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SWOV Fact sheet

Mobility on Dutch roads

Summary

Mobility is an important factor in road safety research, because it has a major influence on the number of road crashes and road casualties. Developments in mobility are determined by developments in, broadly speaking, four areas: demography, social culture, the economy, and spatial planning. Mobility in the Netherlands has been increasing since the 1950s. Today, more than 200 billion km are travelled each year. The increase in mobility in this whole period of time is due almost entirely to the car. Clear changes in this trend can be seen in the last ten years. Total annual mobility has still increased in the last ten years for the population group above the age of 40, whereas, conversely, it has decreased for the group below that age. This difference is largely the result of changes in the composition of the population.

Background and contents

Almost everyone participates in traffic on a daily basis. The distance travelled and the how and why of these journeys are the subject of mobility research. SWOV itself does not conduct research into mobility. Within the Netherlands, mobility research is carried out by the Dutch Ministry of Transport's Rijkswaterstaat Water, Traffic and Environment (RWS-WVL), the Netherlands Institute for Transport Policy Analysis (KiM) and Statistics Netherlands. Given that it has a major influence on the number of road casualties, mobility is an important factor in road safety research.

This fact sheet discusses the developments in mobility in the Netherlands and factors of influence in that regard. In addition, a brief discussion is devoted to what mobility data is collected in the Netherlands and how this is done. For more information about mobility in relation to road safety, see also the SWOV Fact sheet [Risk in traffic](#).

What is mobility and what factors influence it?

In a literal sense mobility is 'the ability to move about'. In road transport research, however, mobility refers to the number of journeys or distance travelled in traffic on public roads. Developments in mobility are largely determined by developments in, broadly speaking, four areas (AVV, 2006):

- Demography: the more people there are, the greater the mobility. In addition, changes in age structure and household composition play a role in mobility development, as well as changing life styles (Dutch Advisory Council for Transport, Public Works and Water Management, 2010).
- Social culture: mobility has increased as a result of, for example, individualization in society and the emancipation of women and their concomitantly increased participation in the labour force.
- The economy: increasing prosperity may be associated with increased vehicle ownership and mobility.
- Spatial planning: the distribution of, for example, residential locations and places of work across the country influences mobility.

Mobility in the Netherlands has continuously been increasing since the 1950s. Throughout the decades, pronounced shifts have also occurred in the modes of transport used (Mom & Filarski, 2008; SWOV, 2007). These were in part determined by the advent of new or faster modes of transport and infrastructure and the associated ability to travel a greater distance than had previously been possible within the same journey time. In terms of mode of transport, the period immediately after the Second World War was characterized primarily by increased use of the moped. This was followed by an explosive growth in the ownership and use of cars from the early 1960s onwards. Today, mobility in the Netherlands remains dominated by the car, which accounts for approximately two-thirds of the total distance travelled on Dutch roads.

Mobility has a major influence on the number of crashes and road casualties. After all, the greater the total distance travelled, the more often a single vehicle crash can occur. Moreover, the more road

users, the more frequently road users will encounter each other and therefore the higher the risk of a two-vehicle crash and, in consequence, road casualties. It is therefore extremely important to take mobility developments into account when conducting research into road safety. More information about this can be found in the SWOV Fact sheet [Risk in traffic](#).

How do we measure mobility?

Continuous research into the travel behaviour of people in the Netherlands has been carried out since the beginning of the 1980s. Data on the mobility of individuals is collected by means of a survey of Dutch households. Up to and including 2003, this survey was conducted by Statistics Netherlands and was called the Traffic Survey (*Onderzoek Verplaatsingsgedrag*, OVG). This survey was subsequently continued by the Centre for Transport and Navigation and was called the Dutch Mobility Survey (*Mobiliteitsonderzoek Nederland*, MON). From 2010, the survey was again taken over by Statistics Netherlands and is carried out under the name Traffic Survey of the Netherlands (*Onderzoek Verplaatsingen in Nederland*, OViN). Based on the survey results, estimates of the mobility of individuals resident in and travelling within the Netherlands are made by means of an increment and weighting process (DVS, 2008). See also data source Mobility of Individuals.

