

Electric-Bike as alternative to car use: evidence from a pilot project in Rotterdam

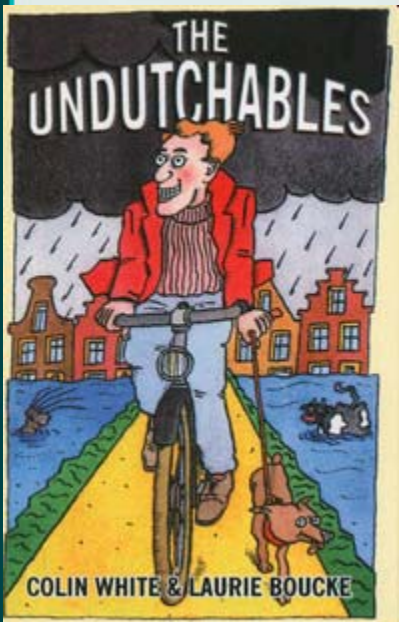
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The Netherlands and the bike



The Netherlands and the bike

- The Netherlands has the highest proportion of bike use in the world;
- One fourth of all trips made in the country are by bike (2008);
- The average distance biked per person per day is 2.6 Km;
- Most of the trips made by bike are in the range from 1 to 7.5 km;

Bicycle use in the Netherlands



Figure 1: Journeys according to main transportation means and distance category in 2007
 (Source: Mobiliteitsonderzoek [Mobility Study] Nederland 2007, AVV)

What is the secret?

- Conventional wisdom might suggest that culture, topology and climate are responsible for the success in the Netherlands;
- However, **policies** are the impetus for making cities either bicycle-friendly or car-friendly!

Why the bicycle?

- For the user (cyclist):
 - It's cheaper;
 - It's healthier;
 - It's reliable;
 - It's comfortable;
- For the employer:
 - A bicycle rack is cheaper than a parking space;
 - Employees that cycle regularly are less sick than the average;

Cyclists are healthy people!

- TNO research among three large employers in the Netherlands (2008):
 - 1,236 employees;
 - 64% regularly cycle to work;
- Main outcome:
 - Employees that cycle regularly are less sick;
 - The larger the distance they cycle the less they are sick;

Motives

- The most important reason to use the bike is health;
- The most important reason for not using the bike are:
 - Distance;
 - Weather;
 - Sweaty;

E(lectric)-bike



E-Bike

- An E-Bike is a pedal electric cycle (pedelec);
- A pedelec is a bicycle supported by an electric motor powered by a rechargeable battery;
- The electric motor only delivers torque when the cyclist is actually pedalling.
- This means that the motor is intended to *assist* pedalling not to *replace* it!

E-bike: expectations

- Main advantages:
 - Electric assistance;
 - You can bike at an average speed of 20-25 km/h without being sweaty;
 - Increased speed = Increased distance
- Main problems:
 - Cost (approx. €2,000);
 - Safety;
 - Image (“it is for old people”);

E-bike in the Netherlands

- The E-bike made its appearance in the Dutch market at the end of the nineties;
- In 2008 approximately 134,000 E-bikes were sold in the country;
- In May 2009 the share of income generated by the E-bikes reached 37.8% surpassing the income generated by the selling of city bikes;

The project “E-fiets: proberen is overtuigen”

- Cooperation of the Municipality of Rotterdam and VCCR;
- Started in March 2009 (duration, at least 12 months);
- Main aim: to disseminate the use of the E-bike among the employees of large companies in Rotterdam;

“E-fiets: proberen is overtuigen”

- Employees of the participating companies can hire an E-bike for free for an entire week (from Monday to Monday);
- Employees must fill in a questionnaire before and after the trial period;
- Nine large employers in the city accepted to participate (August 2009);

“E-fiets: proberen is overtuigen”

- Preliminary results August 2009:
 - 279 people tried the E-bike;
 - 125 people filled-in the evaluation form;
- Usual modal split of the “E-bikers”:
 - 37% by car;
 - 29% by bike;
 - 22% by public transport;
 - 12% mix of modes;

“E-fiets: proberen is overtuigen”

Outcome of the evaluation survey (N = 125):

- On average the E-bike has been evaluated very well (average grade > 4, on a 1 to 5 scale);
- The weight of the bicycle has received the lowest average grade (2.5) while the pedal assistance the highest (4.4);
- Most of the participants (86%) found it simple to charge the battery but only 58% found easy to charge the battery at workplace;

“E-fiets: proberen is overtuigen”

Outcome of the evaluation survey (N = 125):

- 49% the users think the E-bike is worth its price;
- but only 39% would be willing to pay for it (and some of which pending on specific conditions, i.e. availability of tax benefits..);
- 74% of the participants consider the E-bike a suitable transport mode for their commuting trip;

“E-fiets: proberen is overtuigen”

Outcome of the evaluation survey (N = 125):

- Main reasons for not considering the E-bike a suitable transport mean for commuting are:
 - ‘commuting distance too large’ (38%)
 - ‘preference for the normal bike’ (22%);
- Only 15% considered technical limitations of the bike (low battery range and insufficient pedal assistance) as reason;

The potential of the E-bike

- Increase commuting radius:
 - Average commuting distance E-bikers: 13 km;
 - Average commuting distance normal bikers: 9.2 km;
- Alternative to car use:
 - 60% of the car users think the E-bike can fulfill their commuting trip;
 - Most of them commute between 9 and 19 km;

The potential problems of the E-bike

- Price:
 - 36% of the participants said they are planning to buy an E-bike in the near future;
 - The high price of the bike is the main reason (38%) why people do not intend to buy an E-bike;
- Recharge batteries at work (?);
- Image (?)

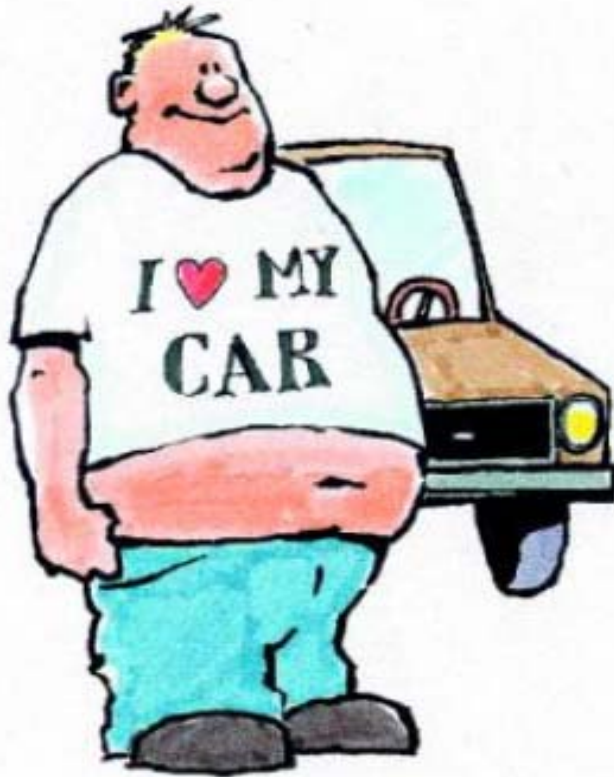
The potential of the E-bike

How to overcome the financial issue?

- Financial subsidies to employees;
- Fiscal benefits;
- ...

Why should employers help employees to buy an E-bike?

- Bikers are less sick and more productive;
- An E-bike is less expensive than a parking space!!



Voor

Na



THANK YOU

E-bike: EU-directive 2002/24/EC

“Cycles with pedal assistance which are equipped with an auxiliary electric motor have a maximum continuous rated power of 0.25 kW, of which the output is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling”