Introducing Evidence-based Methods in Active Mobility Planning
– or how to ACTIV8 Local Potentials

Promoting Active Mobility: From Research into Practice

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What everybody knows…

- Positive effects of higher non-motorized modal shares
    - Reduction of pollution (air, noise, etc.)
    - Health improvement
    - Cheap infrastructure, less land consumption, etc.
- Actual active modal shares decrease /stagnate on national level (1995 – 2013/14):

Mode	1995	2013/14	diff
Walking	26.9%	17.4%	-9.5%
Cycling	5.3%	6.5%	+1.2%*

*well inside statistical fluctuation range

What everybody wants…

o Policy papers setting agendas and goals:

- Masterplan for walking:
  - No quantitative goal
  - Proposes actions to prioritize walking
- Masterplan for cycling:
  - Goal for cycling shares: 13% (2025)
- Mobility Masterplan Carinthia:
  - 40% active modal shares in 2035

BMLFUW (2015a)

Carinthian Government (2016)

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…how planning actually performs…

Legend

klimaaktiv Projects / number of trips
- No Projects
- 0.00000 - 0.00013
- 0.00013 - 0.00047
- 0.00047 - 0.00153
- 0.00153 - 0.00380

Share of Cycling Trips [%]
- 0.0 - 2.3
- 2.3 - 4.5
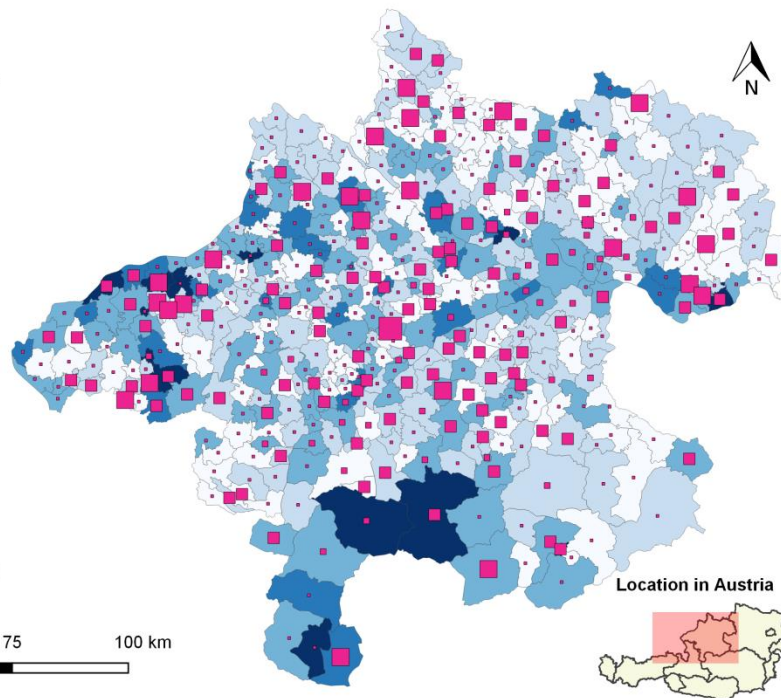- 4.5 - 7.2
- 7.2 - 11.5
- 11.5 - 19.4

Cartography: Date:
DI Clemens Raffler   21.09.2017

Datasources:
Land Oberösterreich - data.ooe.gv.at, 2016;
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0   25   50   75   100 km

Location in Austria

Example from **bicycle traffic** in **Upper Austria**:

o **Investment** into cycling does **not reflect cycling shares**

o Planning **lacks to account** for the **complexity** behind modal choice

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…and how to improve planning efficiency

- Evidence based planning as a scientific framework (Faludi, 2006):

*„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, p. 60)

How can we use scientific evidence to ACTIV8 local potentials for active mobility planning?

Our Solution approach: ACTIV8!

o Cooperative R&D Project ***ACTIV8!***

- Call: Mobilität der Zukunft (4th call)

- Funding Stakeholder: BMVIT

- Partners:

  - tbw research GesmbH (lead)

  - University of Technology Vienna (Centre of Regional Science)

  - Research&Data Competence OG

  - HERRY Consult GmbH

- Project duration: 30 months (05/2015 – 11/2017)
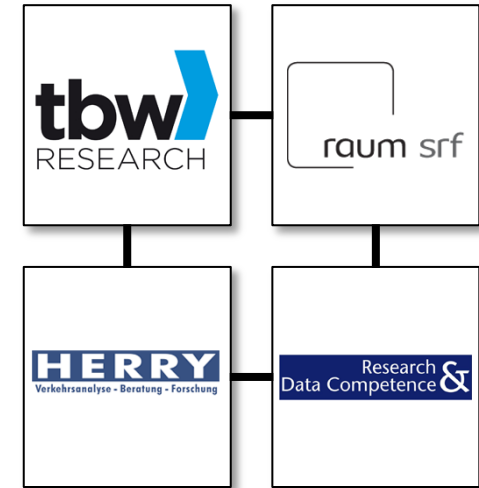
The ACTIV8! Approach

o An integrated, holistic approach to **quantitatively estimate the impacts of all relevant determinants of active mobility**.

