

Road fatalities in the Netherlands

Summary

The annual number of road fatalities in the Netherlands increased considerably in the 1950s and 1960s. That trend reversed at the beginning of the 1970s and the annual number of road fatalities has been decreasing gradually ever since. In 2010 there still were 640 fatalities in Dutch traffic. Almost half of all fatalities are occupants of passenger cars or light goods vehicles. Proportionally speaking – that is, relative to the size of the population – many fatalities occur among teenagers and young adults (aged 16-24) and the elderly (aged 65 and above). By contrast, relatively few fatalities occur among children (aged 0-15). Two-thirds of fatalities occur in rural areas.

Background and content

Virtually everyone, young and old alike, participates in traffic on a daily basis. This means that traffic casualties unfortunately also occur on a daily basis. This fact sheet outlines the development in the number of road fatalities in the Netherlands up to the present time and focuses on the number of road fatalities during the period 1999-2010.

How do we measure road safety?

The road safety level can be expressed in many different ways. More or less direct road safety units of measurement are the number of crashes or the seriousness of crashes in terms of the number of fatalities or the number of casualties in these crashes, both with different (injury) severities. In addition, units of measurement can also be derived from these units, like for example the crash rate or casualty rate: the number of casualties or number of crashes divided by a certain measure of exposure such as distance travelled. This fact sheet focuses on road safety in the Netherlands in terms of the annual number of fatalities. The development of the number of serious road injuries in the Netherlands will be discussed in the separate fact sheet *Serious road injuries in the Netherlands* which will be published shortly. The SWOV Fact sheet [Risk in traffic](#) provides more information about the term risk and of the traffic risk in the Netherlands. For a comparison of road safety in the Netherlands with that in other countries, please see the SWOV Fact sheet [Dutch road safety in an international perspective](#). Further information on how the safety of roads can be measured is discussed in the SWOV Fact sheet [Measuring \(un\)safety of roads](#).

How do we measure the number of traffic fatalities?

Sources of casualty data

Information on the numbers of road casualties is obtained from different sources. The most important are:

- the National Road Crash Register (BRON) in which Dutch Ministry of Transport's Centre for Transport and Navigation (DVS) collects and publishes police data on road crashes;
- data on the causes of death in the Netherlands is obtained from Statistics Netherlands. 'Road crash' is included in the statistics as an unnatural cause of death;
- data from hospitals that is recorded in the National Medical Registration (LMR).

Each data source has its own focus: BRON contains numerous details about the circumstances of a crash, while the LMR database provides more comprehensive information about the nature of the injuries sustained.

Determining the number of road fatalities.

A road fatality is someone who dies of the consequences of a crash within 30 days after being involved in that crash. This definition is also used internationally.

Every year, Statistics Netherlands, in close consultation with the Centre for Transport and Navigation, determines the number of road fatalities. In addition to BRON, they also use doctors' cause of death declarations and statements from district courts, each of the files not being entirely complete. Each road fatality is assumed to be present in at least one of these sources. The number of road fatalities that is determined this way, is referred to as the *real* number of road fatalities and has been available

since the year 1966. Information of earlier years must be obtained from BRON; the problem being that not all fatalities have been registered in this data file.

Statistics Netherlands does not make use of the National Medical Registration to determine the number of road fatalities. However, the LMR data is used to determine the number of serious road injuries (Reurings & Bos, 2009), see also SWOV Fact sheet *Serious road injuries in the Netherlands* (to be published).

Completeness of the individual sources

The registration rate is the share of casualties in BRON that is registered by the police (and available from BRON). In 2010, the registration rate for fatalities was approximately 84%, which means that 16% of the road fatalities could not be found in BRON. The registration rate has been decreasing consistently over the years (see also *Table 1*).

How many road fatalities are there in the Netherlands?

We will first briefly discuss the development in the number of road fatalities over an extended period (from 1950) before concentrating on the developments from 1999 onward later in this fact sheet.

The real number of road fatalities has been available from 1996 onward. For a continuing series starting at an earlier date we have to make use of the police registration of the number of road fatalities. *Figure 1* shows the number of police registered fatalities from 1950. Between 1950 and the early 1970s, a sharp increase can be observed from just over a thousand fatalities in 1950 to more than three thousand in 1972. From 1973 to the present time, the annual number of road casualties has been decreasing gradually and continuously. In the 1950s, the trend in the number of fatalities was dominated mainly by fatalities among cyclists and pedestrians. Next, there is a sharp increase in fatalities among moped riders and especially car occupants, and these modes of transport increasingly determine the overall pattern. The number of fatalities has been decreasing for virtually all modes of transport since 1973. Only the developments concerning motorcycles and freight and delivery vehicles do not entirely conform to this pattern.

