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Public participation GIS approach for mapping leisure-time physical activity

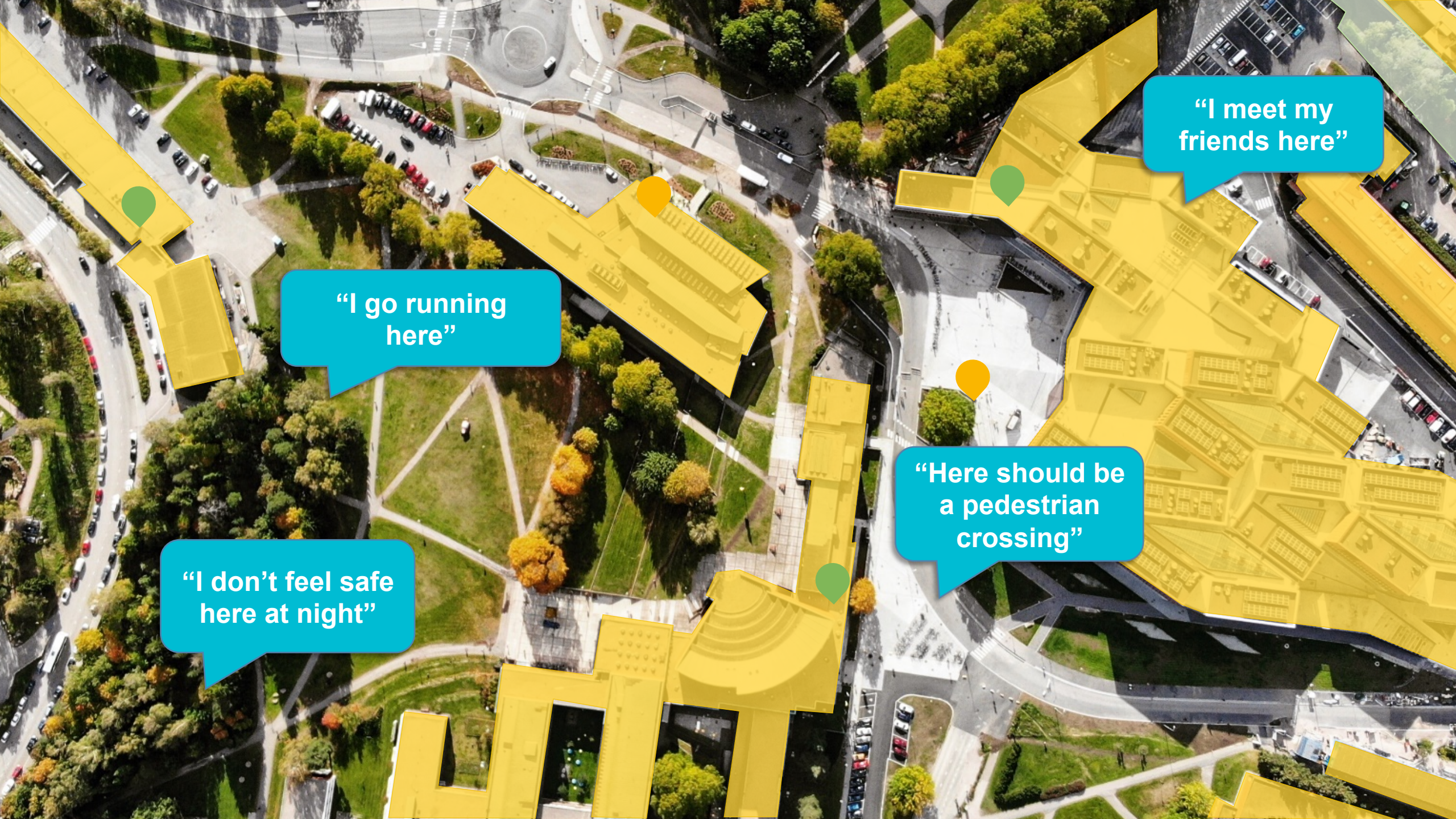


CONTENT

1. Public Participation GIS and the SoftGIS method
3. CASE: Mapping restorative physical activity environments
4. Conclusions

An aerial photograph of a university campus. The image shows a mix of modern and older buildings, some with flat roofs and others with more complex, multi-level structures. There are several parking lots with cars, and green spaces with trees, some of which have yellowing leaves, suggesting autumn. A road with a roundabout is visible in the upper left. The overall scene is a typical university environment.

What Public Participation GIS?



