Ministry of Infrastructure and Water Management

What happened to public transport passengers?

Netherlands Institute for Transport Policy Analysis | KiM

Mathijs de Haas | October, 2023

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Summary

The COVID-19 pandemic changed the behaviour of the Dutch population in many ways. Mobility was one of these changes. Public transport users have experienced more behavioural changes than non-users of public transport, and the number of check-ins to the public transport system in the period from April to December 2022 on weekdays is still about 20% lower than it was in 2019. In general, we can draw five conclusions about the behavioural changes affecting mobility that took place between 2019 and 2022:

1. On average, Dutch people undertake about 6% fewer leisure activities outside the home. For people who prefer to travel by train (-10%) or by bus, tram or metro (-23%), the downturn in leisure activity-related mobility is greater than average.

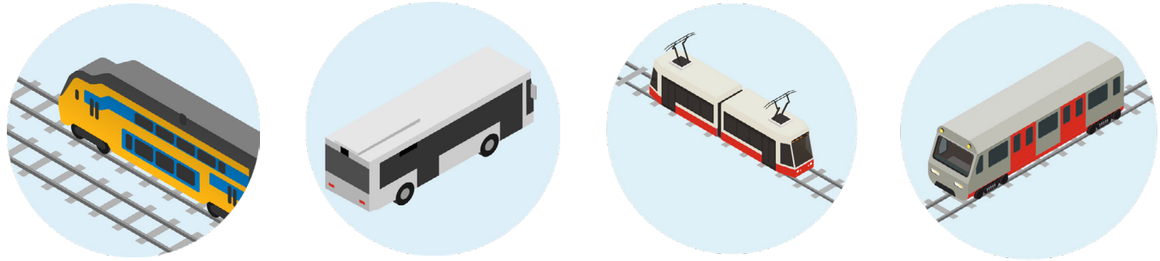
2. Before the pandemic, Dutch people worked an average of 11% of their working hours at home, compared to around 23% by the end of 2022. For public transport commuters, the share of 'working from home' hours actually increased from 15% before the pandemic to 36% by the end of 2022.

3. Online meeting options have reduced the number of business trips. By the end of 2022, workers undertook about 21% fewer business trips than before the pandemic. Among public transport commuters, the decrease is 55%. However, workers do expect to make more business trips in the longer term. On average, they expect to make about 17% fewer business trips than before the pandemic. Public transport commuters expect to make about 44% fewer business trips.

4. Among public transport commuters, the share of working from home increased relatively sharply and the number of business trips saw a sharp decline; the number of workers choosing to commute by public transport also fell. In relative terms, about 9% fewer workers take the train to work, while 31% fewer workers travel by bus, tram or metro. We should note here that the decline in bus, tram and metro use, in particular, has a relatively high degree of uncertainty due to limited response numbers.

5. The number of people who prefer to travel to their leisure activities by public transport has decreased. Among people who preferred public transport in 2019, there was a decrease in the preference for public transport from 49% to 75% for the various activities. A much smaller proportion of people developed a preference for travel by public transport between 2019 and 2021. Overall, the proportion of people who preferred public transport for various activities in 2021 was 10% to 38% lower than in 2019.
No information is available about people's preferences for 2022.

It is plausible that these behavioural changes are largely structural in nature, given that travellers have not been hindered from undertaking their activities by corona measures for a considerable length of time. The opportunities to convince travellers to use public transport more often also appear limited. However, there are factors other than the COVID-19 pandemic underlying these behavioural changes, including high inflation and reduced timetables. For example, we could expect some passengers to return if timetables were increased.



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1 Developments in public transport use and supply

