

## Where Sustainability Meets Experience: A PPGIS Study of Students' Perceptions on a University Campus

Dalma SCHMELLER, Katalin LŐRINCZ

Széchenyi István University, Department of Applied Sustainability  
University of Pannonia, Department of Tourism

### INTRODUCTION & AIM

Universities increasingly frame their campuses as living laboratories of sustainability, positioning the physical campus not merely as an operational setting but as a socio-spatial environment in which sustainability principles are enacted, experienced and interpreted by students (Lauder et al., 2015). A growing body of research highlights students as central stakeholders in sustainability transitions within higher education. Students' environmental attitudes, behaviours and perceptions influence both the effectiveness and the social legitimacy of institutional initiatives (Dagiliūtė et al., 2018; Filho et al., 2016). Participatory governance and bottom-up engagement have been identified as critical success factors for embedding sustainability within university systems (Disterheft et al., 2015).

This study targeted students of the University of Pannonia (Veszprém, Hungary) and sought to address four research questions:

- **RQ1.** Which campus locations generate positive student experiences, and why?
- **RQ2.** Where is sustainability perceived most visibly on campus?
- **RQ3.** To what extent do sustainable locations overlap with positively experienced places?
- **RQ4.** Which environmental and social factors most strongly influence campus experience?

### METHOD

Exploration

Explanation

Modelling

PPGIS survey:  
map-me.org

235  
respondents

QGIS analysis

The study followed the three-phase PPGIS framework proposed by Fagerholm et al. (2021): **exploration – explanation – modelling**.

**Data** were collected through an online map-based questionnaire (map-me.org) in November 2025 among students of the University of Pannonia Faculty of Business and Economics (hereinafter UP).

The **questionnaire included**: demographic background and sustainability attitudes, mapping locations associated with positive experiences, identifying places where sustainability is perceived in practice.

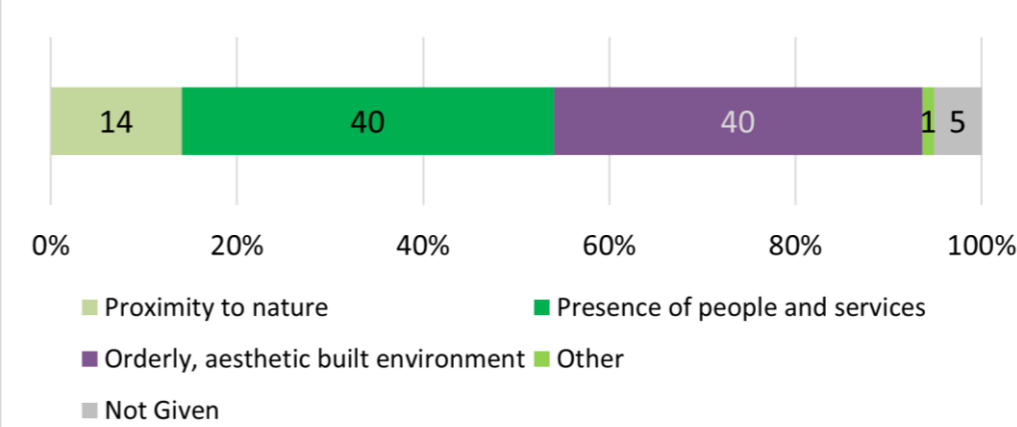
A total of **262 responses** were received; after spatial filtering, **235 valid responses** were analysed.

**Data were exported** from map-me.org in .csv format, including respondent metadata (e.g. IP address, completion time) and spatial coordinates. Each respondent was assigned a unique identifier (ID\_person), enabling the linkage of datasets.