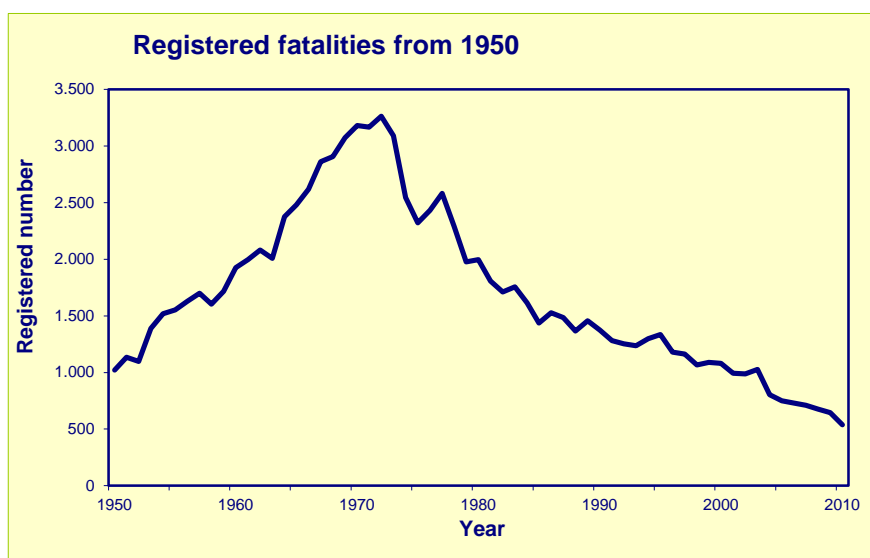


Figure 1. Registered number of fatalities in the Netherlands during the period 1950-2009. Sources: Statistics Netherlands/Ministry of Infrastructure and the Environment.

What factors influence the number of road casualties?

The number of road casualties is to a large extent determined by mobility. After all, the more one travels, the longer and/or more frequently one is exposed to potentially dangerous traffic and the more frequent the encounters with other road users. In addition, there are roughly three types of factors that influence road safety (SWOV, 2007):

1. Infrastructural measures to regulate traffic such as the construction of trunk roads and motorways, separate bicycle paths and dedicated lanes.
2. Road safety measures; these are measures aimed at reducing the probability of a crash or minimizing the consequences. These measures can be divided into the following categories:

- the construction and modification of infrastructure and the introduction of appropriate regulations for such infrastructure;
 - law enforcement, public information, and education;
 - vehicle safety.
3. External factors that influence road safety, among other things through mobility. External factors include, for example, the composition of the population and weather conditions (see also SWOV Fact sheet [The influence of weather on road safety](#)).

The development of the numbers of road casualties by mode of transport, age and gender is discussed below.

How has the number of road fatalities developed since 1999?

Figure 2 shows the development in the number of road casualties in the last twelve years. The figure not only shows the number of road fatalities, it also shows the number of fatalities that was registered by the police. The sudden sharp drop in the number of fatalities in 2004 is immediately noticeable. Studies into the matter that were carried out in the years following 2004 (Stipdonk, 2005; Stipdonk et al., 2006), only found a partial explanation for this unexpectedly sharp drop. Later, attention was again devoted to this deviation from the trend in the so-called Analysis of 2007 (Weijermars et al., 2008) and in a recent study by Weijermars, Bijleveld & Stipdonk (2010). These studies showed that the sharp drop in 2004 seems to be permanent in nature. In addition, this study has revealed that the drop in 2004 did not occur in all groups of fatalities. The extra decline can only be observed for pedestrians, (light) moped riders, car occupants, and a number of sub-categories of car drivers. These subgroups consist of male drivers, 18-24 year old and 40-49 year old drivers, and single vehicle crashes. These subgroups are not independent from one another.

