Evaluation-Method for a station based Urban-Pedelec Sharing System

Dipl.- Geogr. Florian Paul, Prof. Dr. - Ing. Klaus Bogenberger – Universität der Bundeswehr München

Rise of Public Bike Sharing

- Increasing number of Bike Sharing Systems from 68 in 2007 to over 675 in 2013
- 700,000 shared bikes at 33,000 stations worldwide

Bike Sharing Benefits:
- Transportation benefits e.g. reduce of congestion and improve of air quality
- Economic benefits e.g. job creation and investments in local industry
- Health benefits e.g. prevention of diseases
- City image benefits e.g. attraction of new cyclists and improvement of cycle infrastructure

Integrating Pedelecs into Bike Sharing Systems

- E-Bikes currently at 11% market share to the total market in Germany
- More than 1.6 Million E-Bikes on the roads in Germany
- Competition for innovative public bike rental systems in 2009:
  - Implementation of electric assist bicycles - so-called pedelecs - into bike sharing systems in Stuttgart and Aachen
  - 100 Pedelecs at 45 charging stations in Stuttgart to cover longer distances and hilly areas
- Enabling customers to test and try electric powered vehicles without having financial or technological risks

Evaluation method for distribution and assessment of stations

- On-site inspection and analysis of 20 locations in Munich
- Classification by different attributes:
  - Target groups: tourists (non-local), visitors (familiar with places), students, occasional riders and commuters
  - Trip Purpose: leisure or recreational time, sightseeing, trip to/from work, trip to/from university/school, E-Bike trial ride
  - Transport Connectivity: availability of underground, tram, bus or S-train stations, proximity to main cycle routes, existence of park and ride facilities close by
- Final assessment by five-stage scale

Results of Online-Survey among bike sharing users

- 27 questions about usage and experience of bike sharing and pedelecs
- 454 participants (addressed via Call a Bike Newsletter) between 19 and 75 years

Location preferences:

On-site inspection and analysis of 20 locations in Munich

<table>
<thead>
<tr>
<th>Location</th>
<th>Trip Purpose</th>
<th>Transport Connectivity</th>
<th>Final Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinesischer Turm im Englischen Garten</td>
<td>Leisure</td>
<td>High</td>
<td>4.5</td>
</tr>
<tr>
<td>Tierpark</td>
<td>Recreational</td>
<td>Medium</td>
<td>4.2</td>
</tr>
<tr>
<td>Allianz-Arena</td>
<td>Work</td>
<td>Low</td>
<td>3.8</td>
</tr>
<tr>
<td>Eastern</td>
<td>Sightseeing</td>
<td>Very High</td>
<td>5.0</td>
</tr>
</tbody>
</table>

On-site inspection and analysis of 20 locations in Munich

<table>
<thead>
<tr>
<th>Location</th>
<th>Trip Purpose</th>
<th>Transport Connectivity</th>
<th>Final Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinesischer Turm im Englischen Garten</td>
<td>Leisure</td>
<td>High</td>
<td>4.5</td>
</tr>
<tr>
<td>Tierpark</td>
<td>Recreational</td>
<td>Medium</td>
<td>4.2</td>
</tr>
<tr>
<td>Allianz-Arena</td>
<td>Work</td>
<td>Low</td>
<td>3.8</td>
</tr>
<tr>
<td>Eastern</td>
<td>Sightseeing</td>
<td>Very High</td>
<td>5.0</td>
</tr>
</tbody>
</table>