"I meet my friends here"

"I go running here"

"I don't feel safe here at night"

"Here should be a pedestrian crossing"

An aerial photograph of a city street scene, showing buildings, trees, and a roundabout. A semi-transparent white box is overlaid on the center of the image, containing text.

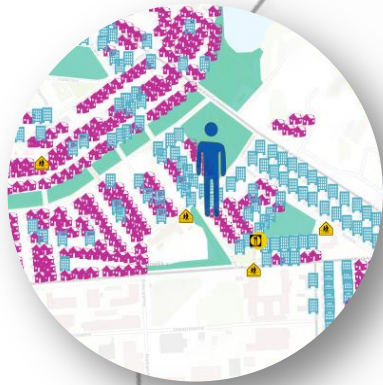
Participatory mapping methods:

- **Public Participation GIS (PPGIS)**
- **Participatory GIS (PGIS)**
- **Volunteered Geographic Information (VGI)**

(Brown & Kyttä 2014)

VARIOUS THEMES

- Social sustainability
- Urban densification
- Ecosystem service accessibility
- Perceived safety
- Travel behavior
- Childfriendly environments
- Etc.



TRANSACTIONAL PERSON- ENVIRONMENT RESEARCH

VARIOUS PLANNING PHASES

- Initiation
- Formulation
- Decision making
- Implementation
- Evaluation



VARIOUS USER GROUPS

- Children
- Adults
- Elderly



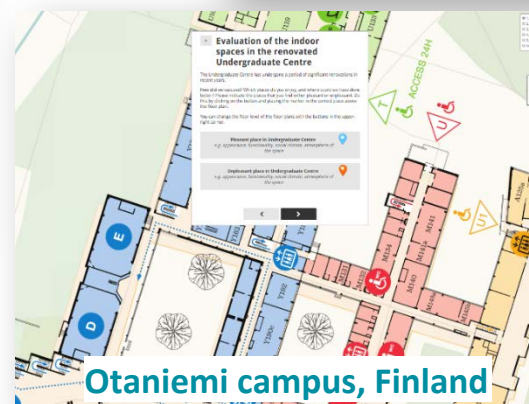
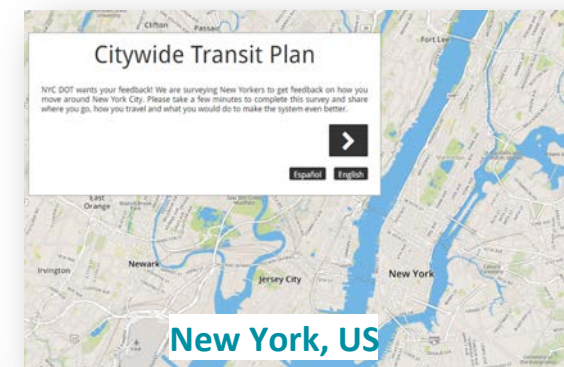
PARTICIPATORY PLANNING APPROACH

VARIOUS SCALES

- Indoor spaces
- Neighbourhoods
- Cities and regions



The SoftGIS method



The SoftGIS method

5/10 My leisure time physical activity on the map

Please mark all the places where you are physically active on your leisure-time in this time of the year.

You can also mark routes if the activity includes a lot of moving around, and to mark routes for travelling actively from place to place

Places for leisure time physical activity

Places for physical activities, such as sport facilities, parks, fields, courts, gyms, forests etc.