Given that the Dutch Mobility Survey relates only to the mobility of individuals resident in the Netherlands, the data it provides does not encompass the total mobility on Dutch roads. Rough estimates indicate that the mobility covered by the Dutch Mobility Survey constitutes approximately 80% of the total distance travelled in the Netherlands. The remaining part comprises lorry traffic (approximately 12%), holiday traffic of individuals resident in and travelling within the Netherlands (this is not included in the Dutch Mobility Survey and constitutes approximately 5%) and distance travelled on Dutch roads by individuals not resident in the Netherlands (approximately 4%). Estimates of these components are provided by Statistics Netherlands on the basis of, among other things, the surveys carried out by the national and international road transport organization NIWO/SIEV for lorry traffic and the Continuous Holiday Survey (*Continu Vakantie Onderzoek*, CVO). The accuracy of these additions is limited, however, as is the availability of stratifications by, for example, age and time.

In addition, Statistics Netherlands maintains the Road Statistics which include, among other things, distance travelled with motor vehicles. Recently, Statistics Netherlands published new and updated data on traffic volumes (of motorized vehicles, based on car odometer data at reference moments, see data source NAP) from 1990 onward. No data on the mobility of non-motorized traffic is available for the period prior to the 1980s. Motor vehicle mobility certainly does not provide a complete picture of mobility from 1950. Broadly speaking, the further back we go in historical terms, the less accurately motor vehicle mobility reflects total mobility. This is because mobility in the past was less dominated by motorized traffic than is the case today. Although data on *non*-motorized traffic is lacking, we do know that in 1950 only approximately 5 billion km were travelled by car, which was then as little as was travelled by public transport. At present, this is around 140 billion km. For reference, 11 billion km were travelled by bicycle in 1985 (this is now 15 billion km).

What is the level of mobility in the Netherlands?

Data on motor vehicle mobility in the Netherlands is used to discern the development in mobility on Dutch roads from 1950. Later in this fact sheet, Traffic Survey data of the Netherlands will be used to focus on recent developments in the mobility of individuals in terms of distance travelled.

Figure 1 shows the progress in motor vehicle mobility since 1950. Up to 1990 this graph uses data from the Road Statistics and after 1990 data is used from the updated Statistics Netherlands' Statistics of Traffic Flows. Following modest growth at the beginning of the 1950s, motor vehicle mobility increased sharply in the 1960s corresponding to the increasing size of the vehicle fleet. Although the rate of increase slowed somewhat thereafter, the increase has continued up to the present day. During the last ten years – the period 1998–2008 – the distance travelled by motor vehicles increased by almost a fifth, which corresponds to an average annual growth rate of almost 2%. To give an idea of the total annual mobility in the Netherlands: motor vehicle mobility was almost 133 billion km in 2010. Today, a total of over 200 billion km is travelled by individuals on the roads each year. Over the last couple of years, the growth has stagnated (Weijermars, Bijleveld & Stipdonk, 2010; Stipdonk & Bijleveld, 2010. KiM, 2012).

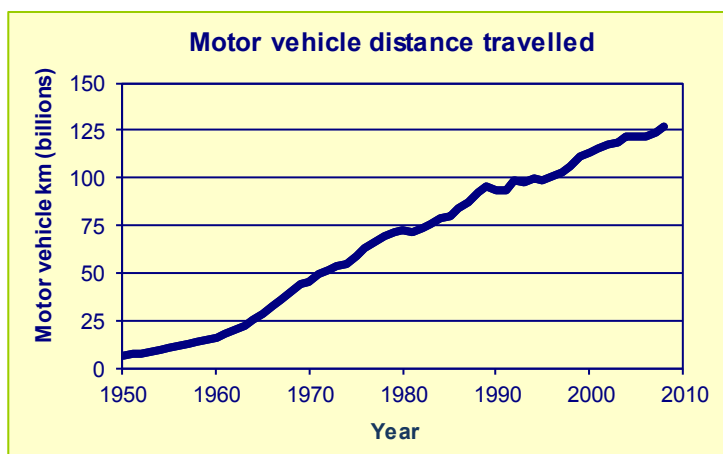


Figure 1. Motor vehicle mobility in billion km. Source: Statistics Netherlands / Statistics of Roads (1950-1989) and Statistics of Traffic Flows (1990-2011*).
* preliminary figures for 2010 and 2011.

