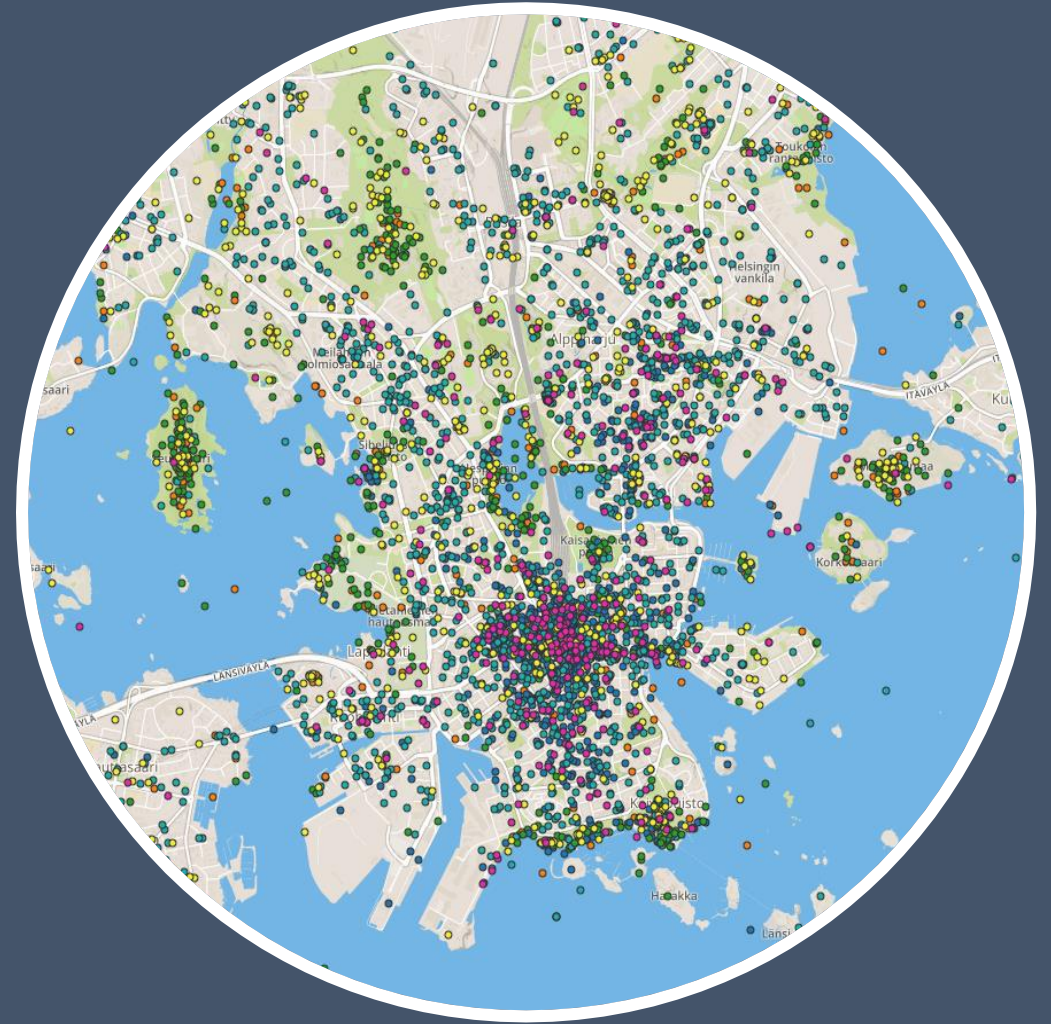




**Aalto University, Finland**

**Royal College of Physicians, London, UK, 14–15 October 2019**

# Public participation GIS approach for mapping leisure-time physical activity

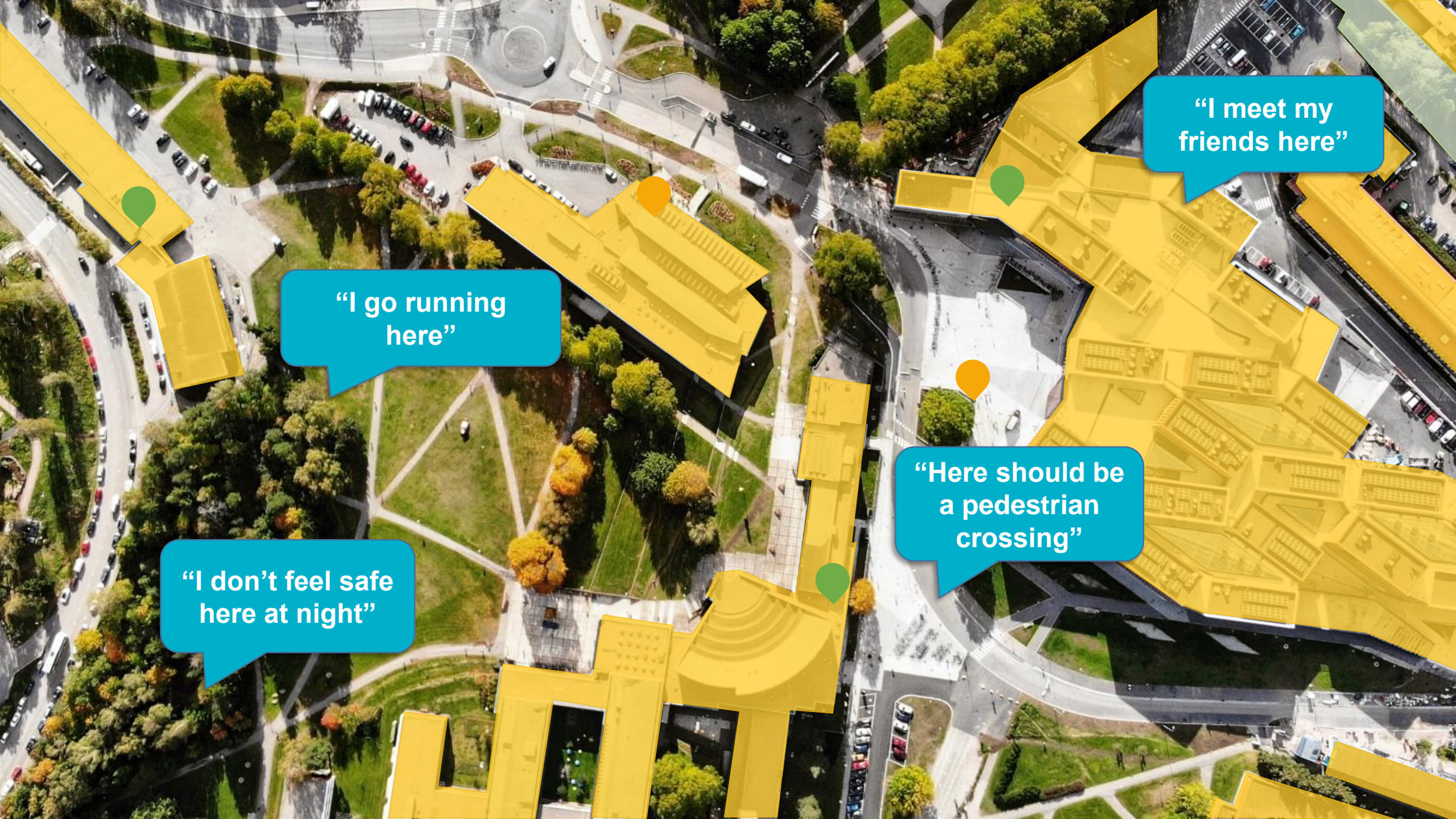


# CONTENT

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 structures. There are several parking lots filled with cars, and green spaces with trees, some of which have yellowing leaves, suggesting autumn. Roads and pathways are visible throughout the campus.

# What Public Participation GIS?



"I don't feel safe here at night"

"I go running here"

"Here should be a pedestrian crossing"

"I meet my friends here"

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.