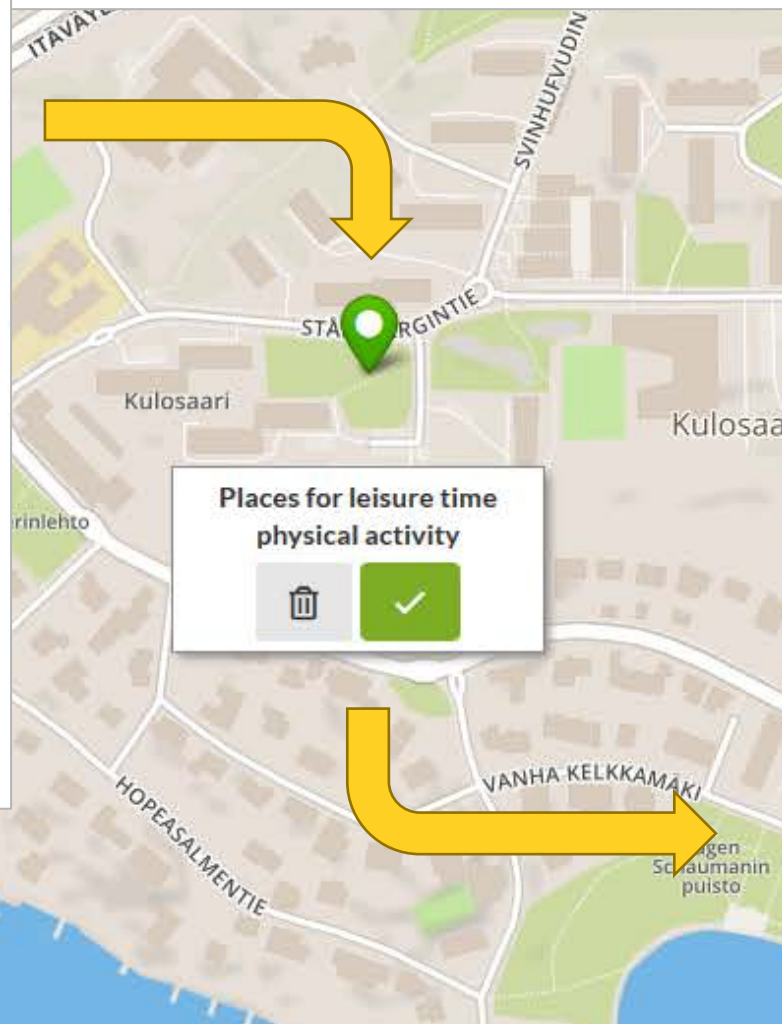
Routes for leisure time physical activity

Routes for activities, such as biking, jogging, walking, dog-walking, paddling, etc.



Routes for travelling by foot or by bike to get from place to place

Routes for commuting or for other travel by foot or by bike



Places for leisure time physical activity



Places for leisure time physical activity

This place is...

☐ Indoors

☐ Outdoors

In this time of the year, how often are you physically active here?

...

Do the physical activities you do here make you breath...

☐ Somewhat harder than normal

☐ Much harder than normal

Do you usually reach this place by...

☐ Walking, biking or similar travel mode

☐ Public transport

☐ Car

Tell us more about this place. Is this a place... (you may choose many)

☐ Where you spend time with family or friends

☐ That helps you relax

☐ That helps you escape stress

☐ Where you can run into good people

☐ Where you enjoy nature and being outdoors

☐ Where you enjoy urban life

Save

Health behaviour

- Travel behaviour
- Physical activity
- Social interaction
- Places for recreation
- Food consumption / groceries
- Etc.

Environmental perceptions

- Safety
- Restorative environments
- Aesthetic value
- Perceived accessibility
- Social quality
- Etc.

Environmental exposure

- Network of usual places
- Activity space modelling
- Etc.

An aerial photograph of a city at sunset. The foreground is filled with dense residential buildings, many with red-tiled roofs, interspersed with green trees. In the middle ground, a mix of urban development is visible. The background features a large industrial area with several tall smokestacks and cranes, situated near a body of water. A prominent church spire with a green roof is visible on the right side. The sky is a soft orange and yellow from the setting sun.

