ByCycle, forget the bus, scholars go by (E-)bike

VELO-CITY, Joof Tummers June 15th 2017
Biking Betuwe

Idea competition Rijnwaalpad
Biking Betuwe
Idea competition Rijnwaalpad

- Rainwater collection
- Solar panels
- Charging station for e-bike
- First aid meetingpoint
- Info
- Air
- Toilet
- Drinking water
- Scholar meetingpoint
- Servicepoint
We believe in the power of the bicycle

Crucial to extend the public transport system
Traveltime Isochrone (verbindingswijzer)
Leaving Amsterdam at 10:00 AM by public transport
Traveltime Isochrone (verbindingswijzer)
Leaving at 10:00 AM by public transport + short bicycle ride
Vision on the future of public transport

Provincie Gelderland

- Healthy option, popular image
- Serious alternative to public transport
- Infrastructure has to be optimized (curves needed)
- Make an early investment (return on investment during high school)
- Great for social blend of medically hindered (asthma etc.)
High school students bike on a daily basis

Short to medium distance (<10km)

During the experiment:
- 78.5% steps virtually always over to the E-bike;
- 15.7% steps approximately half of the time over;
- 5.8% steps not over.

Ook buiten school hoog gebruik van de E-bike!
The bus system is important in rural area’s

Small demand & long distance compared to cities
E-bike to school as an alternative to public transport

Experiment at 4 high-schools in Gelderland

Participants are used to travel by bus or train
Minimum distance from school
Set of 20 e-bikes
Questionnaires
Track-and-trace (24/7)
Why and from where?
It’s a challenge, healthier & faster

- **Uitdaging**: 47%
- **Gezonder**: 28%
- **Sneller**: 23%
- **Gemakkelijk**: 2%

Tranche 1: E-bike versus de bus;
Tranche 2: E-bike versus de bus en/of trein
Tranche 3: E-bike versus het weer
Tranche 4: E-bike versus de gewone fiets

Cities:
- Angerlo
- Apeldoorn
- Arnhem
- Deil
- Delwijnen
- De Steeg
- Deventer
- Doesburg
- Erichem
- Geldermalsen
- Harskamp
- Heteren
- Houten
- Huissen
- Leerdam
- Maurik
- Meteren
- Nunspeet
- Opijnen
- Olburgen
- Ophemert
- Ravenswaaij
- Renkum
- Tricht
- Varik
- Veessen
- Velp
- Wapenveld
- Wekerom
- Wenum-Wiesel
- Wolfheze
Track-and-trace

Heatmap JFSG school Apeldoorn

Average speed 22,3 km/h
Maximum speed 35 km/h
Track-and-trace

Heatmap Montessori school Arnhem
Track-and-trace

Heatmap Lek en Linge school Culemborg

Use

11% Gebruik op weekenddagen
89% Gebruik op weekdagen
## Facts

Well used, high average speed, longer distances

<table>
<thead>
<tr>
<th></th>
<th>JFSG</th>
<th>Montessori</th>
<th>Lek en Linge</th>
<th>RSGNOV</th>
<th>Totaal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of rides</strong></td>
<td>1.773</td>
<td>1.383</td>
<td>2.200</td>
<td>1.422</td>
<td>6.778</td>
</tr>
<tr>
<td><strong>Number T&amp;T</strong></td>
<td>19</td>
<td>16</td>
<td>18</td>
<td>19</td>
<td>72</td>
</tr>
<tr>
<td><strong>Average speed</strong></td>
<td>22,3 km/h</td>
<td>20,1 km/h</td>
<td>18,6 km/h</td>
<td>21,1 km/h</td>
<td>20,5 km/h</td>
</tr>
<tr>
<td><strong>Average distance</strong></td>
<td>16,8 km</td>
<td>9,9 km</td>
<td>8,8 km</td>
<td>7,1 km</td>
<td>10,7 km</td>
</tr>
<tr>
<td><strong>Maximum distance</strong></td>
<td>55,4 km</td>
<td>27,3 km</td>
<td>23,9 km</td>
<td>22,3 km</td>
<td>55,4 km</td>
</tr>
<tr>
<td><strong>Maximum speed</strong></td>
<td>35 km/h</td>
<td>34,9 km/h</td>
<td>34,2 km/h</td>
<td>34,8 km/h</td>
<td>35 km/h</td>
</tr>
<tr>
<td><strong>Use weekdays</strong></td>
<td>84,9%</td>
<td>91,3%</td>
<td>91,5%</td>
<td>87,3%</td>
<td>88,8% (gem)</td>
</tr>
<tr>
<td><strong>Use weekends</strong></td>
<td>15,1%</td>
<td>8,7%</td>
<td>8,5%</td>
<td>12,7%</td>
<td>11,2% (gem)</td>
</tr>
</tbody>
</table>
Weather

Wet or slippery weather reduces the use of the e-bike

Gebruik bij goed weer

28% Geen gebruik
72% Gebruik

Gebruik bij slecht weer

59% Geen gebruik
41% Gebruik
Image of the E-bike among classmates and family
Before and after the pilot

**Before**
- 34% Negatief
- 43% Positief
- 23% Neutraal

**After**
- 20% Neutraal
- 80% Positief
## Public transport vs. E-bike

### Appreciation before and after the pilot

<table>
<thead>
<tr>
<th>Public transport</th>
<th>Positive top 5</th>
<th>Negative top 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather-independent</td>
<td>Time-dependent / waiting time</td>
<td></td>
</tr>
<tr>
<td>Speed / fast</td>
<td>Unhealthy</td>
<td></td>
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<tr>
<td>Homework</td>
<td>Costs</td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td>Delays</td>
<td></td>
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<tr>
<td>Social interaction</td>
<td>Crowded</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E-bike</th>
<th>Positive top 5</th>
<th>Negative top 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>Weather-dependent</td>
<td></td>
</tr>
<tr>
<td>Speed / fast</td>
<td>Charging</td>
<td></td>
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<tr>
<td>Cheap</td>
<td>Homework</td>
<td></td>
</tr>
<tr>
<td>Time-independent</td>
<td>No social interaction</td>
<td></td>
</tr>
<tr>
<td>Sustainability (environment)</td>
<td>Safety</td>
<td></td>
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</tbody>
</table>
Change of transport modality

25% of participants change permanently to the bicycle

During the experiment:
- 78.5% switches all of the time to the E-bike;
- 15.7% switches half of the time;
- 5.8% never uses the E-bike.
- Also well used besides school for social visits, sports & holiday’s

After the experiment:
Lessons learned

At one school 40 e-bikes were purchased by followers

- Healthy option, popular image
- Serious alternative to public transport
- Infrastructure has to be optimized (curves ed.)
- Make an early investment – target second schoolyear (return on investment during high-school)
- Great for
  - young scholars
  - scholars living at large distances from school
  - scholars unable to ride a normal bicycle (medical reasons)
VELO-CITY 2017
THE FREEDOM OF CYCLING
ARNHEM-NIJMEGEN, JUNE 13-16