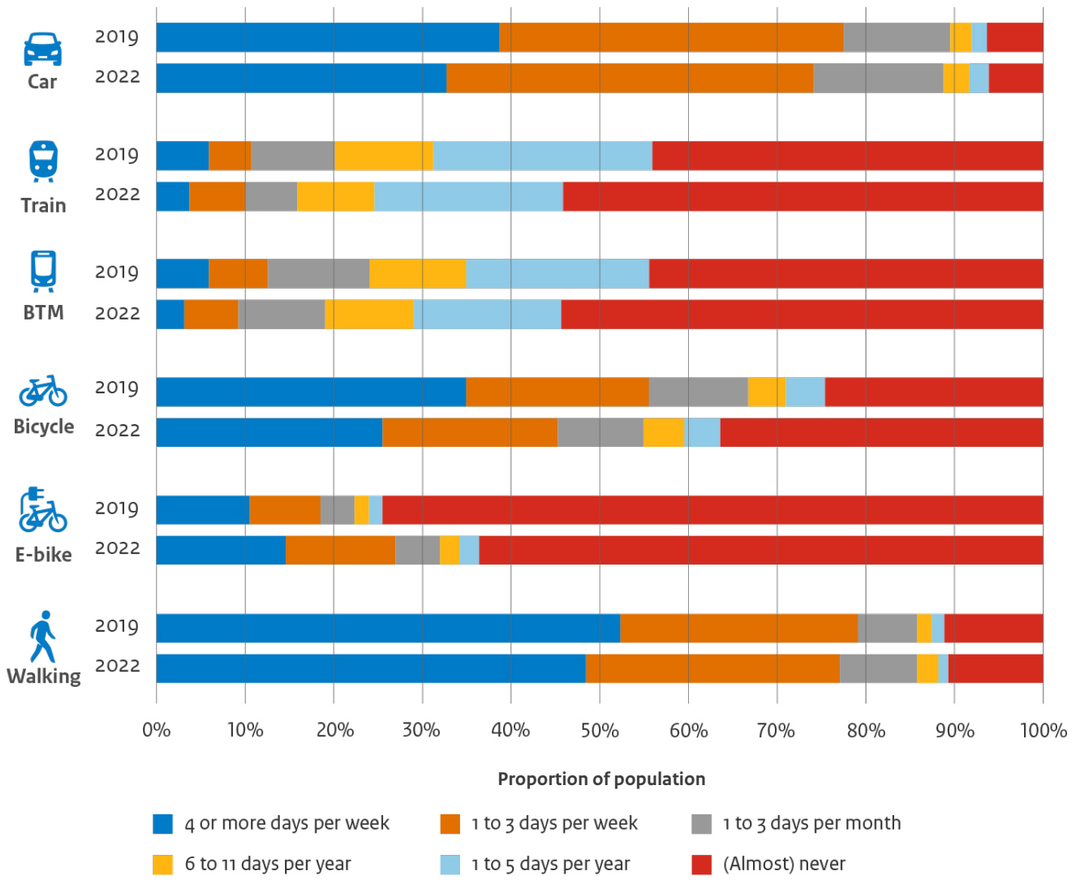
Rationale for the study

Since the start of the COVID-19 pandemic, Dutch people have been using public transport less than before. After the last containment measures were lifted in mid-March 2022, public transport use is recovering somewhat, but the recovery is lower than for other modes of transport. The Netherlands Institute for Transport Policy Analysis (KiM) has examined explanations for this in order to discover whether we can expect passengers to return to public transport.

22% less train use, 31% less bus, tram and metro

We worked with the Netherlands Mobility Panel (MPN) to study changes in travel behaviour between 2019 and 2022. The study examined the changes within a consistent group of respondents. Developments such as population growth are therefore not reflected in the results. Changes in public transport use in particular were found to be relatively large. For example, the group that never or almost never travels by public transport has grown from about 45% in 2019 to 55% in 2022. The number of people who use public transport on four or more days a week has also fallen relatively sharply. This therefore puts the frequency with which people use the train or use bus, tram and metro (BTM) 22% and 31% lower than before the pandemic, respectively. The passenger study conducted by train operator NS in November 2022 shows a similar decrease (21%) in train use.

Modes of transport and frequency of use in 2019 and 2022 (source: MPN)



More frequent changes in public transport use among the highly educated and people with high incomes

Various background characteristics explain the changes in public transport use. For example, changes in the use of trains and BTM are more common among the highly educated and people with high incomes. It is striking that public transport use has both increased frequently and decreased frequently among these groups. From this, we can conclude that the lower skilled and people with lower incomes have modified their public transport use less between 2019 and 2022. A decrease in train and BTM use is more prominent among people who completed a programme of study between 2019 and 2022, public transport commuters who started working from home more often during this period, and people who bought a car between 2019 and 2022. We will discuss the effects of working from home (chapter 2) and buying a car (*chapter 4*) in more detail later in this brochure.

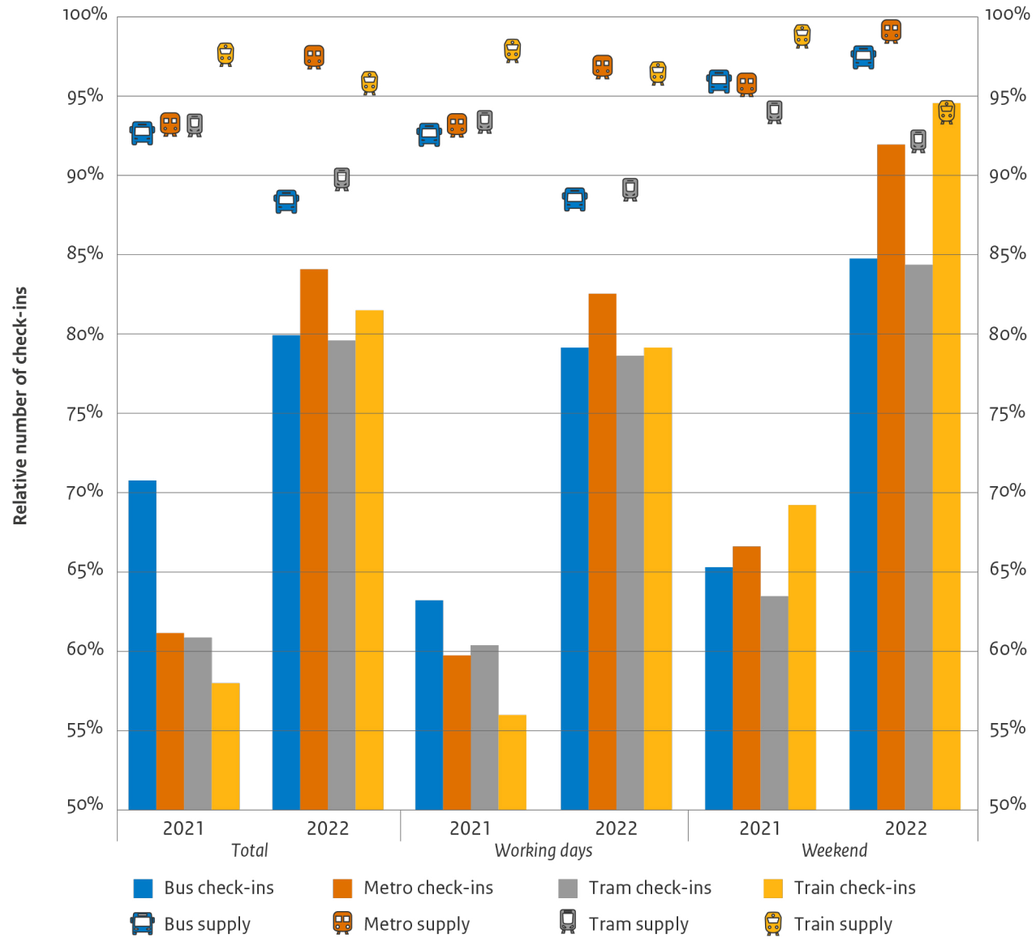
Developments in supply and use are mixed

