

methodologies that are rarely repeated if undertaken at all. This paper will build on work undertaken for UN-HABITAT on developing an Urban Poor Accessibility Assessment Tool to map out directions for work to capture the specific accessibility needs of the urban poor that would improve equity of planning outcomes and enhance the ability the urban transport sector to contribute to poverty reduction. It will explore a package of methodological approach to rapid appraisal of accessibility within urban low-income communities; it will examine the scope of new technologies and participatory approaches to deliver user group planning practices and protocols within such communities. It will highlight examples of innovative practice in user group planning and in delivering accessibility for low-income communities and it will recommend future steps for work in this area.

[17] WHY IS ACCESSIBILITY STUCK IN THE LABORATORY?

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Accessibility as a measured attribute of land-use and transportation systems has existed as a concept in positive research use for over half a century. And since the 1970s, many researchers have also identified accessibility—rather than mobility—as the proper normative goal for transportation planning. Despite this understanding, mobility-based evaluation continues to dominate transportation and land-use policy worldwide, while accessibility remains largely mired in the laboratory. In part this can be explained by measurement challenges, political factors, and the inertia of professional practices. But the lack of progress toward accessibility implementation in practice is also a product of factors more directly under the control of researchers and accessibility's proponents more generally. These factors include: 1) An implicit definition on the part of many advocates of the accessibility concept—often those associated with urban design—equating accessibility with dense, mixed-use, pedestrian-oriented development. While urbanist neighborhoods may indeed offer high accessibility, they are not accessible by definition. More importantly, this definition ignores the vital regional dimension of accessibility; 2) A belief that validity of the accessibility paradigm rests upon observed travel-cost minimization. Under this view, the observation (for example) that people do not choose travel-minimizing residential locations is erroneously thought to undermine accessibility as a normative goal of planning; 3) The propensity of research to treat accessibility predominantly as a positive variable in descriptive or predictive models rather as a normative goal for planning; 4) A social-scientific approach that evaluates accessibility instrumentally in terms of its impact on travel behavior rather than as the inherent goal of transportation; 5) Misperceptions about the relationship between mobility and accessibility. Mobility is one of three means to accessibility; the other two are proximity and remote electronic connectivity. Some versions reverse the relationship, making accessibility a means to mobility; others seek to broaden mobility so as to incorporate accessibility. Reflecting this confusion, transportation planning has begun to express its goals as the promotion of 'mobility and accessibility' without any clear distinctions between the two. By reinjecting mobility as an independent objective, this formulation undermines the potential for accessibility-based evaluation to transform transportation and land-use practice. In combination, these factors have weakened the position of proponents of accessibility-based evaluation in transportation and land-use planning. This paper will explore these issues in a critical review, and will propose alternative formulations to facilitate accessibility's leap from laboratory to practice.

SS 7. B - Digital Technologies Within Cities

Amphitheatre III; Chair: Laurie Schintler

[25] GATHERING TRAVEL BEHAVIOUR VIA A SMARTPHONE: A PILOT STUDY OF THE DUTCH MOBILE MOBILITY PANEL

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Objective: With the rise of Smartphone use, a new method of travel behaviour data acquisition arises as well. The Smartphone, carrying numerous sensors including GPS, may allow for registered data acquisition instead of reported data from the traditional travel diary surveys. In this research, we use an automated trip registration procedure via a Smartphone application in contrast to self-registration. This survey design may cater for a reduction in under registration of trips in comparison to self-registration and therefore provides a benchmark for the quality of the traditional travel diary surveys. However, the use of Smartphone's in the acquisition of travel behaviour data is still in an emerging phase and the potential is still largely unclear. The objective of this study is to assess the potential of using a Smartphone in the process of data acquisition of travel behaviour by evaluating the accuracy of measurement, battery life and participant burden in a pilot study. Methodology: To assess the potential of using the Smartphone in travel behaviour data acquisition, we will evaluate the functionality and the user experience of the MoveSmarter-application during the pilot study of the Dutch Mobile Mobility Panel (DMMP). This panel, containing over 500 individuals, will be monitored for 4 weeks and are paid for their cooperation. We provide some non-smartphone-users in the sample group with a Smartphone with the MoveSmarter-application installed. The application uses the data from the GPS-sensor in the Smartphone to recognize trips of an individual. After processing the data, information per trip can be extracted such as distance travelled, time spent, (average) speed, modality used and travel purpose. Furthermore, the respondents are asked roughly twice per week to verify and, if needed, to correct the processed trip information using a web interface to ensure the accuracy of the trip overview. Moreover, the respondents are asked to answer some additional questions about their travel choices as well. On a daily