o Methodological basis:
- **aggregated statistical models**
- one **model for each active mode** at the level of **municipalities**

o Focus on applicability of results:
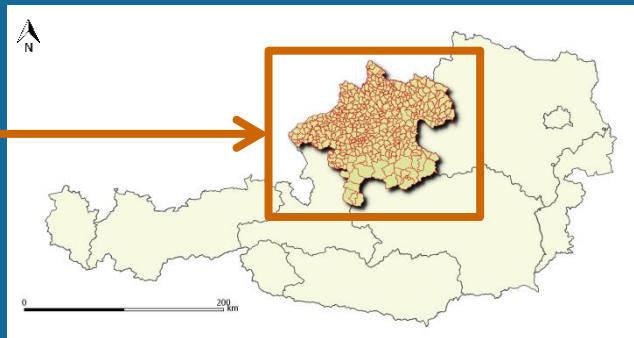- Include **variables that can be altered by planners**
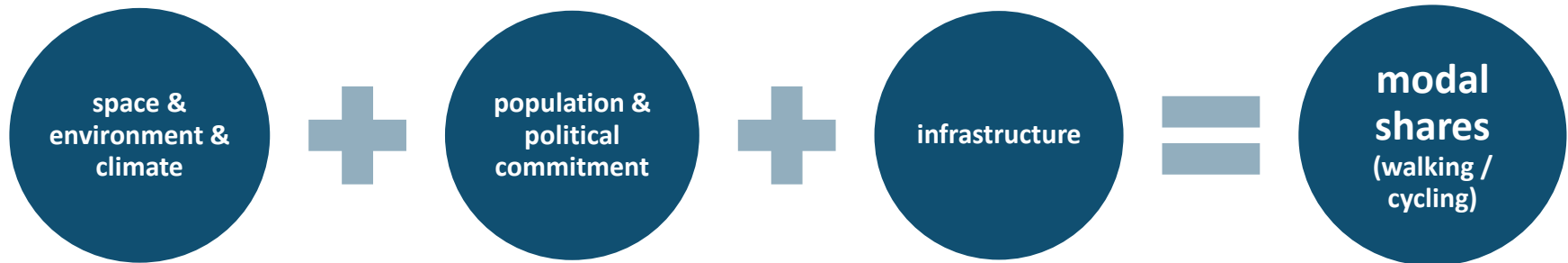
How do the models work?

Multivariate statistical Models:
- Multiple Linear Regression

Outcome Variables:
- Upper Austrian active modal shares
- N = 444 municipalities

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Predictor Variables:
- Operationalization of local attributes as (candidate) predictor variables.
  - Methods: transport economy, GIS, socio-economic data analysis
- **Data sources:** GIP, OSM, ZAMG, OGD Upper Austria, …

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Examples from our 700+ predictors pool

space & environment & climate
- Number of Days with snow cover
- Hilliness of settlement area
- Target-group specific and mode-specific accessibilities of amenities

population & political commitment
- Population share of social milieus (eg. Bourgeois middle-class)
- Quota of part time employment
- Proxies for political commitment

infrastructure
- Meshing of the road network
- Coverage by public transport
- Topological Measures of road network

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Results – Models

| Model	R²	Adj. R²
Pedestrian Model	0.775	0.775
Bicycle Model	0.731	0.711

p for all predictor variables < 0.001

→ **77%** of the observed variance in **pedestrian modal split and 73%** of the **cycling shares** can be explained, respectively.

→ All predictor variables are significant at the 0.001 level

How can we apply these models in evidence based planning support?

Results – Strategic planning support
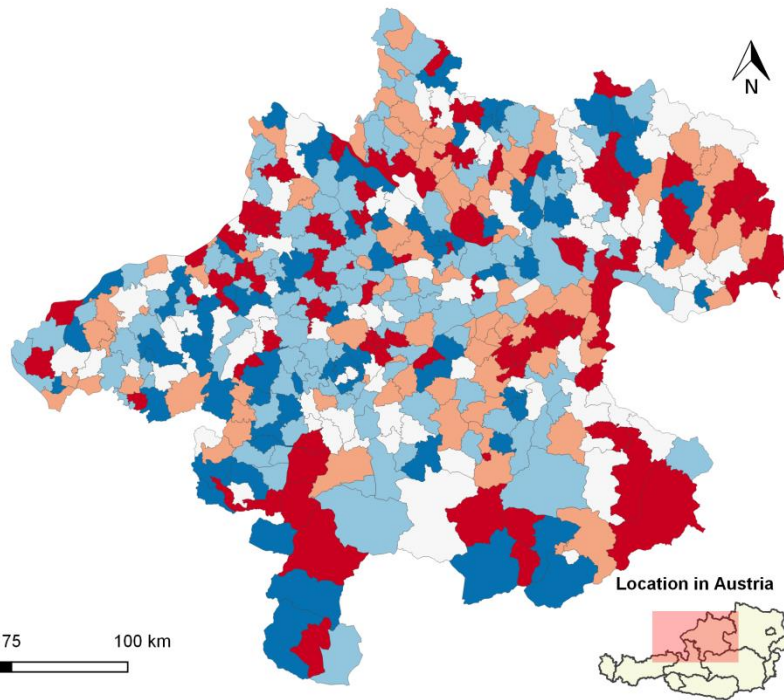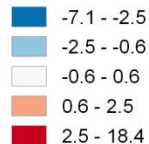
Map of **investment potential**:

- **Blue**: decrease disparities (underachiever)

- **Red**: high return on investment (overachiever)

Results – Simulation examples

‚What's the impact of individual measures on active mobility shares in the respective environment?'

o Other things being equal we estimate the isolated incremental effect of…

- … **one year membership with fahrradberatung.at** (Upper Austrian bicycle planning program) to be **0.11%** increase in cycling shares.

- … a **one percent growth in post-materialist milieu population share** results in a **1.4%** increase in walking shares.

Conclusion & Follow-up Project

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

o **Pinpoint solutions instead of rigid panaceas**

- **ACTIV8II:**

  - Model optimization (new and pooled predictor variables)

  - Tool-Set and expert system for planning practitioners (Upper Austria and Styria as Labs)

  - proof-of-concept and experts' feedback

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ACTIV8

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