How is mobility distributed across different modes of transport?

To properly discern developments in mobility in the Netherlands, it is necessary to consider both the total mobility and the mobility of the different subgroups. The most obvious subgroups are the different modes of transport. The distributions of mobility across different age groups and motives for journeys are discussed later in this fact sheet. As these categories are based on person-related characteristics, only data from the Dutch Mobility Survey (MON) is used. The mobility categories discussed in the following therefore concern only passenger traffic (of Dutch residents, excluding holiday traffic).

The car is clearly the dominant mode of transport in annual Dutch mobility. Passenger car mobility accounts for approximately three-quarters of the MON total (i.e. excluding lorry and holiday traffic) and amounted to approximately 136 billion km in 2011. *Figure 2* shows the distribution of mobility across all modes of transport other than the car for the years 1998, 2003 and 2008. The public transport category includes transport by road (bus) as well as by tram and metro but excludes train traffic. At around 8%, the bicycle's mobility share is the largest after that of the car. Due to the dominant position of the car, the rise in car mobility accounts for virtually all of the increase in total mobility during the past 10 years (estimated on the basis of MON and excluding air, shipping and train traffic). The mobility share of pedestrians increased somewhat, while there was a moderate decrease in mobility of the motorized two-wheelers (motorcycle, moped and light moped) and that of the bus, in particular. The mobility shares of the other modes of transport remained practically the same during the period 1998-2008.

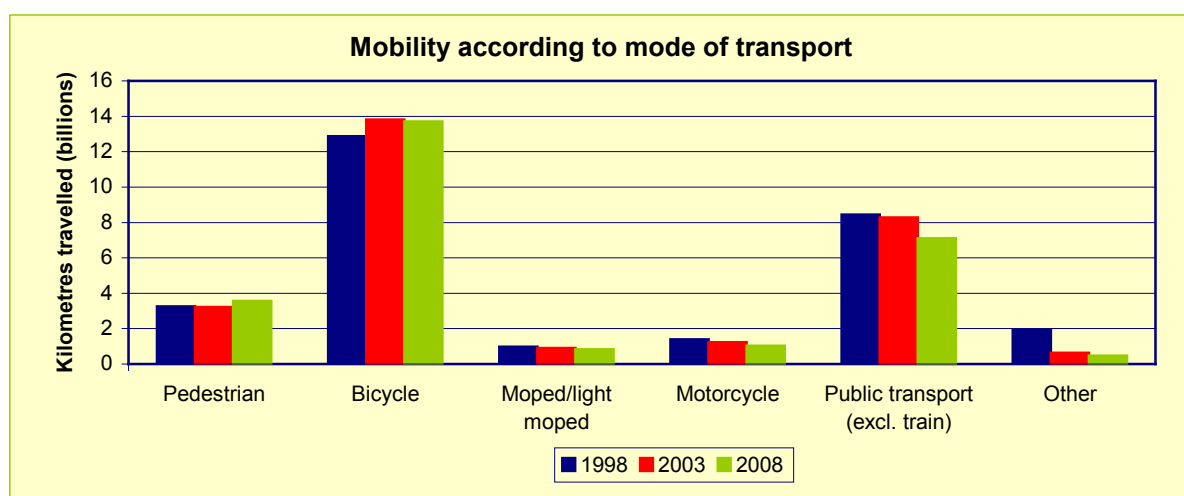


Figure 2. Mobility on Dutch roads according to mode of transport. Source: Traffic Survey

It is obvious that mobility has grown primarily due to an increase in car mobility. The number of journeys per person per day and the time spent making those journeys, however, has hardly changed during the last twenty years (KiM, 2012).

How is mobility distributed across age groups?