basis the respondents are asked if there were any circumstances that influenced their travel choices (e.g. weather conditions and delays in the transport system). Results: The results of the pilot study will show the potential of using Smartphone for the acquisition of travel behaviour data. The results will be analyzed from an accuracy, technical and usability viewpoint. Firstly, the data gathered should accurately reflect the travel behaviour of the participants. All trips made should be detected and an accurate estimation of the trip purpose and modality should be made. Secondly, the Smartphone's and measurement application should not use too much of the Smartphone's resources to ensure sufficient battery life (i.e. recharging only once per day). Finally, participating in a travel behaviour study as such should not come with a large burden on the respondent. The evaluation of the pilot study will reflect on the balance between these three elements in using Smartphone's for travel behaviour research and will provide suggestions for future application in longitudinal travel behaviour research in combination or eventually as a substitute for the widely-used cross-sectional one-day travel surveys.

[89] DIGITAL CONNECTIVITY FOR WALKING NETWORKS

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This paper addresses the aspects of the spatiality of the digital economy through developing an understanding of the relationship between physical connectivity and internet connectivity among older people. The focus of the work is on walking. This is an important mode which is increasing in significance in most city transport plans and this work indicates how mobile internet technologies and walking infrastructures can interact to promote walking among one of the growing sections of our population, older people. This is of considerable significance to digital and transport infrastructure planning and management as our society's age and as walking is turned to as a major tool in measures to reduce CO2 emissions and health problems. Yet little is understood of how older people can take advantage of increasing internet connectivity and in turn how this can be used to support walking. This work explores the skills and competencies involved in accessing the internet and using the internet both prior to and whilst making journeys and highlights such skills, as map reading, journey rehearsal and land-marking. The work then turns to an analysis of how those skills are attained: who teaches them and how are they learnt. It is this analysis of the communities of practice and the social environment of older people that demonstrates how social networks are both a resource that enables the development of skills and how the improved connectivity enables social networks to grow. This then demonstrates the relationship between competencies and skills of individuals, social practices of connectivity both internet and physical (walking) and the social processes of building social networks. The paper will conclude by detailing the implications for transport demand management. It will outline how transport implementations and practice can exploit an improved understanding of the social skills and resources required to use these internet technologies when walking in the design new implementations.

[126] ANALYSIS OF URBAN MOBILITY PATTERNS COMBINING MOBILE PHONE AND CREDIT CARD DATA

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Sustainable urban mobility is one of the major challenges facing European cities. To tackle the challenge of sustainable urban mobility, urban planners need models and decision support tools allowing the assessment of policies and their resulting effects. One of main problems for the implementation of such models is that the input data are usually scarce and/or expensive to obtain. Modern ICT, such as smart phones, e-transactions, Internet social networks, or smart card technologies, allow the automatic collection of spatial and temporal movement data that can complement and enhance the data collected by using traditional methods (census data, travel surveys). Yet, the collected data have to be analysed, making it necessary to develop new data mining techniques. The main objective of the paper is to investigate how new data available from ICT can be exploited to understand mobility and location patterns in cities. This study makes use of statistical analysis and data mining methods, as well as of spatial analysis methods recently developed in the context of network theory, to combine and mine data from anonymised mobile phone calls and credit card payment data. Mobile phone data mainly include the telephone of origin (encrypted), telephone of destination (encrypted), the duration of the call, date and time of the day, cell where the telephone of origin is located when the call starts and cell where the telephone of destination is located when the call starts. Credit card data mainly include socio economical characterization of the credit card owner, the import of the transaction, the place where it takes place, date and time of the day and type of store. The result is a statistical characterisation of different features of urban mobility patterns, such as travel distances and trip purposes, as a function of the socio-economical characteristics of the travellers, which can be used to inform the development of transport simulation models. The research leading to these results has received funding from the European Union Seventh Framework Programme FP7/2007-2013 under grant agreement n° 318367.