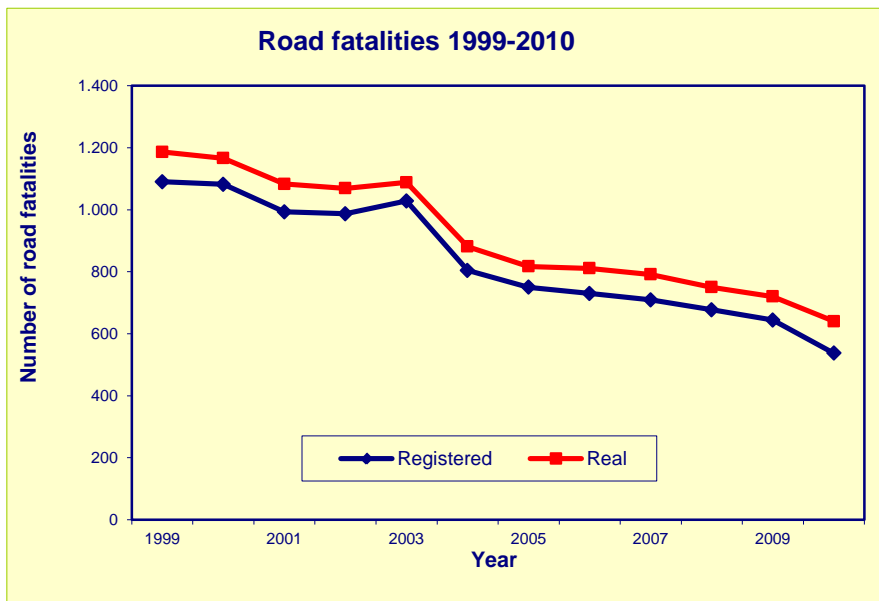


Figure 2. Registered number and real number of road fatalities in the period 1999-2010. Sources: Statistics Netherlands/Ministry of Infrastructure and the Environment

Table 1 specifies the number of road fatalities for the years 2001-2010. In 2010, there were 640 fatalities in Dutch traffic. Table 1 also specifies the registration rate. The registration rate for road fatalities has decreased in recent years to 84% in 2010.

Fatalities	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Registered number	993	987	1.028	804	750	730	709	677	644	537
Registration percentage	92%	92%	94%	91%	92%	90%	90%	90%	89%	84%
Real number	1.083	1.069	1.088	881	817	811	791	750	720	640

Table 1. *Registered numbers and real numbers of road fatalities and the registration percentage during the period 2001-2010. Sources: Statistics Netherlands/Ministry of Infrastructure and the Environment.*

How are road fatalities distributed across different modes of transport?

In addition to looking at all road fatalities in the Netherlands together, it is also possible to consider subgroups in traffic. There are many subgroups of interest, such as casualty groups that differ in terms of circumstances of the crash, personal characteristics (or those of the crash opponent), locational characteristics or combinations of the foregoing. We will first look at the categorization of fatalities according to mode of transport.

Figure 3 shows the development in the number of fatalities categorized according to the casualty's mode of transport. Most fatalities occur among car occupants, which include those in light goods vehicles. This is due to the fact that cars and light goods vehicles are responsible for most of the vehicle kilometres driven on Dutch roads. In 2000, 50% of fatalities occurred among car occupants. The corresponding figure for 2009 was 42%. The number of fatalities among car occupants is therefore decreasing more rapidly in relative terms. Consequently, the percentage of vulnerable road users among fatalities is increasing. If we focus on the last three years (2008-2010, not displayed in the figure), the numbers of fatalities among cyclists have declined only slightly and those among pedestrians have remained virtually the same. The number of fatalities among car occupants, however, still exhibits a continuing decrease.

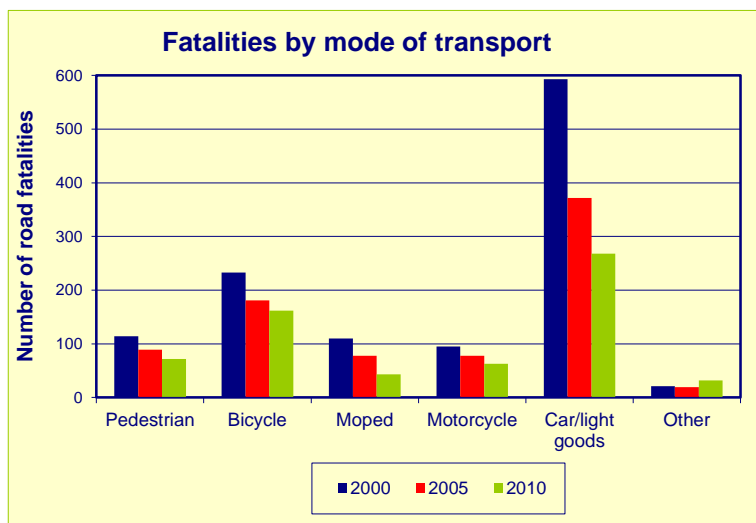


Figure 3. *Number of fatalities according to the casualty's mode of transport. Sources: Statistics Netherlands (CBS)/Ministry of Infrastructure and the Environment.*

In addition to the casualty's mode of transport, it is also possible to categorize according to conflict type (combination of colliding modes of transport) or the crash opponent's mode of transport. However, only the police registered data is available for this purpose. This data indicates that in 2009 over 35% of registered fatalities were casualties in a single-vehicle crash or a crash into an obstacle. For over 30% of fatalities, the crash opponent was a car. A lorry was the crash opponent for almost 15% of fatalities.

SWOV Fact sheets are available about specific groups of road users, such as those for [Cyclists](#), [Moped and light-moped riders](#) and [Motorcyclists](#).

