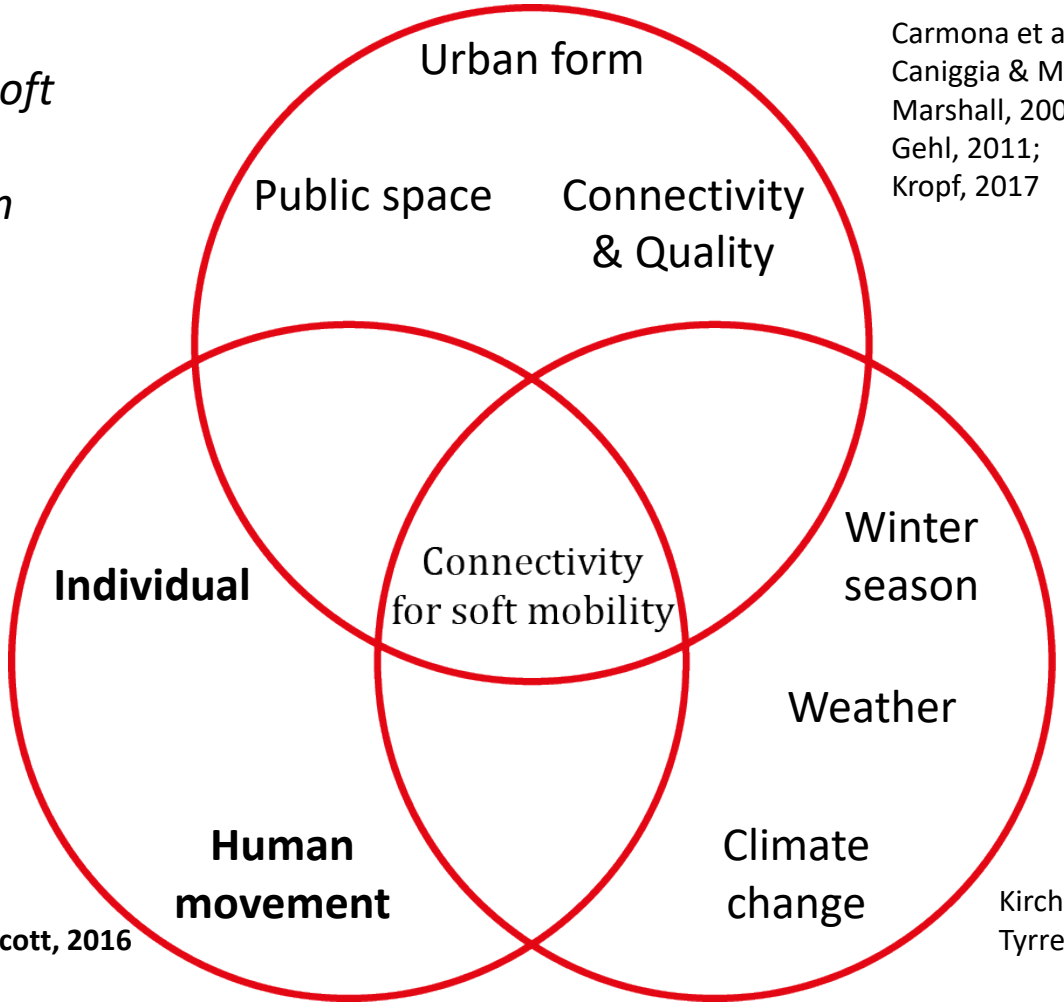
EAMQ-Climate: space



Participants responses – avoidance

Framework

Connectivity for soft mobility in the winter season can be shaped at the interaction of the ***urban form, individual and winter season****.*



Carmona et al., 2010;
Caniggia & Maffell 1979;
Marshall, 2005;
Gehl, 2011;
Kropf, 2017

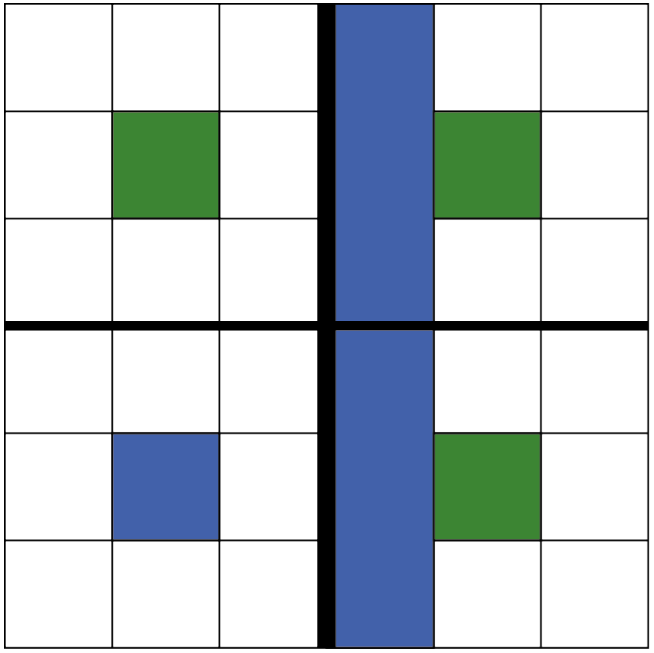
WHO, 2018
Shumway-Cook & Woollacott, 2016

