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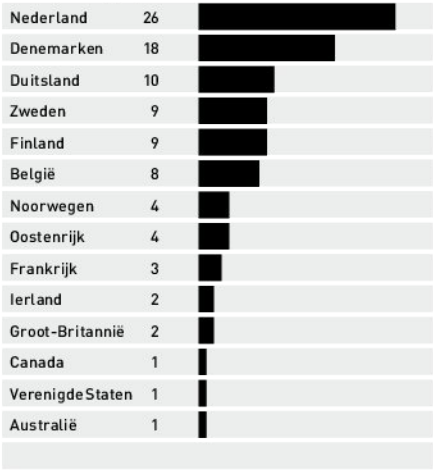
There are still opportunities for Dutch cycling

The popularity of the bicycle as a mode of transport plays a key role in promoting sustainable mobility. In order to encourage and facilitate bicycle use, policymakers must study future trends and development, and in addition it is important that we learn about the effects of bicycle policy. Bicycle use is subject to change, and a key development is the unexpected potential of the electric bike to encourage bicycle use in general.

More than four billion bicycle journeys are completed in the Netherlands each year; This represents 27 per cent of all journeys undertaken in the country, and the number has been stable for years. As figure 1 shows, the Netherlands is the number one country in Europe in terms of bicycle use (Pucher & Buehler, 2012). This use continues to grow in the Netherlands as a whole, And is concentrated mainly in the cities, while there has been a decline in bicycle use in rural areas. Over the past decade, the total number of kilometres travelled by bicycle at the national level has increased to 15 billion on an annual basis. This represents 8 per cent of the total mileage travelled by individuals in the Netherlands (Statistics Netherlands [CBS], 2012).

Figure 1 Bicycle share (as a percentage of all travel) in percentage of bicycle travel



While the quality requirements for our bicycle routes and bike networks have been identified, there has been only limited research into the social and economic significance of bicycle use. Fundamental bicycle research is still at an early stage of development in the Netherlands and there is a disconnect between this research and current bicycle policy, which exists only at the urban and regional levels. This would appear to be incongruous with the bicycle's potential to contribute to sustainable mobility.

Regional and social differences

Whereas in student towns such as Groningen and Leiden bicycle journeys account for 35 per cent of all travel, this is only 20 per cent in Almere, Arnhem, Rotterdam and Zoetermeer (see Figure 2). Harms et al. (2013) have noted that bicycle use is increasing in some areas (e.g. in Den Bosch and Haarlem), that it has stabilised in other parts of the country (including Alkmaar and Dordrecht), while in other towns (such as Apeldoorn and Enschede) it has even decreased. Furthermore, both growth and decline are concentrated among specific socioeconomic groups. The growing spatial and social

Figure 1 Car and bicycle use among urban young adults, 1999-2009 (data sourced from: the Study Centre for Travel Behaviour of Statistics Netherlands; OViN; Directorate General of Public Works and Water Management Mobility Research)

