Crowdsourcing in bicycle traffic planning – MOVEBIS project presentation

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Data requirements by road infrastructure designers

Where to drive? When to drive? How many drive? Who is driving? Why do we drive?

Where do routes start/end?
The development of road traffic data?

Number of permanent counting points in large cities of central and east Germany

+ short time counts
+ household surveys
How to close data gaps with GPS data?

- Cyclists as data source
  - Strava
  - BikeCitizens
  - Komoot
  - MOVEBIS

- Benefit for bicycle traffic design
- No established procedures!
Räumliche Ausprägung des Radverkehrs
Dresden 2018

Bild: P. Rosenkranz
Limits of crowdsourcing and GPS

...No Random Sample!

Age Distribution of Strava-Users in Dresden

- Under 25
- 25-34 Years
- 35-44 Years
- 45-54 Years
- 55-64 Years
- 65-74 Years
- 75-84 Years
- 85-94 Years

Women: 12%
Men: 88%
Types of cyclists

- Ambitious (Sports cyclist)
- Passionate (Enthusiastic cyclist)
- Pragmatic (Day-to-Day cyclist)
- Functionale (Sparse cyclist)
Representativeness

Heterogeneous CITY CYCLING sample

Daily Traffic Track Records

Share of Tracks

- Beginning of Track SrV 2013
- End of Track SrV 2013
- Beginning of Track Stadtradeln 2018
- End of Track Stadtradeln 2018

Time

0:00:00  6:00:00  12:00:00  18:00:00  0:00:00

0%  2%  4%  6%  8%  10%  12%  14%
Representativeness

Trip Duration

<table>
<thead>
<tr>
<th>Trip Duration SrV 2013</th>
<th>Trip Duration Stadtradeln 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Duration in [min]</td>
<td></td>
</tr>
</tbody>
</table>

abs. Frequency

- 5  10  15  20  25  30  35  40  45  50  55  60  65  70  75  80  85  90  95 100 105 110 115 120 >120
Representativeness

Age and Gender Distribution in the City of Gießen SR 2018

<table>
<thead>
<tr>
<th>Age Category [Years]</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤9</td>
<td></td>
</tr>
<tr>
<td>10-18</td>
<td></td>
</tr>
<tr>
<td>19-24</td>
<td>20%</td>
</tr>
<tr>
<td>25-34</td>
<td>30%</td>
</tr>
<tr>
<td>35-44</td>
<td>15%</td>
</tr>
<tr>
<td>45-54</td>
<td>10%</td>
</tr>
<tr>
<td>55-64</td>
<td>5%</td>
</tr>
<tr>
<td>65-74</td>
<td>2.5%</td>
</tr>
<tr>
<td>≥75</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Stadtradeln
SrV2013

50% male
50% female
Results

Following Data Preparation

- Representative trip length distribution

- **Important**: Age and Gender distribution seems to be close to population

- Sample can be filtered accordingly
Activities are Visible in Dataset → Data Preparation is necessary!
Activities cleaned, Waiting Times remain!
www.movebis.org

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