

# Mobility Pass for Real Estate – A Holistic Tool for the Calculation of Mobility Costs and the Awareness on Housing Decisions

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# Research Background

- *In Austria, about 10 % of the population changes their home every year, in 2009 that was about 875,000 people. Nearly 80 % (680,000 people) residence changes occur within one or between neighbouring municipalities in Austria. \**
- *A household in Austria spends EUR 5,240 on average in 2010 on mobility. \*\**
- *Compared to year 2005, Austrian households spend EUR 330 more in mobility. \*\**

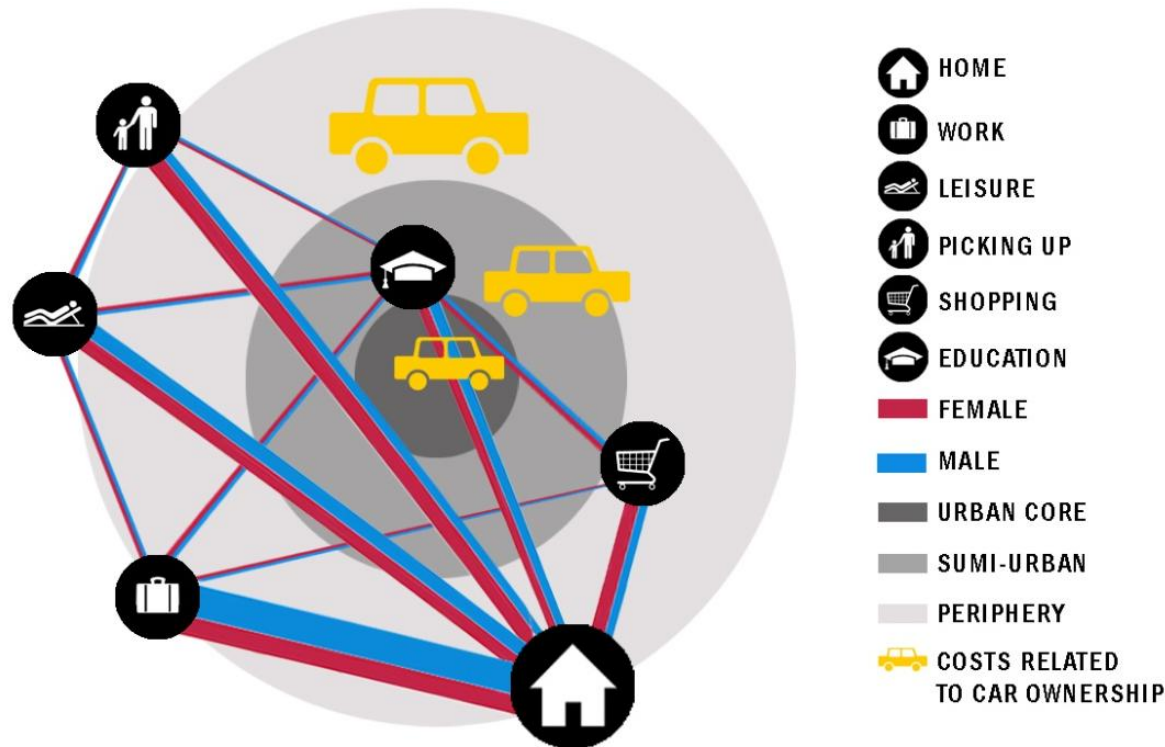
**The choice of location for a residence or a business is usually an important, long-term decision requiring a high level of investment of capital.**

**→ The medium and long-term consequences of most people's travelling patterns are still hard to estimate.**

Quellen: \*Statistik Austria, \*\*VCÖ, 2010



# Research Background



Time geography shows the movement of an individual in the spatial-temporal environment with the constraints placed on the individual by these two factors.

Time and Space are restrictions and important for the mobility behaviour.

Already in the 1970s, Torsten Hägerstrand dealt with an analysis of spatio-temporal behaviour of individuals and the depiction of human action in “time paths”.



