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and Water Management

Cycling facts 2023

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Cycling basic data

The Dutch cover more than one-quarter of their journeys by bicycle

- In 2022, the Dutch rode their bicycles 4.8 billion times, clocking up a total of 18.2 billion kilometres¹. This amounts to 3.0 km of cycling per person^{II} per day.
- The Dutch complete more than one-quarter (28%) of all trips in the Netherlands (primarily) by bicycle (see Figure 1). The conventional bicycle accounts for most of this (20%) with the remainder accounted for by e-bikes (8%). The share of cycling is lower when it comes to the distance that people travel per year (5% conventional bicycle, 3% e-bike, see Figure 2).

Figure 1: Distribution of the total number of journeys by a given mode of transport¹.

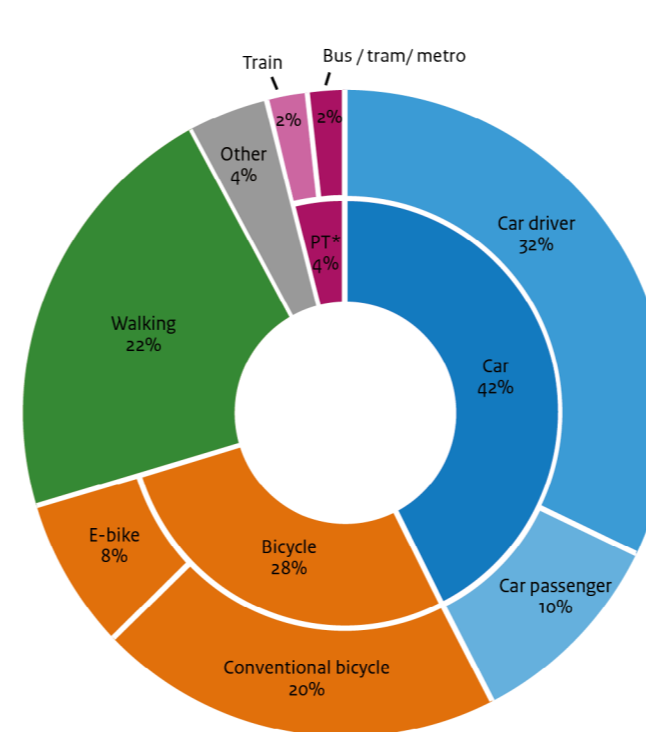
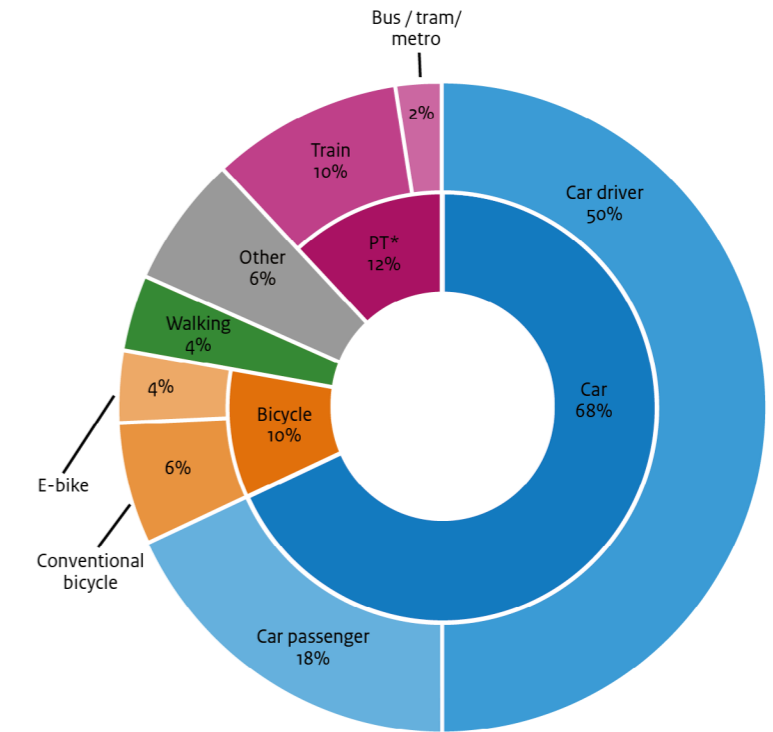


Figure 2: Distribution of the distance travelled by mode of transport¹.



¹ CBS, ODIN 2022

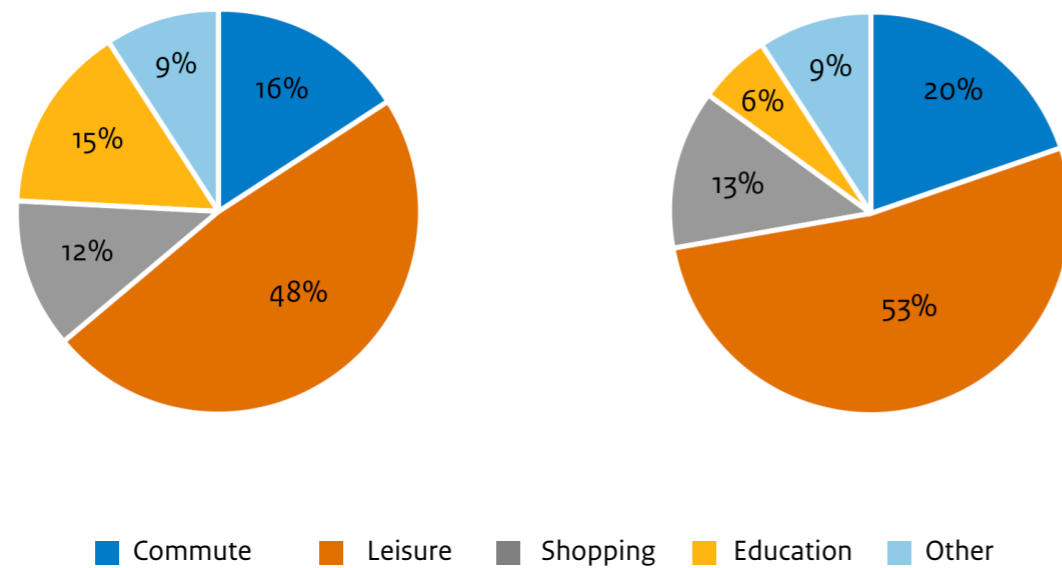
^I This concerns all trips completed by bicycle, including the first or last mile of longer trips. If we only look at travel where cycling is the main mode of transport, we see 4.5 billion journeys clocking up a total distance of 17.7 billion kilometres. In the rest of this brochure, we will look at trips where cycling is the main mode of transport except where stated otherwise. In this publication, 'bicycle' or 'cycling' refers to the use of the conventional bicycle (ordinary pedal-powered bicycle) but also electrically assisted bicycles (e-bikes). E-bikes come in different varieties too, such as the speed pedelec and fatbike. In most cases, we are unable to distinguish between these different types.

^{II} The Dutch National Travel Survey (ODIN) measures mobility among all residents of the Netherlands aged 6 years and older. When we talk about 'Dutch people' or 'the Dutch', we are referring to this group.

Leisure is an important reason to cycle

- Almost half (48%) of the distance travelled by conventional bicycle is for leisure purposes (see Figure 3). For e-bikes, the figure is even higher (53%).
- Commuting is the second most important reason to travel. This applies to conventional bicycles and e-bikes, but the share is slightly higher for e-bikes (20%) than for conventional bicycles (16%).
- In relative terms, conventional bicycles are used more for attending education (15%) than e-bikes (6%).

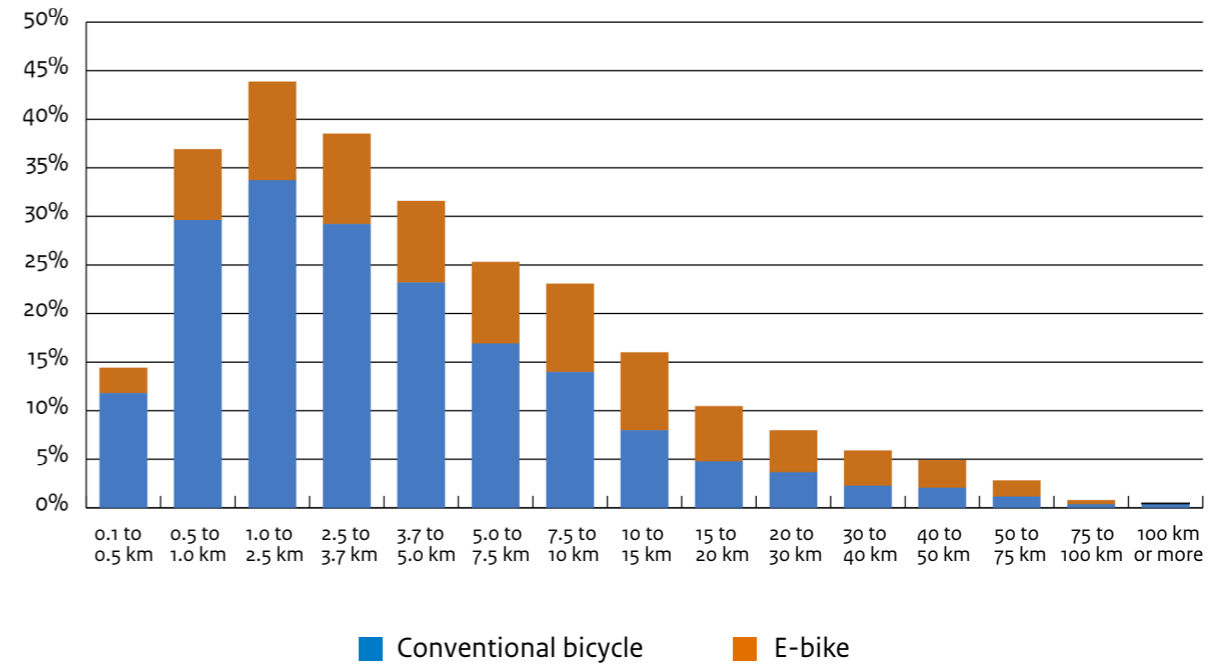
Figure 3: Distribution of cycling by travel reason based on distance travelled (left: conventional bicycle, right: e-bike)²



Cycling is especially popular for relatively short trips

- For journeys of up to 500 metres, the primary mode of transport is walking (82%). The share of cycling in these short trips is 14%. For journeys between 500 metres and 5 kilometres, the share of cycling is relatively high (32-44%). The share of cycling reduces as distance increases; for distances of 15-20 km, the Dutch still only cycle around 10% of the time (see Figure 4).
- For journeys longer than 10 km, the e-bike share is greater than that of the conventional bicycle.

Figure 4: Share of bicycle in trips by distance category²



² CBS, ODIN 2022

The Dutch cycle furthest and longest when cycling for leisure and least far and shortest when cycling for shopping

- An average journey by conventional bicycle covers a distance of 3.3 km (excluding journeys for the first or last mile). On average, journeys by e-bike are almost 70% longer at 5.6 km. When cycling is used for the first or last mile, the average distance is shorter: 2.4 km for conventional bicycles and 5.2 km for e-bikes.
- Distances travelled are greatest for leisure trips. On average, the Dutch travel 4.7 km per trip for leisure by conventional bicycle but almost double (9.0 km) by e-bike. Journeys involving visits to the shops are shortest on average: 1.8 km by conventional bicycle and 2.6 km by e-bike (see Figure 5).
- The gap between the average journey time per trip for the two bicycle types is smaller than the gap between the distances travelled. This tells us that the average travel speed by e-bike is higher than by conventional bicycle. When using a conventional bicycle, people travel for an average of 20 minutes, compared to an average of 27 minutes when using an e-bike: about a third longer (Figure 6).

Figure 5: Average distance per journey, conventional bicycle and e-bike, by travel reason³

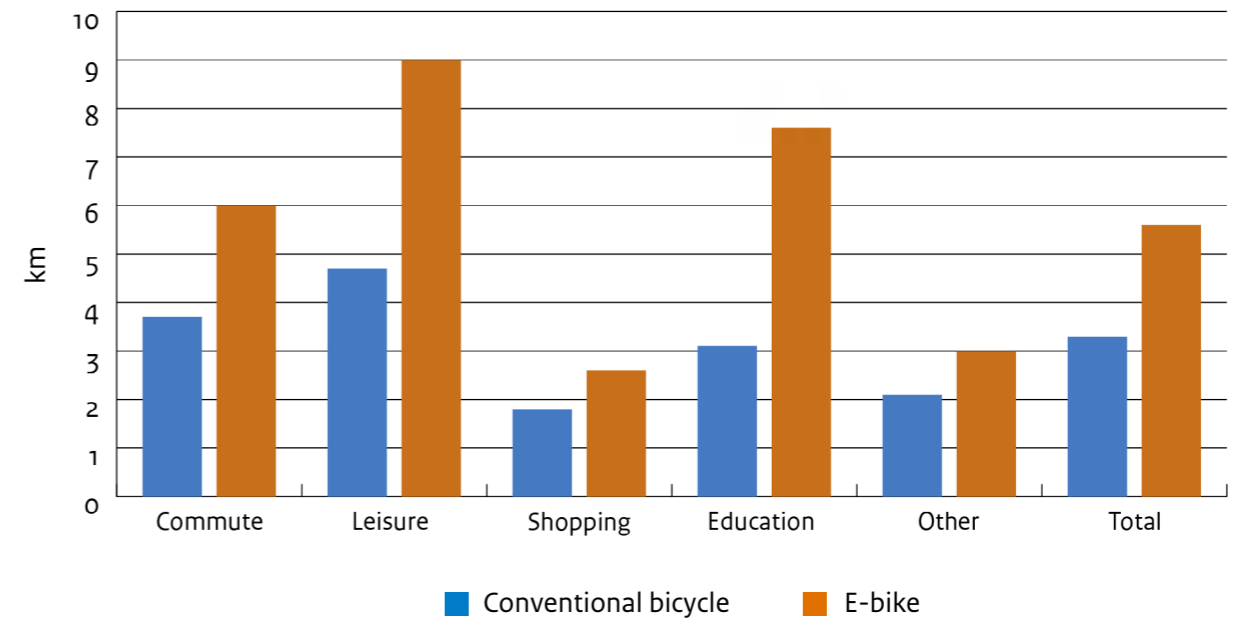
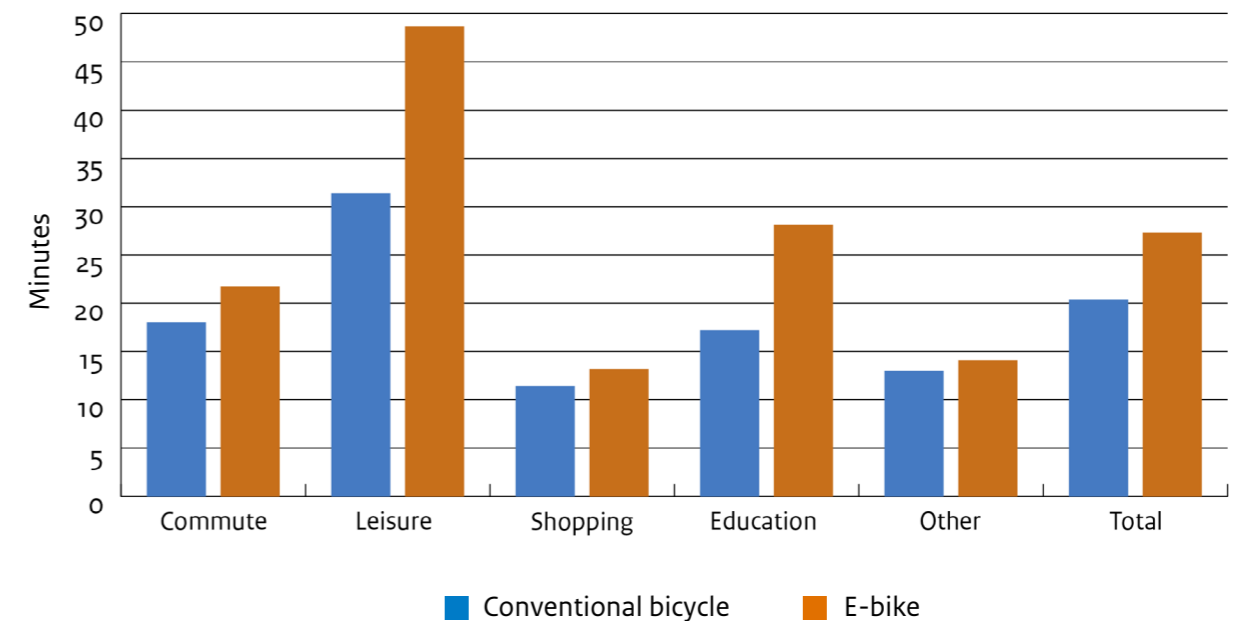


Figure 6: Average travel time per journey, conventional bicycle and e-bike, by travel reason³

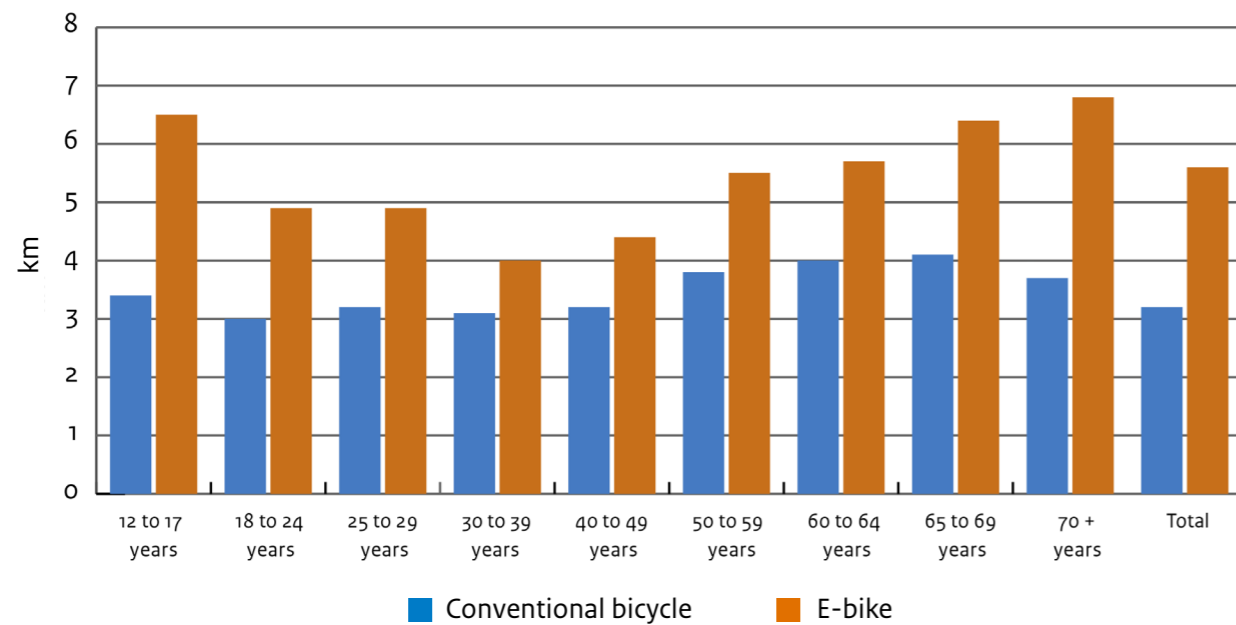


³ CBS, ODIN 2022

Difference in average trip distance between cycling and e-biking highest among the young and the old

- There is a difference between age groups in the average travel distance per bicycle trip. The over-50s cover the longest distance per trip by conventional bicycle (Fig. 7). Elderly people (over 70) cover the longest distance by e-bike (6.8 km per trip) of all age groups. There are other factors, but it does relate to their reasons for using their e-bikes: they cycle relatively often for leisure purposes. Young people (12-17 years) also travel a relatively long distance per e-bike ride: 6.5 km per trip. This is partly due to the high proportion of education-related trips for this group. The gap between the distance travelled using the two bicycle types is smallest for 30-39 year olds.

