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PROGRAMME IN
AGEING URBANISM

Maptionnaire: A PPGIS Digital Survey Tool

Application potentials with children and older adults in Asia[1]

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'Participation' has become a fundamental aspect of urban planning practices in western democratic countries. With the advent of digital technologies, a myriad of public participation methodologies and tools have emerged in the past few decades ranging from digital survey and mapping to location-embedded survey and tracking with smartphones. Maptionnaire is one such map-based online survey tool. As in 2019, this tool has been used by more than 6000 projects in 80 countries in Europe, Australia, New Zealand and the US (Mapita Oy, n.d.).

This article reviews some urban studies that have used Maptionnaire as a survey method and provides a commentary on its potential application particularly in Asian urban studies involving children and older adults as participants.

[1] This is an evolving database. We will be adding more examples and cases over time. Posted online at https://lkycic.sutd.edu.sg/research/resources/. January 2020.

Background

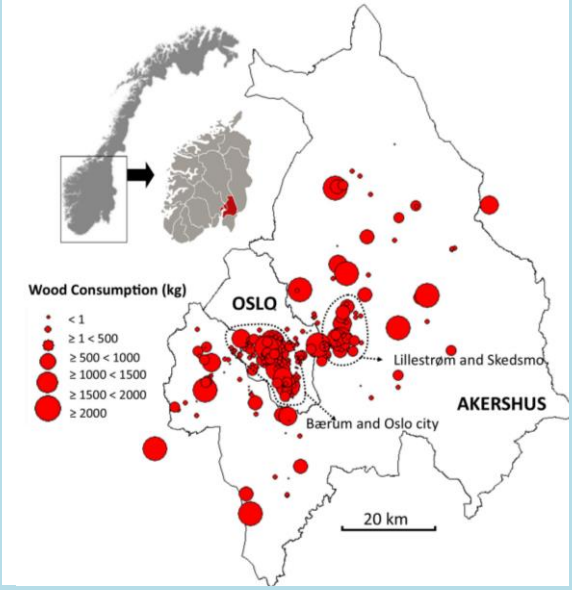
Maptionnaire was developed by Kahila-Tani and colleagues a decade ago in Aalto University as a 'do it yourself' research tool. One key purpose was to build a 'bridge' between planning support system and public participation geographic information system (PPGIS) methodology (Kahila-Tani, Broberg, Kyttä, & Tyger, 2016). PPGIS integrates social studies and digital GIS technologies to inform urban plans and designs. This methodology was developed earlier in mid-1990s by planners and GIS scholars in the University of Maine to include 'all voices' in 'democratic' planning practices (Obermeyer, 1998).

Key Steps

As outlined in the Maptionnaire handbook, key steps for using Maptionnaire as a digital survey are quite straight forward (Mapita Oy, n.d.). They include creating a questionnaire, recruitment of residents, interpretation of results, and incorporation of data into plans and designs. Compared to standard survey and focus groups, Maptionnaire survey-links are sent to participants through emails. This eliminates the need for direct contact with respondents. Also, because data is stored and coded automatically in online depositories, management of large data set in Maptionnaire is relatively simple.

For example, López-Aparicio, Vogt, Schneider, Kahila-Tani, and Broberg (2017) used Maptionnaire among residents (n = 500, participants were aged 10 to 50+, 90% of them are aged 30+) to understand emissions from wood burning for urban household heating in Oslo, Norway. Questionnaires were sent through a cloud service. Recruitment process involved various media including social media, stakeholders, municipalities, and a network of educational and professional organisations. Participants used computers, smart phones and tablets to answer questions such as 'what building type do you live in', 'which is your main heat source', 'do you use wood burning in residential heating'. Results revealed location-specific maps of wood consumption that could inform better policy and planning in Oslo.

Box 1: Location-specific wood consumption reported by citizens in Oslo and Akershus country.



Source: **López-Aparicio et al. (2017, p. 183)**.

Innovative use of Maptionnaire in urban planning and design process has been emerging. In Lower Zambezi valley, Mozambique, Janssen and Dias (2017) adopted Maptionnaire to develop an interactive geodesign tool that combines drawing, icons, visualisation to gain feedback from stakeholder workshops

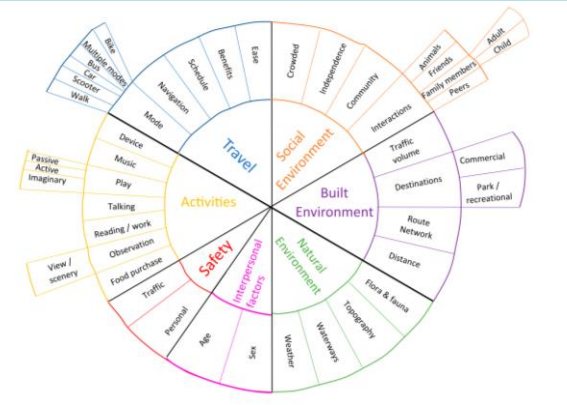
that were part of an urban planning process.