# Mobility Pass for Real Estate (online tool)



“Mobility Pass for Real Estate” will be an online tool which investigates the relationship between the selection of the location of residence and the mobility behaviour, showing the effects of mobility **time**, mobility **costs**, CO<sub>2</sub> **emissions** and possible **accident risks** on different selected locations.



# State-of-the-Art / Good Examples (Hamburg/Munich)



**Wohn- und Mobilitätskosten Rechner**

► Start ► Wohnstandort ► Wohnobjekt & Haushalt ► Ergebnis ► 1. Variante ► 2. Variante ► Variantenvergleich

**Bitte wählen Sie einen Wohnort**

Wählen Sie aus der Liste Ihren derzeitigen oder den gewünschten Wohnstandort aus oder geben Sie in das dafür vorgesehene Eingabefeld den Namen des Wohnstandortes ein. Sie können zur Auswahl ebenfalls die Karte nutzen: Wenn Sie einen Kreis oder die Stadt Hamburg anklicken, erscheinen in der Auswahlliste alle Gemeinden des Kreises bzw. die Hamburger Stadtteile. Durch Anklicken eines Namens wird dieser für die weitere Berechnung als Wohnstandort ausgewählt.

Wohnstandort:  ▼

Eingabe:

**Weiter** ►

<http://www.womo-rechner.de>

One good example for an existing calculator of residential and mobility costs is the “WoMo” (Wohn- und Mobilitätskostenrechner) calculator in Hamburg – and there is also a similar instrument for Munich.

It is able to calculate mobility costs referring to the district of Hamburg and the municipalities on its border.



# State-of-the-Art / Good Examples

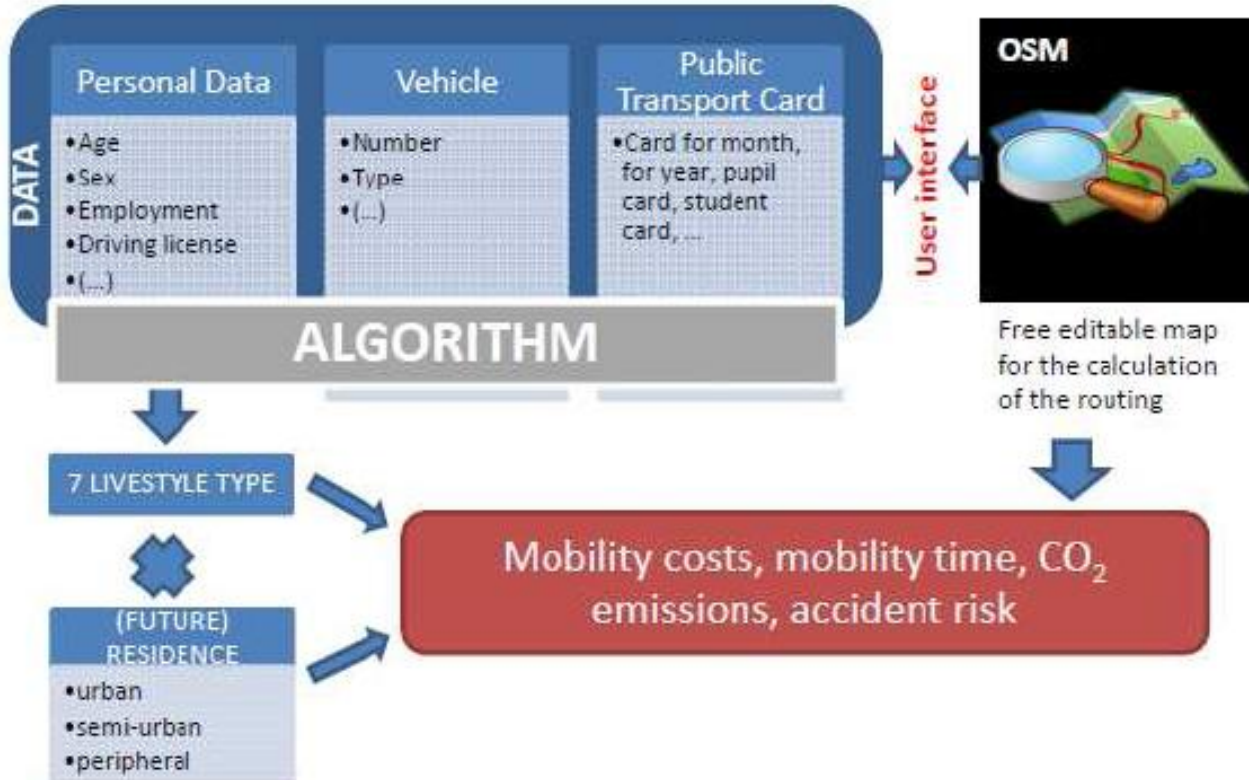
## Comparison to the „Mobility Pass for Real Estate“

