Cargo cycles trials and initiatives in Berlin

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Outline

• Background – project "I substitute a car"

• The **courier market** in Berlin
  • shipments by bikes and cars
  • technical substitution potential
  • modal split of a courier company

• The **courier logistics organisation**
  • drivers/barriers for electric cargo bike use
  • example of a restructured tour

• The **messengers**
  • awareness of electric cargo bikes
  • requirements towards vehicles

• Other German trials and initiatives

• Take-home messages
Project "I substitute a car" – used vehicles

- Main vehicle: iBullitt (x 40)
  - producer: urban
  - engine: 250 W front wheel hub
  - payload: up to 100 kg
  - cargo box standard: 176 l, maxi: 281 l

- Additional vehicle: CargoCruiser (x 1)
  - producer: veloform
  - engine: 250 W, 48 V, 1.536 Wh
  - payload: bis 300 kg
  - cargo box: 879 l
"Coffee run" – one application example in Berlin

- **pickup1**
- **coffee grounds**
- **delivery 1**
- **delivery 2**
- **mushrooms**
- **pickup 2**
The courier market – density of pickups (Berlin city center)
OD-relations of courier shipments (Berlin city center)

Shipments per week:
- Bike messengers
- Car messengers

1 km
Short trips and light goods

Potential 1: (<10km) 72% of trips
Potential 2: (<20km) 92% of trips

- Bike messengers (n=79,903)
- Car messengers (n=52,810)

Non-transportable 89%
Transportable 11%
Car substitution potential

Potential 1: trips below 10km & transportable goods
- Substitutable deliveries: 42%
- Substitutable mileage: 19%

Potential 2: trips below 20km and transportable goods
- Substitutable deliveries: 68%
- Substitutable mileage: 48%
Daily mileages of bike and car messengers

Cumulated Percentage of Days

Bikes (n=1641)

Cars (n=2707)

Daily Mileage [km]
Modal split of a courier company

**Modal Split (deliveries)**
- Car: 27%
- Caddy: 27%
- Bike: 27%
- iBullitt: 8%
- CargoCruiser: 1%
- Motorcycle: 1%
- Transporter: 8%
- Truck: 0%

**Modal Split (km)**
- Car: 34%
- Caddy: 32%
- Bike: 17%
- iBullitt: 4%
- CargoCruiser: 0%
- Motorcycle: 1%
- Transporter: 11%
- Truck: 0%

reported period: 7/2012 – 9/2013; n≈267,000 trips

sum ~ 2.3 million km
Understanding courier logistics organisation to identify drivers/barriers for further spread of electric cargo bikes

- company background
  - historical development
  - range of services, USP
  - assets
- employees / messengers
  - recruiting and training
  - remuneration
- pricing
- customers
- green logistics
- order acceptance
  - process and communication
  - mode decision
- dispatching of shipments
  - process and communication
  - control of success / failures

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Restructuring of a central Berlin pick up tour

Chart 12

> Cargo cycles trials and initiatives in Berlin > Johannes Gruber > January 2014

Deliveries per month

- Bike
- iBullitt
- CargoCruiser
- Car
- Caddy
The individual messengers: Awareness of and attitudes towards electric cargo bikes

<table>
<thead>
<tr>
<th>Statement</th>
<th>Bike messengers</th>
<th>Car messengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using ECB (electric cargo bikes) in my city makes sense.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>ECBs contribute towards environmental protection.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>ECBs attract passengers' interest.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Messengers on ECBs can take over tasks that have formerly been carried out by bike messengers.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Messengers on ECBs can take over tasks that have formerly been carried out by car messengers.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>ECBs will generally be successful in courier services.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
<tr>
<td>There is plenty of information available on ECBs and their use.</td>
<td>Strongly agree</td>
<td>Agree</td>
</tr>
</tbody>
</table>

n=191 (92 bike messengers, 99 car messengers)
The individual messengers:
Requirements towards vehicle characteristics

1 Electric range
2 Handling while driving
3 Purchase price
4 Theft protection
5 Vehicle safety
6 Speed
7 Environmental protection
8 Maintenance costs
9 Charging at place of residence
10 Payload
11 Charging on the way
12 Perception/acceptance of customers
13 Perception/acceptance of private surrounding
Other German trials and initiatives

- German Evangelical Church Assembly Hamburg, May 2013: Cargo cycles for event logistics
- Velotransport.de: Product overview, exhibitions
- VCD lobby project: "Ich fahr Lastenrad"
- New project funded by Federal Ministry of Transport, "Commercial use of bicycles", lead by DLR
- Private initiatives, e.g. WISAG (facility management)
- First trials at German Bundeswehr
Take-home messages

• The courier market
  • considerable demand for courier services in urban core areas
  • car and bike messengers are in direct competition – spatially, temporally, by type of good
  • large potential for electric cargo bikes to substitute urban small-scale trips (19%-48% of the mileage currently done by combustion engine vehicles)

• The courier logistics organisation
  • electric cargo bikes are positioned between bikes and cars – in terms of cost, payload, range
  • mostly self-employed owner-operators connected to courier companies
  • courier companies are often small in size; they are evolving gradually and might lack strategic focus – on the other hand: large potential for innovators

• The messengers
  • overall positive anticipation both by bike and car messengers
  • deficit seen in available information, purchase price, electric range
Thank you for your attention!

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