

Mobile telephones and mobile positioning data as source for population statistics

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Abstract

Information and communication technology (ICT) has an important role in the development of contemporary lifestyle. Mobile positioning is often considered to be a novel and exciting source of information for the studying of the spatial dynamics of human society. Mobile phones and mobile-based electronic questionnaires have become important resources for questionnaire research. The linking of a survey with the location of a telephone is one of the next technological developments in the area, which will make it possible to investigate human behaviour more precisely and provide various opportunities for applied research. Geographical studies performed on the basis of mobile telephone location data can also open new research directions, and new possibilities will arise thanks to the increasing pervasiveness of mobile phones and the simplicity of information gathering using this technology (Ahas 2010).

Presentation introduces mobile telephone positioning-based research: theoretical and methodological aspects of it. Mobile positioning is today possible in most mobile networks, there is number of location based services offered by network operators of independent bodies. Positioning data can also be used to track the spatial mobility of persons or groups of people or for generation statistics about spatial mobility of society (Mountain and Raper 2001; Ahas and Mark 2005; Kuusik et al 2010). This is a very rapidly developing field which can be successfully used for generating tourism statistics (Ahas et al 2008; Tiru et al 2010), transportation (Saluveer & Järv 2009) or everyday mobility of society (Silm & Ahas 2010). The most positive aspect of mobile positioning is that nowadays more than half of the population of the world have mobile phones; it was estimated in November 2007 there were 3.3 billion mobile telephone users in the world (Reuters 2007). Is also significant that the differences in mobile phone penetration between developed and developing countries are smaller than the variance of other socio-economic statistics. This enables the implementation of interesting worldwide studies on population monitoring and mobility assessment.

Mobile positioning can be divided into active and passive positioning.

Active mobile positioning is used for mobile tracking in which the location of the mobile phone is determined (asked) with a special query using a radio wave (Ahas et al. 2007a). In order to track certain phones for research projects, a special permit from the phone holder is required. In addition, a questionnaire about travel behavior is conducted with respondents, in order to obtain more information about their travel behavior.

The passive mobile positioning used in this study is data that is automatically stored in memory or log files (billing memory or the hand-over between network cells) of mobile operators (Ahas et al. 2008).

Passive mobile positioning data do not require personal contact with the people involved, and yield a large amount of anonymous data.

There are also downsides as privacy and data protection issues involved with the introduction of every new technology.

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