	WoMo calculator Hamburg/ (Munich)	Mobility Pass for Real Estate
Database	Based on location and household types	Based on lifestyle types and data on accident risk and CO <sub>2</sub> emissions
Area	Refers only to the district or municipality	For each location site through entering the exact current or future address
Spatial limits	Refers only to the district of Hamburg and the municipalities on its border	At the moment for entire Austria, but the Mobility Pass is structured in modules and expandable (potentially to a Europe-wide dimension)
Determination of the costs	Estimation of the housing and mobility costs (CO <sub>2</sub> emissions through car and household)	Estimation of the mobility costs, time, CO <sub>2</sub> emissions, accident risk, and additionally a medium- and long-term forecast to these 4 components
Output	Identifies the financial consequences of the location decision	Additional to the financial consequences, as well the accident risk, time and environmental consequences



# Implementation of the online tool

## Structure



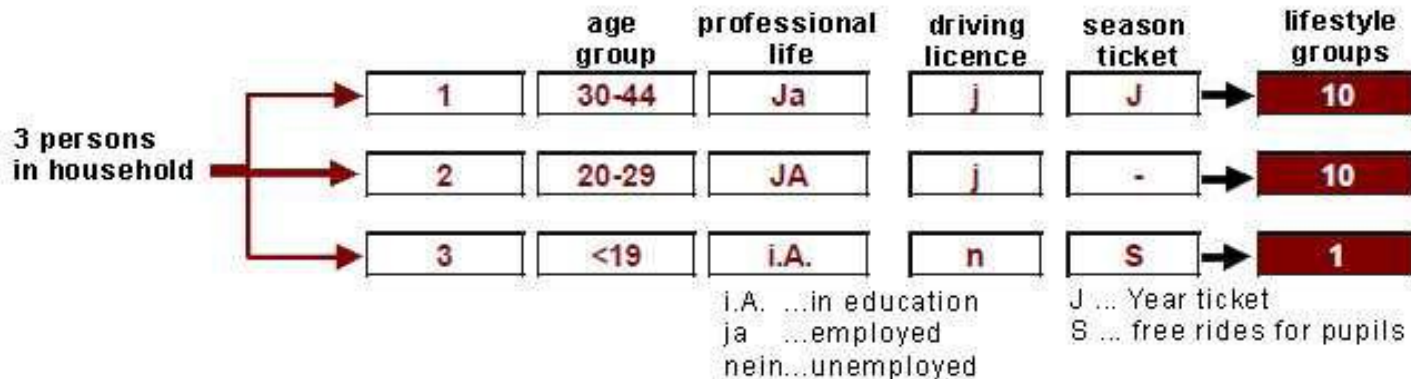
„Mobility Pass for Real Estate“ will be designed as a free online tool with the components of:

- the project database
- geodata from Open Street Map
- data from the evaluation about lifestyle types, mobility costs, accident risk, .....



# Implementation of the online tool

## *The Data Evaluation*



### Lifestyle types:

- based on the lifestyle matrix developed out of the micro census evaluation made by Statistic Austria, **7 different lifestyle-types** could be identified for Austria
- in relation to the residential location (urban, semi-urban, peripheral), **21 lifestyle groups** have been established and a certain mobility behaviour can be classified.