Figure 7: Average distance per trip using a conventional bicycle and e-bike, by age⁴



⁴ CBS, ODIN 2022



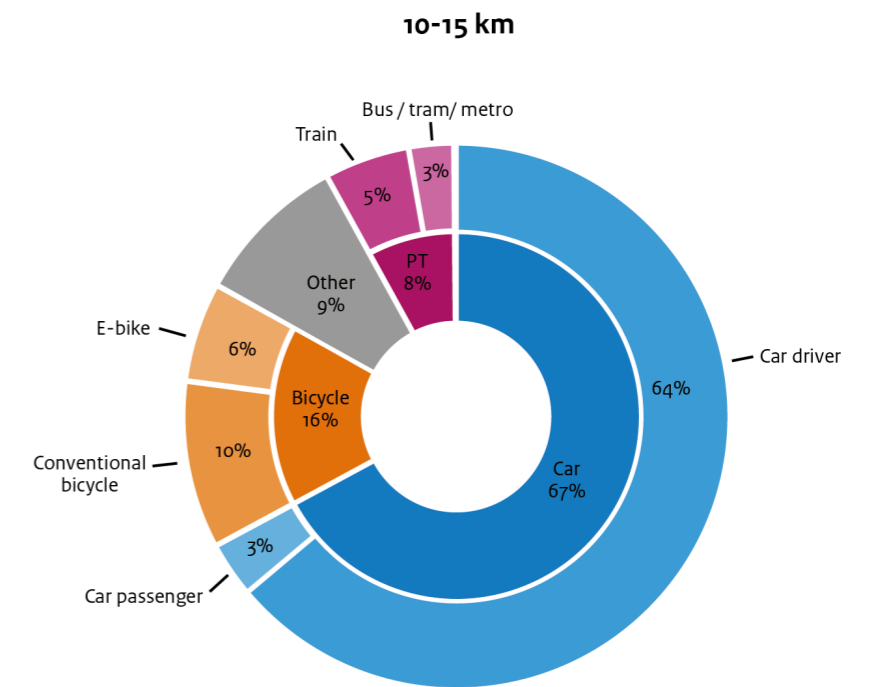
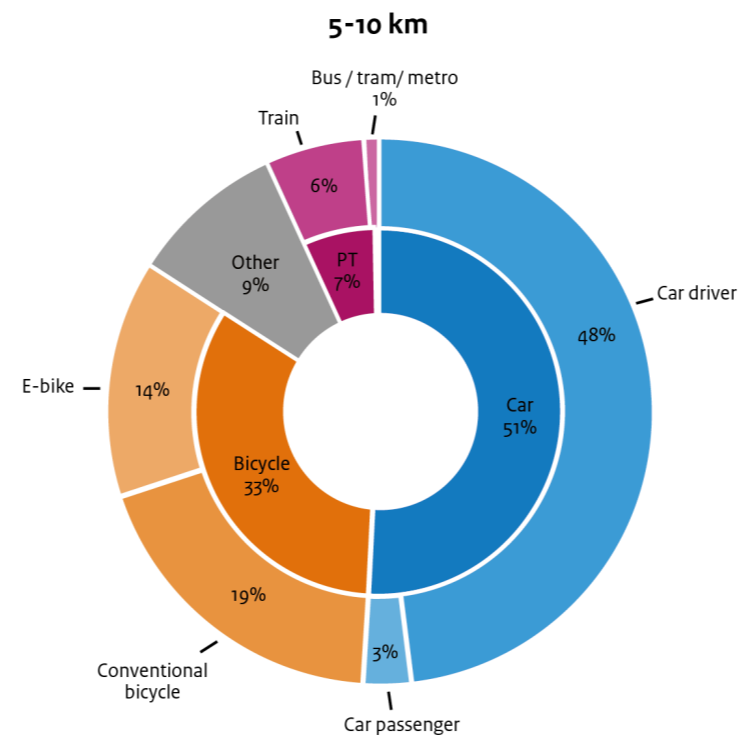
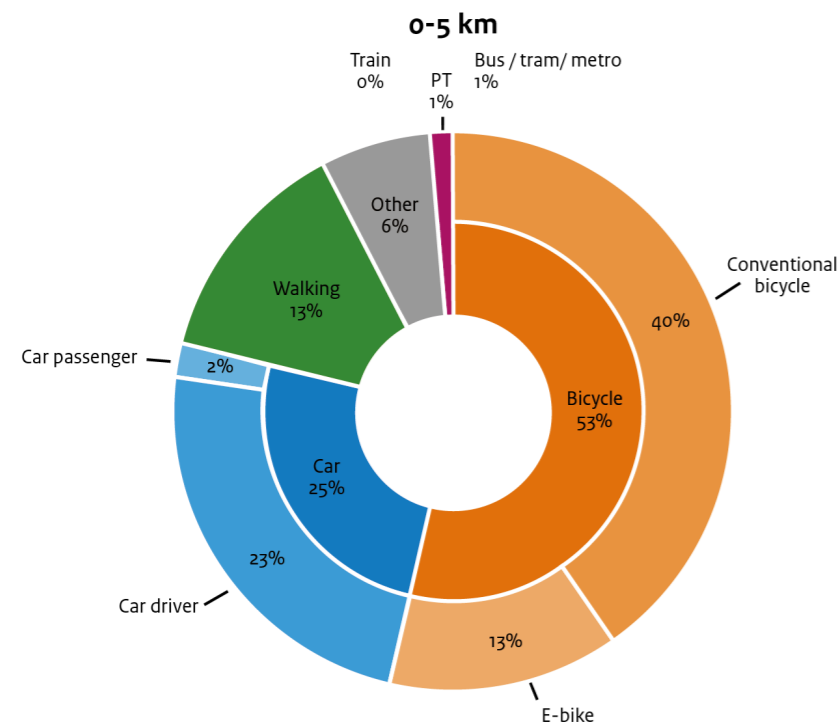
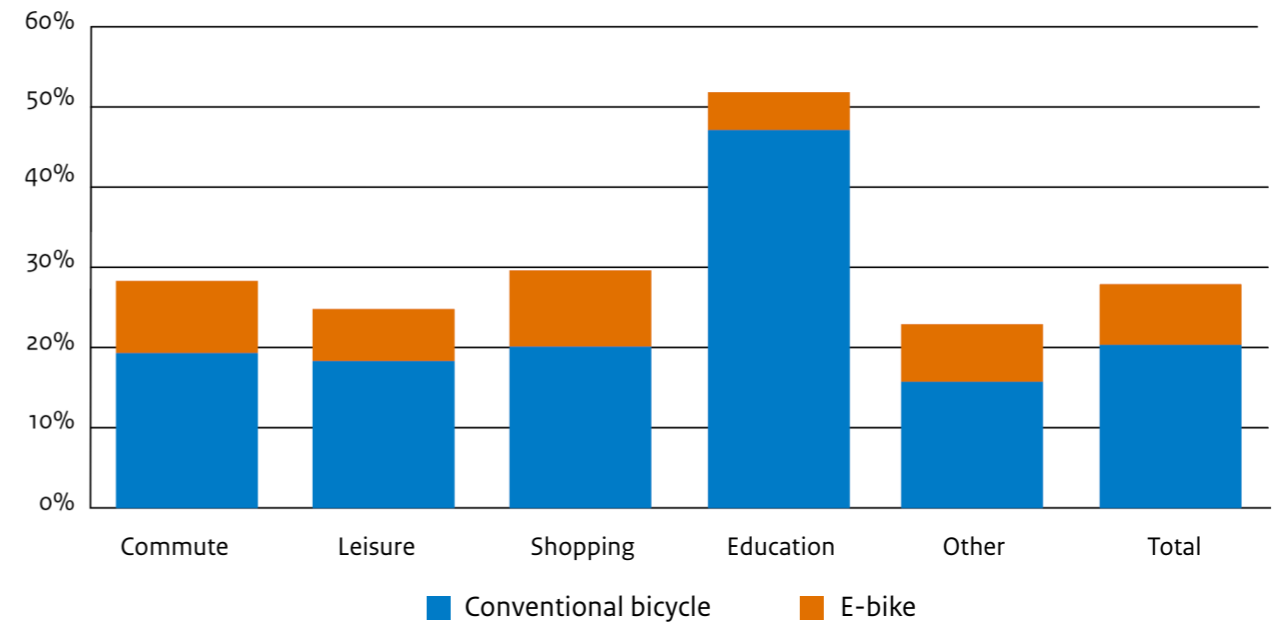
The bicycle is the main mode of transport for education-related trips

- The bicycle does not play an equally large role for every travel reason. For travel to a place of education, the Dutch use the bicycle more than half of the time (52%, see Figure 8). The use of e-bikes for this travel reason is relatively low.

Cycling is the main mode of transport for commutes of up to 5 km

- The Dutch complete about 28% of their commuting trips by bicycle. However, the proportion is higher for relatively short commutes (see Figure 9). More than half (53%) of commutes up to 5 km are cycled. For travel distances between 5 and 10 km, the figure stands at 33%, falling to 16% for distances between 10 and 15 km. The share of e-bikes increases relative to conventional bicycles as the distance increases.

Figure 8: Share of bicycle in total journeys by travel reason⁵

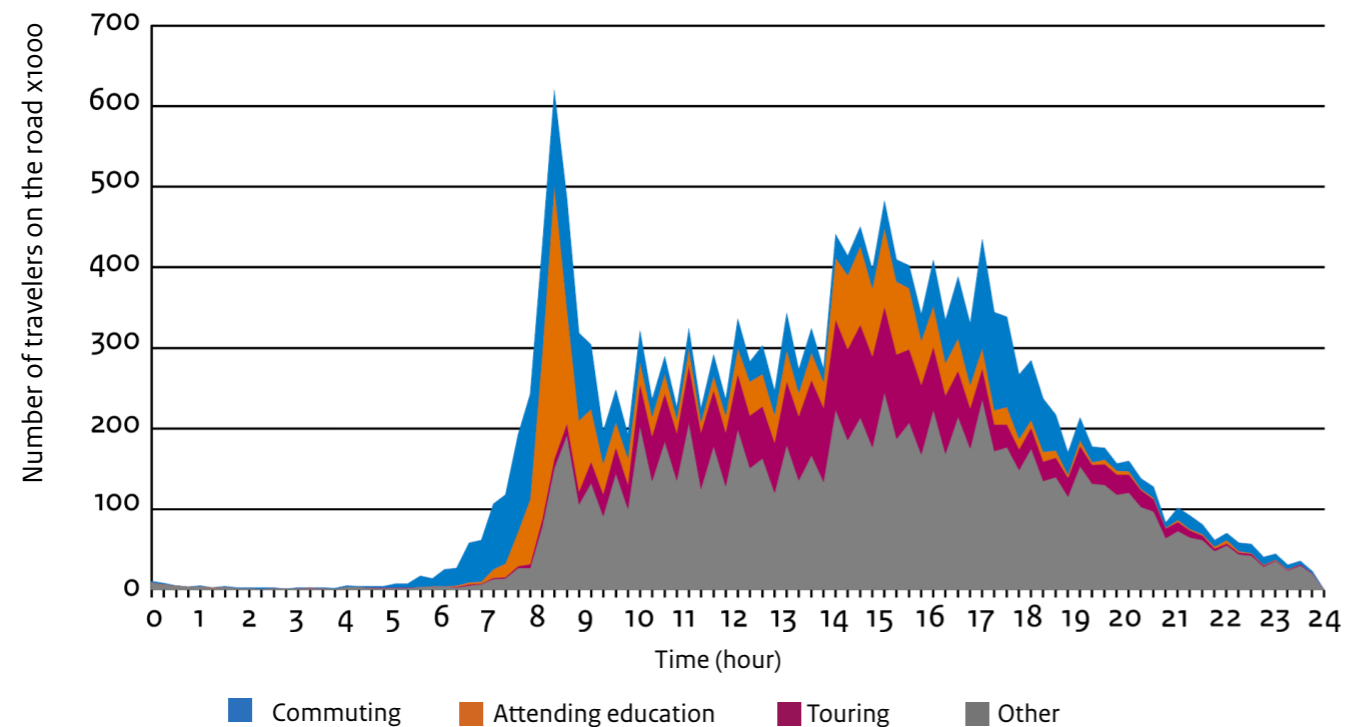


On working days, cycle use peaks between 8:00 and 8:30 in the morning

- On an average working day, there is a clear peak in bicycle use during the morning rush hour (see Figure 10). By 8.15, most cyclists are on the road, the majority of them (55%) to attend education. Just under 1 in 5 of them (19%) are cycling to work at that time.
- In the afternoon, the peak is less pronounced. The afternoon peak for those in education is between 2 pm and 3.30 pm, while those in work will cycle home between 4.30 pm and 6 pm.
- At weekends, cycling is less clustered and no real peaks are evident (see Figure 11). Relatively few people cycle for their work or education on weekends. The proportion of touring is relatively high on weekends between late morning and late afternoon.

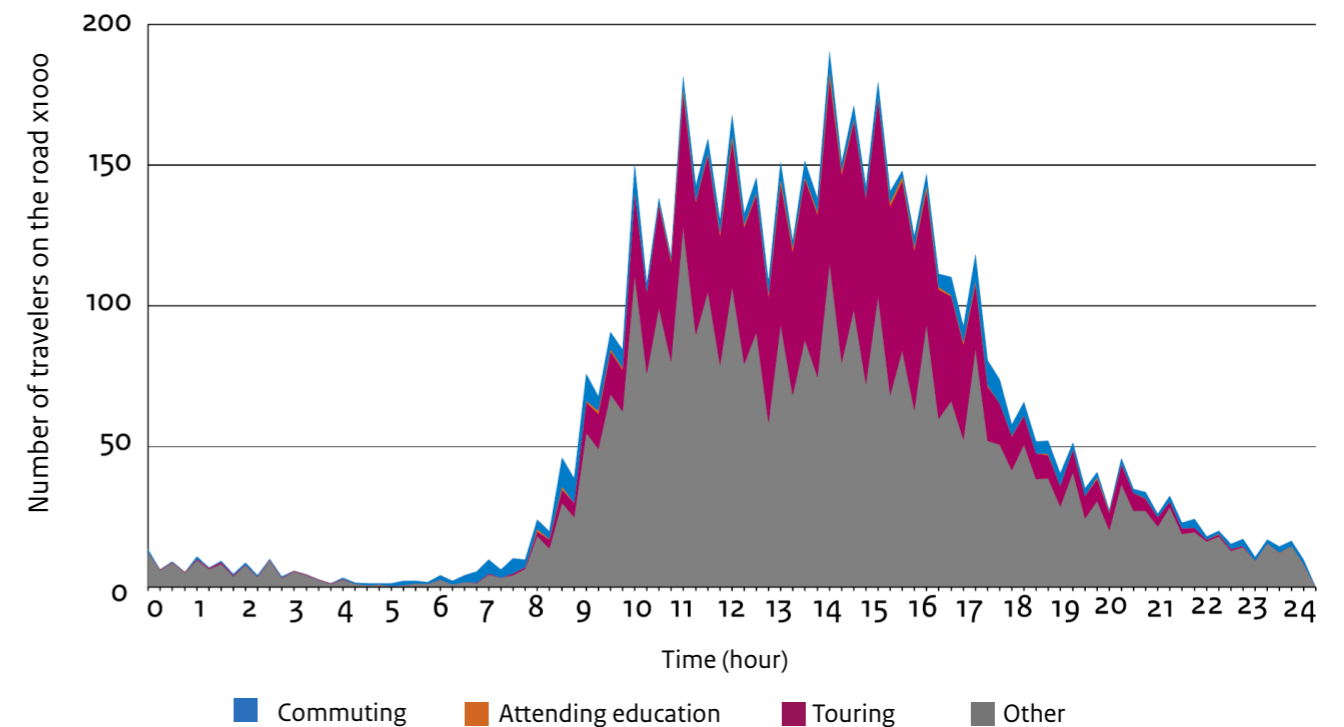


Figure 10: Number of active cyclists on an average working day by travel reason⁶



⁶ CBS, ODin 2022

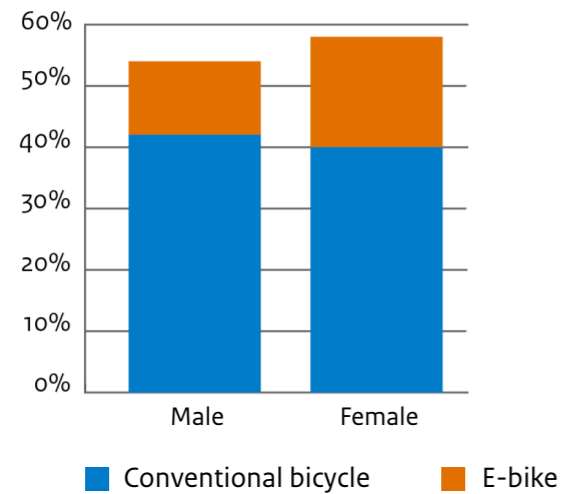
Figure 11: Number of active cyclists on an average weekend day by travel reason⁶



Women and young people tend to cycle most often

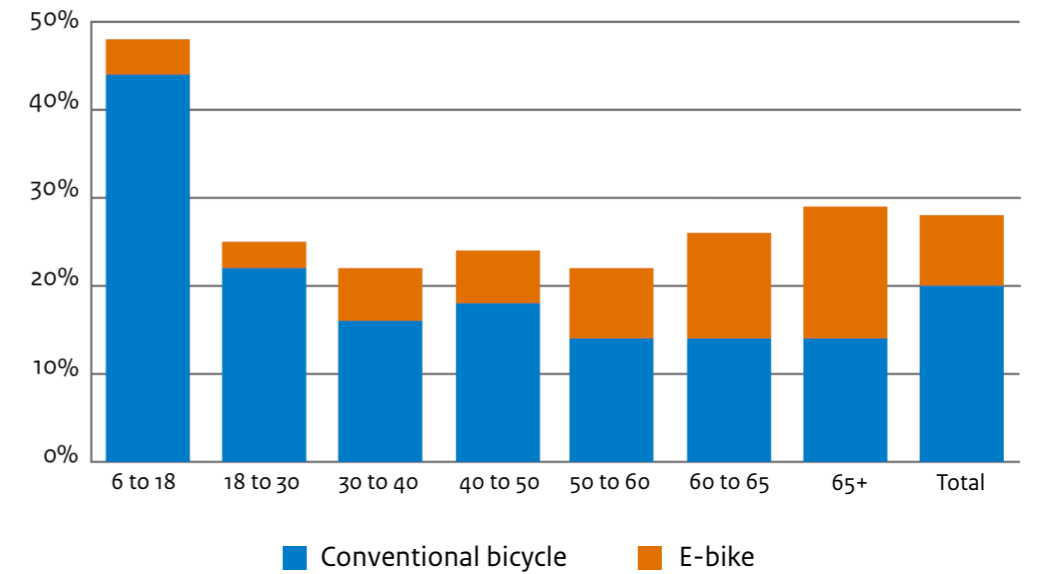
- Women make more bicycle trips per year than men (2.4 billion compared to 2.1 billion). For women, the share of cycling in trips (29%) is therefore slightly higher than for men (27%, see Figure 12). The difference is most pronounced in e-bike use: women make more than half as many more e-bike journeys than men do.
- Children (from the age of 6) travel by bicycle more often than adults. Children under the age of 18 make almost half (48%) of their journeys by bicycle. People aged 30-60 cycle least in relative terms. Above the age of 60, cycling as a form of mobility increases slightly again. The share of e-bike use is highest among the over-60s too (see Figure 13).

Figure 12: Share of bicycle in total journeys by travel reason⁷



⁷ CBS, ODIN 2022

Figure 13: Share of bicycle in trips by age group⁷



People who have the option to use a car cycle less

- Adults without a driving licence make significantly more journeys by bicycle than adults who do have a driving licence. Their cycling share in trips is almost 1.5 times higher than for driving licence holders. The difference relates in particular to conventional bicycle use. The share of e-bike use is almost equal for both groups (see Figure 14).
- As more cars become available in a household, the members of that household will cycle less often. The bicycle share is highest in households without cars (37%), and lowest in households with 3 or more cars (20%, see Figure 15).