CASE: Typology of outdoor LTPA environments and green exercise

Restorative benefits of green exercise

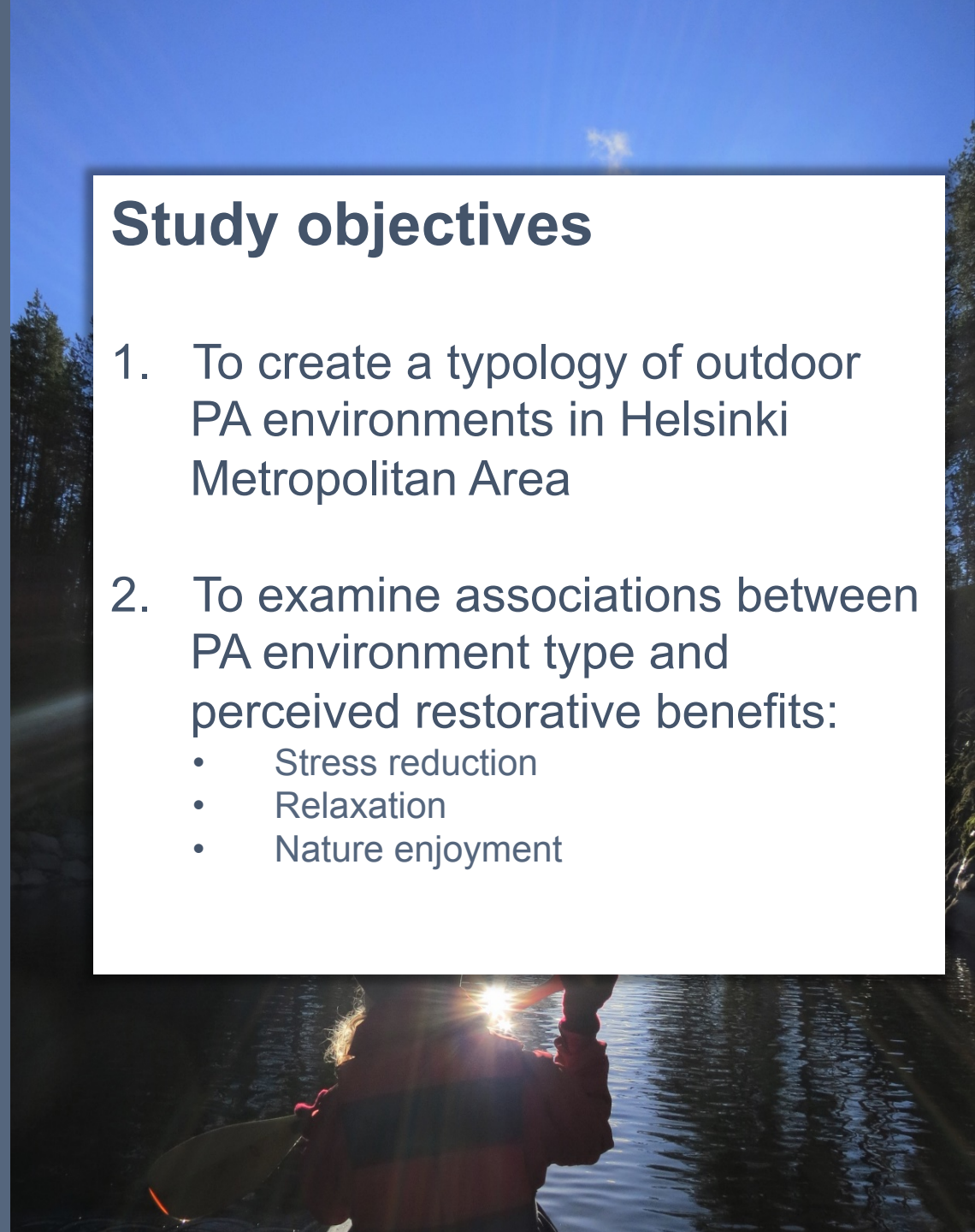
Kajosaari & Pasanen, forthcoming