## VARIOUS USER GROUPS

- Children
- Adults
- Elderly



## TRANSACTIONAL PERSON- ENVIRONMENT RESEARCH

## PARTICIPATORY PLANNING APPROACH



## VARIOUS PLANNING PHASES

- Initiation
- Formulation
- Decision making
- Implementation
- Evaluation

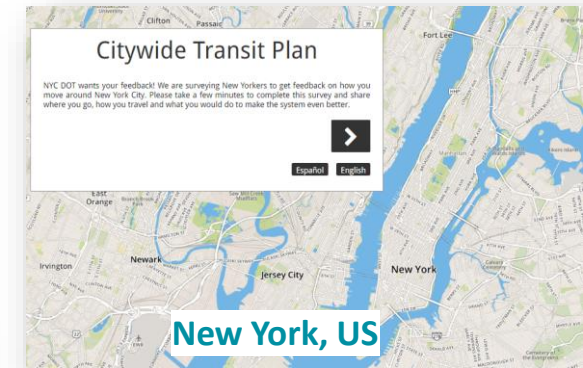
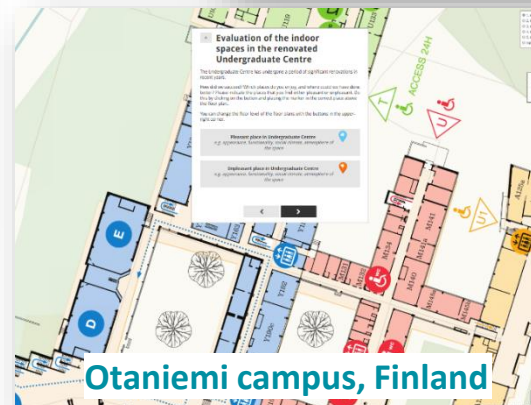


## VARIOUS SCALES

- Indoor spaces
- Neighbourhoods
- Cities and regions

# The SoftGIS method

## maptionnaire



## 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.



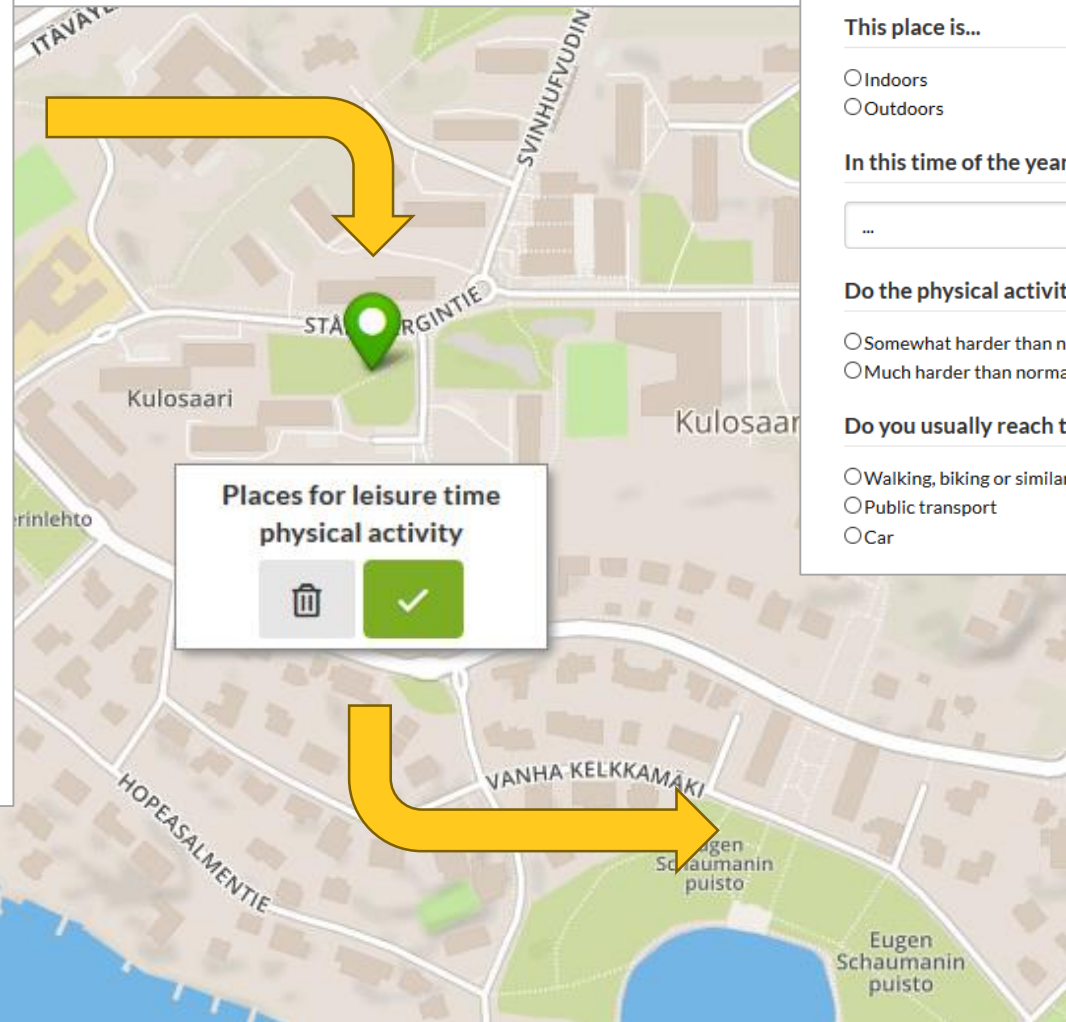
### Routes for leisure time physical activity