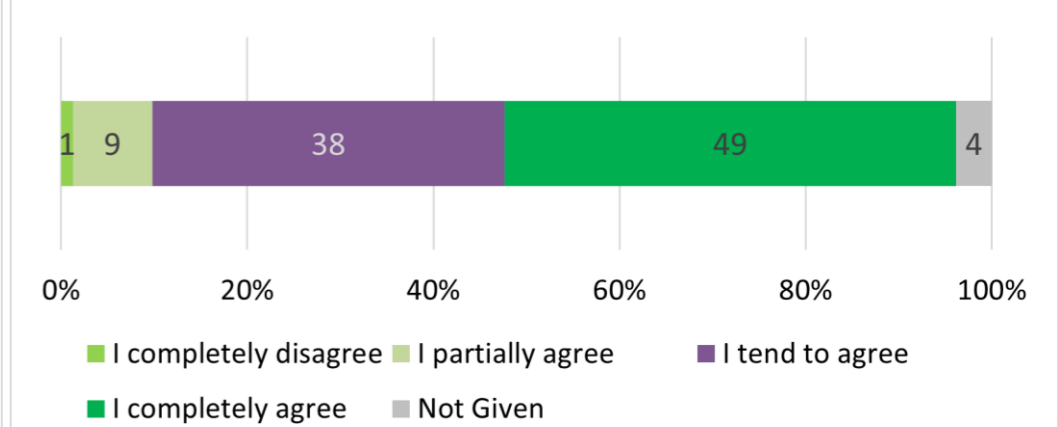
**Spatial analysis** was conducted in QGIS 3.40 using heatmap visualisation and centroid-based aggregation methods.

### RESULTS & DISCUSSION

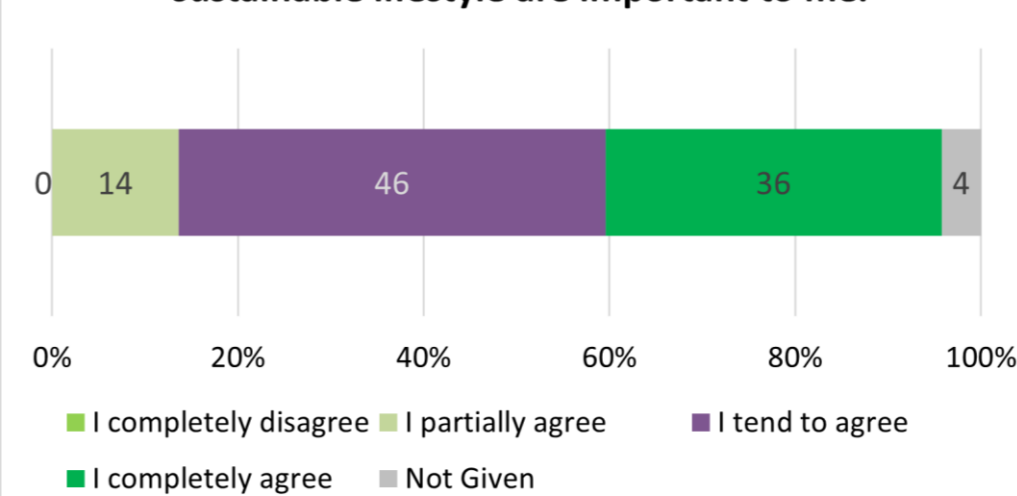
'What do you consider to be the most important factor in encouraging repeated use of a particular place?'



'It is important to me that University of Pannonia sets a good example for students in terms of sustainability.'