The extent to which public transport use has recovered since the COVID-19 measures were lifted paints a mixed picture. There are differences between the various modes of public transport and also between regions, days of the week and user groups. While train use during the pandemic was relatively lower than that of BTM compared to the preceding period, train use has recovered more strongly than BTM use since the lifting of all containment measures.

In the period from April to December 2022, the number of check-ins on weekdays for trains, buses and trams was still about 20% lower than in 2019, while metro check-ins were about 17% lower. On weekends, the number of check-ins recovered more strongly. For trains, numbers were still about 5% lower in the same period on weekends than in 2019. For BTM, the number of check-ins on weekends was also significantly closer to levels before the pandemic than on weekdays.

In contrast to public transport use, public transport supply remained much closer to 2019 levels throughout the pandemic and after the lifting of all measures. The fact that supply remained so high is due – in part at least – to government subsidies ('*beschikbaarheidsvergoeding OV*'). These subsidy arrangements saw the state reimburse public transport operators for 93-95% of their costs to continue operating a full timetable. In addition, regional and local grantors of concessions continued to provide the usual subsidies to operators, despite a reduction in supply.

Number of check-ins and supply (in timetable hours) in the period from April to December in 2021 and 2022 relative to 2019 by mode of transport (*Source: Translink (check-ins) and GTFS data processed by Hypercube (supply)*)



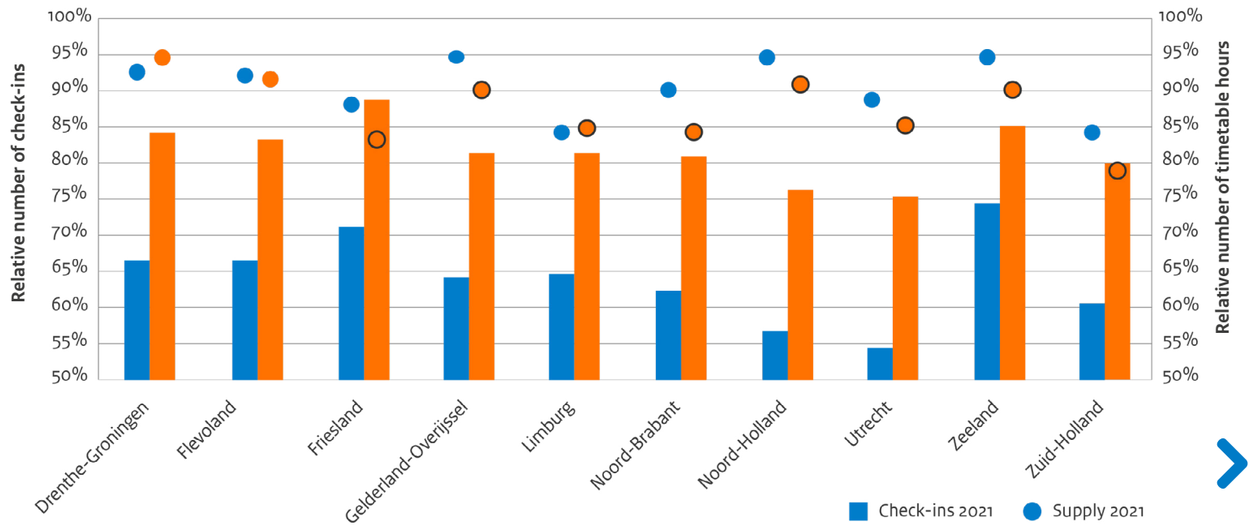
No clear relationship between developments in supply and use

Although it is known that the public transport supply influences demand, the available data does not support this correlation in our assessment. For example, in regions where supply fell relatively sharply, this is not universally reflected in use, and vice versa. An important caveat is that there are large variances in the development of supply and demand within the regions. Within a single region, supply may have been reduced on certain lines or routes, while it remained level or increased on other lines or routes. The fact that the interaction between use and supply is not reflected in our data likely relates to the level of aggregation of the data on public transport use we have access to.