Figure 14: Share of cycling in total journeys by driving licence possession, over-18s only⁸

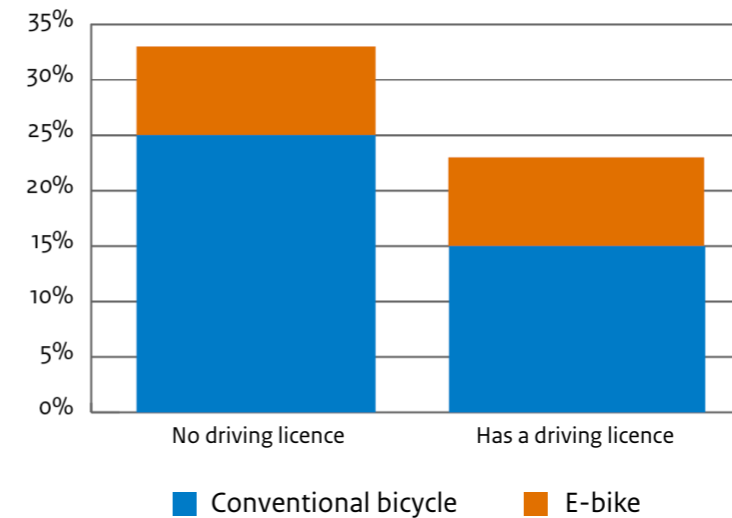
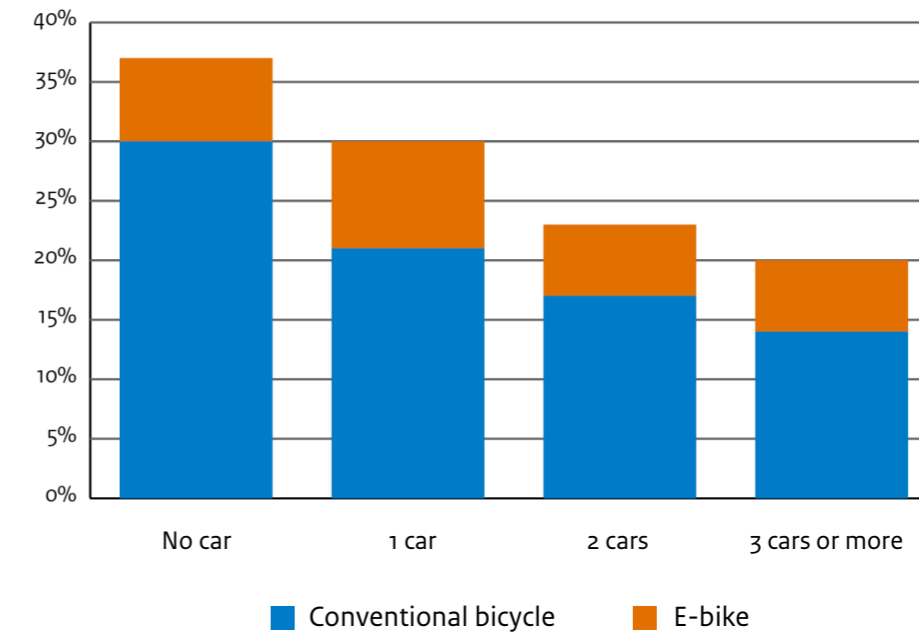


Figure 15: Share of cycling in total journeys by number of cars in the household⁸

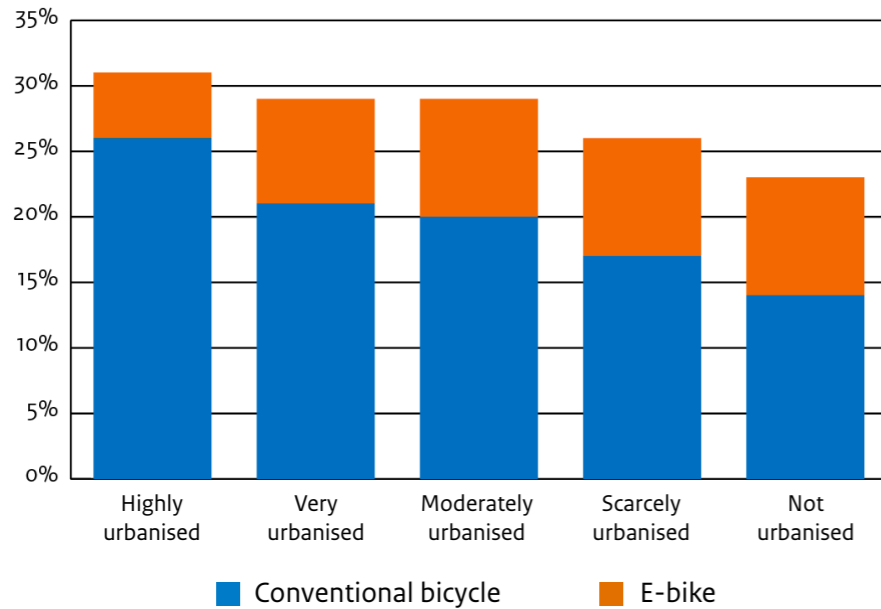


⁸ CBS, ODIN 2022

Cycling is more popular in urban than in non-urban areas

- People who live in areas with a (very) strong or moderate level of urban development cycle relatively more than people in areas with a low level of urban development or non-urban areas (see Figure 16). This is partly due to the distances to the destinations, which are generally shorter in urban areas than elsewhere⁹. In areas with high levels of urban development, the share of e-bikes in total journeys is lowest, while it is highest in areas with low levels of urban development and in non-urban areas.
- For journeys within the municipal boundaries, the role played by bicycles is greater in some municipalities than in others. For example, the share of cycling in many municipalities in Limburg province is lower than in the rest of the Netherlands (see Figure 17).

Figure 16: Share of cycling in total journeys by level of urban development⁹

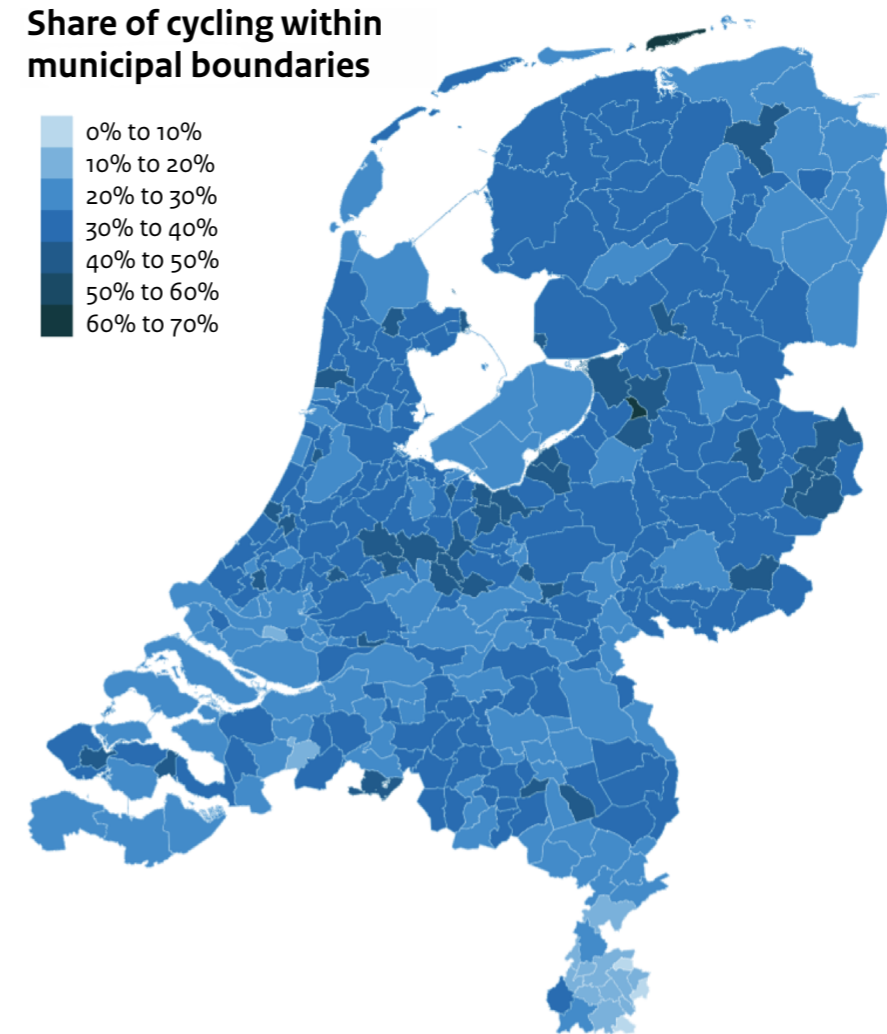


⁹ CBS, ODIN 2022

¹⁰ See, for example: Tillemans, T., Jorritsma, P. & Harms, L. (2019). *Bevolkingsdaling en de effecten op de bereikbaarheid en de mobiliteit in Nederland*. The Hague: Netherlands Institute for Transport Policy Analysis (KiM).

¹¹ CBS, ODIN 2020 to 2022

Figure 17: Share of cycling in total journeys within municipal boundaries¹¹

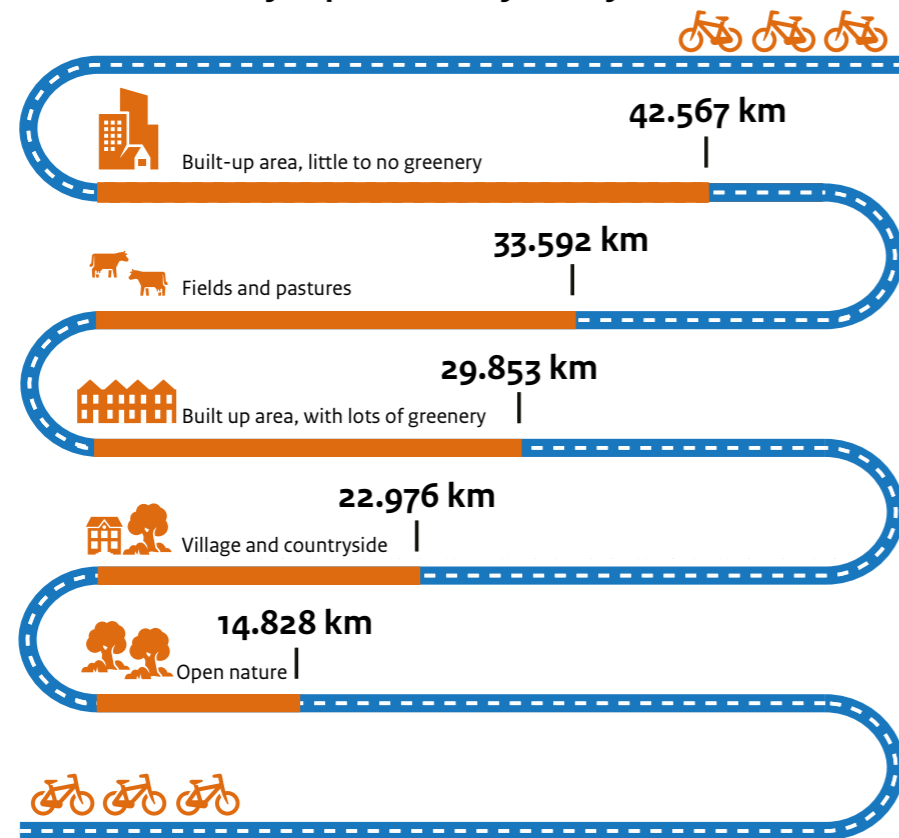


The Netherlands has 153,000 km of cyclepaths and cycleways

- A large proportion of the Dutch cycling network (28%) is located in built-up areas with little or no greenery (see Figure 18). A further 20% is located in built-up areas with lots of greenery. Almost half of the cycling network (47%) is therefore located in areas with little to no urban development (such as fields, pastures and rural areas). Information about this aspect is unknown for a small part of the Dutch cycling network (6%).
- Approximately 38,000 km of this cycling network concerns solitary cyclepaths or cycleways adjacent to the roadway. However, the majority of the network consists of roads shared by bicycles and cars.

Figure 18: Number of km of cyclepath by type of environment¹²

Where can our cyclepaths and cycleways be found?*

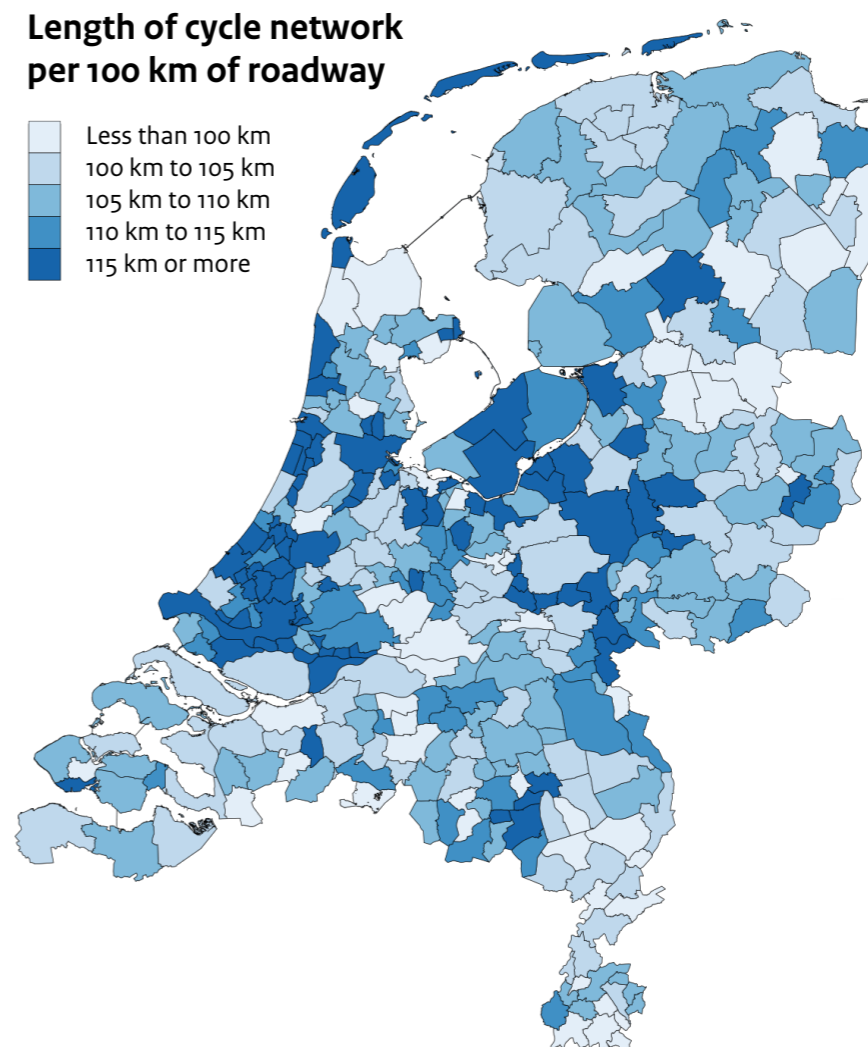


¹² CBS (2023). The Netherlands in numbers, 2023 edition.

* For 8,884 km, the environment type is unknown

- In many regions of the Netherlands, the length of paths and roads where cyclists are welcome is greater than the length of roads where cars are welcome (Figure 19). This applies, for instance, to large parts of the Randstad conurbation, the Wadden Islands, Flevoland, the Veluwe, as well as the regions of Arnhem-Nijmegen and Eindhoven. The converse, in other words that the cycle network is smaller than the car network, is true primarily in parts of Limburg, Drenthe and Overijssel.

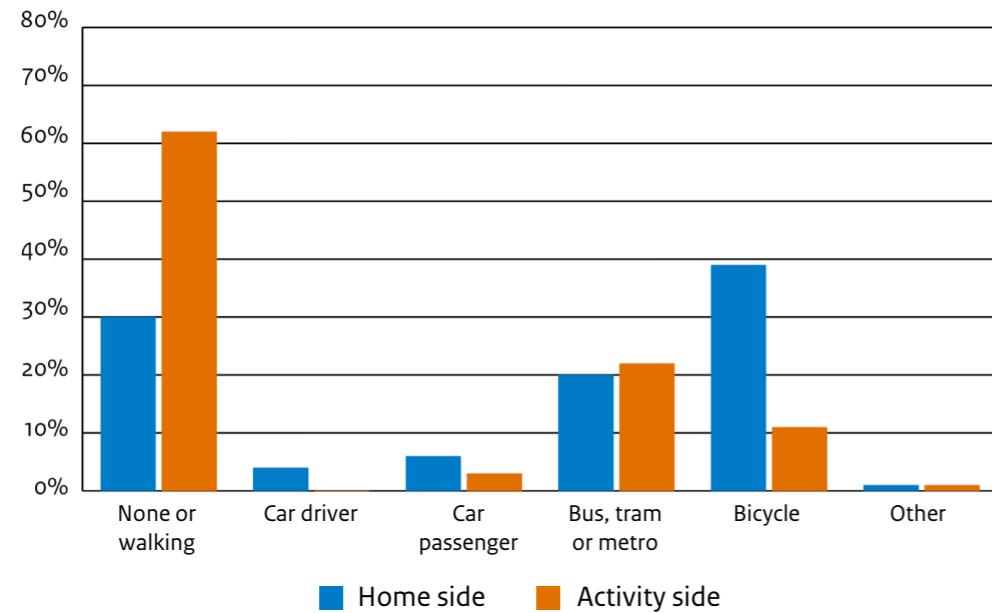
Figure 19: Length of cycle network per 100 km of roadway, 2022¹²



Cycling plays a major role in first and last mile mobility for train passengers on the home side of the journey

- When travelling by train as the primary mode of transport, passengers use the bicycle for the first or last mile on the home side in about 40% of cases (see Figure 20). On the activity side, bicycle use is much lower (11%) because passengers are less likely to have access to a bicycle on the activity side. The most common mode of transport for the first and last mile on the activity side is walking.^{III}
- Cycling is much less common for the first or last mile when the primary mode of transport is bus, tram or metro (BTM, see Figure 21). On the home side, BTM passengers cycle in about 9% of journeys, compared to only 1% on the activity-side. This is primarily because the distance between a BTM stop and home or the destination is often a lot shorter than the distance to a train station. The first or last mile for BTM journeys usually involves walking.

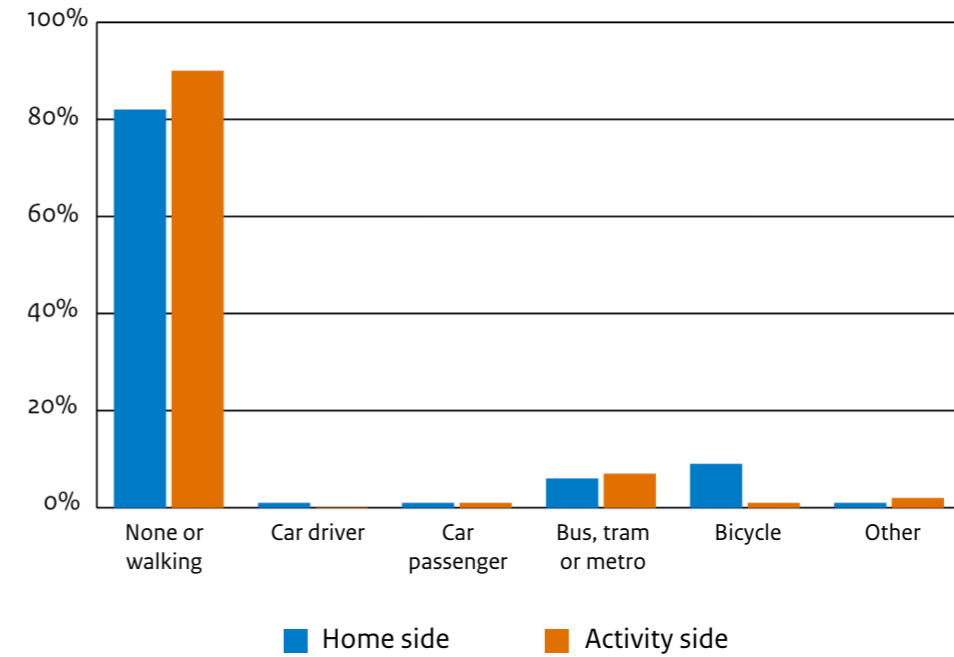
Figure 20: Shares of modes of transport in the first and last mile of train journeys on the home and activity side¹³



¹³ CBS, ODiN 2022

^{III} In some cases, ODiN respondents do not report any first or last mile travel during a public transport journey. We assume here that, in many cases, they inadvertently fail to report their journey on foot. We therefore combine public transport journeys without any reported first or last mile mode of transport together with the public transport journeys where people reported completing the first or last mile on foot.

Figure 21: Shares of first and last mile modes of transport for bus, tram or metro on the home and activity side¹³



In the Netherlands, there are 1.3 bicycles for every person

- It is estimated that in 2022 there were 23.9 million bicycles in the Netherlands, a country of only 17.8 million inhabitants (see Table 1). This amounts to about 1.3 bicycles for every person. The number of e-bikes in the Netherlands more than doubled between 2017 and 2022.
- The Netherlands is at the forefront of both bicycle ownership (see Figure 22) and bicycle use (see Figure 23). Cycling as a proportion of all trips is much higher here than in other countries. In Flanders and Denmark, cycling also features relatively highly as a proportion of trips, but lower than in the Netherlands.