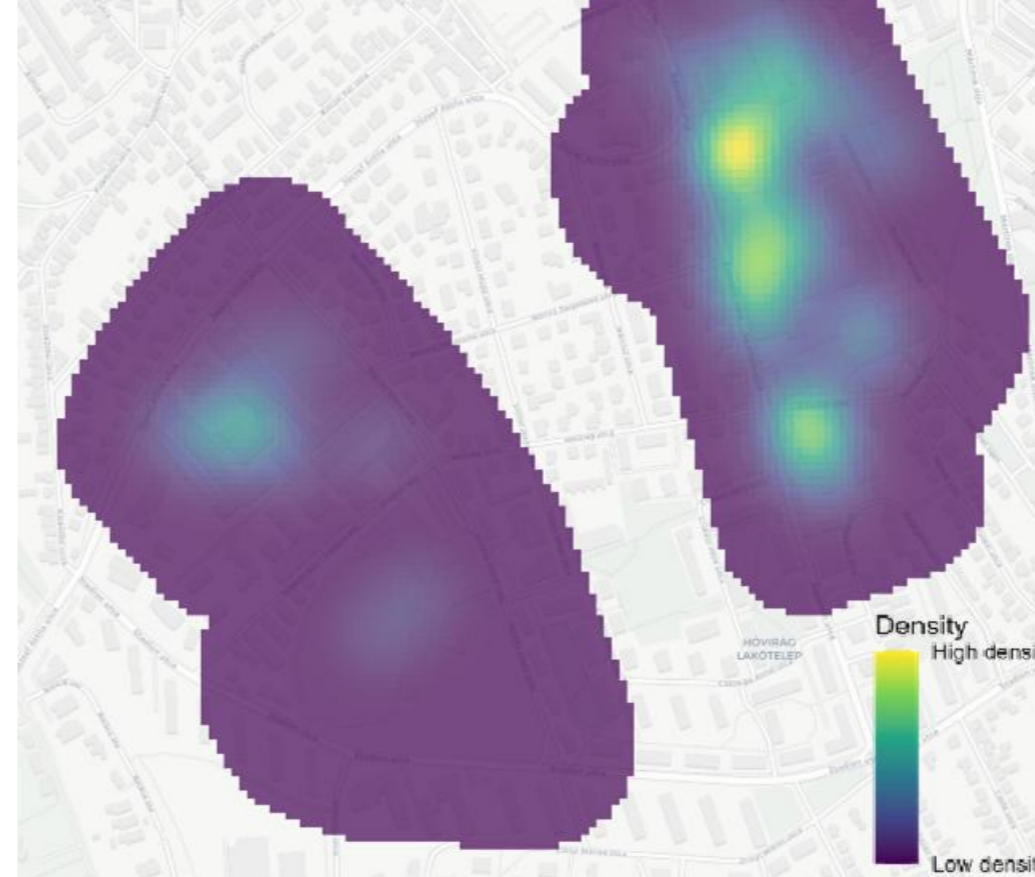


'Environmental protection and striving for a sustainable lifestyle are important to me.'



The **re-use of locations** is most strongly influenced by the presence of people and services, slightly outweighing the importance of an orderly, aesthetically pleasing environment. Most respondents consider it important that the UP serves as a positive example in terms of sustainability; however, there is less consensus regarding environmental protection and efforts toward a sustainable lifestyle. The analysis identified **four spatial clusters** with distinct functions: 1. green spaces, 2. areas suitable for sports, 3. hospitality venues, 4. study-related locations. Among the factors contributing to **positive experiences**, the most frequently selected response was "rest and relaxation", and respondents who chose this option marked at least one green space. The marked locations are typically visited several times per week, with an average duration of 1–2 hours per visit. Students most commonly associate the **UP's sustainability efforts** with selective waste collection facilities. Although proximity to nature appears as a motivation for visiting locations, it is the least influential factor in determining their repeated use.

**Good experience (Campus):**  
rest and relaxation



**Campus sustainability:**  
selective waste collection



### CONCLUSION

The study revealed spatial patterns of student experiences on campus, mainly linked to **social presence, services, and green spaces for relaxation**. Sustainability is perceived mainly through selective waste collection, resulting in limited spatial overlap and highlighting the need for stronger experiential and community-based integration on campus.

### FUTURE WORK / REFERENCES

Future research will expand the analysis beyond the university campus to examine **students' perceptions of urban sustainability within the wider city environment**. Particular attention will be given to the relationship between positive urban experiences, sustainable spatial practices, and patterns of everyday spatial behaviour. **Sustainability** becomes visible when **students can experience** it spatially and socially.