Other factors also influence developments in the supply of public transport

Apart from operators having to deal with reduced demand, other factors also have a major influence on supply. For example, in addition to staff shortages, which was certainly a factor in late 2022, absenteeism among drivers was running relatively high. As a result, operators were forced to cut timetables even when demand for public transport was still strong.

Number of check-ins and supply (timetable hours) in the period from April to December 2021 and 2022 compared to 2019 by province *(Source: Translink (check-ins) and GTFS data processed by Hypercube (supply)) (some provinces have been merged due to concession changes in these provinces between 2019 and 2022*



2 Changed activity patterns

Fewer leisure activities

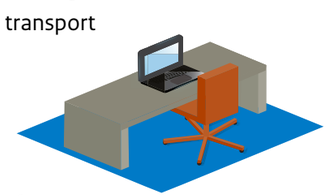
In the autumn of 2022, people undertook fewer leisure activities outside the home than they did in the autumn of 2019. This is especially true for the frequency with which they went shopping (-17%), played sports (-12%), did volunteer work (-10%) or took a day trip (-9%). In contrast, other activities, such as picking up items bought online from a collection point (+15%) or going out for food and drinks (+7%) saw an increase. Overall, the Dutch undertook about 6% fewer activities.

Particularly people who preferred to travel to various activities either by train or by BTM before the pandemic went out less often in their leisure time. For people who prefer travelling by train, the average decrease was 10%, and for people who prefer BTM, the decrease was even greater at 23%. We should stress here that this concerns a preference. People who prefer to use public transport will not always use this mode of transport, but it is likely that they will do this more often than people with other preferences. The decrease in the number of leisure activities is therefore expected to be greater for public transport than for other modes of transport.

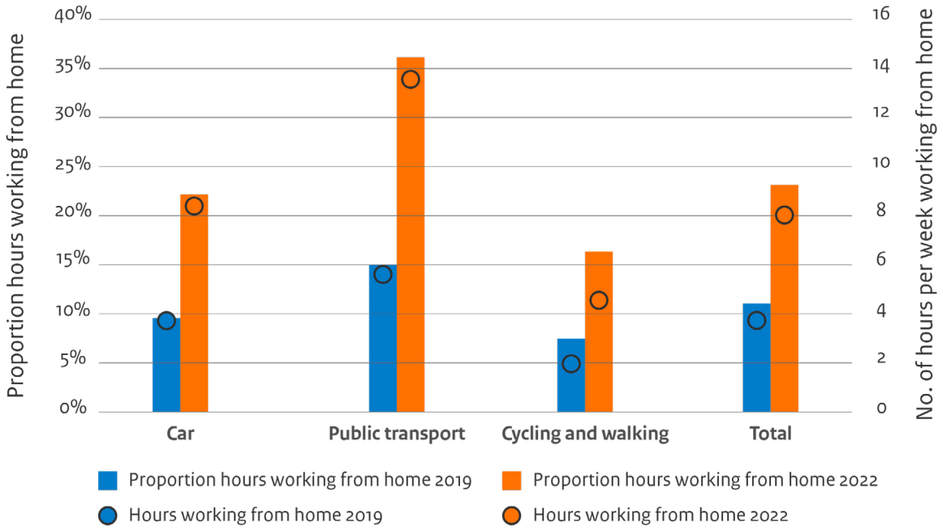
Relative changes in leisure activities outside the home between 2019 and 2022 by preference for train or BTM *(Source: MPN)*

More working from home, less spread across the week

Among public transport commuters, both the extent to which they work from home and the increase in working from home since the pandemic was higher than among other workers. Before the pandemic, Dutch people worked 11% of their working hours from home on average. Car commuters worked about 10% of their working hours from home, while public transport commuters worked about 15% of the time from home. By the end of 2022, the Dutch worked just under one-quarter (23%) of their working hours from home, with public transport commuters being significantly more likely to do so (36%). Because they work from home more often, the Dutch spend fewer days of the week commuting. Tuesday and Thursday stand out as the most popular days for working in the office (not shown in the chart). This pattern is stronger among public transport commuters than among workers using some other mode of transport for their commute. Even among those who drive or cycle to work, Tuesday and Thursday are the most popular days to work in the office, although the differences with the other days are less pronounced than they are for public transport commuters.



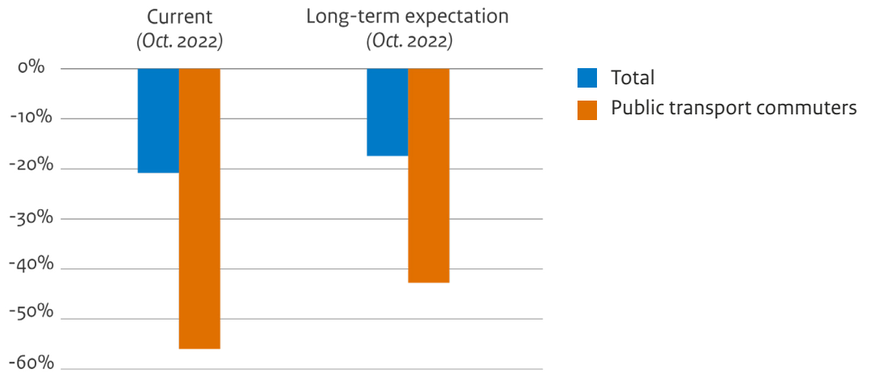
Proportion of working hours and number of working hours that Dutch people work from home, by mode of transport for their commute *(Source: MPN)*



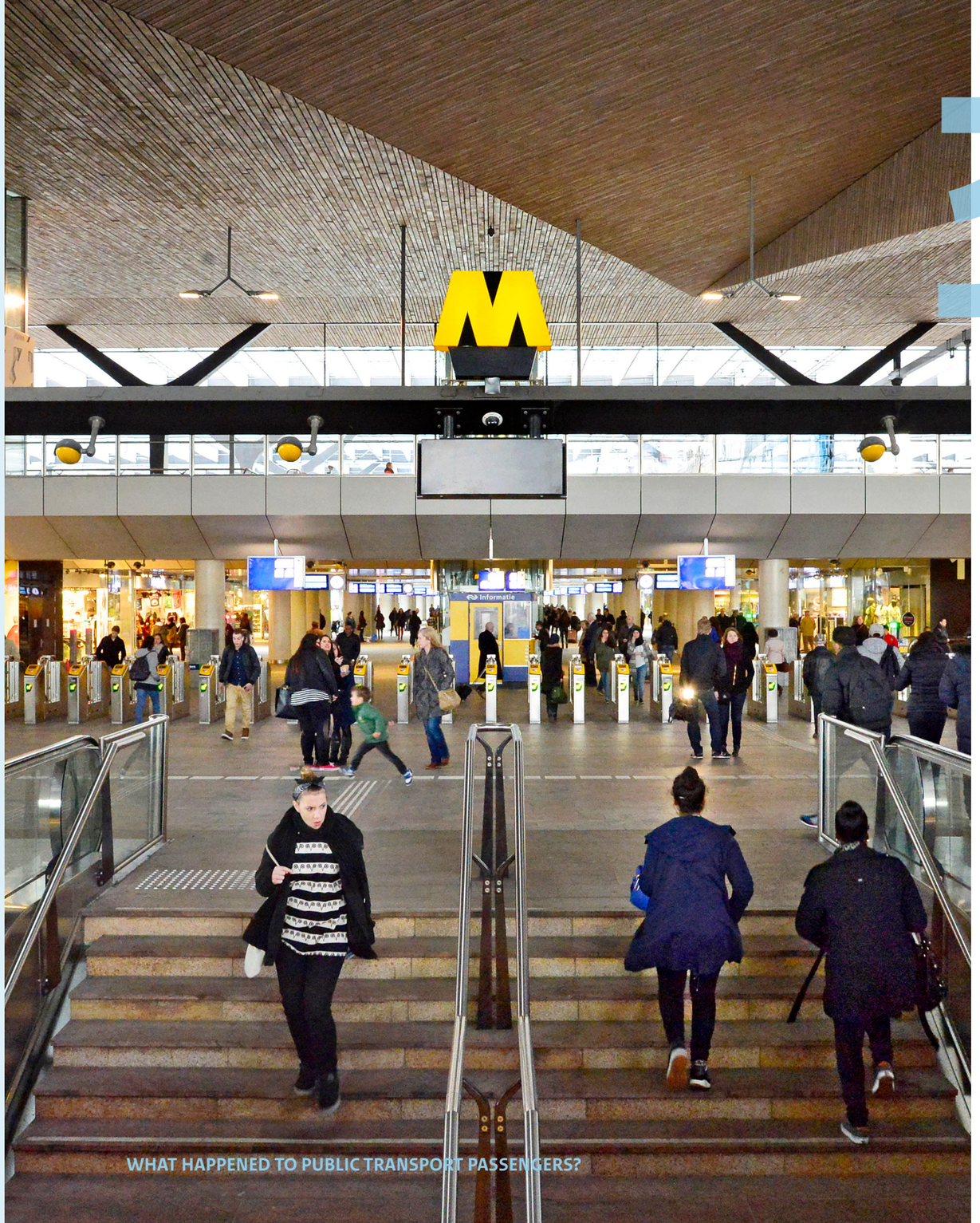
Sharp decline in business travel

A swing from physical to online meetings can also be observed, related to the increase in working from home. This swing is greater among public transport commuters than among other workers. As a result, the decrease in business travel is also much greater among public transport commuters. In October 2022, employees expected to make slightly more business trips in the longer term. Although, in the longer term, this would still amount to an average of 17% fewer business trips than before the pandemic. For public transport commuters, this decrease is much greater at 44%.

Relative decrease in the number of business trips in 2022 compared to 2019 for all workers and for public transport commuters *(Source: MPN)*



WHAT HAPPENED TO PUBLIC TRANSPORT PASSENGERS?

