Available online at www.sciencedirect.com

ScienceDirect

Transportation Research Procedia 19 (2016) 109 – 118

Transportation Research Procedia

www.elsevier.com/locate/procedia

International Scientific Conference on Mobility and Transport Transforming Urban Mobility, mobil.TUM 2016, 6-7 June 2016, Munich, Germany

NaWo - a tool for more sustainable residential location choice

St. Tischler*, M. Mailer

University of Innsbruck,Unit for Intelligent Transport Systems, Innsbruck, 6020, Austria

Abstract

Urban sprawl is a major problem in many metropolitan areas. Especially in cities with high housing prices people are looking for residential locations in suburban or remote areas where residential costs are lower. Still, these decisions are often made without being fully aware of the consequences on mobility patterns and transport costs. Furthermore, residential location shapes social, economic and environmental issues and thereby the sustainability of human life.

To foster sustainable residential location choice a decision-making aid which is focused on the effects of residential location on daily mobility has been developed as part of the project "Sustainable choice of residential locations" and made available in the greater Munich area as well as the Austrian province of Tyrol. Using this web-based calculator ("NaWo"), property seekers are given an initial insight into the distances to be covered at the desired location considering their personal mobility behavior. With this awareness-raising measure, it is possible to take the sustainability aspect into greater consideration in residential location choice with regard to the costs, impact on the environment and the opportunities for social inclusion.

Peer-review under responsibility of the organizing committee of mobil.TUM 2016.

Keywords: sustainability, spatial structures, mobility, residential mobility, housing and mobility costs

1. Introduction

Worldwide metropolitan regions are confronted with the negative impacts of urban sprawl. The number of people living in metropolitans regions is increasing mainly by migration. Especially in cities with high housing prices people are looking for residential locations in peri-urban or remote areas where residential costs are lower. However, people

* Corresponding author. Tel.: +43-512-507-62404; fax: +43-512-507-2909.
E-mail address: stephan.tischler@uibk.ac.at

Peer-review under responsibility of the organizing committee of mobil.TUM 2016.
doi:10.1016/j.trpro.2016.12.072

changing their residential location have to adopt their mobility behavior. Since most journeys start or end at home the choice of living locations determines daily travel and has a very high impact not only on urban mobility.

Housing is the central feature of human life. As with other living creatures, a person needs a place of refuge – be that as protection against natural influences (weather, for example), protection against adversaries or even to maintain social contacts. The proverbial "*roof over your head*" not only offers protection from the weather but as its principal function psychologically and physical reproduction in the form of personal hygiene, family life, rest and relaxation, intimacy and physicality. Therefore the residential location forms the central point of people's daily life.

In social geography housing is regarded as one of basic principle of existence (Maier et al., 1977). These principles are related to activities to meet fundamental human needs. Housing is a basis for meeting fundamental human needs. But not all fundamental needs can be met directly at home. So changes of location are necessary to carry out activities associated with other basic principles of existence. For example, the need for food is associated with the provision of food, which is normally taken care of by the activity of shopping these days. Mobility is thereby of vital importance. Even if mobility itself is often described as a basic principle of existence, it actually rather takes the role of the enabler. Since people have settled down, the home, as a starting point of journeys which serve to meet the basic principles of existence at other places, is the center of everyday life. Most journeys start or end at home.

In many countries people and families moving in suburban regions are very often captive car users due to the fact that locations of their daily activities like work, school, shops and even leisure facilities cannot be accessed by foot, bicycle or pubic transport. On the other hand commuting by car is causing severe traffic problems in cities. But also on the individual level car dependency results in high efforts and expenses for daily mobility. Many people are not aware that high travel costs reduce or even nullify lower housing costs in suburban regions and has negative effects not only in ecological terms (e.g. carbon footprint) but also on quality of live (e.g. dependency and obligation of escort trips).

Housing demands space, energy and building material including the necessary infrastructure for this. In countries of Central Europe such as Austria, almost 25% of overall energy consumption is used in private households (e.g. heating and hot water etc.). But during the last decade, this value remains more or less stable while the energy consumption of traffic is still rising (more than 75% during the last 25 years) with a portion of 33% related to the overall energy consumption (BMWFW, 2015, p. 23). Hence, transport and housing in addition to industry are responsible for a large part of greenhouse gas emissions. The increased emergence of the concept of sustainability in the fields of housing and construction manifested in recent years – based on a predominantly property-related consideration of the issue. More efficient heating systems and thermal insulation to save energy have thereby moved into the focus of science and funding. However, the effect of residential location is hardly included in energy calculations.

Several studies have been undertaken to analyze the change of spatial structures in metropolitan areas and the role of residential mobility and residential location choice (Wu, 2004; Knox and Pinch, 2000; Kim, 1994). Still, the decision for residential place and all its resulting ecological, economic and social impacts often remain unconsidered. Changing a residential location or underlying location decisions are as a result also ultimately crucial for spatial-structural procedures and impacts on traffic. However, it is not clear how sustainability issues exert a direct or indirect influence on residential location decisions and to what extent increased awareness-raising amongst property seekers can be facilitated in particular from the viewpoint of sustainable mobility.

So, home and the residential location also shape social, economic and environmental issues and thereby the sustainability of human life. Still, decisions on living locations are often made without being fully aware of the consequences on mobility patterns and transport costs, often resulting not only in high costs and time consumption in daily mobility but also in high dependence on private car. But how can people looking for a new residence be made aware of the consequences their location choice might have on overall costs (housing and mobility), environmental impacts and their everyday life?