Studies involving children and older adults

Although age range of population surveyed using Maptionnaire varies, adult citizens are often the target population. Few studies used Maptionnaire that involved children and older adults. Due to limited cognitive, motor and sensory abilities, children and older adults would expectedly face high challenges in using new media, such as internet and digital maps.

In Auckland, New Zealand, Egli et al. (2019) implemented one-to-one Maptionnaire survey among 1,102 children (aged 8 to 13 years) to learn about their perceptions and preferences for travel to school.

Box 2: Thematic analysis of children's travel to school in Auckland.



Source: Egli et al. (2019, p. 8).

Using both closed-ended and open-ended questions, the study explored several themes including built environment, natural environment, social environment, safety, activities and travel to school. The study reported potential internal inconsistency of child-reported data as a major limitation. In-depth probing with participants was difficult in the digital survey.

Poplin (2015) tested a PPGIS application system (OpenLayers[2]) among 25 - 60 years old Wilhelmsberg residents (n=98) and undergraduate students of urban planning (n=28). The study found substantial problems related to inhabitants' very limited ability to interact with online maps. Some residents reported having walking experiences through places (such as highways, roads and canals) where it was impossible to walk through. Such findings raise new methodological questions, rather than holistically answering original research question.

Box 2: Routes (lines) drawn by participants on digital map of Wilhelmsberg

Source: Poplin (2015, p. 363).

[2] See, https://openlayers.org/

Gottwald, Laatikainen, and Kyttä (2016) explored the challenges faced by older adults (aged 59-77) when using a PPGIS survey tool in Helsinki Metropolitan Area. The study identified several cognitive (such as lack of experience with zooming aspects of web maps), motor (difficulties in drawing routes), sensory ("the text is too small"), emotional and preferential (worried about their performance) difficulties faced by older adults as they used Maptionnaire. Specifically, drawing routes on the map using scroll button of a mouse was reported as 'too complicated' by older adults. The study suggested special attention to digital operation and clear graphical communication using both hard (such as printed user guide) and soft (such as online video tutorial) instruments.

Laatikainen, Haybatollahi, and Kyttä (2019) used PPGIS survey among older adults (aged 55-74, n = 844) in Helsinki Metropolitan Area, Finland and examined the association between the environmental and individual features with older adults' walking in their surrounding environments ('home range' or activity spaces). The study reports limited use of PPGIS among population with poor computer literacy or no access to internet, irrespective of their old age, and self-report bias.

Studies in Asia

There are few reported applications of Maptionnaire in Asia. A quick search on Google Scholar [3] using the phrase "maptionnaire", resulted in 220 entries. Very few of those articles (less than 10, including student thesis) were in Asia. Given Asian urban population are different in educational qualification and exposure to maps compared to those in Europe, Asian children and older adults might feel more discomfort with online maps. This highlights the need for pre-evaluation of survey design, such as expert reviews of survey questions, cognitive interviews and focus groups with small number of study population etc., before large-scale implementation among children and older adults in Asia.

Summary

Like any other research method, Maptionnaire as a PPGIS research methodological tool has both potentials and limitations. Collection, analysis and management of large-scale location-preference data is simpler and faster using Maptionnaire compared to traditional survey methods. This suggests a high application potential of Maptionnaire in planning related studies in urbanizing Asia. However, the use of Maptionnaire in childhood and ageing studies in Asian urban context requires special consideration on some procedural issues. This short review highlights the following issues, among others:

- Few Maptionnaire surveys involved children. In cases where children below 18 were participants, challenges regarding in-depth probing of child-reported data were reported.
- Empirical studies reported that older adults face cognitive, motor, sensory, emotional and preferential problems with digital maps more than adults do.

[3] Accessed on 16.12.2019

- One of the major difficulties for older adults was to draw walking routes accurately on online maps. Poor quality and internal inconsistency of route-choice data might affect the quality of spatial analysis and limit the potentials for informing urban plans and designs.
- Simple, clear and consistent guidelines for participants and video tutorial for participants were suggested to address reported challenges.
- Pre-evaluation of survey design and questions could be beneficial before large-scale implementation of Maptionnaire among children and older adults in Asian cities.

Further studies, preferably using mixed methods research approach, are needed to evaluate the advantages of using Maptionnaire among children and older adults in Asia, compared to other map-based survey methods.

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