Velo City 2018
Utility of GPS data for urban bicycle transport planning in Germany – potential, limitations, prospects

Velo City 2018 – 2018/06/15, Rio de Janeiro
Dipl.-Ing. Sven Lißner
Bicycle transport planning

tender planning or demand driven planning
Data request in bicycle planning

- Analysis of requirements
- Creating new infrastructure
- Optimization of infrastructure
- Limited funding
Background – practitioners questions

Where are people cycling?

Who is cycling?

How much people are cycling?

When do they cycle?

Origins and destinations?
Status-quo in the city of Dresden: counting data
Status-quo in the city of Dresden: survey data

modal split
- car: 12%
- public transport: 27%
- walking: 39%
- cycling: 22%

bicycle ownership
- no bike: 21%
- one bike: 26%
- two bicycles: 26%
- more than two: 27%
What is actually missing?

- Spatial distribution
- Detour factors
- Route data
- Origins and destinations (for modelling)
- ....
Share of smartphone users in Germany
“How important is the following data for your work?”

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Not Important</th>
<th>Rather Unimportant</th>
<th>Rather Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Data</td>
<td>5</td>
<td>32</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Modal Split</td>
<td>6</td>
<td>31</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>Origin-Destination</td>
<td>4</td>
<td>24</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Traffic Volume</td>
<td>1</td>
<td>18</td>
<td>39</td>
<td>3</td>
</tr>
<tr>
<td>Accident Data</td>
<td>3</td>
<td>16</td>
<td>41</td>
<td>1</td>
</tr>
</tbody>
</table>

GPS - specific
Have you ever used GPS-data?

- 77% never used GPS data
- 20% used GPS Data
- 3% no reply
Taking a closer look: “The users of Strava”

Age distribution of Strava users in Dresden

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-64 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-84 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85-94 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n.s.: not significant
Validation: comparing cycling speed in real vs. app data

Aggregated distribution of speed

![Graph showing aggregated speed in percent against speed in km/h for Strava-East, Strava-West, Measurement-West, and Measurement-East data.](image-url)
Results: Projecting the number of cyclists from counting devices

![Graph showing cyclists per hour and day with Y counter and f(x) prediction factor.](image)
Strava data is...

→ …reliable in some cases e. g.
  • traffic volumes
  • spatial distribution
→ …biased due to its motivational background

→ ...a methodical “grey” box

→ ...available for every city with enough app users
Strava data is not...

→ ...representative for the average cyclist, including:

- Very young people
- Very old people
- Very poor people
Where could better data come from?

21 days of CITY CYCLING

The campaign for improved quality of life, cycling promotion and climate protection! Cycle for 21 days and collect kilometres with your family, friends or colleagues. Want to know whether your municipality is participating? Use the search function below to check – then simply sign up and get cycling!

Read more