The size and composition of the population affect annual mobility. After all, the more people there are, the greater the total mobility is likely to be. Furthermore, the average mobility per person in terms of both distance and mode of transport differs according to age group. *Figure 3* shows the distribution of mobility across different age groups for the years 1998, 2003 and 2008. An increase in the mobility of individuals above the age of 40 in the period 1998-2008 is immediately apparent, whereas the mobility of individuals below the age of 40 remained the same or even decreased (for 18- to 30-year-olds). This difference in mobility trend for the various age groups is due almost entirely to changes in the composition of the population. Within the total population, the 40-49 age group grew by approximately 10% during the period 1998-2008, while the population group above the age of 50 grew by around 20%. *Figure 3* illustrates that these growths more or less correspond with the increase in mobility of the age groups concerned. A sharp decrease of approximately 20% occurred in the size of the 25-29 age group, a development which largely accounts for the drop in mobility for that age group. In addition, we can see that (mainly) young adults of the 18-29 age group spend increasingly less time on travelling and that on average, they travel a shorter distance per day. This decrease takes place for all modes of transport (KiM, 2012).

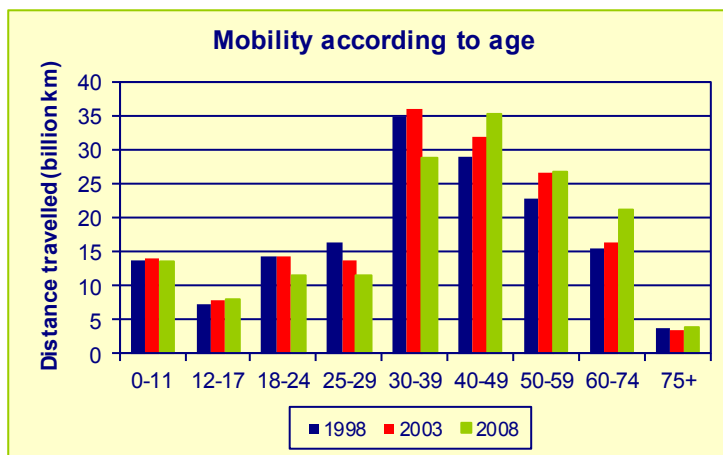


Figure 3. Mobility on Dutch roads by age group. Source: Traffic Survey/

Mobility by age group and mode of transport

In addition to categorization by age group or mode of transport, simultaneous categorization by age group *and* mode of transport is also useful, as it enables consideration of the relationship between the two (see also SWOV, 2007). Such categorization reveals relatively high mobility among cyclists in the 12-17 and 40-65 age groups, while the same applies to pedestrians in the 0-11 and 30-60 age groups. It is also evident that motorcycle mobility shifts correspondingly towards a higher age group. While most motorcyclists were aged around 30 at the beginning of the 1990s, the peak had shifted to those aged around 40 by the early 2000s.

Mobility by road type

Data concerning mobility on various road types is not collected. Estimates for mobility per road type were made in the past (see for example Janssen, 2005). Since that time, however, road categorization has changed on the basis of the Sustainable Safety criteria. Data on mobility for road types according to Sustainable Safety categorization is not yet available. However, research has been done into the relationship between variations in choice of route within a network of different road types and road safety (Dijkstra, 2011).

What are the motives for journeys?

Mobility arises from the simple fact that people wish to perform different activities in different places. It is therefore relevant to consider development in mobility also within the context of motives for journeys. *Figure 4* shows that commuter traffic increased by more than 10% in the last ten years. Commercial traffic, on the other hand, decreased somewhat. To some extent, the increase in

commuter traffic is linked to the rise in the number of dual-income households in which the partners' respective places of work are often different (AVV, 2006).