Table 1: Bicycle ownership in the Netherlands (BOVAG-RAI estimate)*

Year	Total number of bicycles in millions	E-bikes in millions (% of total)
2000	17.8	
2005	18.0	
2006	18.0	
2007	18.0	
2008	18.0	
2009	19.0	
2010	20.0	
2011	20.8	
2012	22.3	1.0 (4%)
2013	22.3	1.0 (4%)
2014	22.5	1.2 (5%)
2015	22.7	1.3 (6%)
2016	22.8	1.4 (6%)
2017	22.8	1.8 (8%)
2018	22.9	2.1 (9%)
2019	22.9	2.4 (10%)
2020	23.1	2.9 (13%)
2021	23.4	3.4 (15%)
2022	23.9	3.8 (16%)

¹⁴ Fietsersbond, the Dutch Cyclists' Union (2019). Nederland fietsland. [🔗](#)

¹⁵ Goel, R., Goodman, A., Aldred, R., Nakamura, R., Taha, L., et al. (2021). Cycling behaviour in 17 countries across 6 continents: levels of cycling, who cycles, for what purpose, and how far? [🔗](#)

¹⁶ Christiansen, H., & Baescu, O. (2023). The Danish National Travel Survey Annual Statistical Report. [🔗](#)

¹⁷ Flanders Department of Mobility and Public Works (2023). Onderzoek Verplaatsingsgedrag Vlaanderen 2023. [🔗](#)

* BOVAG-RAI (2023). Mobiliteit in Cijfers Tweewielers 2023-2024. [🔗](#)

Figure 22: Number of bicycles per capita in various countries¹⁴

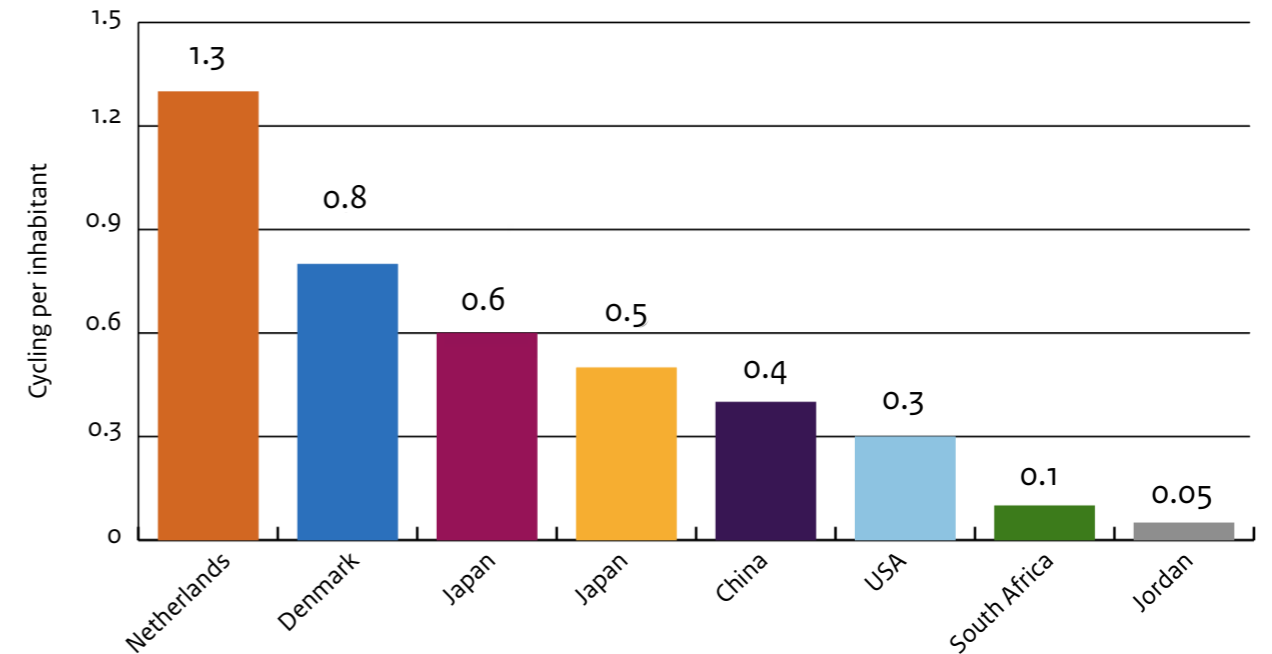
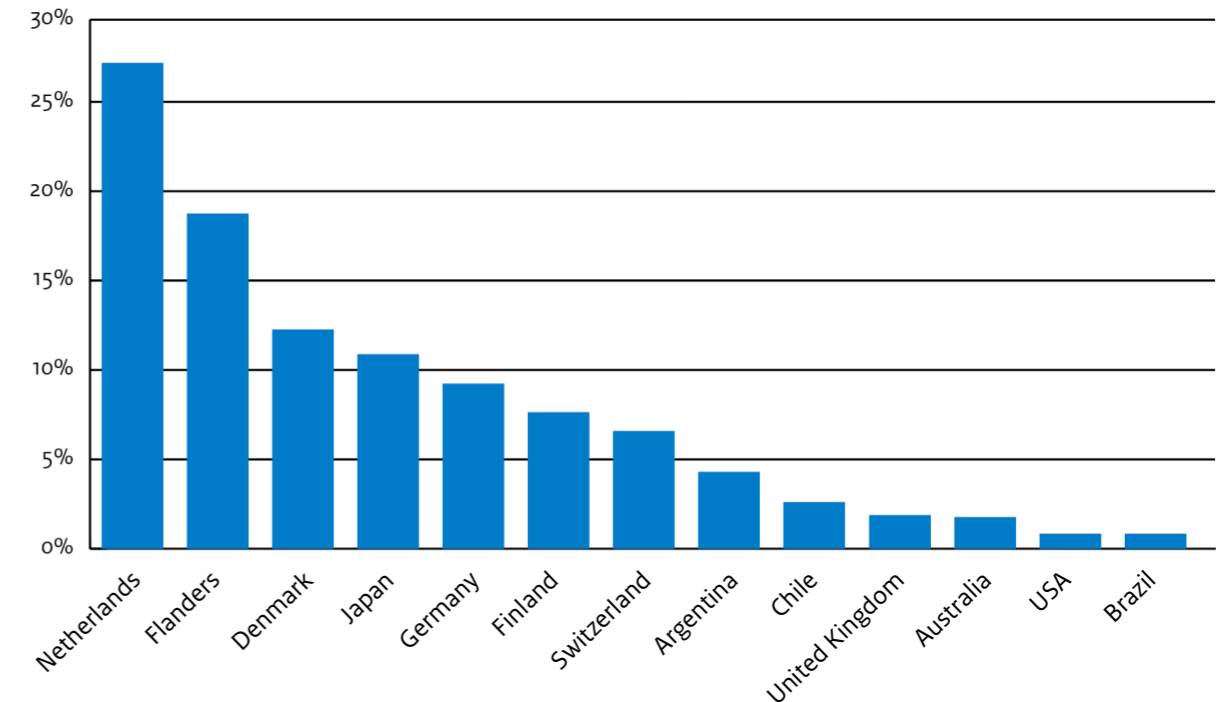


Figure 23: Proportion of bicycles in total journeys across various countries^{15 16 17}



Share of car and bicycle for journeys up to 7.5 km approximately equal

- Many car journeys cover a distance that could also be covered by bicycle (see Table 2). When choosing a mode of transport, reasons other than distance are also at play.
- In 2022, more than one-third of car journeys (35%) were shorter than 5 km; this corresponds to 2.4 billion journeys.
- About half of the car journeys (49%) were shorter than 7.5 km, while two-thirds (66%) were shorter than 15 km.
- More than 80% of the journeys by conventional bicycle were over a distance of less than 5 km. Just under 10% of e-bike journeys were longer than 15 km.

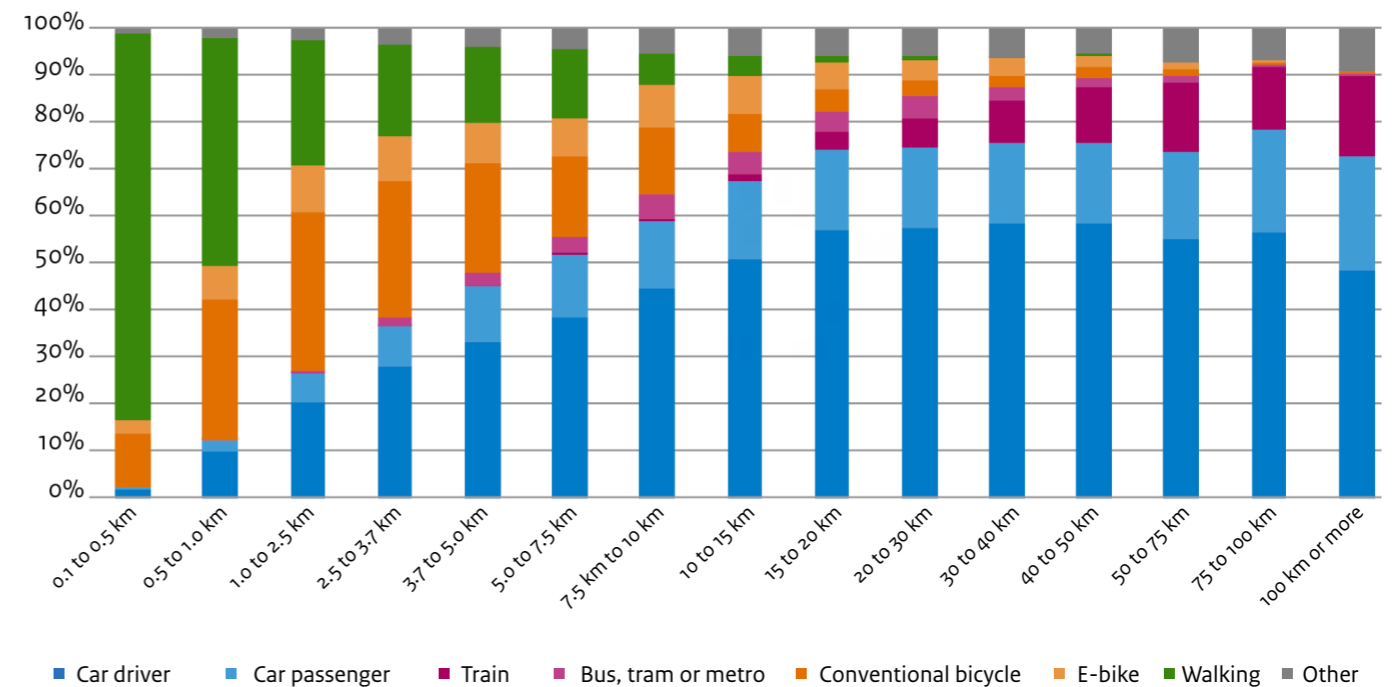
Table 2: Number of car and bicycle journeys up to 5, 7.5 and 15 km¹⁸

		tot 5 km	tot 7,5 km	tot 15 km
Car driver	Billion journeys	1.8	2.6	3.5
	Proportion of all car driver journeys	35%	49%	67%
Car passenger	Billion journeys	0.6	0.8	1.1
	Share of all car passenger journeys	34%	48%	66%
Car total	Billion journeys	2.4	3.4	4.6
	Proportion of all car journeys	35%	49%	66%
Conventional bicycle	Billion journeys	2.7	3.0	3.2
	Proportion of all conventional bicycle journeys	82%	91%	97%
Electric bicycle	Billion journeys	0.8	1.0	1.1
	Proportion of all electric bicycle journeys	66%	78%	91%
Bicycle total	Billion journeys	3.5	4.0	4.3
	Proportion of all bicycle journeys	77%	88%	96%

¹⁸ CBS, ODiN 2022

- Walking is the most popular option for journeys up to 1 km (see Figure 24¹⁸). Cycling has the biggest share for journeys between 1 and 3.7 km (conventional bicycle and e-bike combined). For longer journeys, the car is most popular.
- 69% of all journeys in the Netherlands are shorter than 7.5 km. 37% of these journeys are completed by bicycle, with an almost equal share (36%) completed by car.

Figure 24: Shares of modes of transport in journeys by distance category¹⁸





Trends and developments

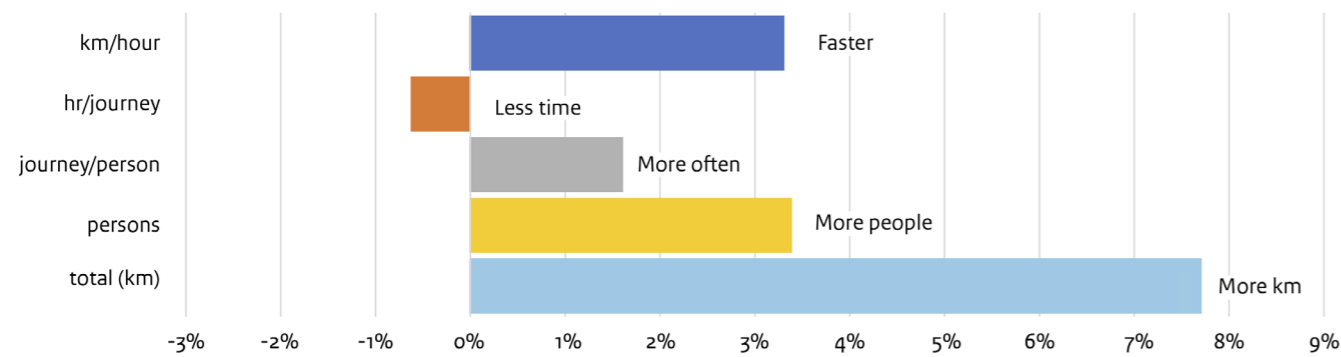


In this chapter, we outline a number of trends and developments for cycling and bicycle use in general. Chapter 3 focuses specifically on the e-bike.

Distance travelled by bicycle increased by almost 8% between 2012 and 2019

- Between 2012 and 2019, the total distance travelled by Dutch cyclists increased by almost 8% (see Figure 25^{IV}). A key explanation for this increase is population growth. Furthermore, the average travel speed has increased because more people have switched from conventional bicycles to e-bikes. The distance cycled has also increased because people used their bicycles more often in 2019 than they did in 2012. The growth in distance travelled is somewhat muted because people spend slightly less time on average per cycle journey.

Figure 25: Breakdown of total distance travelled by bicycle (conventional bicycle and e-bike combined), 2012-2019¹⁹

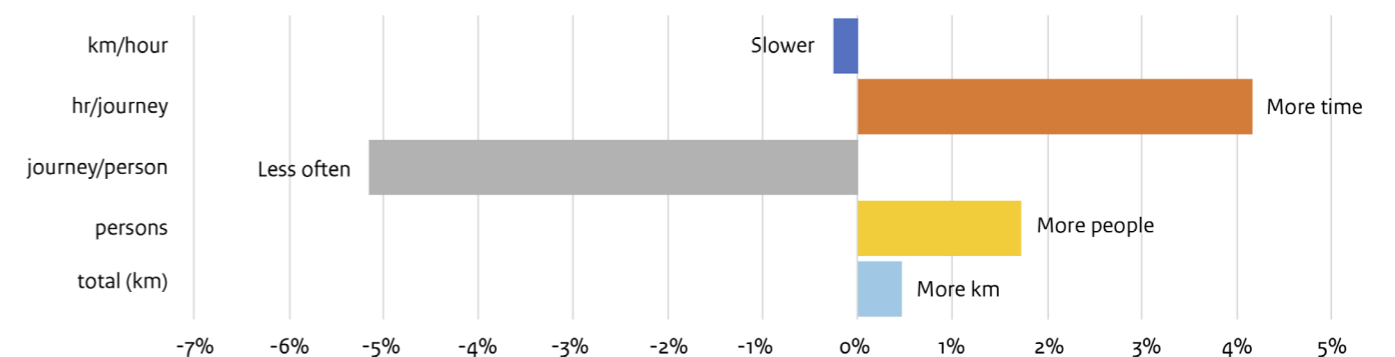


Contribution to total growth in distance cycled (conventional bicycle and e-bike combined) 2019-2022 (percentage point)

^{IV} A breakdown allows us to unravel the evolution of the distance cycled into various components. This shows us how the various components contribute to that evolution. We make a distinction between the components of travel speed (km/hour), travel time per journey (hours/trip), frequency with which Dutch people cycle (trips/person) and population growth (number of people). For more information, see the KiM Mobility Report 2023.

- Between 2019 and 2022, the distance that Dutch people travelled by bicycle increased by just under 1% (see Figure 26). The Dutch now cycle less often, but cycle longer distances per bicycle ride (they cycle a little slower, but much further). The decrease in the cycling frequency is due to a decrease in the number of trips for the travel reasons of commuting and attending education. Population growth, in contrast, caused an increase in the distance cycled. Conventional bicycle and e-bike use has developed differently in this period. The distance travelled by conventional bicycle decreased by almost 17% between 2019 and 2022, while the distance travelled by e-bike increased by more than 55%.

Figure 26: Breakdown of total distance travelled by bicycle (conventional bicycle and e-bike combined), 2019-2022¹⁹



Contribution to total growth in distance cycled (conventional bicycle and e-bike combined) 2019-2022 (percentage point)

¹⁹ CBS trend model. Boonstra, H. J., & Van den Brakel, J. (2023). Modelling mobility trends – update including 2022 ODiN data and Covid effects. The Hague: Statistics Netherlands (CBS).

Bicycle use increased slightly after the last corona measures were lifted

- The last corona measures were lifted in mid-March 2022. In the first quarter of that year, the distance cycled was still slightly lower than in the same period in 2019, but this increased slightly in the three quarters that followed (see Figure 27).
- For travel reasons relating to commuting and education, the Dutch cycled less in all four quarters of 2022 than they did in 2019. From the second quarter of 2022, cycling for commuting reasons moved closer to the level of 2019 than it had been in the first quarter. This is also true of cycling to attend education, although this mainly increased from the third quarter (the start of the new academic year).

Share of cycling is relatively stable

- The proportion of journeys by bicycle remained relatively stable over time (see Figure 28)^V. During the pandemic years of 2020 and 2021, the share decreased slightly, but in 2022 it had almost returned to the same level as before the pandemic. This pattern has been adjusted for short-term fluctuations caused by factors such as the weather.
- The move away from conventional bicycles in favour of e-bikes is clear. Although the total share of bicycles remained stable over time, the share of e-bikes is increasing while the share of conventional bicycles is decreasing. In 2012, about 1% of all journeys involved an e-bike, but by 2022 this had increased to about 7%.

Figure 27: Evolution of distance cycled in 2022 compared to 2019²⁰

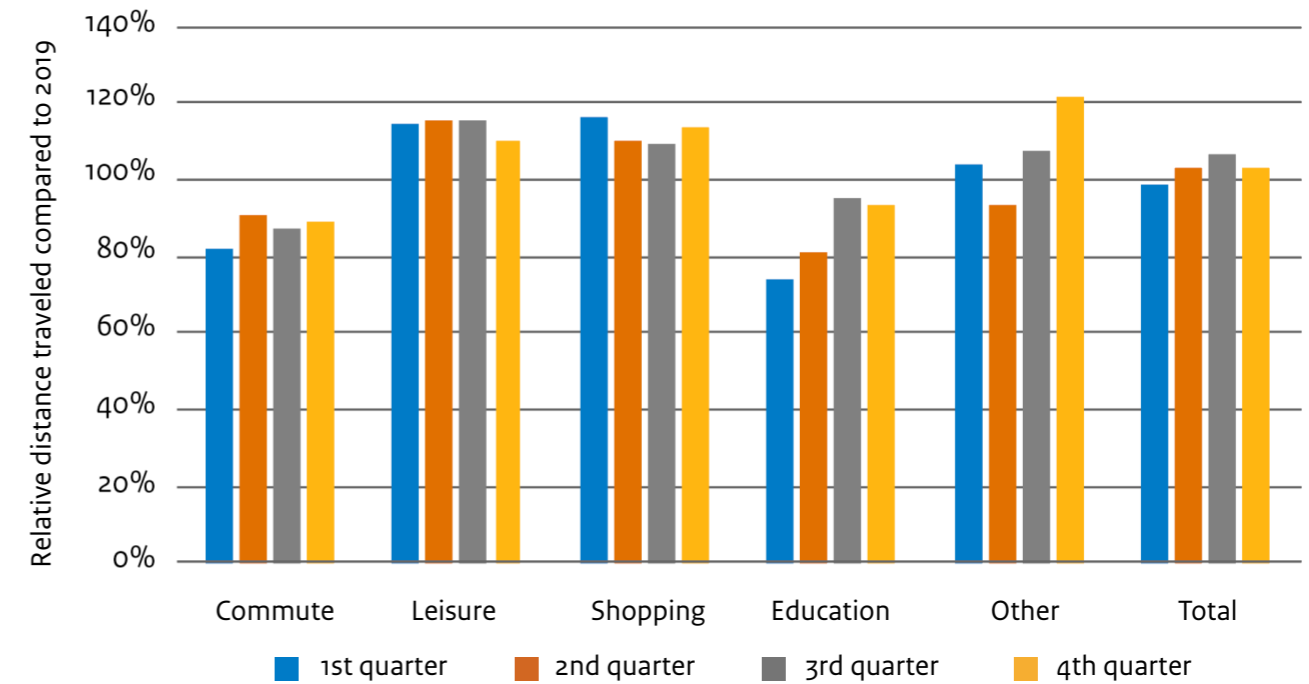
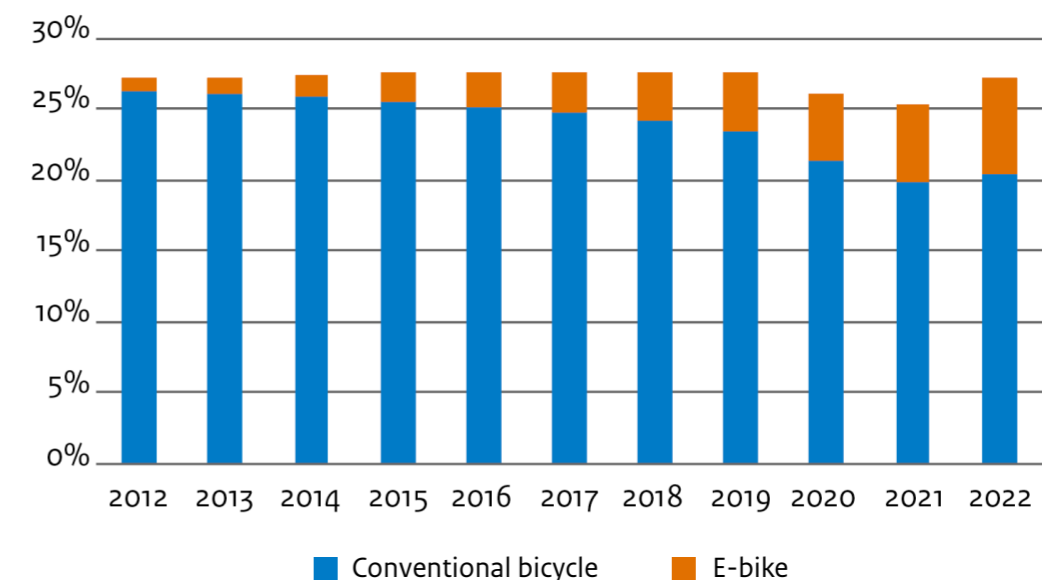


Figure 28: Evolution of the share of journeys by bicycle from 2012 to 2022²¹



²⁰ CBS, ODIN 2019 & 2022

²¹ CBS trend model. Boonstra, H. J., & Van den Brakel, J. (2023). Modelling mobility trends – update including 2022 ODIN data and Covid effects. The Hague: Statistics Netherlands (CBS).

