The impact of work-related aspects on bicycle commuting in the Netherlands, using the theory of planned behavior

Eva Heinen, Delft University of Technology
Kees Maat, Delft University of Technology
Bert van Wee, Delft University of Technology

Recently, the many advantages of the bicycle are more often recognized positively. Cities and countries encourage cycling and an introduction of a rental bicycle system can been seen in many cities, for example Paris and Washington, DC. Even in the Netherlands which already has the highest bicycle rate in the world, the government further encourage cycling especially for commuting. A modal shift from car towards the bicycle would be most beneficial particularly for commuting, which takes mainly place during rush hour, because a modal shift towards the bicycle in peak hours contributes most to a less polluting traffic system and to reduce congestion levels.

Recent studies have investigated cycling (to work) by testing the influence of many determinants (socio-economical, built environment and opinions) on cycling (De Geus, 2007; Dill and Voros, 2007; Horton et al., 2007; Hunt and Abraham, 2007; Gatersleben and Appleton, 2007; Gatersleben and Uzzell, 2007; Martens, 2007; Wardman et al., 2007; Barnes et al., 2006; Pucher and Buehler, 2006; Schneider and Holz-Rau, 2006; Bruijn et al., 2005 and Lohmann and Rölle, 2005). However, although researchers have shown great interest in cycling, little academic research has been carried out into how work-related factors affect rates of bicycle usage. This is remarkable because it seems evident that work-related factors will affect the commuting mode of transport chosen. Work-related factors include the work location, the commuting distance from home, bicycle facilities at the work location, the hours worked, the type of clothing required for work and whether it is necessary to travel during working hours. Moreover, the knowledge available suggests that not only external aspects influence cycling, but also internal beliefs, attitudes and the evaluation of the social context. This is also revealed by that individuals in identical situations and in similar socio-economic groups still choose differently in regard to the decision to cycle to work. The attitudes of colleagues or the employer, including pressure regarding the mode of transport, may influence the individual mode choice.

This paper aims to address these gaps by answering the question to what extent work-related factors determine the choice to cycle to work. For this, we designed a comprehensive model of bicycle commuting. We assume that work-related aspects influence bicycle mode choice. The influence is indirect: work related aspects affect one’s attitude towards cycling to work, the attitudes of colleagues or the employer, including pressure regarding the mode of transport, and the perceived possibilities to cycle to work (Figure 1). We expect that cycling is not only determined by ‘hard’ factors, such as the built environment, available infrastructure and sociodemographics, but also that attitudes and expectations – not only of the cyclists themselves, but also by his social environment (such as the employer) – have their impacts on the decision to cycle. Therefore, the base for the conceptual model is the theory of planned behavior (TPB) (Ajzen, 1991). This theory assumes that the behavior is a direct result of the intention to perform the behavior, which is again affected by the attitude, social norm and perceived behavioral control toward this behavior. In our model observable behavior is commuting to work by bicycle, which is affected by the personal attitude, expected attitudes of important others and the perceived behavioral control towards cycling to work. We expect work aspects to influence these constructs of the TPB. For example the presence of showers could increase the experienced behavioral control towards cycling to work, because an individual encounters fewer obstacles for cycling, since he can tidy himself up before work.
The data used for this analysis are gathered in a bicycle survey carried out in the Netherlands. The survey was conducted among inhabitants and employees in two cities and in two more rural municipalities, which resulted in a sample of workers living both in medium-sized cities, suburbs and rural areas. The inhabitants were approached by mail at their home address, while the employees were reached by e-mail at their work address. We collected data of approximately 4,000 respondents. The survey focused only on bicycling, but the respondents were kept unknown about the specific aim of the research. The survey included questions about the respondents’ personal and socio-economical situation, their work situation, their attitudes, habits and experiences, their chosen mode of transport for traveling to and from work and the reasons behind this choice. Of particular interest for our research were the questions focusing on work-related factors.

Because we assume multiple causal relations, an analyzing method is needed that allows and can test these relationships. Therefore, structural equation modeling (SEM) is used. SEM allows analyzing multiple causal effects between various constructs and aspects.

Preliminary results suggest that work related aspects indeed influence the propensity to cycle to work. A major aspect is clothing style. A more official clothing style results in less cycling. Moreover workers wearing a suit are less likely to have a very positive attitude towards cycling. Also the social norm, the perceived expectation of important others, is lower for workers wearing suits compared to for example individuals working in casual clothing. Individuals who are wearing casual clothing to work perceive a more positive social norm from family, friends and co-workers. A second aspect is working hours. Working at night decreases the frequency of cycling as well. The darkness might increase risks (both social and traffic safety) and thereby resulting in a less positive attitude and a lower perceived behavioral control towards cycling.

Knowledge on how clothing style, working hours and other work-related factors affect bicycle use assist policy makers and employers to increase cycling rates. Policy maker could develop targeted policies, while employers could adapt the incentives they provide for specific modes of commuting and benefit from the reduced need for parking places, lower commuting costs, fewer company and lease cars, and healthier employees.

References