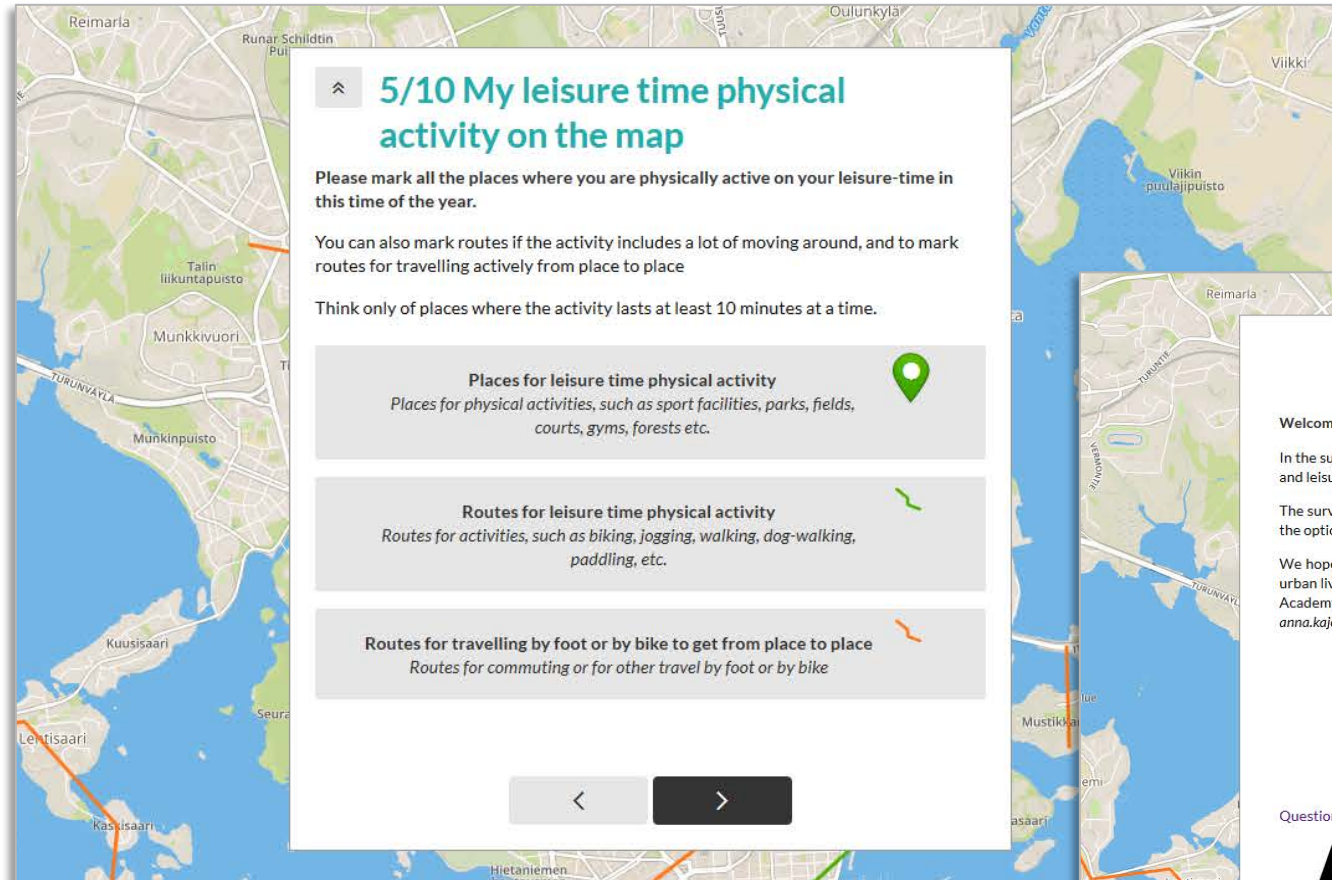
- Does physical activity in green and natural environments provide more mental health benefits than physical activity in indoor or other outdoor settings?