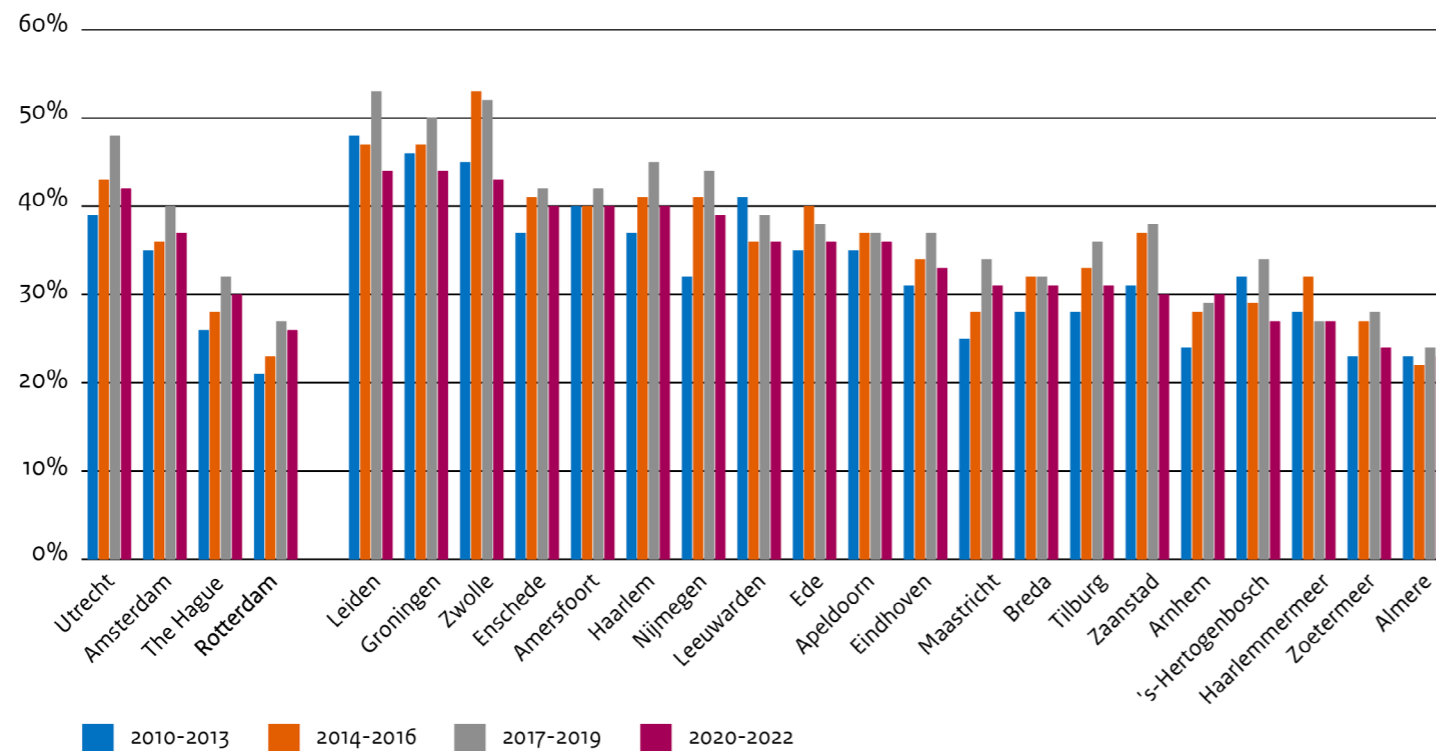
^V We base this on a trend model from Statistics Netherlands, which applies adjustments for short-term effects such as weather influences. This model counts all trips, so also when the bicycle is used as access- or egress mode.

The share of cycling for intra-urban trips in the large cities has decreased slightly since the pandemic

- In the four largest cities (G4), the share of cycling for intra-urban trips increased in the years preceding the pandemic. In the period 2020-2022, this share is slightly lower (see Figure 29), mainly because people started walking more often for journeys within the city (not shown in the Figure). In most large municipalities, the share of active mobility (cycling and walking) in the period 2020-2022 is therefore higher than in previous periods.
- In other large municipalities, the proportion of cycling for travel within the city also decreased. The share of walking in these cities also rose sharply after the pandemic.

- Among the G4, Utrecht is the city where residents cycle most in relative terms. Although the share decreased slightly, residents of Utrecht cycled on more than 4 out of 10 (42%) of their journeys within the city.
- In the other three cities of the G4, inhabitants cycled less often. This is partly due to the availability of a tram and metro system in these cities. Utrecht has only a tram system, with fewer lines than the tram systems in the other three cities.
- Just as before the pandemic, residents of Leiden, Groningen and Zwolle cycled most in relative terms.

Figure 29: Evolution of the share of cycling for intra-urban trips in the 24 largest municipalities (in terms of population)²²



²² CBS, OViN 2010 to 2017 and ODin 2018 to 2022.

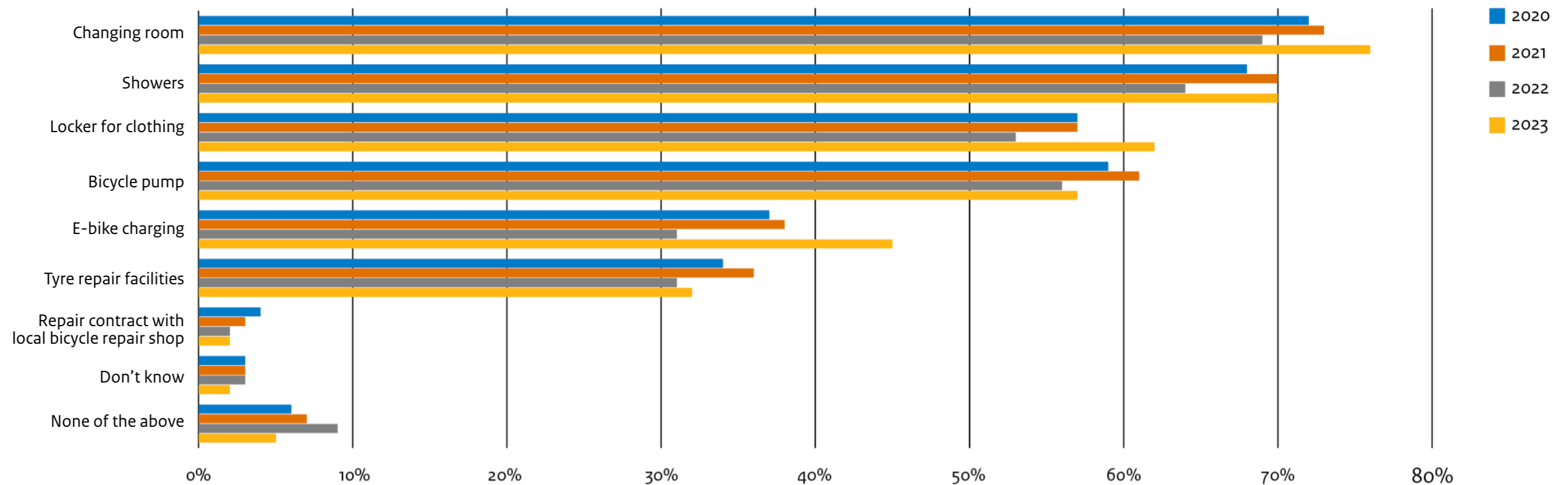


The number of employers (with more than 100 employees) offering a financial incentive to purchase a bicycle is increasing

- In 2023, 57% of employers with more than 100 employees offered workers a financial incentive to buy a bicycle or e-bike. This share is higher than in 2020, when it stood at 51%.
- The number of employers offering a bicycle lease plan has also increased, from 10% in 2020 to 16% in 2023.
- Employees can almost always store their bicycles on the employer's premises. In most cases, there is a private, covered bicycle storage facility (62%), while less often it is uncovered (29%) or semi-covered (21%).

- However, the size of the storage space is not always sufficient. Three-quarters (73%) of employers always have sufficient storage space for cyclists. Only 1% of employers said that they did not have any suitable option for bicycle parking on their premises.
- Almost all employers (95%) have facilities for employees who come to work by bicycle. In most cases, these include changing rooms and showers (see Figure 30).

Figure 30: Facilities available for workers who travel to work by bicycle²³



²³ Ministry of Infrastructure and Water Management (2023). Employer Survey 2023. Study among employers into incentives for sustainable travel by employees. Ministry of Infrastructure and Water Management / IGO Research.

People with a Western migration background cycle in relative terms just as much as the Dutch population without a migration background

- The difference in the proportion of cycling between people with a Dutch background and people with a migration background has narrowed since 2010. For people with a Western migration background, the proportion of cycling in 2022 was even slightly higher than for Dutch people without a migration background (see Figure 31).
- Even among people with a non-Western migration background, the proportion of cycling was on the rise even before the pandemic, although it has declined somewhat since then. The proportion of cycling for this group is still significantly lower than for other Dutch people.
- Despite the fact that the proportion of cycling for people with a Western migration background is slightly higher than for Dutch people without a migration background, they do cycle slightly less often in absolute terms (see Figure 32). This is because people with a migration background make fewer trips in total than people without a migration background. Dutch people with a Turkish, Moroccan or Surinamese background cycle least often.

Figure 31: Share of cycling in trips by migration background²⁴

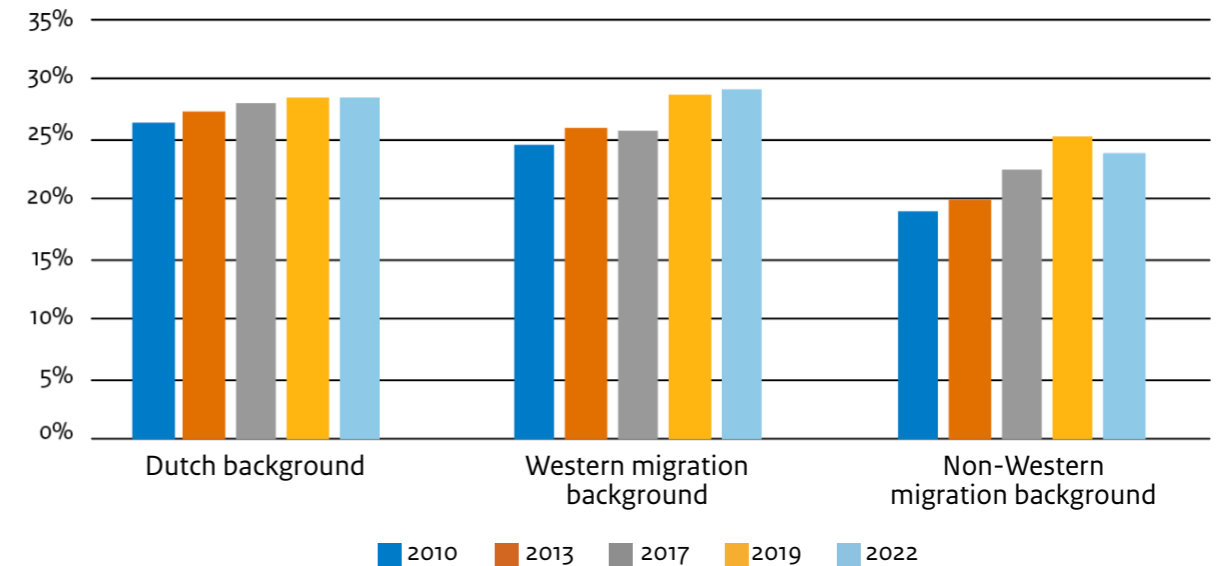
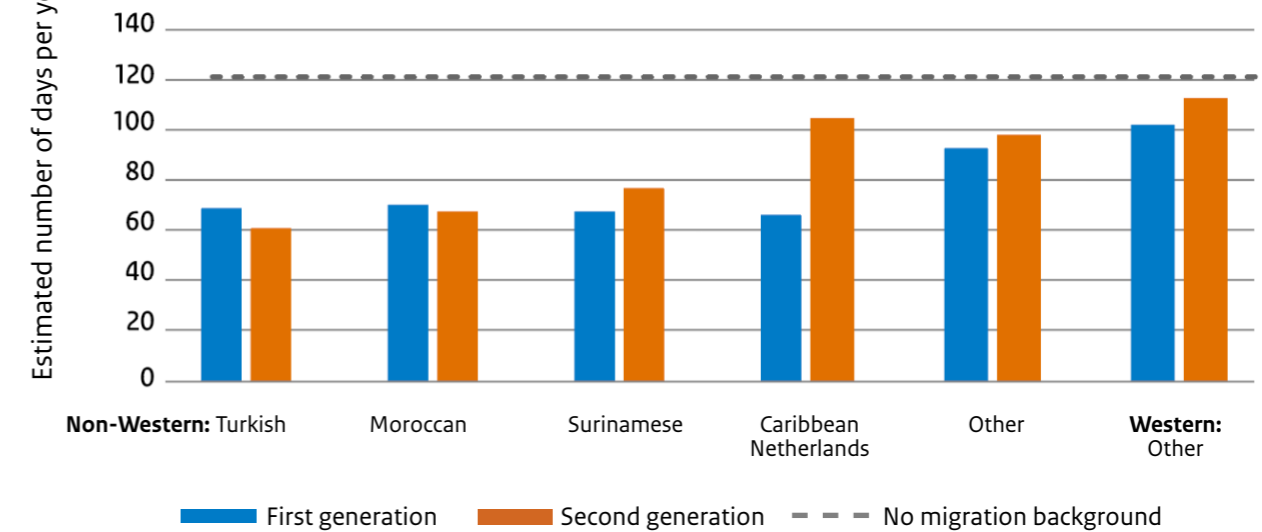


Figure 32: Number of days cycling per year by migration background^{25 VI}



²⁴ CBS, OViN 2010, 2013 & 2017 and ODIN 2019 & 2022

²⁵ Durand, A., Huang, A., Zijlstra, T., & Alonso-González, M. (2023). Multicultural diversity in mobility. The Hague: Netherlands Institute for Transport Policy Analysis (KiM).

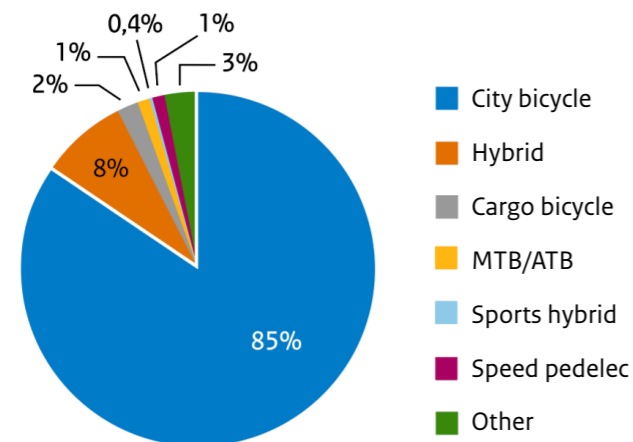
^{VI} First generation: born outside the Netherlands. Second generation: born in the Netherlands, but one or both parents born outside the Netherlands

3 E-bike developments

More than half of new bicycles sold are e-bikes

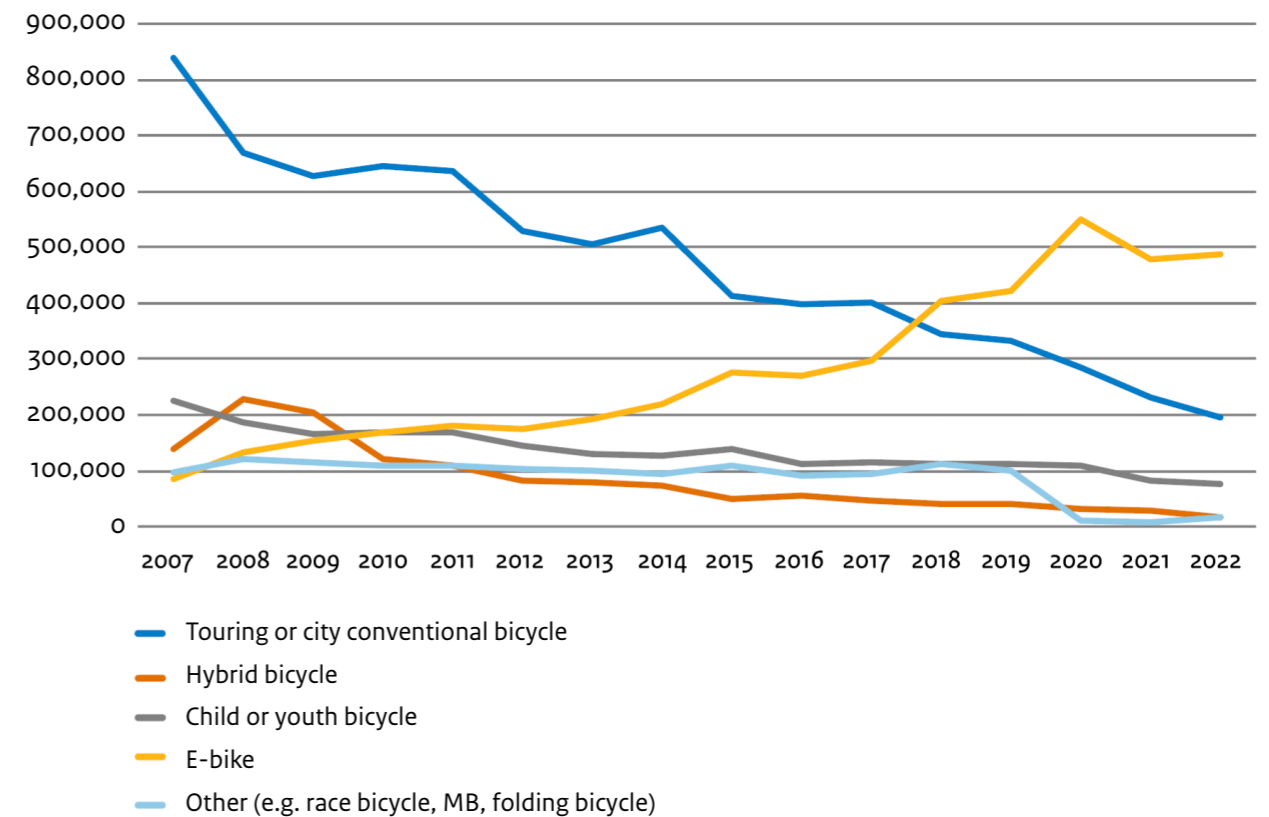
- Since 2018, more new e-bikes have been sold than standard city bicycles or touring bicycles (see Figure 33).
- After a peak in the corona year of 2020, e-bike sales tailed off slightly in 2021. This was due in part at least to supply problems.
- The average price of a new e-bike in 2022 stood at €2,489.
- The vast majority of new e-bike sales (85%) are for city bicycles (see Figure 34). A small proportion is for special types of e-bike, such as cargo bicycles (2%) or mountain bikes (1%).
- In 2022, 4,370 speed pedelecs were sold, accounting for a share of around 1% of total e-bike sales.

Figure 34: Share of e-bike types in new e-bike sales in 2022²⁶



²⁶ BOVAG-RAI (2023). Bicycle sales 2022.