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

## 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.

# CASE: Typology of outdoor LTPA environments and green exercise

# Restorative benefits of green exercise

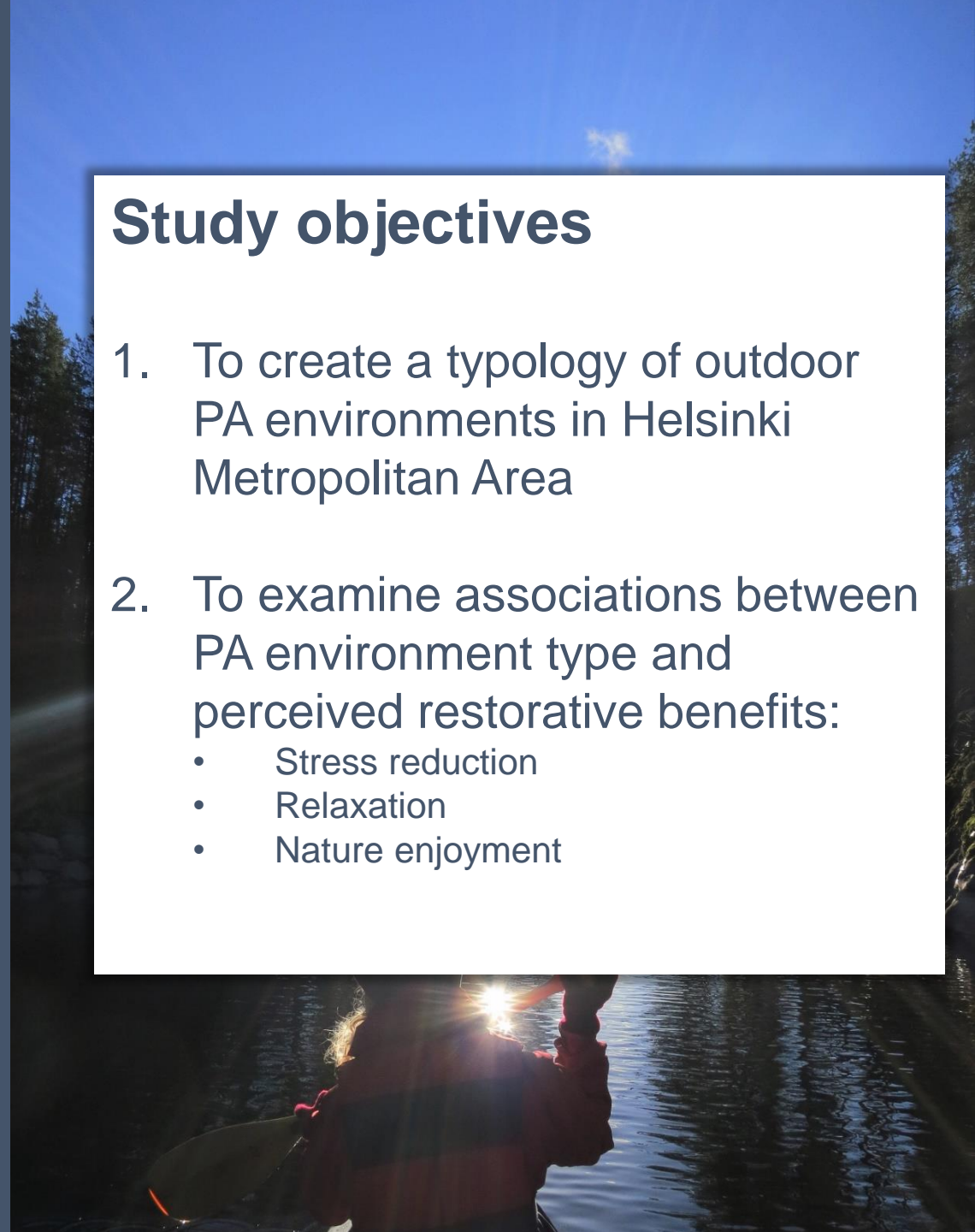
*Kajosaari & Pasanen, forthcoming*

- 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)

**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

Think only of places where the activity lasts at least 10 minutes at a time.