(Barton & Pretty, 2010; Hartig et al., 2014; Mitchell, 2013; Pasanen et al., 2018; Pasanen, Tyrväinen, & Korpela, 2014; Thompson Coon et al., 2011)

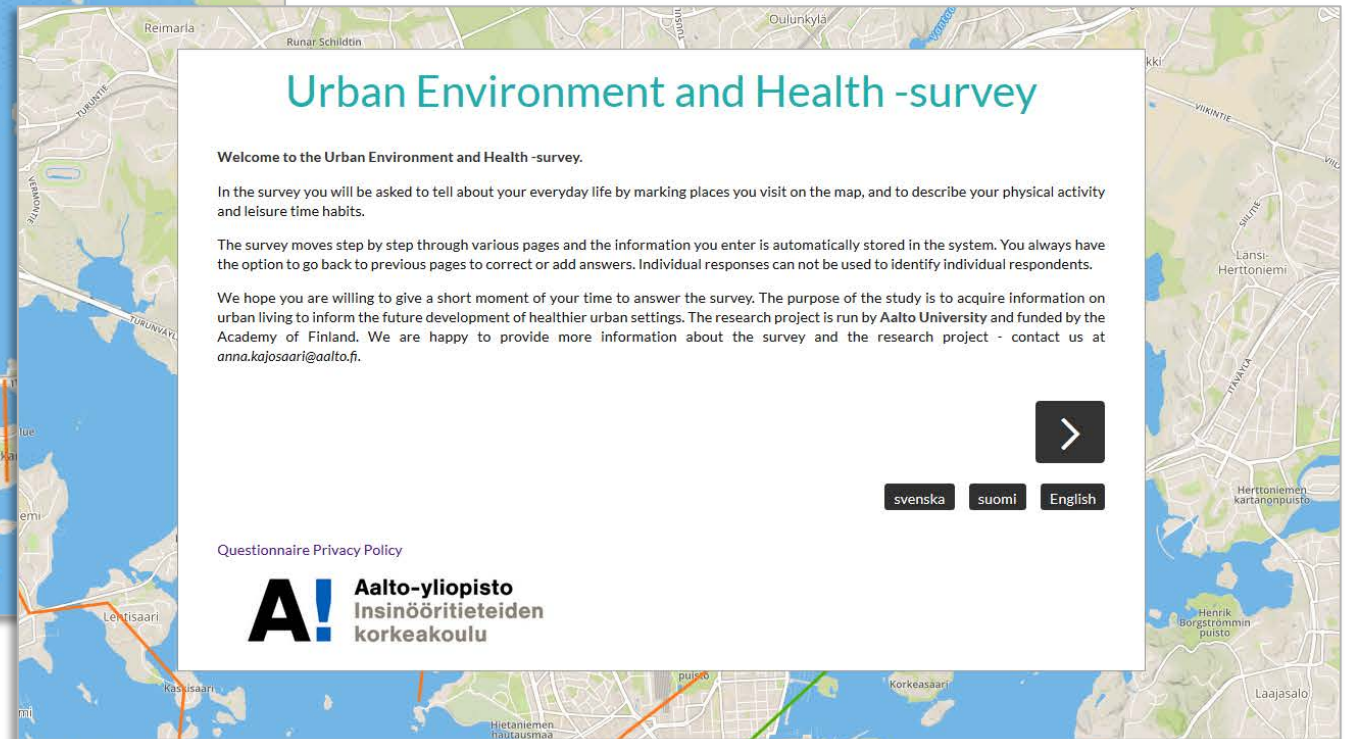
Study objectives

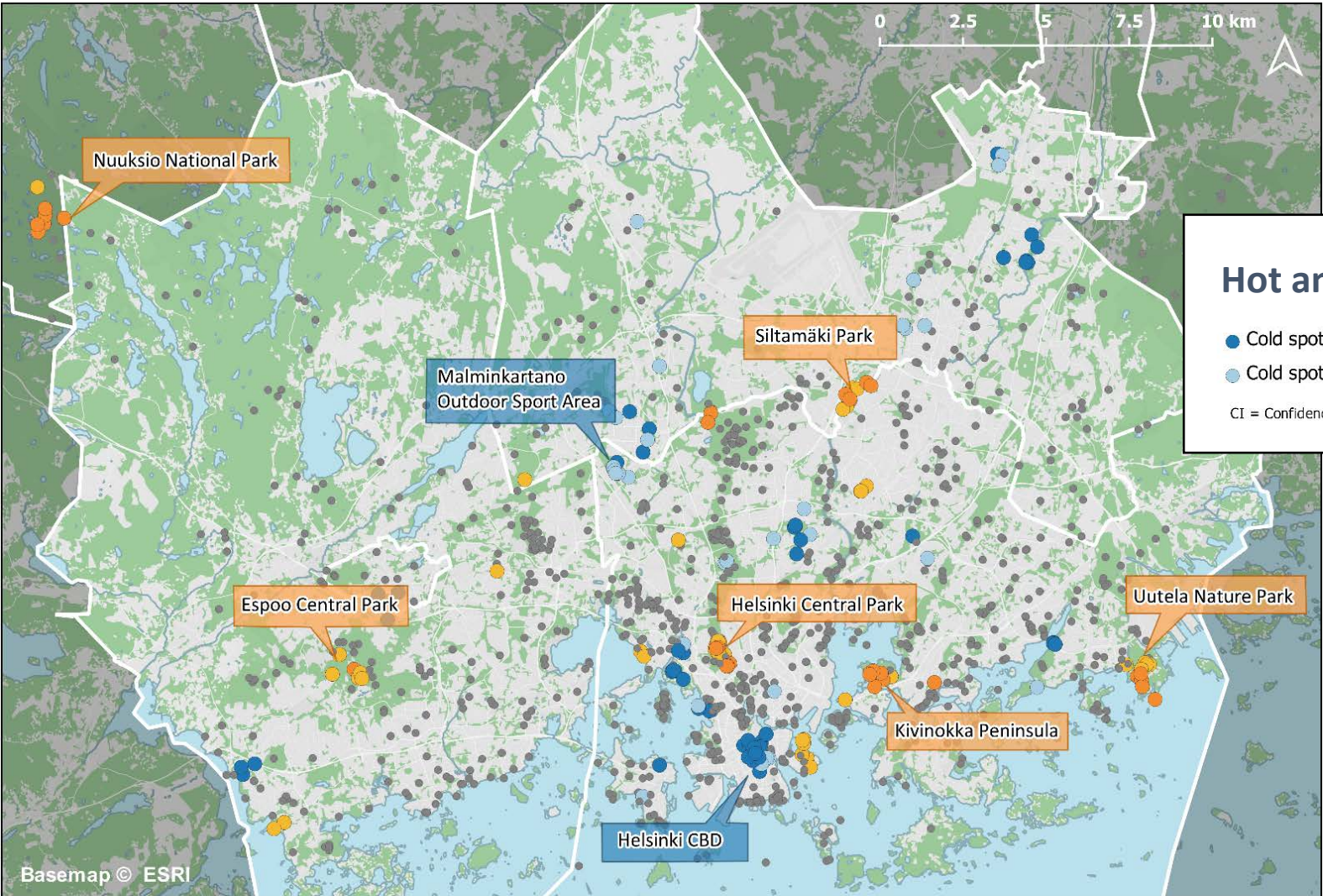
1. To create a typology of outdoor PA environments in Helsinki Metropolitan Area
2. To examine associations between PA environment type and perceived restorative benefits:
 - Stress reduction
 - Relaxation
 - Nature enjoyment





- **Urban Environment and Health – survey (N 1,517), August 2018**





Hot and cold spots - Stress reduction

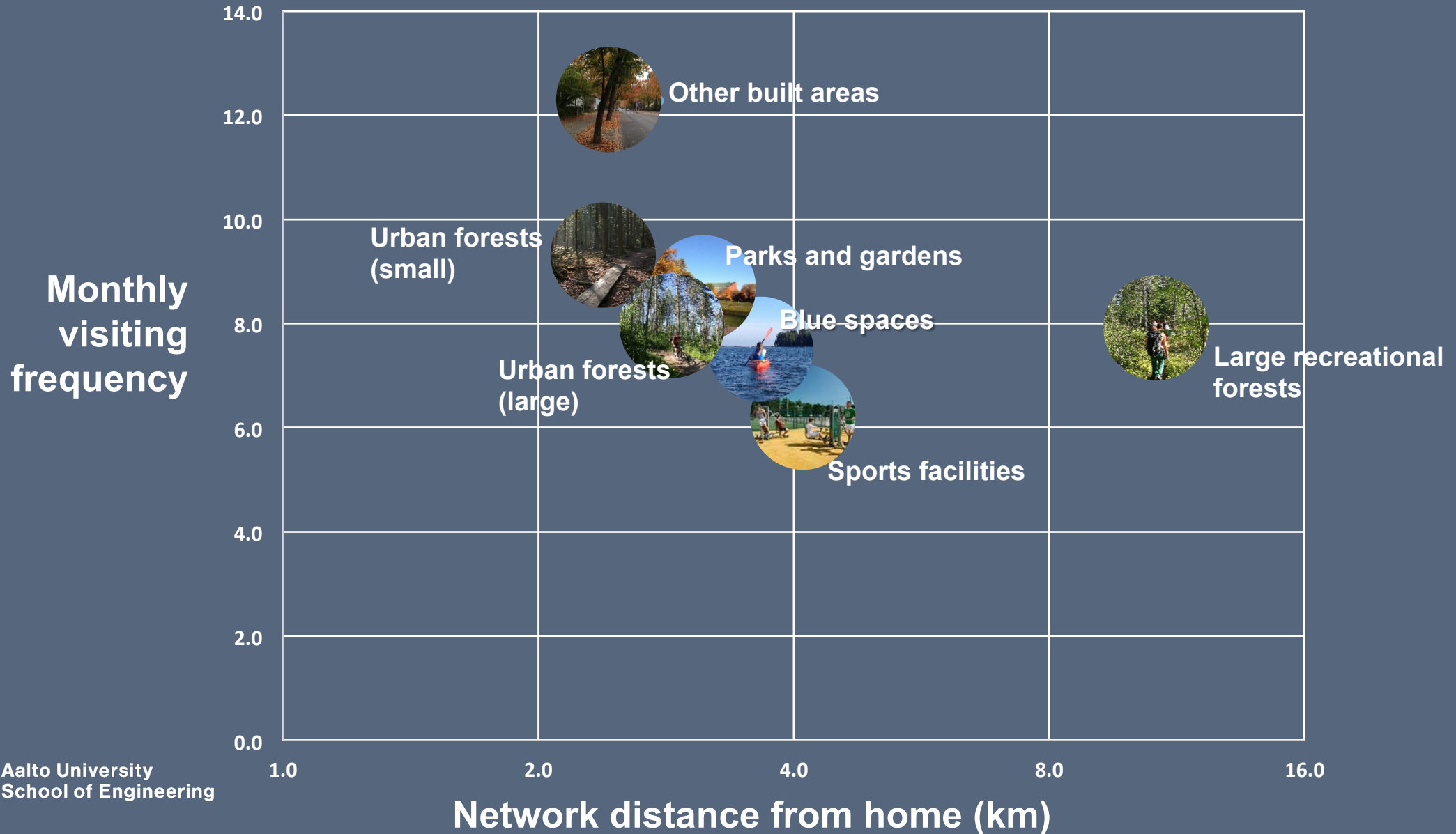
● Cold spot - 95% CI	● Hot spot - 90% CI	● Not significant
● Cold spot - 90% CI	● Hot spot - 95% CI	