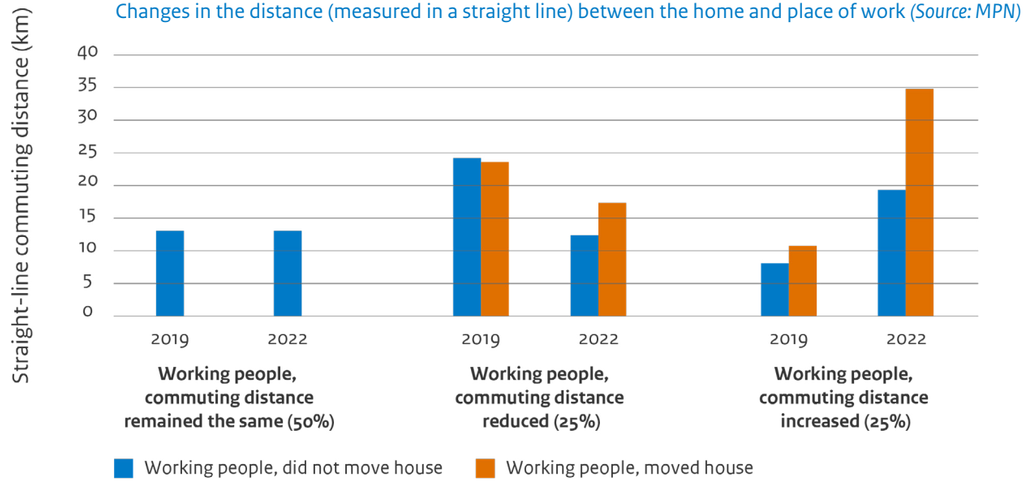


3 Changed locations of activities

Increase in distance of the commute

For about one-quarter of the workers in our sample, the average distance of the commute fell between 2019 and 2022, but increased for another quarter. Because the increase in commuting distance is greater than the distance decrease, the average commuting distance between 2019 and 2022 actually increased slightly. The increase in distance is the greatest in the case of workers moving house (and not due to a change of job or relocation of the employer).

Changes in the distance (measured in a straight line) between the home and place of work *(Source: MPN)*



Workers who moved house, resulting in a greater commuting distance, are more likely to work from home. We cannot say whether people who moved further away from their place of work did so because of the opportunity to work from home. Although people working from home go to the office less often, the distance they travel on the days they go to the office is slightly longer than before the pandemic.

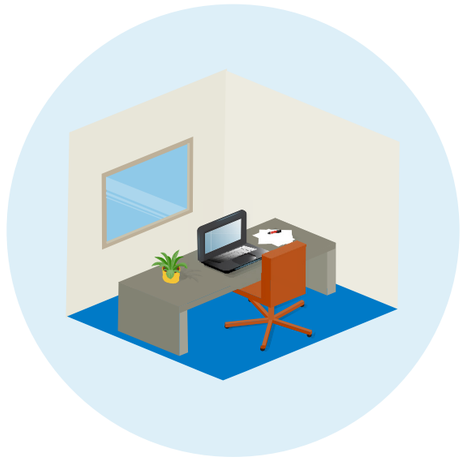
Due to limited response numbers, we cannot break these developments down further to examine modes of transport. However, the national passenger survey ('Landelijk Reizigerson-derzoek', 'LRO') shows that public transport commuters have moved house or changed their place of work more often than those who drive or cycle to work. The biggest increase in average commuting distance was for public transport commuters.

Changes in the locations of other activities difficult to pinpoint

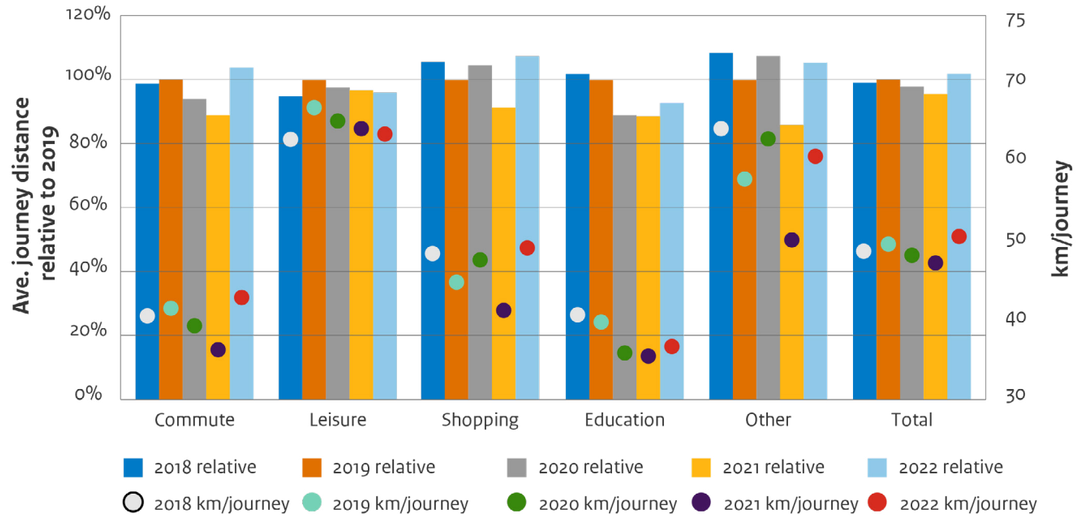
For activities other than work, it is difficult to pinpoint whether they take place closer to home or further away. This is because it was not specifically addressed in the MPN survey. Changes in the average travel distance may offer some indication, but other factors may also be at play here. For example, if someone chooses to use the bicycle or e-bike for short trips that he or she previously made by public transport, this will result in distances travelled using public transport being higher even though the locations visited will not have changed.

