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Smart shared mobility hubs: the future of hubs for vulnerable users

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This work addresses the following topic(s) from the Call for Contributions: (Please check at least one box)

☒ Placemaking to integrate urban spaces and mobility
☐ Promoting sustainable mobility choices in metropolitan regions
☐ Governing responsible mobility innovations
☐ Shaping the transition towards mobility justice
☐ System analysis, design, and evaluation
☐ other: _____

Extended Abstract (745 words)

Problem statement
In many European cities, attention to mobility hubs is growing, especially due to the rapidly growing supply of shared transport (especially shared bicycles and mopeds). In the SmartHubs project, research is being conducted into mobility hubs in four European Living Labs: Rotterdam and The Hague, Brussels, Munich, Vienna and Istanbul. A shared mobility hub is defined as "a physical location where different shared transport options are offered at a dedicated, non-temporary and recognisable location, and public transport is available within walking distance" (Geurs et al., 2023, p. 7). All kinds of mobility hubs have now been created. To categorize a mobility hub, the so-called integration ladder was introduced in the SmartHubs project, based on a multi-dimensional typology for mobility hubs. The ladder contains three dimensions: physical, digital and democratic integration (Geurs et al., 2023).

Within the SmartHubs project, explicit attention is paid to the role of vulnerable groups in the use of mobility hubs. Vulnerable groups include individuals with structural, additional obstacles while using means of transport. These vulnerable users may belong to different socio-demographic, economic or health-related groups, such as women, low incomes, persons with physical disabilities, ethnic minorities and others (De Paepe et al., 2023; Lucas et al., 2016; Martinez et al., 2022). In essence, shared transport and hubs have great potential to increase the mobility of vulnerable groups, but only if these new services are also tailored to their needs (Fleming, 2018). At present, as endorsed by Paepe et al. (2023), it is unclear whether vulnerable groups are open to the acceptance of shared transport at mobility hubs and under which conditions these groups would use these services (De Paepe et al. al., 2023).

Research objectives
This research examines the current and potential use of shared mobility hubs among various vulnerable population groups. The objective is to assess whether these groups exhibit distinct potential for the use of hubs and to identify any specific or supplementary requirements they deem essential in the development of these hubs.

Methodological approach
An online survey was administered to gain more clarity about the possible use of mobility hubs, the factors that influence their use, and which elements of a hub are important for (potential) users. The survey was conducted in the four living labs within the SmartHubs project (Rotterdam-The Hague, Brussels, Vienna and Munich) from December 2022 to January 2023.

A total of 2515 respondents were collected after cleaning the data. The respondents were recruited via online survey panels, via online distribution and by conducting assisted surveys (with vulnerable groups). A stratified sample was conducted, with a focus on vulnerable groups. The vulnerable groups included in this study are based on previous SmartHubs work by Martinez et al. (2022), which investigated the needs and preferences of vulnerable groups (Martinez et al., 2022). The following groups are discussed:

1. Persons with a low income (Income < €1600 per month),
2. Older persons (Age > 65 years),
3. Women,
4. Persons with physical disabilities (Problems walking),
5. Persons who were not born in their country of residence,
6. People with low digital skills (Level 0 or Level 1, see Horjus et al. (2022)).

In the field of hub design, the importance of various elements has been investigated. Concerning physical and digital integration, the following elements have been included, the visualizations of which can be seen in Figure 1:

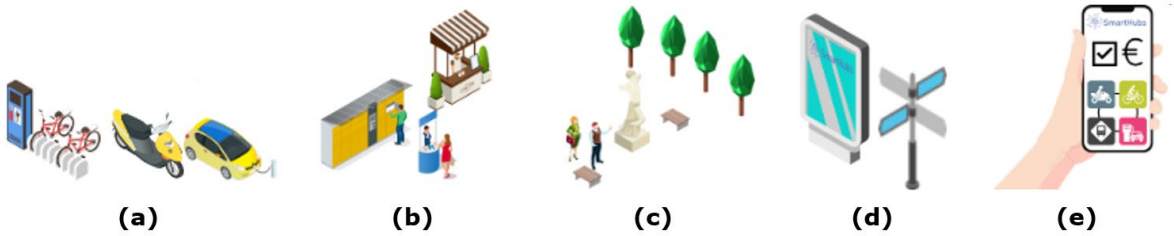

Figure 1: Visualisation of different mobility hub elements

a. Different options of shared mobility.
b. Presence of non-mobility-related services at the hub, such as a parcel point or coffee corner.
c. Attractive design, related to the importance of placemaking and spatial design of the hub, such as benches, planters, lighting or art.
d. Information provision, both signage and a digital information screen. This element is important for physical and digital integration.
e. A mobile app for planning, booking and paying for a ride with any mode of transport, i.e. the availability of a MaaS app.

Results

It can be concluded that some vulnerable groups view shared transport and mobility hubs differently. In general, people value the presence of a digital (MaaS) application, while some vulnerable groups think information at the hub itself is more important. People with low digital skills or older people use little shared transport and are also relatively less interested in the development of mobility hubs in general. For a future mobility hub to be a game changer, it must be clear which elements of a hub are important to its potential users and stakeholders.

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