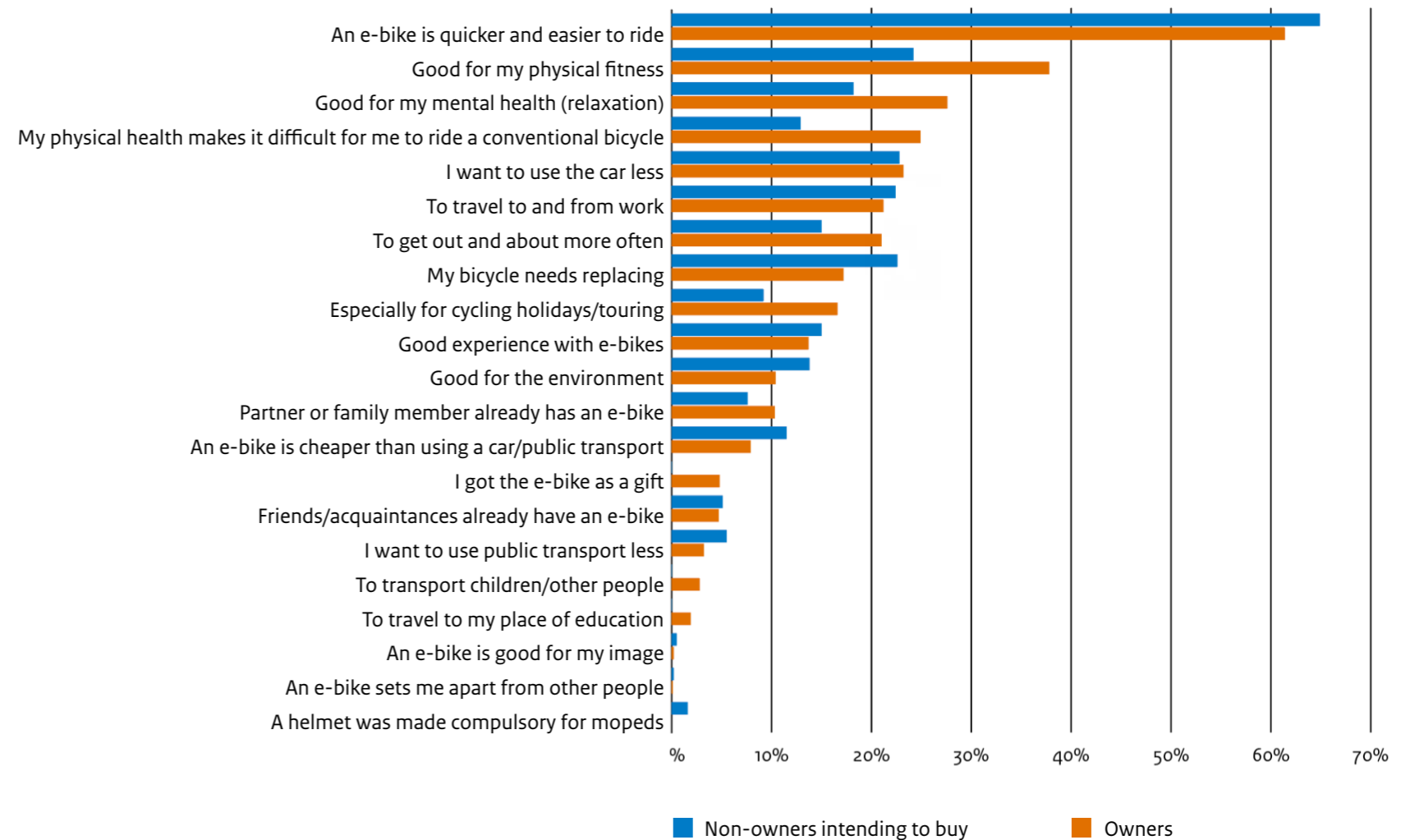
Figure 33: Development of new bicycle sales 2007-2022²⁶



Speed and ease of travel are the main considerations for buying an e-bike

- People who already have an e-bike find that being able to travel faster and with greater ease is by far the most important reason to buy an e-bike (see Figure 35). The next 3 reasons given relate to health. Almost 40% of e-bike owners bought the e-bike because it would be good for their physical health. Almost 3 in 10 owners (28%) said that their mental health was a key reason in buying the bicycle. Finally, one-quarter of owners stated that they cannot use a standard conventional bicycle, or not so much, due to their physical health.
- Even among non-owners who intend to purchase an e-bike in the future (39% of non-owners in 2021), being able to travel faster and with greater ease would be the primary reason to consider buying one. Reasons relating to health are less important for this group than for those who already own an e-bike. This difference can be explained in part at least by the fact that current e-bike owners are, on average, older than those who do not yet own one. It is therefore plausible that they are relatively more likely to suffer from health problems.

Figure 35: Reasons for buying an e-bike²⁷



²⁷ De Haas & Huang (2022). Aanschaf en gebruik van de elektrische fiets. The Hague: Netherlands Institute for Transport Policy Analysis (KiM).

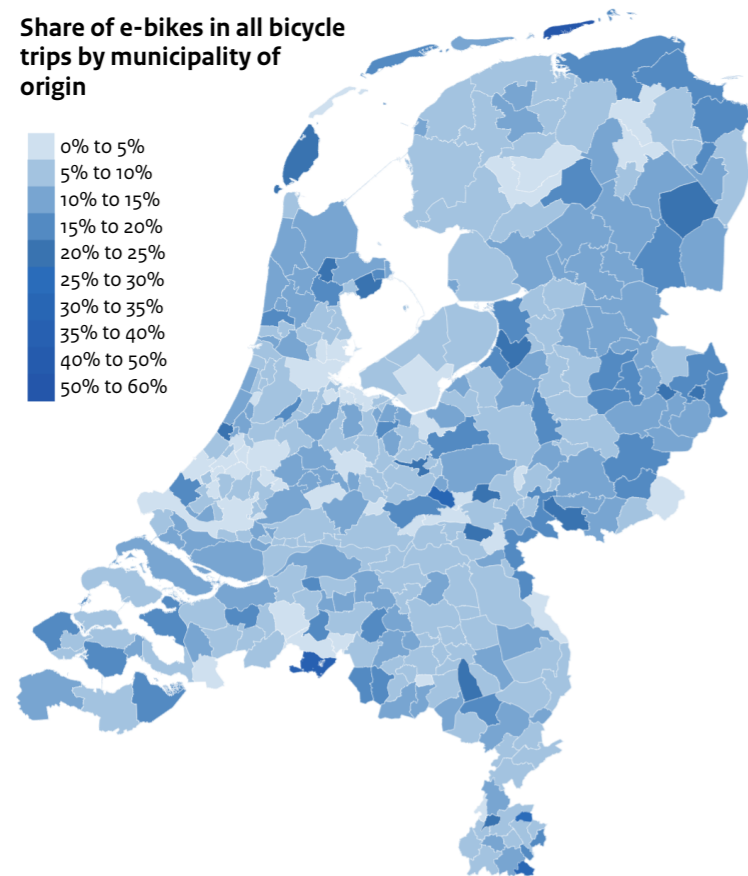
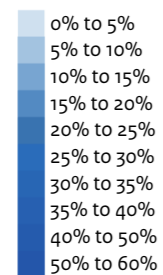
E-bike share is increasing across the country

- The share of the e-bike in all bicycle trips has increased across the whole country in recent years (see Figure 36).
- However, the role of the e-bike is not equally large in all parts of the country. Outside the Randstad conurbation, the share of e-bikes in overall bicycle mobility is higher in many municipalities than it is within the Randstad.

Figure 36: Share of e-bikes in all bicycle trips by municipality of origin²⁸

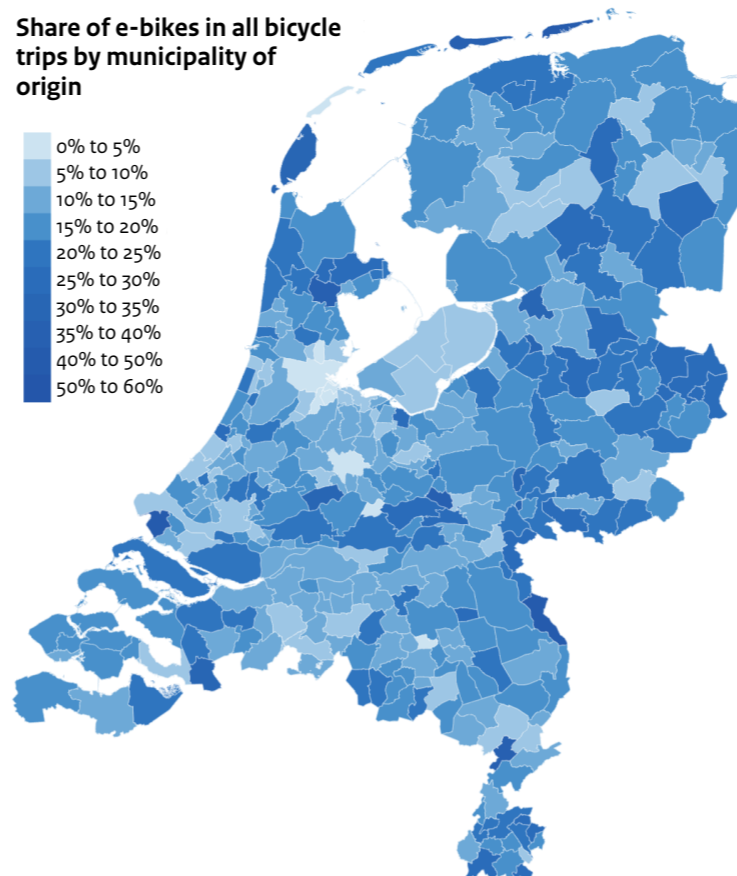
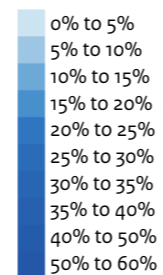
2014-2016

Share of e-bikes in all bicycle trips by municipality of origin



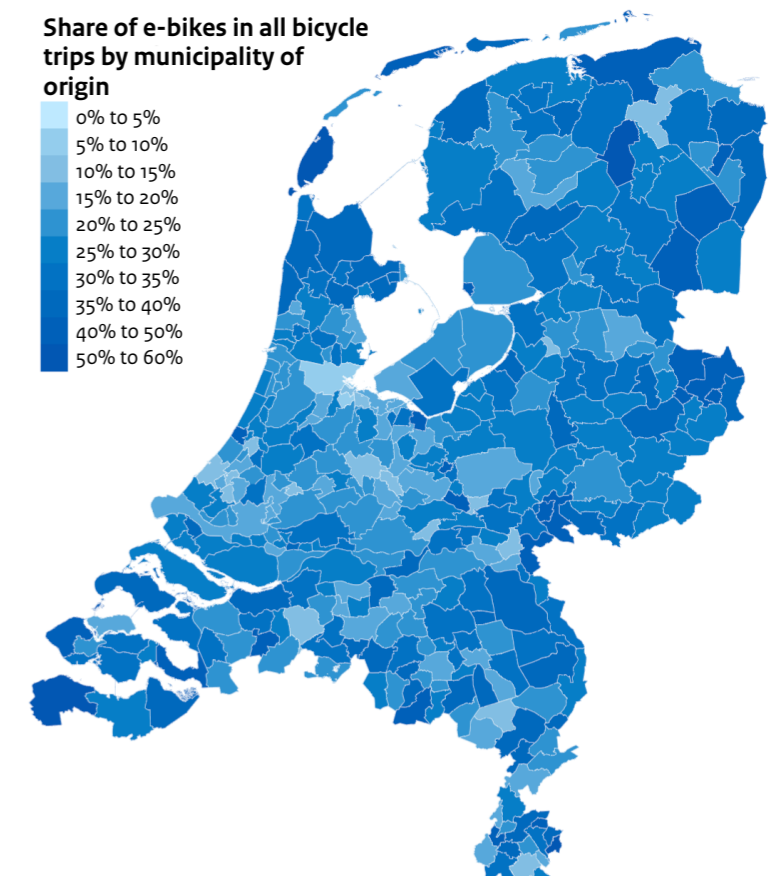
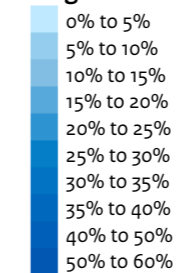
2017-2019

Share of e-bikes in all bicycle trips by municipality of origin



2020-2022

Share of e-bikes in all bicycle trips by municipality of origin



iN 2018 to 2022

The e-bike share is on the rise among all age groups

- Between 2012 and 2022, the share of e-bikes in the overall distance cycled increased from 5% to 37% (see Figure 37). Among older age groups, the increase was smaller in relative terms than among younger age groups. Nevertheless, the share of e-bikes in the total distance cycled was still higher among older people than among younger age groups.
- Between 2019 and 2022, the share of e-bikes in the total distance cycled among people aged 70 years or over increased in relative terms by about 18%. Among 12 to 17-year-olds and 18 to 24-year-olds, the increase was much greater in relative terms. For both groups, the share of e-bikes almost tripled.

Role of e-bike largest in relative terms for commuting and leisure

- The share of e-bikes in the total distance cycled in 2022 was highest for commuting (40%) and leisure (40%, see Figure 38). For the travel reason of shopping, the share was slightly lower at 38%.
- Although the share of the e-bike in the distance cycled for education-related purposes was still relatively low in 2022 (18%), this share is growing relatively fast. In 2012, the Dutch hardly used the e-bike at all to attend education, while by 2022, the share of the e-bike in the total distance cycled for this travel reason was more than 2.5 times higher than in 2019.

Figure 37: Share of e-bike in total distance cycled by age²⁹

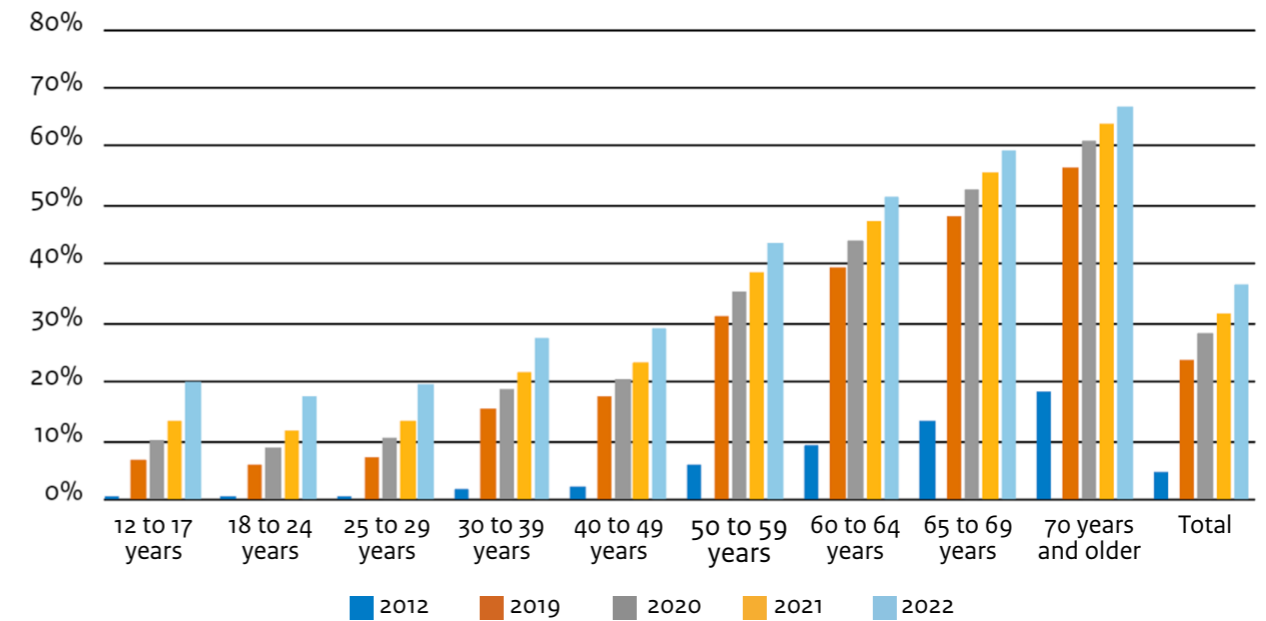
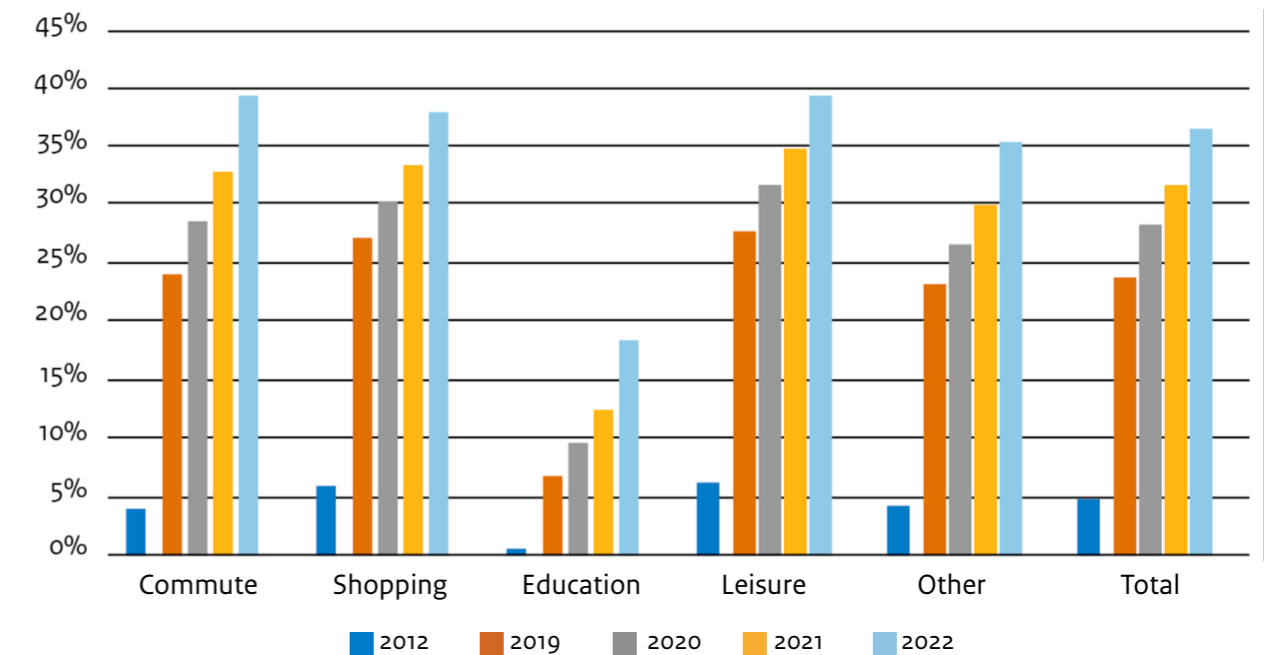


Figure 38: Share of e-bikes in total distance cycled by travel reason²⁹



²⁹ CBS trend model. Boonstra, H. J., & Van den Brakel, J. (2023). Modelling mobility trends – update including 2022 ODIN data and Covid effects. The Hague: Statistics Netherlands (CBS).

4 Social effects of bicycle use



Cycling is a healthy option

- People who walk or cycle to work have a significantly reduced risk of death (all causes) and of cardiovascular disease and diabetes³⁰. Figure 39 shows the results of a meta-analysis of 23 prospective cohort studies covering a total of more than 500,000 participants.
- Even with intensive and long-term active mobility in situations with high levels of air pollution, health impact assessment (HIA) studies show that the long-term health benefits outweigh the health risks^{31, 32, 33, 34}.
- Studies show that people who use an active mode of transport tend to have better mental health^{35, 36}.
- Active mobility to and from school also positively correlates with teenagers' educational outcomes and school enjoyment³⁷.