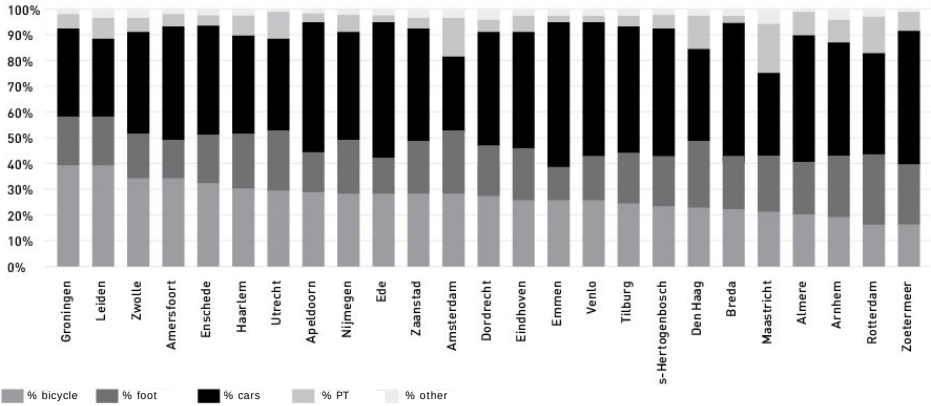
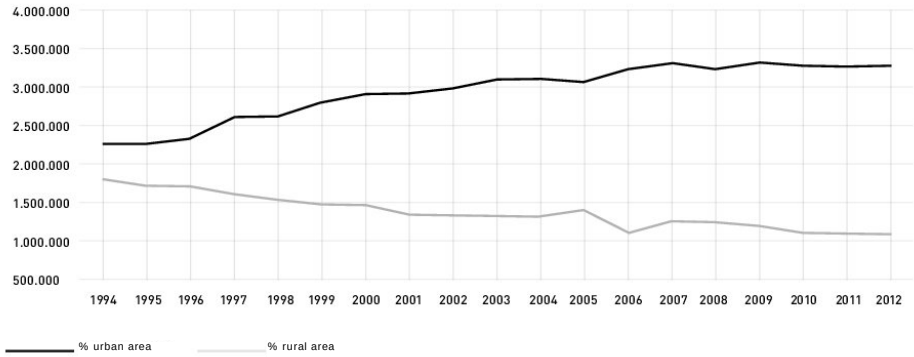


Figure 3 Bicycle traffic in urban versus rural areas, 1994-2012 (data sourced from the Study Centre for Travel Behaviour of Statistics Netherlands; OViN; Directorate General of Public Works and Water Management Mobility Research)



differentiation is significant, since it shows that bicycle use is sensitive to spatial and social conditions and that policymakers have the ability to manage and control the conditions for bicycle use (Harms et al., 2013).

The majority of growing bicycle use is found in cities (see Figure 3) – this can be attributed mainly to population growth. Moreover, the growth tends to be concentrated in specific areas, on specific routes and at specific times of the day. Bicycle use in Amsterdam has grown by a substantial 40 per cent in recent decades, but this growth has been concentrated mainly in the city centre and surrounding districts. The strongest growth occurred on routes to areas near railway stations, as evidenced by the major capacity problems experienced by bicycle parking facilities in those areas, Consumer organisations have asked policymakers to consider this growth in developing their policies. The Cyclists' Association, for example, has advocated a leap in scale level for bicycles (Van Es, 2012), while the Royal Dutch Touring Club (ANWB) has highlighted the need for improved traffic safety for schoolchildren and elderly people with bikes. (ANWB, 2014). In contrast, rural areas are showing a decline in bicycle use: large parts of the provinces of Friesland, Zeeland and Limburg have been experiencing a decline in population, a decrease in mobility, and a reduction in bicycle mileage. This trend is coupled with increased economies of scale, e.g. mergers between schools, or the discontinuation of specific amenities, including shops. As a result, residents of rural areas must travel increasingly longer distances simply to meet their day-to-day

needs. As these distances increase, people are more inclined to replace their bicycle with a car.
According to Harms (2013), there are social differences in addition to spatial differences. Bicycle use among young adults (aged 18-30) is growing, while this group also uses public transport more often and uses the car less frequently. This may be related, on the one hand, to the fact that they settle in cities and to changing lifestyles, and, on the other hand, to the economic crisis, which has left young people with less disposable income, who thus lack the money to purchase a car. Another social trend affecting bicycle use is the ageing Dutch population. The Baby Boomers travel and cycle more frequently and over longer distances, but they also tend to use the car more often than previous generations of senior citizens. Non-Western immigrants living in cities do not use bikes as often as native-born Dutch urbanites, even when we factor in location, income and education level. It is likely that culture and – more specifically – image are factors in these differences. This, too, is increasingly affecting bicycle mobility in cities such as Zoetermeer and Almere.
The spatial and social-cultural context is a key factor when it comes to creating an effective bicycle policy. The main task of policymakers in urban areas is to provide sufficient capacity or space for cyclists, while in rural areas they must ensure that places remain accessible by bicycle. The challenge in terms of young people is to make sure they continue to use the bicycle as they enter a new stage of life. For senior citizens, the successful bicycle policy must involve ensuring traffic safety, while immigrants must be encouraged to start using the bicycle. Finally, it is important to be aware of the correlation between bicycle use for recreational purposes and bicycle use for commuting purposes (Kroesen & Handy, 2013). The easier it becomes to cycle to recreational destinations, the more people will be inclined to cycle to work. Conversely, people will be more likely to use the bike for recreational purposes if they also use it more frequently for commuting purposes (for example, because their employer offers a Cycle to Work scheme).