Kircher, 2002;
Tyrrell, 2013

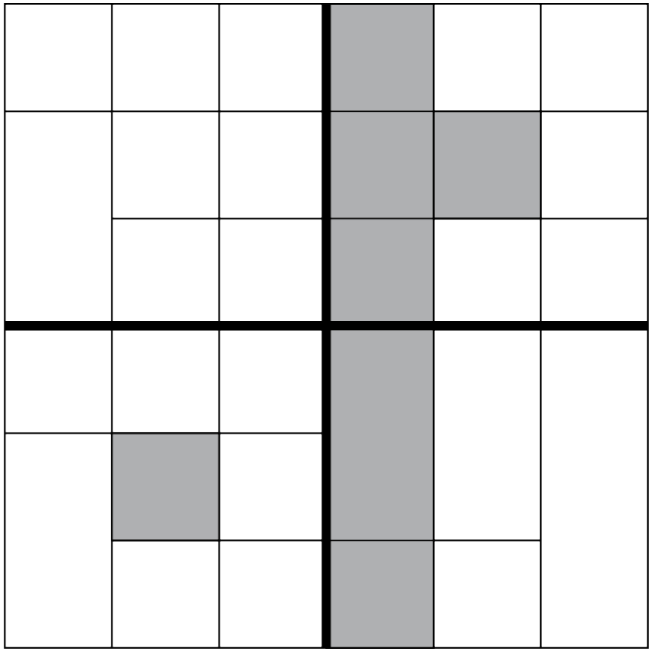
Chapman, D., & Larsson, A. (2019). Toward an Integrated Model for Soft-Mobility. *Int. J. Environ. Res. Public Health*, 16, 3669; doi.org/10.3390/ijerph16193669

Green-Blue-White Planning

Urban structure: Summer



Urban structure: Winter



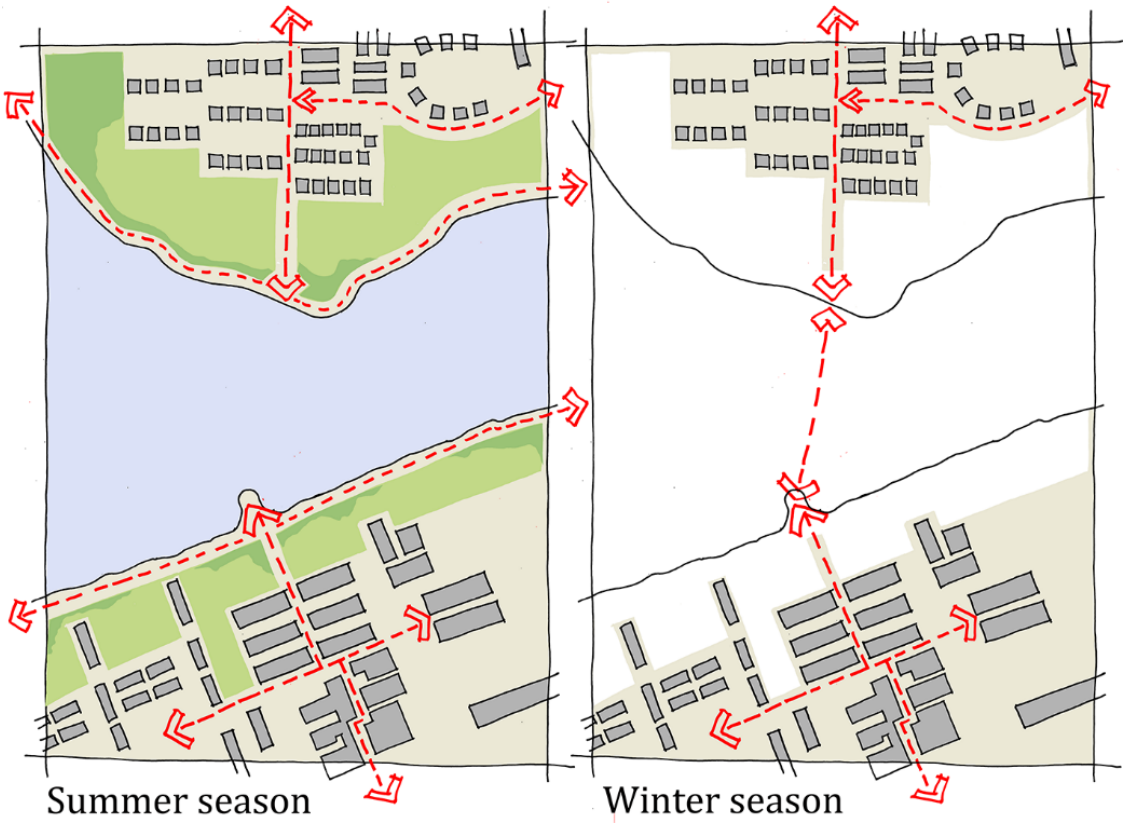
This analysis shows that interaction between the urban form and winter season were seen to be capable of altering the urban structure; that is the network of routes and spaces of an area for soft mobility and the urban tissue; that is the relationship between plots, blocks and pathways.

Analysis

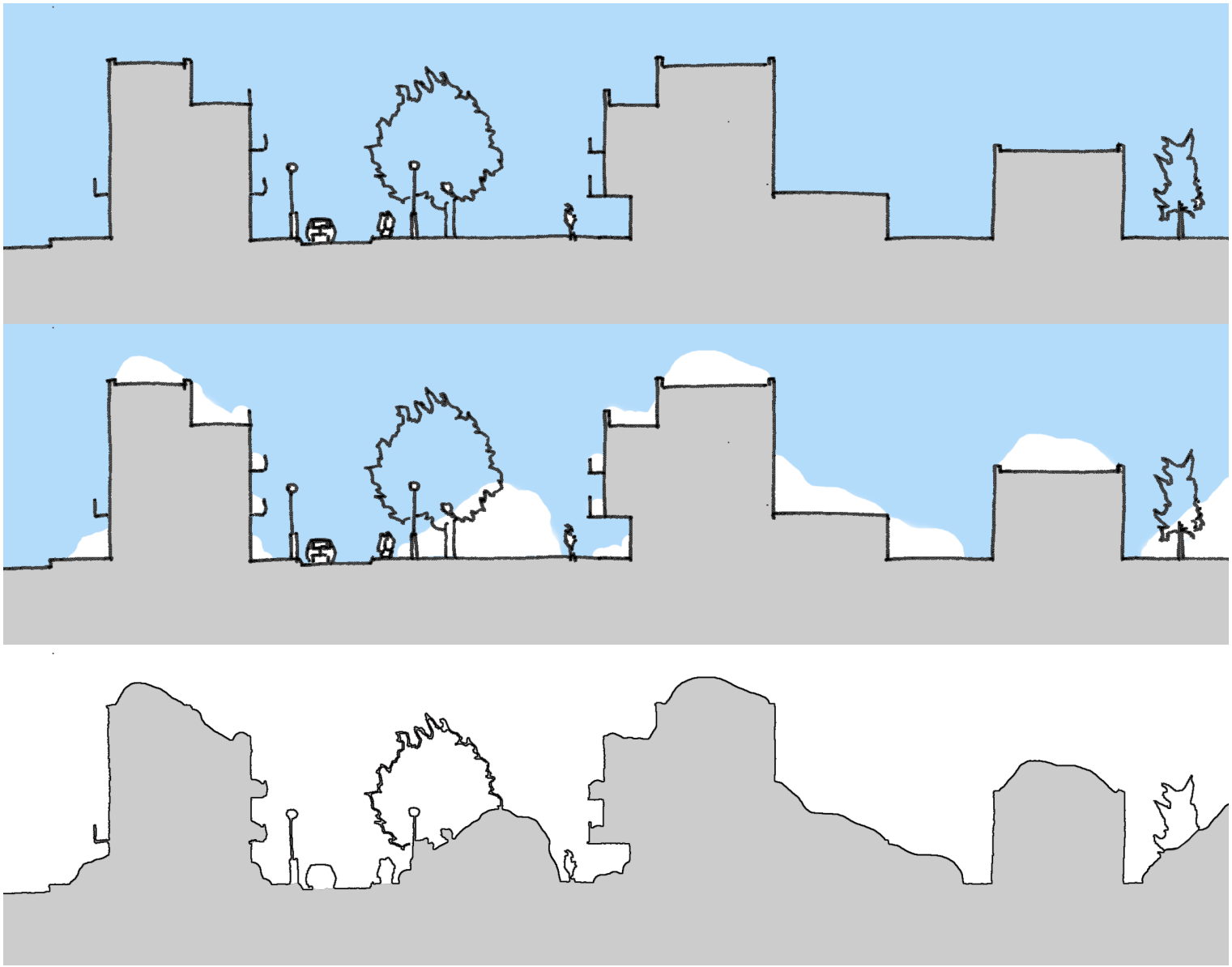
The main additional routes for soft mobility that appear in winter are **routes over frozen water.**

These routes grow the soft mobility network of an area by **creating a 'finer' urban grain and route network.**

Provide **connectivity between neighbourhoods.**



Sketch of the morphological change created by the winter season



Example winter street section

Opportunities for winter city urban design

"As climate moves ever higher in our collective consciousness, this welcome book takes climate as its starting point and the need for climate sensitive planning and design as its goal. In doing so it systematically looks across scales of impact and intervention to offer a long overdue and in-depth examination of the arctic context"

Prof. Matthew Carmona, University College London

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