Measuring political commitment in statistical models for evidence-based agenda setting in non-motorized traffic

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Research framework

• Our findings are based on ACTIV8!, a cooperative R&D project in the 'Mobilität der Zukunft' programme of bmvit (4th call)

• tbw research, HERRY Consult GmbH, Research & Data Competence OG, Technische Universität Wien, Fachbereich Stadt- & Regionalforschung

• Project duration from 05/15 until 10/17
What is ACTIV8!

An integrated, holistic approach for estimating the quantitative impacts of potential measures on active mobility.

Methodological basis: aggregated statistical models (one for each active mode)
What’s our motivation for ACTIV8!?

„In order to be able to develop sound policies that encourage cycling, it is essential that we understand what determines bicycle use“ (Heinen et al, 2010, S. 60)

Based on our recent experience this quote is even more true for walking (particularly in Austria).
What’s the added value?

• **Decision support**: increasing **planning efficiency** and benefit/cost ratios of measures: *How can we best increase the modal share of active modes? How can we objectively prioritize a set of suggested measures to help active mobility in a community context?*

• **Systematic deduction** of pinpoint measures taking **local contexts** into account: *What would be an ideal addition to communal premises for active mobility?*

• **Simulation of measures**: *What’s the impact of individual measures on active mobility shares in the respective environment?*

• → pinpoint solutions instead of rigid panaceas
How does it work?

• Applying **multivariate statistical models** and conducting analyses.
• Using data on **Upper Austrian modal shares** on municipality level as the **outcome variables** (either walking or cycling) \((N = 444\) municipalities).
• Massive **data gathering** (currently approx. 700 variables) in order to operationalize local attributes related to space, climate, population, (political commitment, infrastructure, etc.) as (candidate) **predictor variables**. Data sources: GIP, OSM, ZAMG, OGD Upper Austria, own calculations, etc. E.g.

  • *population share social milieu ‘bourgeois middle-class’*
  • *meshing of the road network*
  • *number of days with snow cover*
  • *hilliness of the settlement area*
  • *quota of part-time employment*
  • *target-group-specific and mode-specific accessibilities of kindergartens*
Some questions that can be answered using ACTIV8!:

• Which communities are already making the best of their specific potentials for active mobility and which areas are currently underachieving?

• What’s the impact size of potential measures in different fields of action (e.g. infrastructure, awareness building, settlement policy, social policy, housing, etc.) on active mobility shares?

• Where to implement which kind of measures in order to maximize positive impacts on active mobility?
Operationalizing attitudes, mind-sets and commitment

- aiming both at capturing (1) attitudinal attributes among the population and (2) commitment of administrative/political decision-makers.
- Using available data as much as possible, i.e. some attributes were operationalized via proxy variables.
- Validation of this approach by conducting a survey among administrative staff of Upper Austrian municipalities (self-assessed ‘stated’ commitment).
Some results
cycling modal shares in Upper Austria (municipality level)

Legende

Radverkehrsanteil
- 0% - 3%
- 3% - 5%
- 5% - 8%
- 8% - 13%
- 13% - 21%

Kartographie:
DI Clemens Raffler

Erstellungsdatum:
10.05.2017

Datenquellen:
Land Oberösterreich - data.ooe.gv.at, 2016;
© BEV, 2016;
tbw research GesmbH
ACTIV8! cycling performance

Legend
Classification of municipalities subject to cycling performance
- Large unused cycling potential
- Medium unused cycling potential
- Neutral
- Good use of local cycling conditions
- Best use of local cycling conditions

Cartography:
DI Clemens Raffler

Date: 06.06.2017

Datasources:
Land Oberösterreich - data.oeoe.gv.at, 2016;
© BEV, 2016;
tbw research GesmbH
modal split and political commitment - some findings on individual impacts:

*Cycling shares in Upper Austrian municipalities ranges between 0% and 21% (average municipality. *approx.* 3.5%, mean value for Upper Austria *approx.* 5.1%)*

- Controlling for the effects of all other considered determinants we estimate the *isolated incremental effect* of the Upper Austrian *fahrradberatung.at* funding program to be *0.11% increase* in cycling modal share *per year* since first enrollment.

- That means that a community will increase modal shares in cycling *by 1% after approx. 9 years* after enrolling to the program.
some findings (cont’d)

- **Klimabündnis**: cycling modal share is higher by 0.22% if the community is a **member of Klimabündnis** (Austrian initiative to promote climate protection).

- **social milieus**: **group-specific impacts** on cycling modal share: *(‘Established‘ positive (+0.28%), ‘Modern performers‘ negative (-0.60% per 1% share in total population)*.
some findings (cont’d)

- crosstab: **affinity towards cycling** (objective attributes and self-assessment) vs. **enrollment in Fahradberatung.at** (either NO or YES)

<table>
<thead>
<tr>
<th>Enrollment Fahradberatung Upper Austria=NO</th>
<th>INDEX_fahrradaffin_4KAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not affine</td>
</tr>
<tr>
<td></td>
<td>95.5%</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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<td>74.9%</td>
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<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>not affine</td>
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<tr>
<td></td>
<td>4.5%</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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<td></td>
<td>25.1%</td>
</tr>
</tbody>
</table>

% within INDEX_fahrradaffin_4KAT  100.0%  100.0%  100.0%  100.0%  100.0%
some findings (cont’d)

• correlations: **cycling affinity** vs. cycling **modal shares** and various proxy variables on **political commitment** towards cycling.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>affinity to cycling</th>
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<tbody>
<tr>
<td>cycling modal share</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>,448**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>no of klima aktiv proj / area</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>,408**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>years since 1st enrollment in fahradberatung</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>,384**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<tr>
<td>years since 1st enrollment in klimabuendnis</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>,537**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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**. Correlation is significant at the 0.01 level (2-tailed).
Conclusions

• ACTIV8! has laid the **basis for a comprehensive model for planning support** by evidence-based methods.

• it is possible to include variables on ‘soft’ factors such as attitudes and mind-sets of population and decision makers into the statistical models.

• both group of variables prove to be **significant** when quantitatively explaining modal shares.

• there is a **clear correspondence between the objective evaluation** of political / administrative commitment and the **(subjective) self-assessment** of the decision makers.