Long-term potential of e-bikes

Electric bicycles have become a familiar sight on Dutch roads, with the current number exceeding one million. While e-bikes currently account for more than 17 per cent of all bicycles sold in the Netherlands (data provided by RAI Association, 2013), there is no data available on current use, and the impact of this relatively new mode of transport is currently unknown. Literature reviews and traffic model analyses demonstrate that the use of e-bikes

in commuting has a substantial impact on the accessibility of Dutch cities (Engelmoer, 2012). However, electric bikes currently appear to be popular mainly with senior citizens, who use them primarily for recreational purposes. In addition, there are also a growing number of employers who encourage the purchase and use of the e-bikes as part of their mobility management policies and programmes. A survey conducted in the urban region of Arnhem-Nijmegen revealed that a total of 630 employees who purchased an e-bike in 2012 using a special subsidy have since reduced their weekly mileage (by car or motorcycle) by an average of 74 kilometres. As a result, car use for commuting purposes declined from 65 per cent to 23 per cent (Dutch Cycling Embassy, 2013).
A large number of e-bike users (Jones et al.; research in progress) interviewed as part of the study reported that they began using the bike more often, as and travelled longer distances. In addition, the study also showed that they were more inclined to use the bicycle than the car. The e-bike has prompted many of the interview subjects to change their behaviour on a permanent basis. Before such behavioural change can occur on a large scale, marketing professionals will need to work on improving the image of the e-bike and ensure that it is not viewed as a mode of transport strictly for the elderly. E-bikes can improve the sustainability of transport in urban areas, while its larger range in rural areas may ensure that amenities and facilities remain accessible by bicycle. Traffic safety, an infrastructure free from obstacles, a sufficient number of charging stations and parking facilities adapted to e-bikes must all be prioritised by policymakers. In addition, the problem of e-bike theft must also be addressed.

Bicycle/train combination

The bicycle plays a significant role in the Netherlands as a mode of transport for getting to and from the train station. In fact, around 40% of train passengers use the bike to travel to the station (source: Research Institute for Mobility Policy, 2013). The Dutch public transport system is so well developed that the majority of people live within cycling distance of a railway station: 60 per cent of the Dutch population live within a 5 kilometre cycling distance of a train station, and 24 per cent live within walking distance (1.5 kilometres) (excluding light-rail and railway stations opened after 2012). A total of 37 per cent of the Dutch population live within a 5 kilometre cycling distance of an intercity railway station, and 8 per cent live within a 1.5 kilometre walking distance. The quality of bicycle journeys to the train station is a factor in determining whether people will choose the train

as their primary means of transport. However, there is one significant difference between cyclists and pedestrians: cyclists more frequently have the option to choose between several stations. Roughly 70 per cent of train passengers can choose between two or more stations (Kager et al., 2014), Both from the point of departure as well as from the final destination In addition, this group has access to an average of three train stations within a 5 kilometre cycling distance from their home. A total of 25 per cent of train passengers has access to no fewer than five or more stations within a 7.5 kilometre cycling distance, again from both the point of departure as well as from the final destination. This provides them with the option to use the public transport network as it suits them – that is, to adapt it completely to their day-to-day routines and/or changing circumstances. People using a bicycle to get to and from the station may opt for a station that offers a specific line or a specific type of train operation; this flexibility adds to the appeal of the combination of bicycle-train transport. An additional benefit for those using both the bike and the train is that they can visit destinations located between their point of departure and their destination, which may or may not change. The combination of bicycle travel and train travel works differently in every city. In Utrecht, for example, the Central Station is a major bicycle destination, while Amsterdam and Rotterdam show a more even distribution of the combination of bicycle with train travel. In those cities, the structure of the railway network ensures that there are a larger number of stations that appeal to cyclists.