**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

**Urban Environment and Health -survey**

Welcome to the Urban Environment and Health -survey.

In the survey you will be asked to tell about your everyday life by marking places you visit on the map, and to describe your physical activity and leisure time habits.

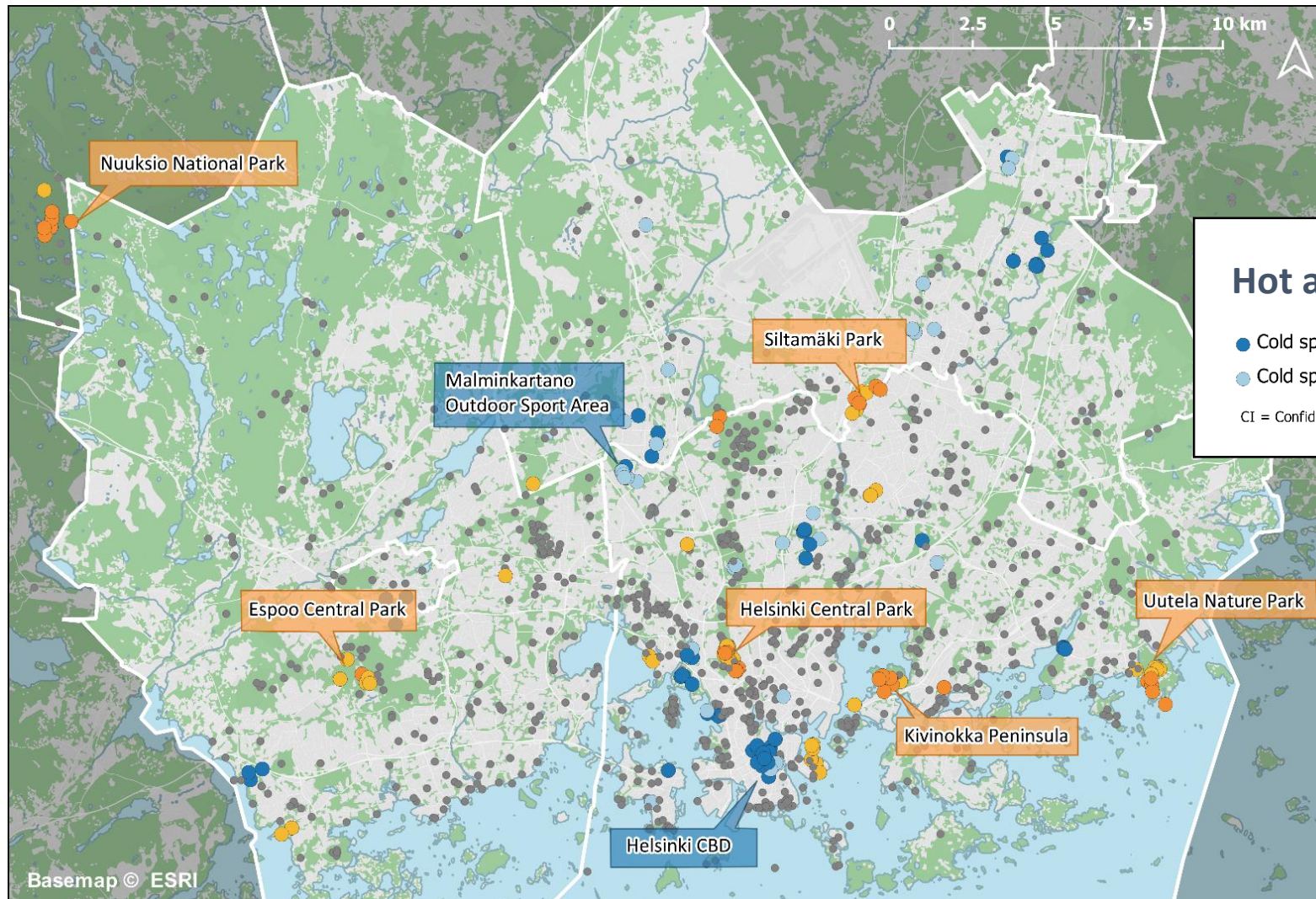
The survey moves step by step through various pages and the information you enter is automatically stored in the system. You always have the option to go back to previous pages to correct or add answers. Individual responses can not be used to identify individual respondents.