### Accident risk:

- The accident risk describes the calculation of the probability of accidents of certain groups and the determination of a risk score with the help of the economic costs of accidents.



# Implementation of the online tool

## *Potential Users*

- The target groups for this online tool will be on the one hand more the individual household (buyer/tenant) and the public administration, and on the other hand the real estate business (real estate agents/real estate education/project developers).
- As a result of the online tool, the real estate business can offer a better service to their customers – after the first steps of the online tool, a more professional version can be developed where real estate agents can update important facts and real estate data themselves.



# Implementation of the online tool

## *user interface (for module 1)*

Angaben zum Standort:

Wohnort (Eingabe des Ortes):

Angaben zur Mobilität:

PKW-Bestand des Haushalts:

Persönliche Angaben:

Anzahl der Personen im Haushalt:

Person 1

Alter :

Geschlecht :  Männlich  Weiblich

Führerschein:  Ja  Nein

Berufstätigkeit :

- user interface is the space where interaction between the user and the online tool occurs and where the output of mobility cost, accident risk, CO<sub>2</sub> emissions and mobility time will appear

- jQuery is used (free, extensive JavaScript class library, which provides comfortable features for Document Object Model (DOM) manipulation and navigation)



# Implementation of the online tool

*output (for module 1)*

## Person 1

Transportmittel	Verkehrsmittelkilometer	Kosten (in €)	Co2 (in g)	Unfallrisikokosten (in €)
PKW-Fahrer	13.492,29	7.015,99	1.902.413,20	1.364,68
PKW-Mitfahrer	0,00	0,00	0,00	0,00
ÖV	0,00	0,00	0,00	0,00
Fuss	0,00	0,00	0,00	0,00
Rad	0,00	0,00	0,00	0,00
<b>Gesamtkosten:</b>		<b>7.015,99</b>	<b>1.902.413,20</b>	<b>1.364,68</b>

## Gesamte Haushaltskosten

Mobilitätskosten:	7.015,99
CO2 (in g):	1.902.413,20
Risikokosten:	1.364,68

## Vergleich



Example for the calculation of the mobility costs, CO<sub>2</sub> emissions and accident risk costs (mobility time will be added next)

In **module 2**, a routing option for the exact calculation of the trip distances will be added and more information about the user is needed (leisure activities, ...) The online routing will be based on OpenStreetMap.



# Conclusion and outlook

Foreseeing and comparing the mobility costs, mobility time, CO<sub>2</sub> emissions and accident risks of different selected locations over enables citizens (and companies) to make their own choices when choosing housing (or business) locations

It would be indicated if the same status were given to the Mobility Pass as it was for the “Energy Pass” because of the EU Directive, which is compulsory since 2009 and shows on scale from A to G how energy efficient a building or a flat is.

A future possibility to enlarge the offer within the “Mobility Pass for Real Estate” is the integration of Open Government Data (OGD) for other European countries beside Austria.

Planners and local administrations can use “Mobility Pass for Real Estate” to have an effective tool when thinking about where to further develop cities (compact vs. dispersed way) or where to allocate housing subsidies .



The reasearch project „Mobility Pass for Real Estate” is funded within the IV2splus programme (ways2go initiative) of the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT). The programme management lies at the Austrian Research Promotion Agency (FFG).



### Project consortium of “Mobility Pass for Real Estate”:

CEIT Alanova – Institute for Urbanism, Transport, Environment and Information Society, Schwechat/Austria

Austrian Road Safety Board (Kuratorium für Verkehrssicherheit – KfV), Vienna/Austria

University of Applied Science of WKW – Institute for Real Estate Management (FH Wien-Studiengänge der WKW – Institut für Immobilienwirtschaft), Vienna/Austria

Herry Consult GmbH, Consulting in Transportation Planning, Vienna/Austria



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**Thank you very much for your attention!**