The impression may arise that parking bicycles near railway stations is relatively standardised across the Netherlands, as witnessed by the large number of bicycle parking facilities at the larger railway stations which are packed to capacity. On closer consideration, however, it turns out that the system operates very differently in the majority of large cities. According to Kager et al. (2014), planners must factor in the number of train stations in each city; the quality of public transport services; average cycling distances; the quality of bicycle parking facilities; the level of interchangeability of stations as a result of specific use of lines; and the local share of bicycle use as part of total travel (i.e. also separately from station use) in the further analysis of bicycle parking near stations, and the impact of policy measures. At the same time, it is precisely this variety of factors that offers a “living laboratory” to study the technicalities of the bicycle-train combination. While a policy focus on the bicycle-train combination can potentially contribute to keeping urban regions

accessible and liveable, experiments are required in order to optimise this policy.

Policy effectiveness explained The question of what constitutes effective bicycle policy is not an easy one to answer. Although the existing scientific academic literature in this area does provide some insight, these more often than not represent secondary analyses of poorly substantiated evaluation studies in countries where bicycles have a completely different status, such as the United States and Canada. These studies tend to focus on the impact of infrastructure measures – including bike paths and bicycle parking facilities – which are not widespread in those countries. There have been only few academic studies to date into the impact of bicycle policy in countries where bicycles play a more significant role, such as the Netherlands and Denmark.

The impact of infrastructure measures, education, communication and marketing is currently being studied in twenty-two medium-sized Dutch cities. Another field of study has been the method by which bicycle policy has been organised and implemented, including the financial integration of the policy, the targets and objectives set, the involvement of the stakeholders, the level of cooperation, and the role of leadership. The initial results of the study demonstrate that the effectiveness of bicycle policy in Dutch cities is related to a number of success factors (specifically, the combination of those factors) (Harms et al.; research in progress). First of all, the method of organisation and implementation of policy and interests is relevant, including the application of measurable and monitored goals, a high level of realisation of those goals, providing room for experiments (e.g. pilot projects and temporary measures) and the involvement and intervention of aldermen and mayors. Secondly, infrastructure measures have proved to be effective, and this extends to both “push” measures (e.g. discouraging car use by increasing the price of city-centre parking) and “pull” measures (i.e. encouraging bicycle use by developing more higher-quality infrastructure). A third finding is that the level of success is also determined in part by external circumstances, including the demographic and spatial changes mentioned above.

Policymakers are up to bat

In view of the role of the bicycle in the daily urban system, it is self-evident that is it mainly local governments which play a key role in setting bicycle policy, since the bicycle is key to keeping the major Dutch cities accessible. However, the central government also has a number of interests of its own. According to ARTGINEERING (2014), bicycle travel contributes to building a

solid mobility system; bicycle transport could potentially be an alternative mode of transport for one-third of all local people using the car on the ring roads, and the bicycle connects urban areas with suburban and rural areas. In addition, cycling also contributes to the health of the Dutch population; the return on investment in a bicycle infrastructure is relatively high; the bicycle increases the competitive advantage of the Netherlands internationally, and, finally, it is a rock-solid export product. Consequently, effective bicycle policy pays off in terms of accessibility, the economy, natural scenery, health, and even national identity. Bicycle-friendly cities (including Amsterdam, Copenhagen and Zurich) score high on the list of the world's most liveable cities (ARTGINEERING, 2014). This would lead to the conclusion, then, that effective bicycle incentive policy offers benefits for all. The effectiveness of Dutch bicycle policy would be improved if a cohesive package of measures were to be implemented, with a focus on spatial and social differences. Policymakers have a wide range of tools at their disposal to give bicycles the freedom to thrive, but they will, essentially, need to study carefully the behaviour of cyclists and even that of separate categories of cyclists.

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