CI = Confidence Interval

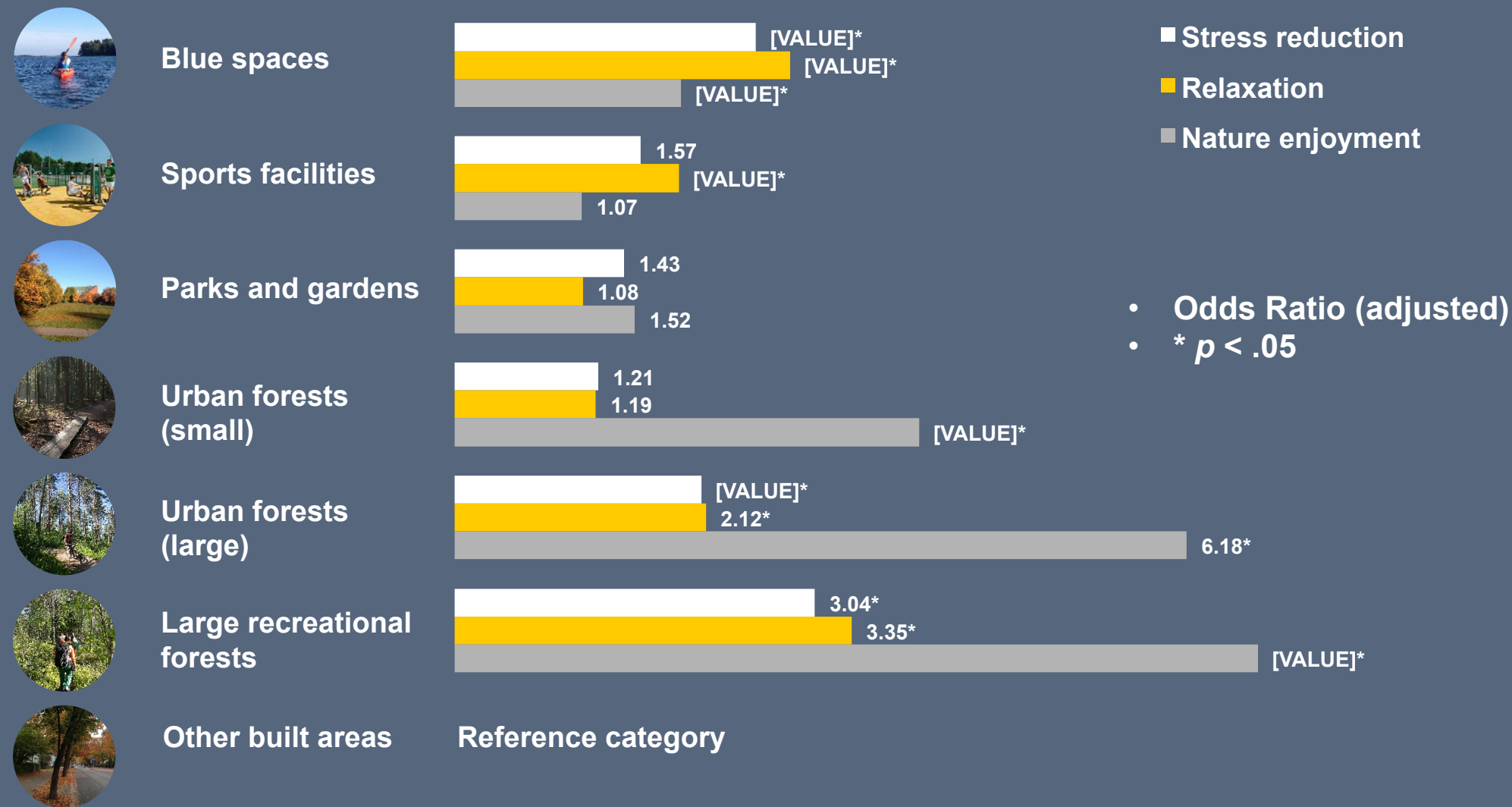
Typology of outdoor physical activity environments



Distance from home and visiting frequency



Perceived restorative benefits of outdoor PA environments



Conclusions – PPGIS approach for studying and planning for health supporting urban environments

- Framework for producing spatially sensitive data on health behaviors, environmental perceptions, and environmental exposure
- As a research method
 - Bridges person-environment and built environment studies
 - Produces primary spatial data that facilitates spatial approach beyond neighborhood effects
 - Possibility to analyze spatial patterns and relations
- “Soft” participant-produced spatial information to assist land-use planning
 - Connects social scientific knowledge to urban planning
 - Helps to identify target locations for built environment interventions
 - Visualizing and communicating evidence
 - Layer in GIS or in advanced planning support systems



Thank you!

Contact

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SELECTED READINGS

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