Cycling is associated with positive feelings

- A large proportion (72%) of the Dutch experience cycling as a relaxing pastime (see Figure 40), a figure that is only beaten by walking (76%).
- People who cycle or walk to work are more likely to feel satisfied, less stressed, more relaxed and perceive more freedom than people who drive to work by car.^{39, 40}

³⁰ Dinu M., Pagliai G., Macchi C., Sofi F. (2019). Active Commuting and Multiple Health Outcomes: A Systematic Review and Meta-Analysis. [↗](#)

³¹ Nijland, H. (2017). Fietsen leidt tot langer en gezond leven. The Hague: PBL Netherlands Environmental Assessment Agency. [↗](#)

³² Mueller N., Rojas-Rueda D., Cole-Hunter T., de Nazelle A., Dons E., Gerike R., et al. (2015). Health impact assessment of active transportation: A systematic review. [↗](#)

³³ De Hartog, J.J., Boogaard, H., Nijland, H., Hoek, G. (2010). Do the health benefits of cycling outweigh the risks? [↗](#)

³⁴ Tainio M., de Nazelle A., Götschi T., Kahlmeier S., Rojas-Rueda D., Nieuwenhuijsen M.J. et al. (2016). Can air pollution negate the health benefits of cycling and walking? [↗](#)

³⁵ Avila-Palencia I., De Nazelle A., Cole-Hunter T., Donaire-Gonzalez D., Jerret M., Rodriguez D., Nieuwenhuijsen M. (2017). The relationship between bicycle commuting and perceived stress: a cross-sectional study. [↗](#)

³⁶ Stark, J., Meschik, M., Singleton, P. A., G Schützhofer, B. (2018). Active school travel, attitudes and psychological well-being of children. [↗](#)

³⁷ Jussila, J.J., Pulakka, A., Halonen, J.I., Salo, P., Allaouat, S., Mikkonen, S., Lanki, T. (2023). Are active school transport and leisure-time physical activity associated with performance and wellbeing at secondary school? A population-based study. [↗](#)

³⁸ KiM, Mobility Panel Netherlands (MPN) 2022. [↗](#)

³⁹ Singleton, P.A. (2019). Walking (and cycling) to well-being: Modal and other determinants of subjective well-being during the commute. [↗](#)

⁴⁰ Willis, D.P., Manaugh, K., El-Geneidy, A. (2013). Uniquely Satisfied: Exploring Cyclist Trip Satisfaction. [↗](#)

Figure 39: Reduced risk of death and occurrence of cardiovascular disease and diabetes, including a 95% confidence interval³⁰

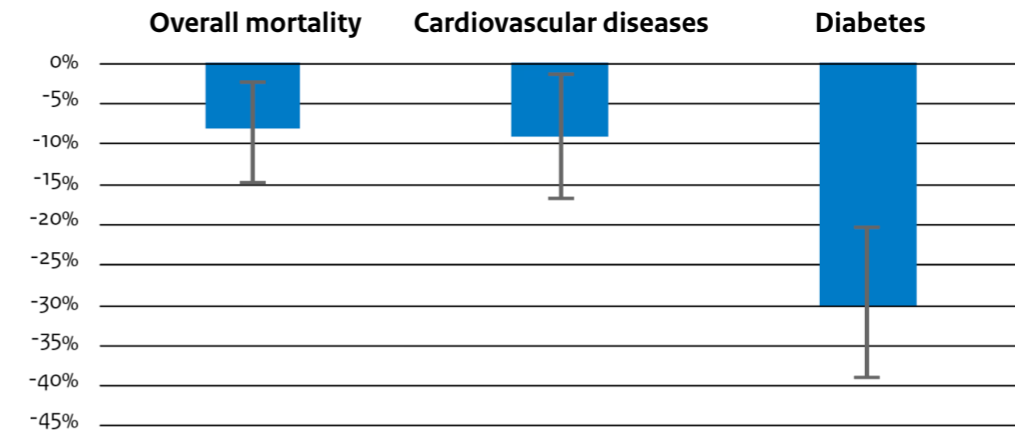
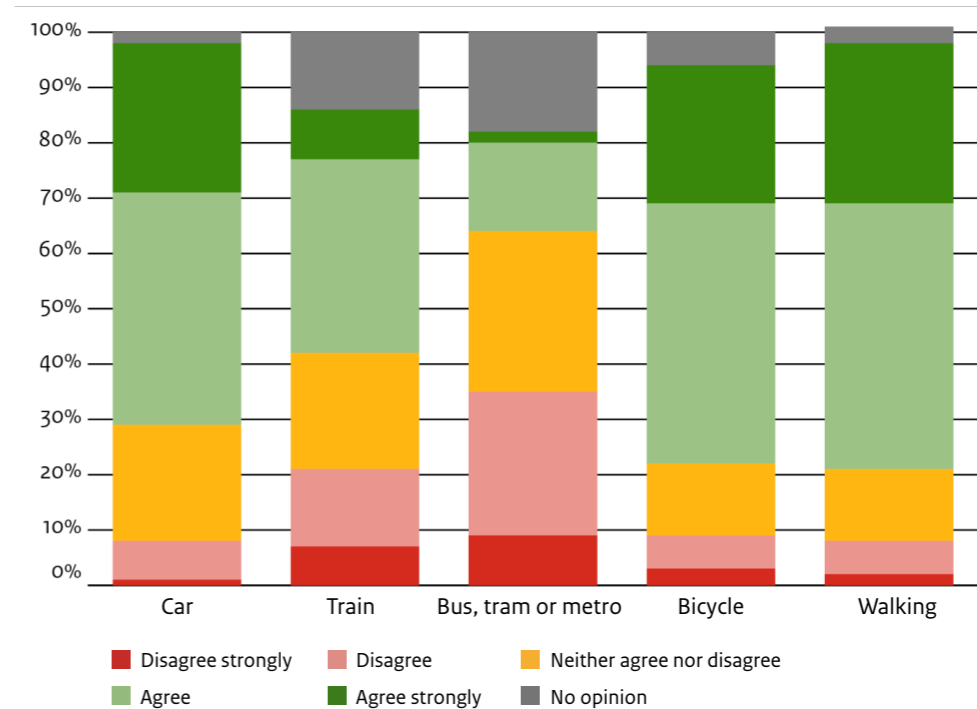


Figure 40: Response to the statement 'I find the use of this mode of transport relaxing'³⁸



Committed cyclists rate their health better than sporadic cyclists

- More than 4 in 10 (41%) committed cyclists (cycling 4 days or more per week) rated their own health as excellent or very good (see Figure 41).
- In a previous study, KiM concluded that more cycling leads people to rate their health more positively⁴².

People who are overweight (BMI 25 or higher) tend to use the e-bike more often than people with a BMI of lower than 25

- More than 4 in 10 (42%) people with obesity (BMI ≥ 30) only use the e-bike. For people with a BMI under 25, the proportion is less than half at 19% (see Figure 42).
- Based on this data alone, it is not possible to draw any conclusions about the causality, if any, between bicycle and e-bike use and BMI. Previous KiM research has shown a correlation but no causal relationship between weight and bicycle (including e-bike) use.⁴²

Figure 41: Perceived health by frequency of bicycle use⁴¹

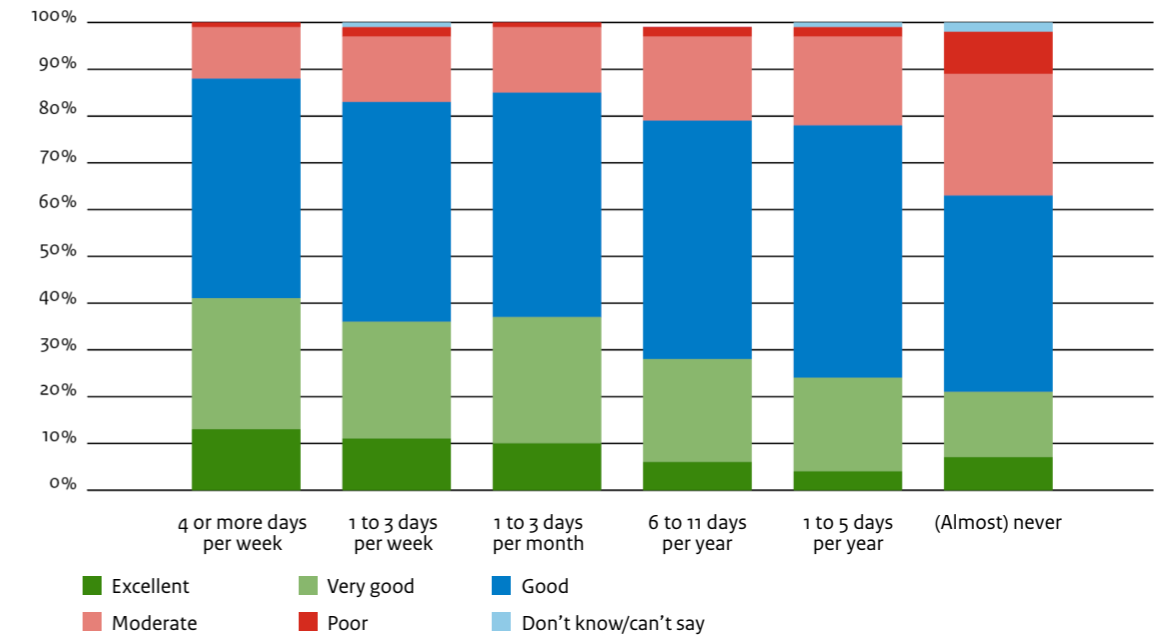
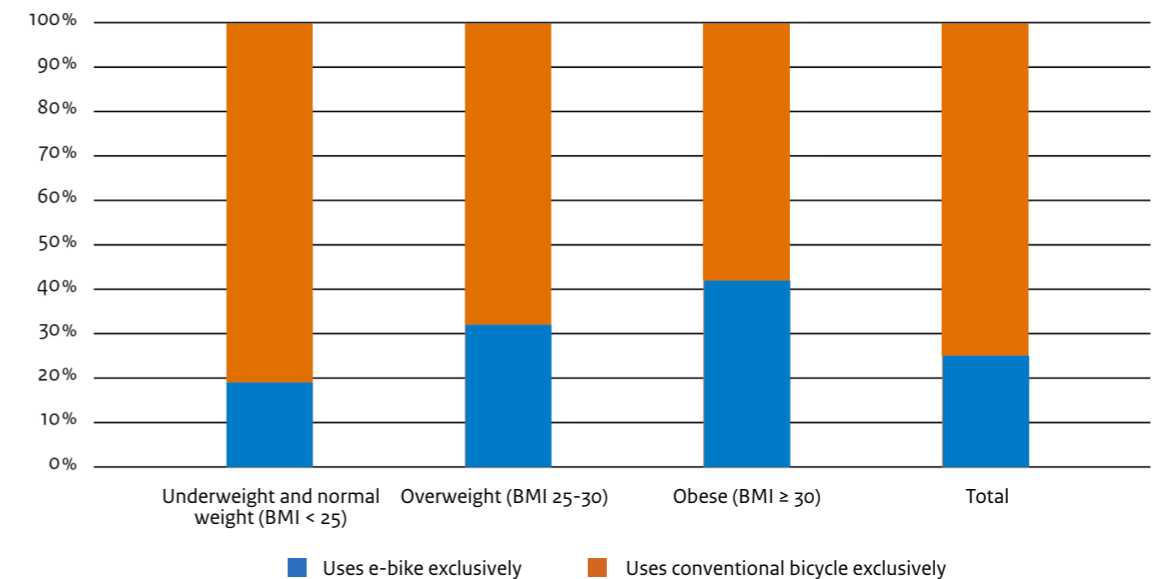


Figure 42: Distribution of people (12 years and older) who exclusively use an e-bike or who exclusively use a conventional bicycle by weight category^{*42}



* About 6% of the people questioned in the RIVM study use an ordinary conventional bicycle and an e-bike or speed pedelec. This group has not been included in the figure because information about the respondents' BMI is unavailable. The 'Total' column has been adjusted to take this group into account.

⁴¹ KiM, Mobility Panel Netherlands (MPN) 2022.

⁴² de Haas, M. (2021). Het verband tussen gezondheid en actief reizen. The Hague: Netherlands Institute for Transport Policy Analysis (KiM).

⁴³ RIVM (2022). Factsheet Elektrisch fietsen in Nederland.

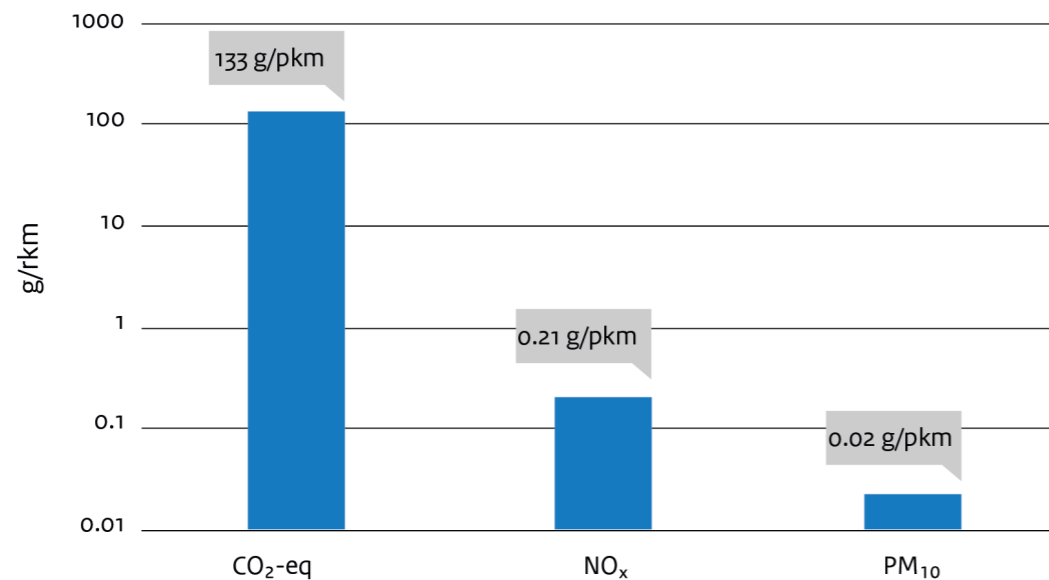
A shift from car to bicycle saves greenhouse gas emissions and means cleaner air

- Cycling one kilometre rather than driving saves an average of 133 g of CO₂, 0.21 g of NO_x and 20 mg of particulate matter (PM₁₀, see Figure 43).^{vii}
- In 2022, the Dutch made almost 3.5 billion car journeys shorter than 7.5 km, racking up a total of about 11.6 billion kilometres.

A shift from car to bicycle in favour of cycling saves space

- A moving bicycle takes up 28 times less space than a moving car (see Figure 44), while a parked bicycle takes up 10 times less space than a parked car.

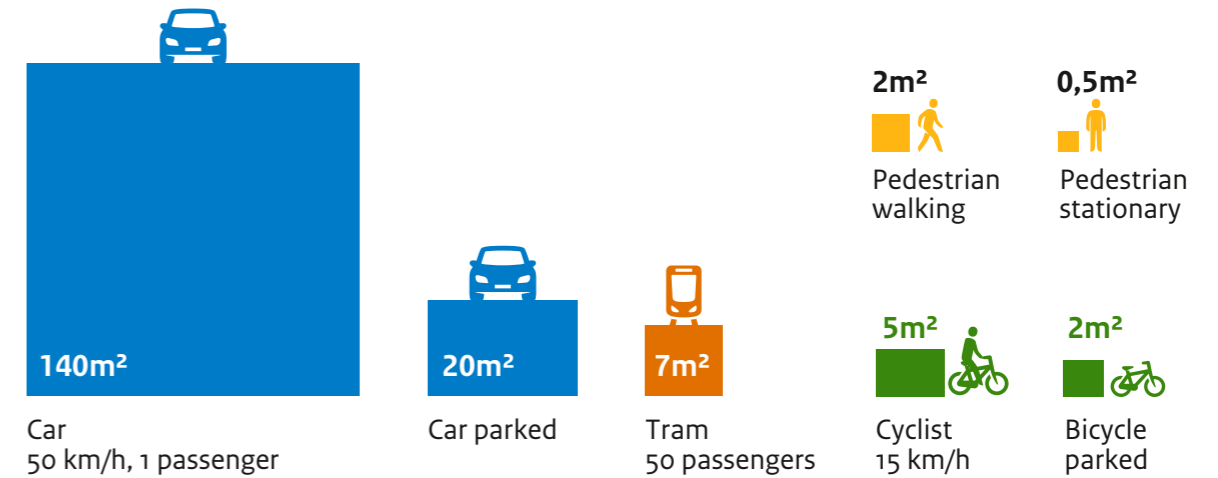
Figure 43: Savings in emissions when shifting from car to cycling, per passenger kilometre ^{vii}



^{vii} KiM's own estimate based on key figures published in the STREAM Passenger Transport 2022 emissions study by CE Delft ⁴⁴. In accordance with the calculation of the TNO report 'Cycling is green, healthy and beneficial' (2010) ⁴⁵, a ratio between city, extra-urban road and highway of 70%, 25% and 5%, respectively, was assumed and calculated using the tank-to-wheel CE emissions figures for 2020.

⁴⁴ Fietscommunity (2017). Van wie is de stad? The Hague: Platform 31. ⁴⁵

Figure 44: Space requirements per passenger and per mode of transport⁴⁴



Number of fatal traffic accidents involving cyclists is on the rise

- There were 745 road deaths in the Netherlands in 2022 (see Figure 45). A cyclist was involved in almost 4 out of 10 cases (39%). 2022 saw the highest number deaths (290) among cyclists since 1996 (the year Statistics Netherlands started recording actual numbers of deaths). In 2021, there were 207. The number of cyclists involved in a collision with a vehicle in particular increased sharply between 2021 and 2022: from 127 in 2021 to 206 in 2022.
- The distance cycled has also increased. As a result, the number of road deaths per unit distance cycled (risk of death) in 2021 was about the same as in 2013. Between 2021 and 2022, the risk of death from cycling increased relatively sharply⁴⁶.
- According to Statistics Netherlands, at least 119 (41%) of bicycle traffic fatalities in 2022 involved an e-bike. This is a lower threshold value because accident reports do not always properly distinguish between an ordinary conventional bicycle and an e-bike. The e-bike therefore has a higher share in cycling fatalities than the distance cycled (37% in 2022). However, there is still no unambiguous evidence that riding an e-bike poses a greater risk than riding an ordinary conventional bicycle⁴⁷.
- Nearly 7 in 10 (69%) of cycling fatalities in 2022 were men. This ratio holds true not just for cycling: 71% of all road traffic fatalities in 2022 were men.
- Most cycling fatalities (62%) were aged 70 years or older (see Figure 46).

Figure 45: Number of road traffic fatalities per year by mode of transport⁴⁵

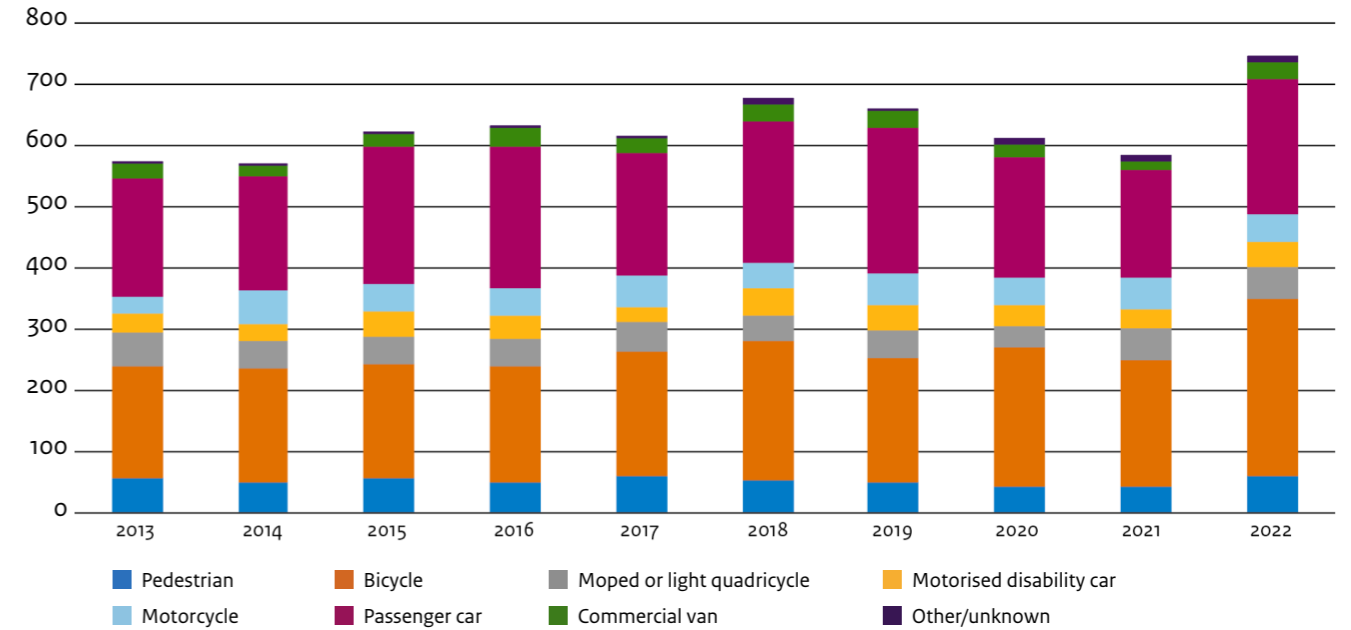
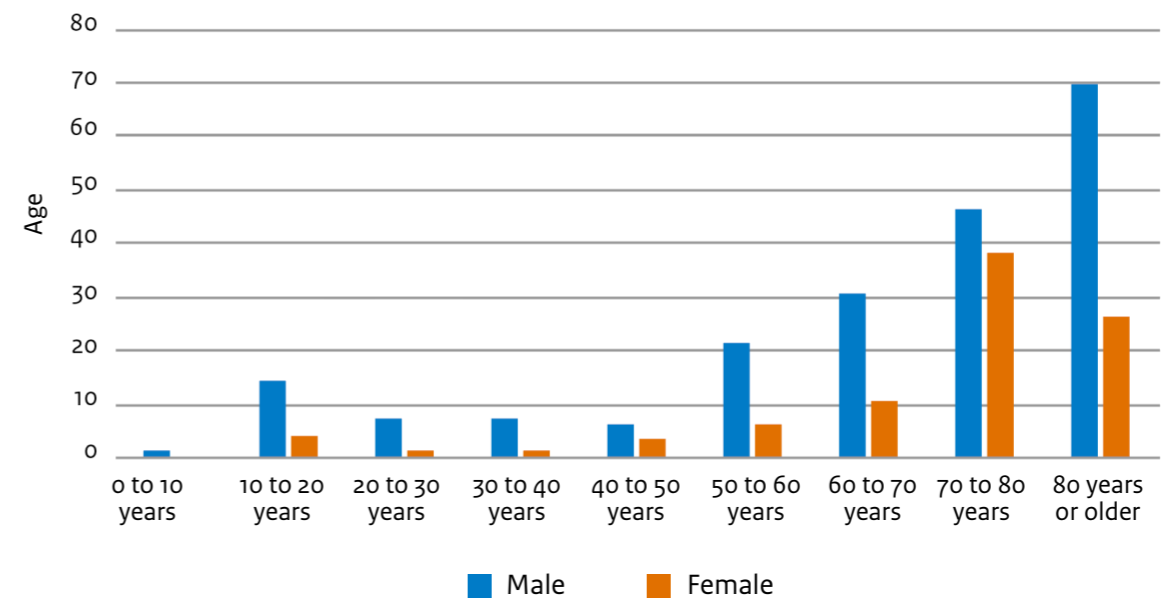


Figure 46: Cycling fatalities in 2022 by age and gender⁴⁵



⁴⁵ Statistics Netherlands (2023). Road traffic fatalities, 2022.