How are fatalities distributed across different age groups?

The distribution of casualties across different age groups does not agree with the composition of the population in the Netherlands (see *Figure 4*). Children aged 0-15 constitute 20% of the total population but account for only 5% of the total number of fatalities. This is probably due to the group's limited mobility. For the elderly the opposite applies: the percentage of those aged 65 and above among fatalities is approximately twice as high as the group's share in the population. A similar picture emerges with respect to the 18-24 age group. For the elderly, this is probably linked to greater physical vulnerability (see also the SWOV Fact sheet [The elderly in traffic](#)). For the group of young drivers, it is due to the higher probability of being involved in a crash during the initial phase of participation in motorized traffic (see also the SWOV Fact sheet [Young novice drivers](#)).

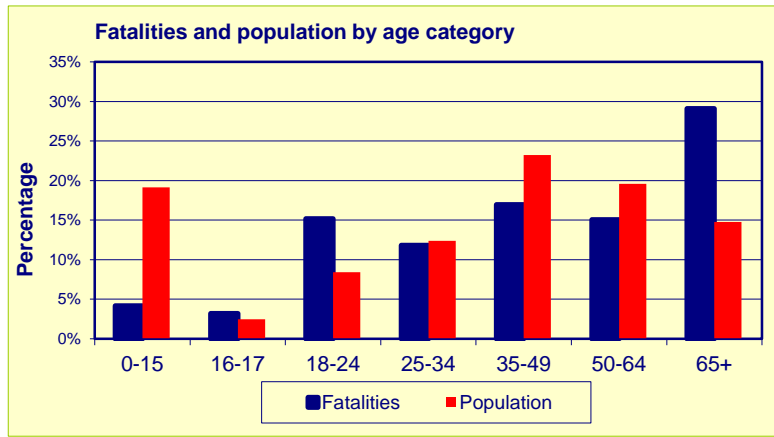


Figure 4. Proportions of population and traffic fatalities by age category in the period 2006-2010. Sources: Statistics Netherlands (CBS)/Ministry of Infrastructure and the Environment.

What is the ratio of men to women in the number of fatalities?

Approximately 70% of fatalities are men and therefore 30% are women. This proportion has barely changed in recent years. However, gender-based differences can clearly be observed for different modes of transport. These differences are also strongly linked to differences in mobility between men and women. Among pedestrians and cyclists, the man-woman ratio is approximately 60% to 40%. Among moped riders, however, over 80% of fatalities are men and, among motorcyclists, more than 90% of fatalities are men.

How are fatalities distributed across different road types?

In addition to a casualty's characteristics, those of the crash location are also important when studying road safety. For categorization according to road type, only data on police registered numbers is available. Approximately 35% of fatalities occur within urban areas (*Figure 5*). Of the fatalities that occur outside urban areas, i.e. 65% of the total, around a quarter occur on motorways (speed limits of 100-120 km/h).

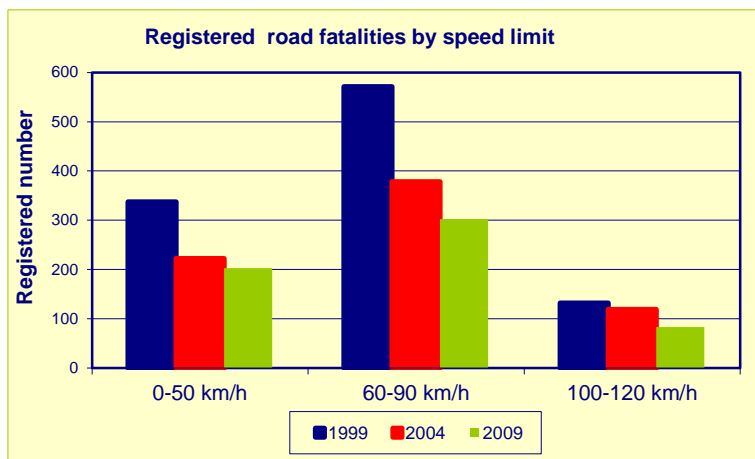


Figure 5. Registered numbers of road fatalities by speed limit in urban and rural areas. Sources: Statistics Netherlands (CBS)/Ministry of Infrastructure and the Environment.

Conclusion

Following an increase in the 1950s and 1960s, the number of fatalities in the Netherlands has been continuously and gradually decreasing since 1973. In 2010, there were 640 fatalities in Dutch traffic. Almost half of fatalities are occupants of cars and light goods vehicles. Relative to the population as a whole, a proportionally large number of fatalities occur among young people and young adults (aged 16-24) and the elderly (aged 65 or above), while children (aged 0-15) account for comparatively few fatalities. Two-thirds of fatalities occur outside urban areas.

Publications and sources

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