Based on the Dutch National Travel Survey (ODiN), no particularly clear patterns can be observed in the average travel distance by train. The average distances travelled vary from year to year, but small fluctuations can even be seen before the pandemic, between 2018 and 2019. However, travel by train for school or study seems to involve shorter distances since the start of the pandemic. Unfortunately, we cannot say whether students and pupils set out to look for a place of learning closer to home in recent years, or whether this development relates to remote learning options that became available.

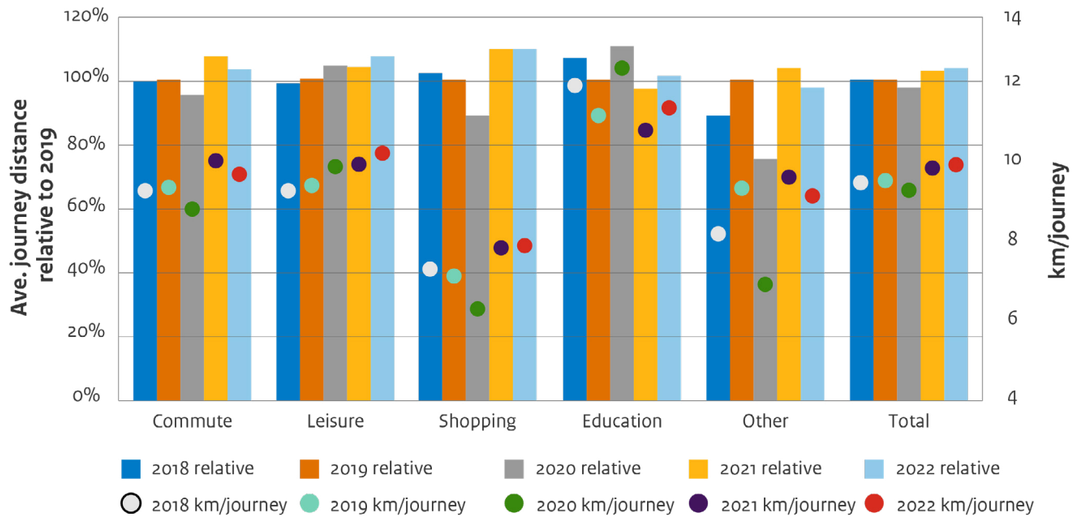
In 2022, the average distance travelled by BTM users for reasons of leisure and shopping was slightly higher than before the pandemic. We cannot make any judgement on whether people actually set about undertaking activities further away from home, or whether there has been a swing towards other modes of transport (bicycle, walking). For other travel reasons, the average distances travelled in 2022 are at about the same level as before the pandemic.



Evolution of average train journey distance, relative (2019 = 100) and absolute *(Source: ODiN)*



Average distance travelled for BTM journeys, relative (2019 = 100) and absolute *(Source: ODiN)*



4 Other modes of transport

Fewer workers using public transport

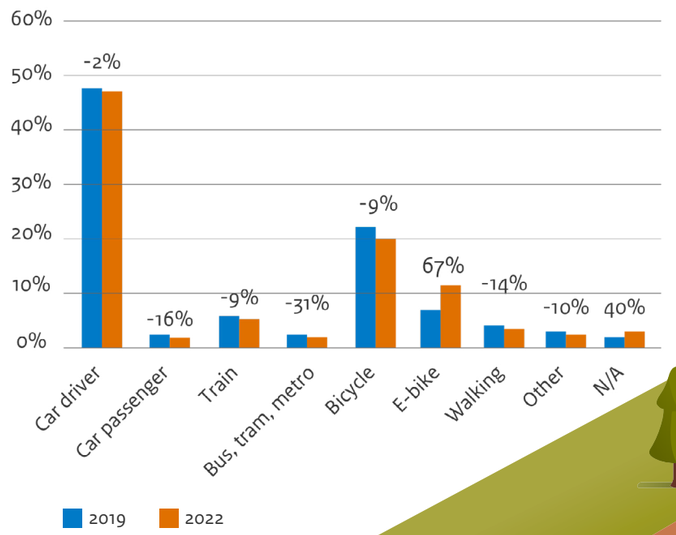
Workers made fewer trips for their commute to work because of the option to work from home, but some of these also used a different mode of transport for their commute in 2022 compared to 2019. The proportion of workers who travel to work using a particular mode of transport has fallen for almost all modes of transport. Only the proportion of workers who travel to work by e-bike increased. The proportion of people who do not travel for work at all also increased (for example, because they work from home all the time).

The shares of train and BTM in commuter travel have declined relatively sharply. In 2022, the share of car drivers fell by about 2%, while the share of train fell by 9% and BTM by about 31% in relative terms. The total proportion of bicycle (pedal bicycle and e-bike combined) increased by about 9%.

In a period of equal length before the COVID-19 pandemic, the changes were much less pronounced, especially for public transport. In that period, the proportion of train use increased by about 3% in relative terms, while the proportion of BTM fell by about 5%.

It should be noted here that developments for modes of transport with a small share (such as public transport) have a relatively high degree of uncertainty because the information is based on a limited number of respondents. However, the LRO national passenger survey, which has more respondents, points to a similar trend. The LRO also showed that fewer workers travel to and from their place of work by train or BTM.