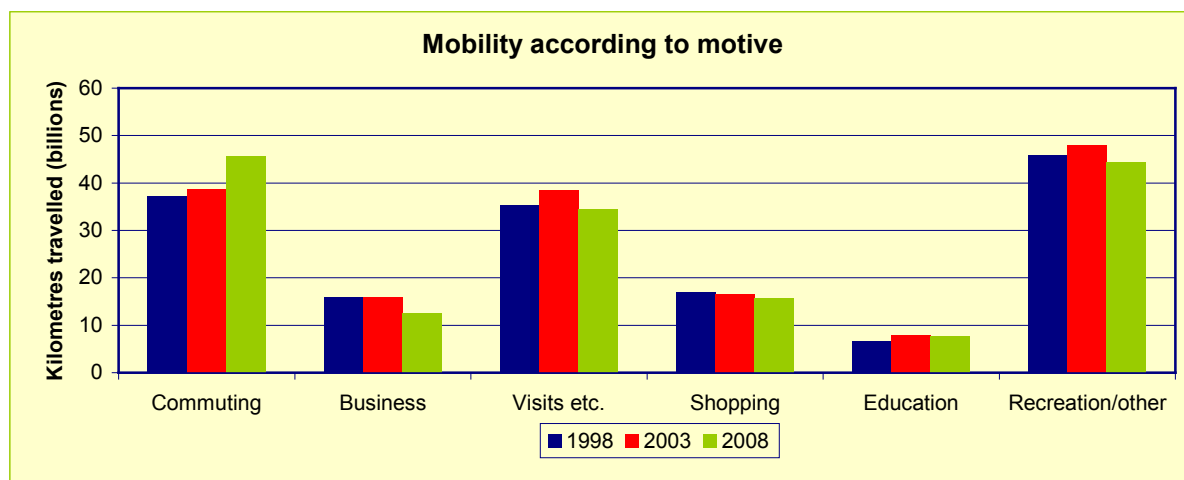


Figure 4. Mobility on Dutch roads according to motive. Source: Traffic Survey/ (

Are there alternative methods of assessing mobility developments?

Unfortunately, the availability of mobility data is limited, especially for historically more distant periods. To obtain a more complete picture of mobility developments, it is therefore useful to consider alternative units of measurement. An alternative measure of mobility can also be important in international comparisons, since in many countries no or virtually no data on mobility is available (see also SWOV Fact sheet [International comparability of road safety data](#)).

Given the close relationship between vehicle fleet and mobility, the former can be used as an alternative measure of mobility for motorized traffic. After all, the more cars owned in the Netherlands, the greater the total distance travelled by car is likely to be. Car sales figures can also be used as an alternative for estimates of mobility. Figure 5 shows the data for the Dutch vehicle fleet. The number of cars evidently became one and a half times larger during the last twenty years. This more or less corresponds with the relative growth of car mobility in the same period (not shown in Figure 5). Use of vehicle fleet data as the basis for mobility estimates must however be made with due caution. Although, for example, the number of motorcycles in the Netherlands has more than quadrupled since 1986, motorcycle mobility has been decreasing during that same period.

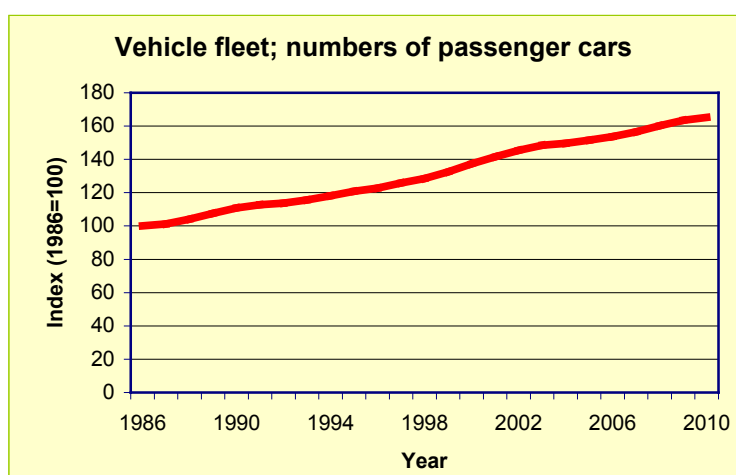


Figure 5. Vehicle fleet development in the Netherlands. Source: Statistics Netherlands (CBS).

Conclusion

Considering that mobility has a major influence on the number of road crashes and road casualties, it is an important factor in road safety research. Developments in mobility are determined by developments in, broadly speaking, four areas: demography, social culture, the economy, and spatial planning. Data on the mobility of individuals in the Netherlands is collected in the Dutch Mobility Survey (MON). Mobility in the Netherlands has been increasing since the 1950s. This development seems to have come to a near stand-still in 2011. Today, more than 200 billion km are travelled each year. Mobility data on, for example, different modes of transport or age groups provide more background information about developments. For instance, it is evident that the increase in mobility in the last sixty years has been due almost entirely to the car. Categorization according to age group reveals that the total annual mobility of the population group above the age of 40 increased in the last ten years, whereas, in contrast, mobility decreased for the population group below that age. It must be borne in mind, however, that this difference is largely the result of changes in the composition of the population.

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