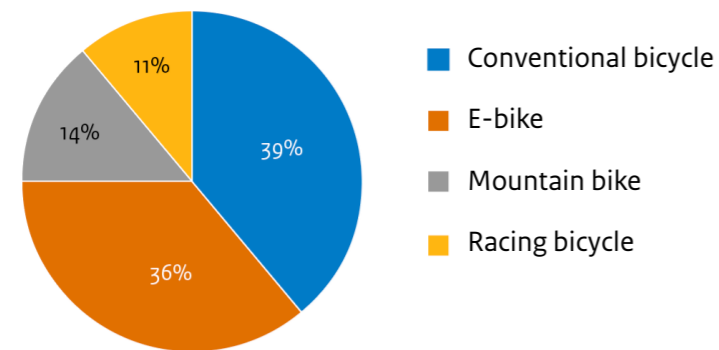
⁴⁶ KiM Netherlands Institute for Transport Policy Analysis (2023). Mobility Report 2023.

⁴⁷ SWOV Institute for Road Safety Research (2022). Pedelecs and speed pedelecs. SWOV factsheet, May 2022.

40% increase in cyclist admissions to Accident & Emergency (A&E) between 2013 and 2022

- In 2022, two-thirds (66%) of A&E admissions following a road traffic accident involved cycling accidents (see Figure 47). The majority of cyclists admitted to A&E had sustained serious injuries (MAIS 2+^{VII}).
- In 2021, 6,800 seriously injured (MAIS 3+^{VII}) people were hospitalised after a road traffic accident. About 71% of cases involved a cyclist.⁴⁹ By comparison, more than one-third (36%) of casualties in 2021 were cyclists.
- About 36% of A&E admissions following a cycling accident concerned an accident involving an e-bike (see Figure 48). This is about the same size as the share of e-bikes in the overall distance cycled.
- In the period 2013-2022, there was an increase in the number of traffic casualties admitted to A&E due to serious injuries (see Figure 49). This increase is mainly accounted for by cyclists⁴⁸.

Figure 48: Distribution of casualties by bicycle type⁵⁰



⁴⁸ VeiligheidNL (2023). Kerncijfers Verkeer 2022.

⁴⁹ SWOV Institute for Road Safety Research (2023). Road Deaths in the Netherlands. SWOV factsheet, September 2023.

⁵⁰ VeiligheidNL (2022). Vervolgonderzoek naar fietsongevallen 2020-2021. As reproduced by KiM.

^{VII} In the Injury Information System, serious injury during an A&E visit was defined as MAIS 2+. Since 2021, SWOV has been using MAIS 3+ to count the number of serious road injuries; this always involves hospitalisation and not just a visit to A&E that does not require hospitalisation.

Figure 47: Number of A&E visits due to a road traffic accident in 2022 by mode of traffic participation⁴⁸

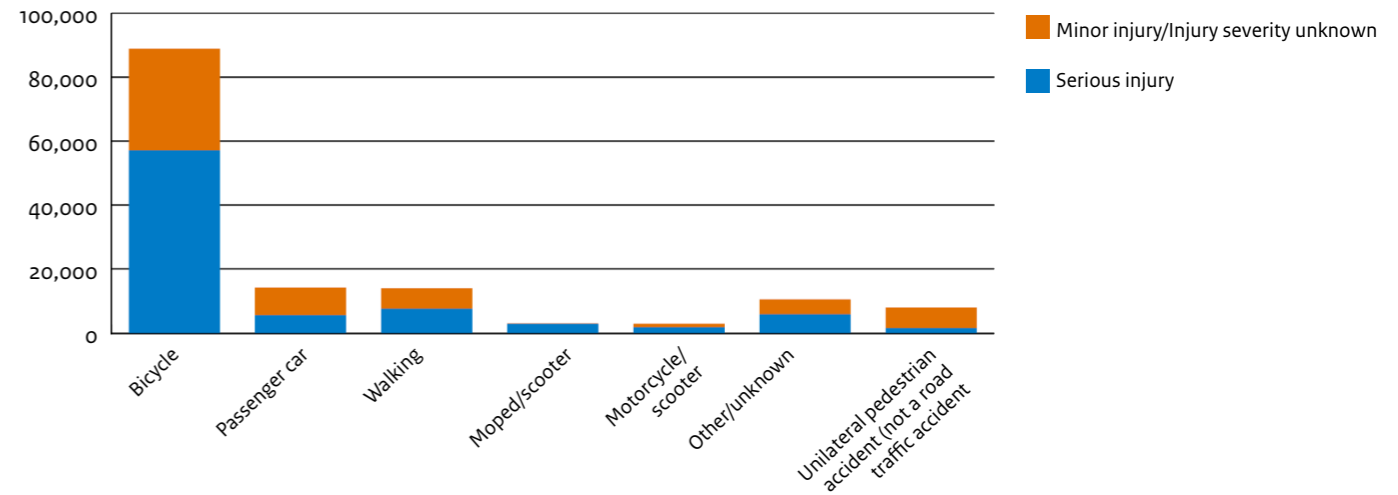
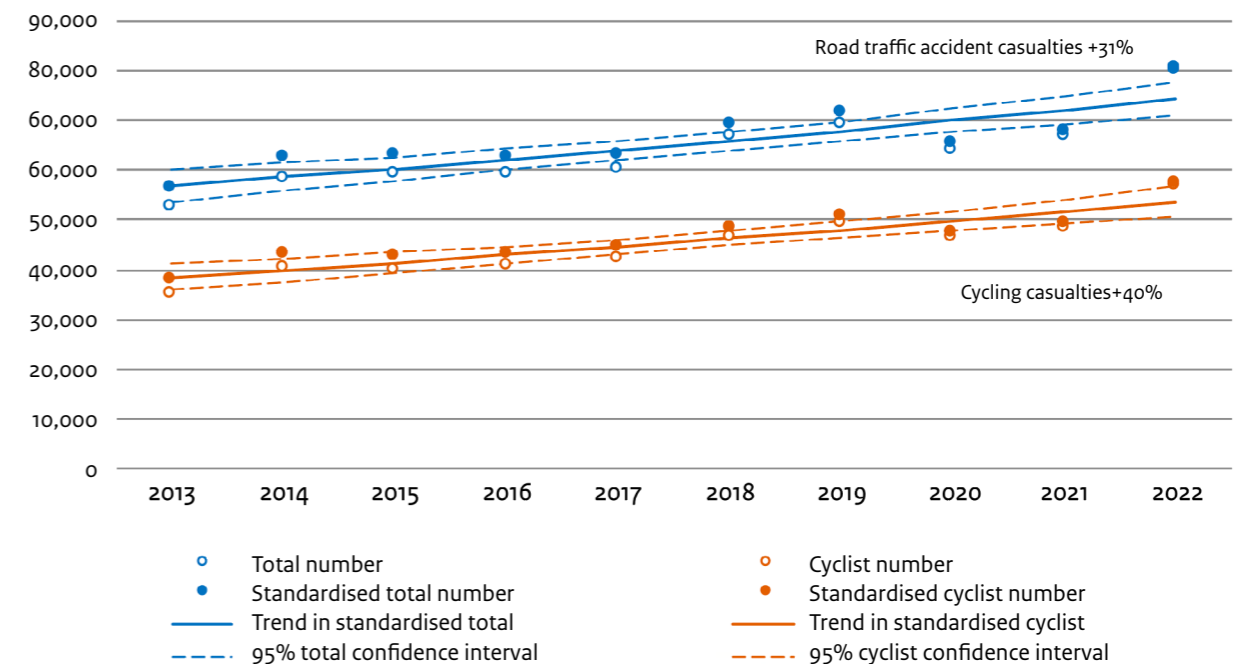


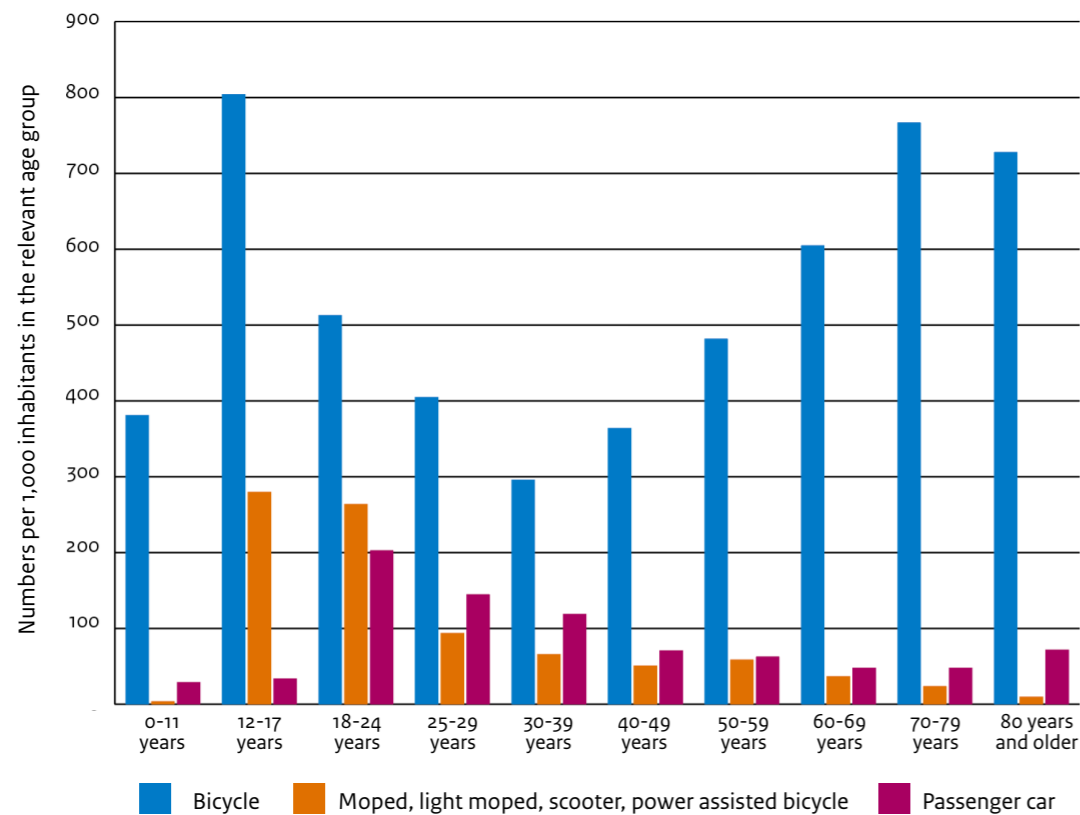
Figure 49: Evolution of the number of road traffic casualties requiring A&E treatment (following serious injury), 2013-2022, adjusted for changes in population composition⁴⁸



Young people and the elderly most likely to need A&E treatment after a road traffic accident involving a bicycle

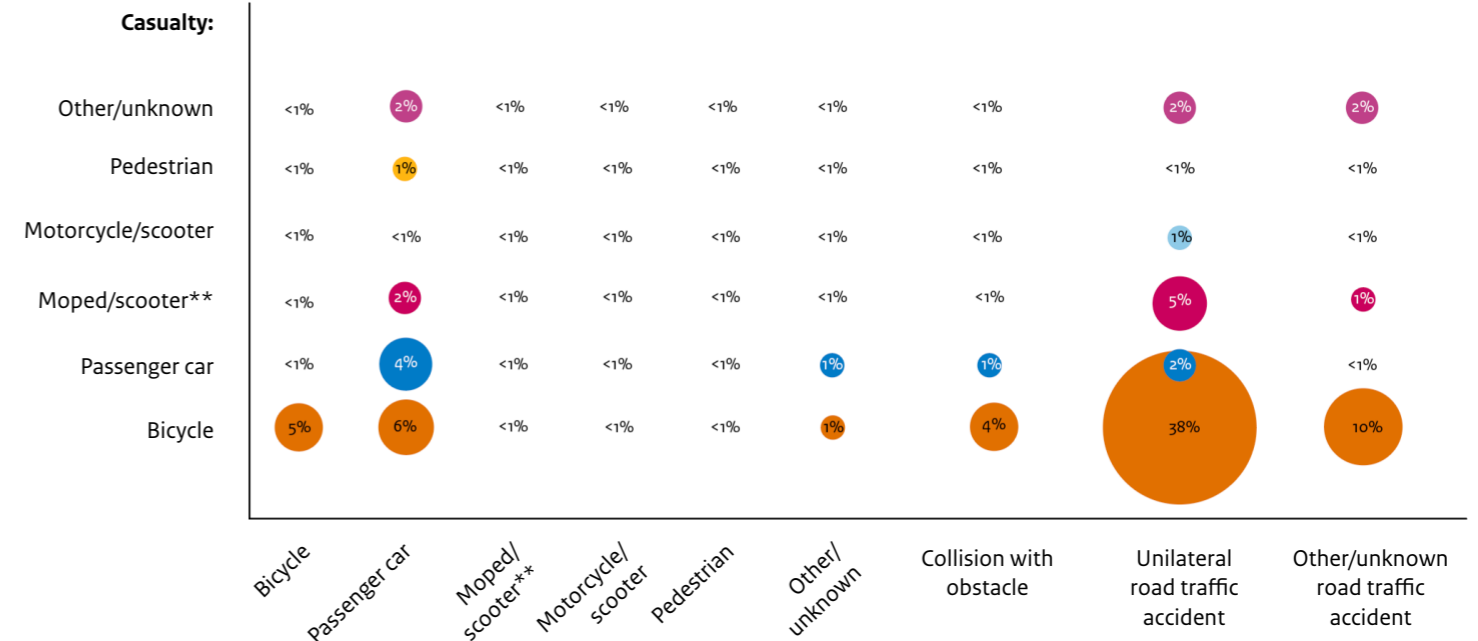
- Relatively speaking, most A&E visits following a cycling accident resulting in injury involve young people in the age groups 12-17 years and 70 years and older (see Figure 50). A&E visits following a cycling accident are the least common in relative terms among 30-39 year olds.
- Most cyclists attending A&E due to an accident resulting in injury are involved in a unilateral accident (where no other vehicle is involved, see Figure 51). Only in 6% of cases does the traffic accident involve a passenger car.

Figure 50: Number of A&E visits following a traffic accident in 2022 per capita; by mode of traffic participation and age⁵¹



⁵¹ VeiligheidNL (2023), based on the LIS injury information system 2022 and population statistics provided by Statistics Netherlands.
⁵² VeiligheidNL (2023), based on the LIS injury information system 2022.

Figure 51: Number of A&E visits following a road traffic accident in 2022; by traffic scenario^{*52}

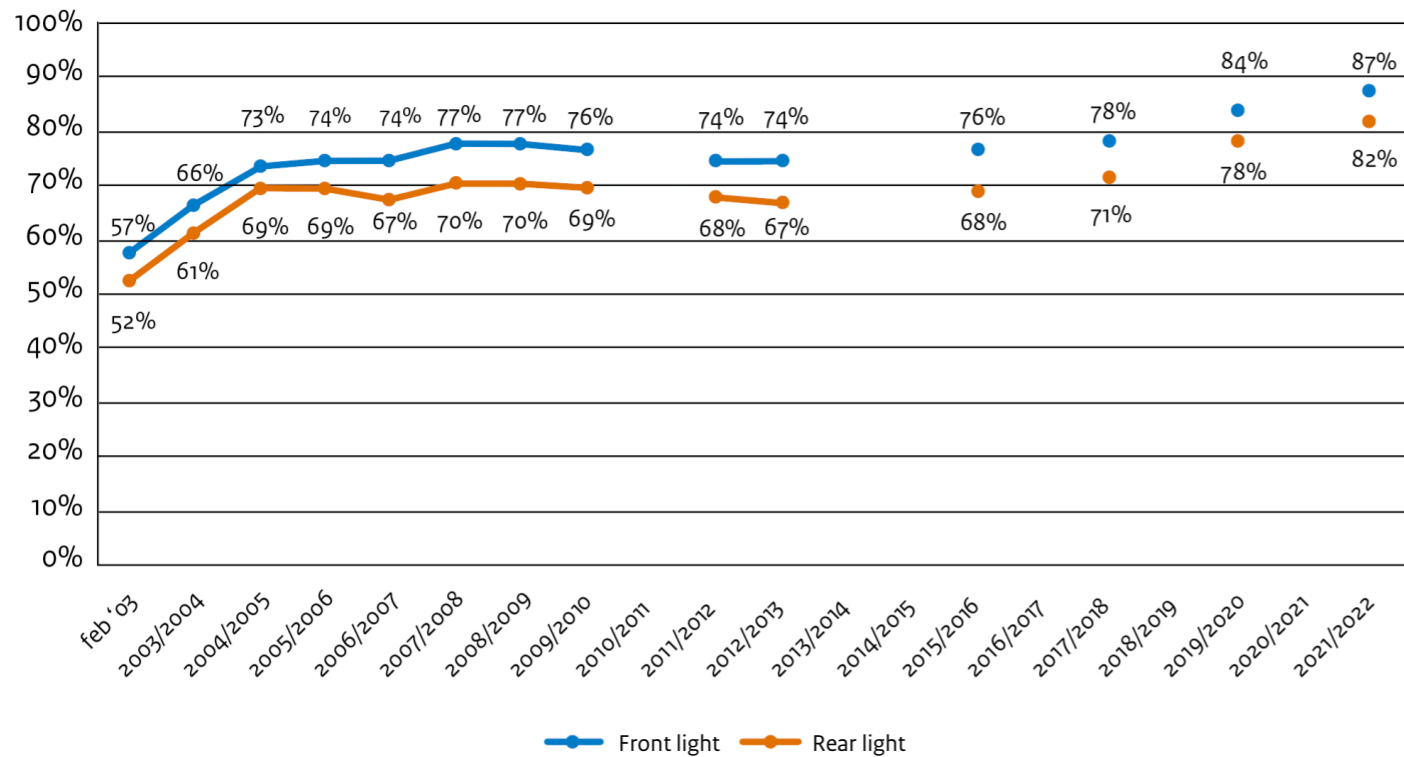


*No percentage is stated in the Figure for percentages <1%.
 **Moped, light moped, scooter, power-assisted bicycle.

Cyclists tend to ride more often with lights

- Since 2003, the percentage of cyclists displaying a front and/or rear light has increased (see Figure 52). In 2021/2022, more than three-quarters (78%) displayed both a front and rear light (not shown in Figure).
- The use of lighting by cyclists correlates with their age. Use of lighting is lowest among young people (<18 years); 67% of this group displayed both a front and rear light in 2021/2022. Lighting use is highest among cyclists aged 50 and older (88% in 2021/2022). However, the difference between the age groups has narrowed in recent years.
- E-bike riders are more likely to display a front and rear light (95% in 2021/2022) than cyclists on an ordinary conventional bicycle (74%).

Figure 52: Percentage of cyclists displaying front and/or rear lights ⁵³



⁵³ Rijkswaterstaat Water, Transport and Environment (2022). Lichtvoering fietsers 2021/2022. [\[link\]](#)



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