We hope you are willing to give a short moment of your time to answer the survey. The purpose of the study is to acquire information on urban living to inform the future development of healthier urban settings. The research project is run by Aalto University and funded by the Academy of Finland. We are happy to provide more information about the survey and the research project - contact us at [anna.kajosaari@aalto.fi](mailto:anna.kajosaari@aalto.fi).

[Questionnaire Privacy Policy](#)

**A!** Aalto-yliopisto  
Insinööritieteiden  
korkeakoulu

[svenska](#) [suomi](#) [English](#)

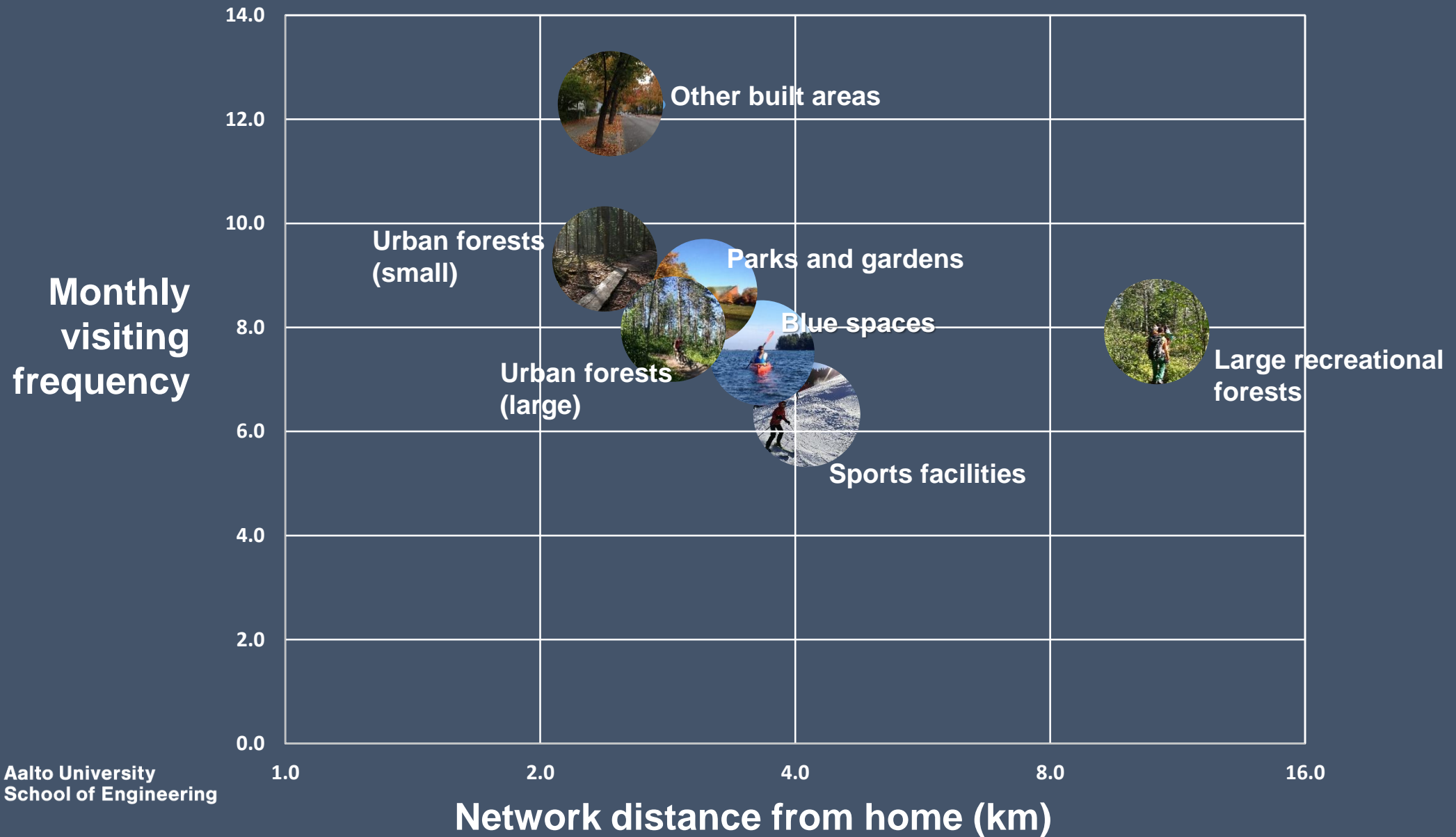


Preliminary results

# Typology of outdoor physical activity environments

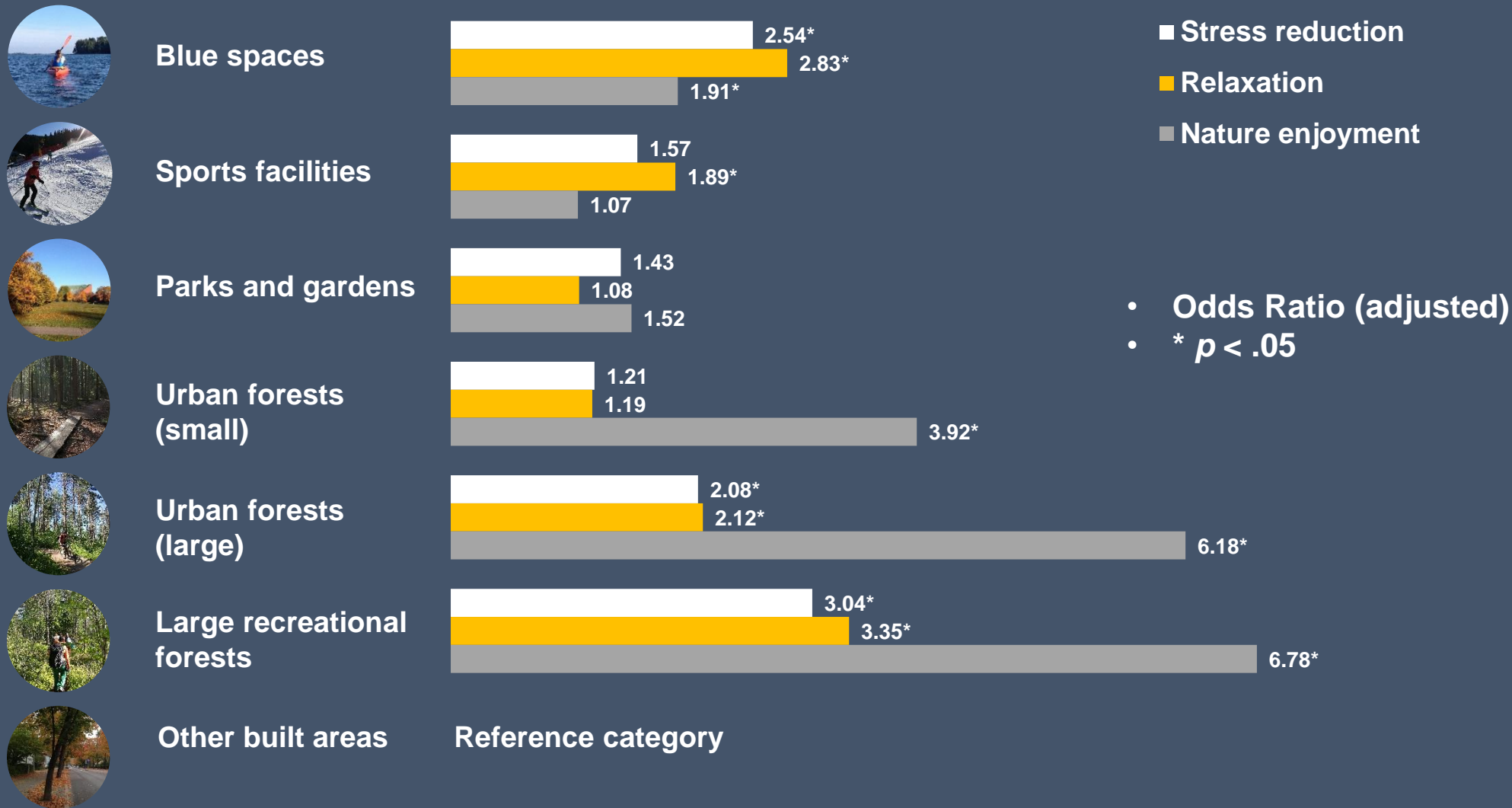


# Distance from home and visiting frequency



# Perceived restorative benefits of outdoor PA environments

(Preliminary results)



# 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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