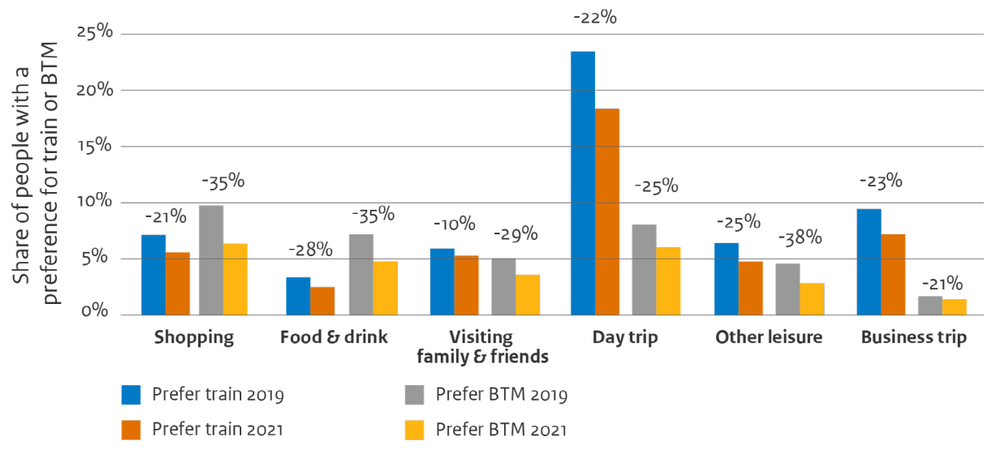
Mode of transport used most often for commuting to and from work. The percentages above the bars show the relative change in share between 2019 and 2022 *(Source: MPN)*

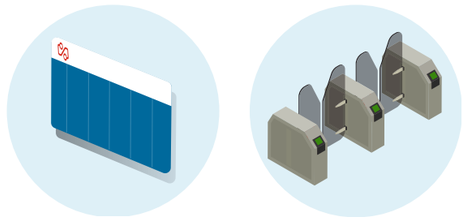


Fewer people prefer public transport for a variety of activities

The proportion of people who prefer public transport for their travel to various activities (shopping, eating and drinking, visiting family and friends, day trips, other leisure activities and business trips) decreased between 2019 and 2021. Within the group of people who preferred public transport in 2019, the decrease in their preference for public transport varies in relative terms between 49% and 75%. A much smaller proportion of people developed a preference for travel by public transport between 2019 and 2021. Overall, the proportion of people who prefer public transport for the various activities is 10% to 38% lower. Because we only have information for the period up to and including 2021, we cannot say whether the stated preferences have recovered somewhat since the lifting of all containment measures.

Proportion of people who prefer to travel by train or BTM for various activities. The percentages above the bars show the relative change in share between 2019 and 2021 *(Source: MPN)*



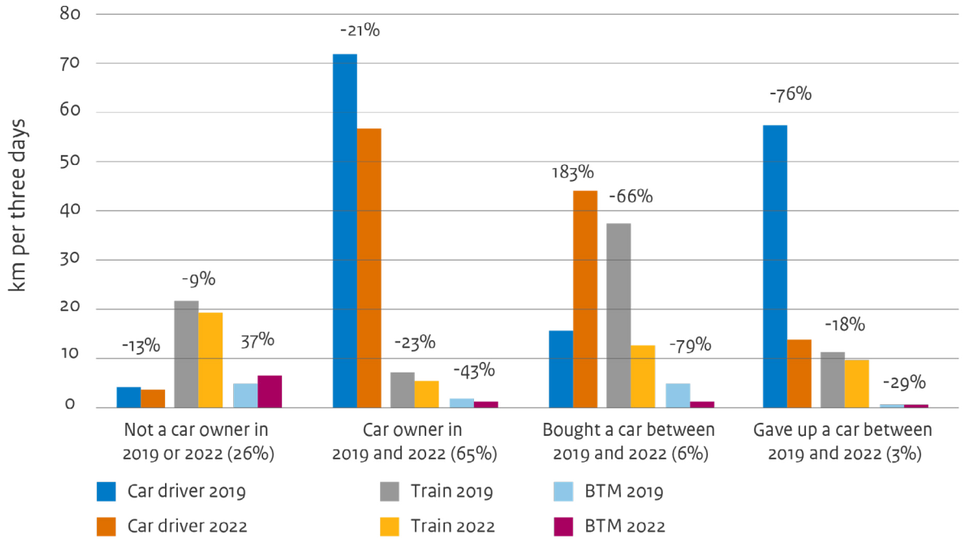


Strong decrease in public transport use after buying a car

About 6% of our sample bought a car between 2019 and 2022, while about 3% gave up their car in the same period. As a result, car ownership increased on balance from about 68% to about 71%. This increase is comparable to period of equal length before the pandemic. For example, between 2016 and 2019, 6% of the sample also bought a car, while about 2% gave up their car. However, buying a car during the pandemic had a much more pronounced effect on public transport use.

The group that bought a car between 2019 and 2022 often travelled by public transport in 2019. One-quarter (25%) used the train four or more days a week, while about 22% used BTM at the same frequency. After buying the car, train use among this group decreased by about 66% and BTM use by almost 80%. By comparison, of the group that bought a car between 2016 and 2019, a much smaller proportion used public transport on four or more days a week (12% for the train, 13% for BTM), and the decrease in public transport use was much less pronounced: 44% for the train and 54% for BTM, respectively.

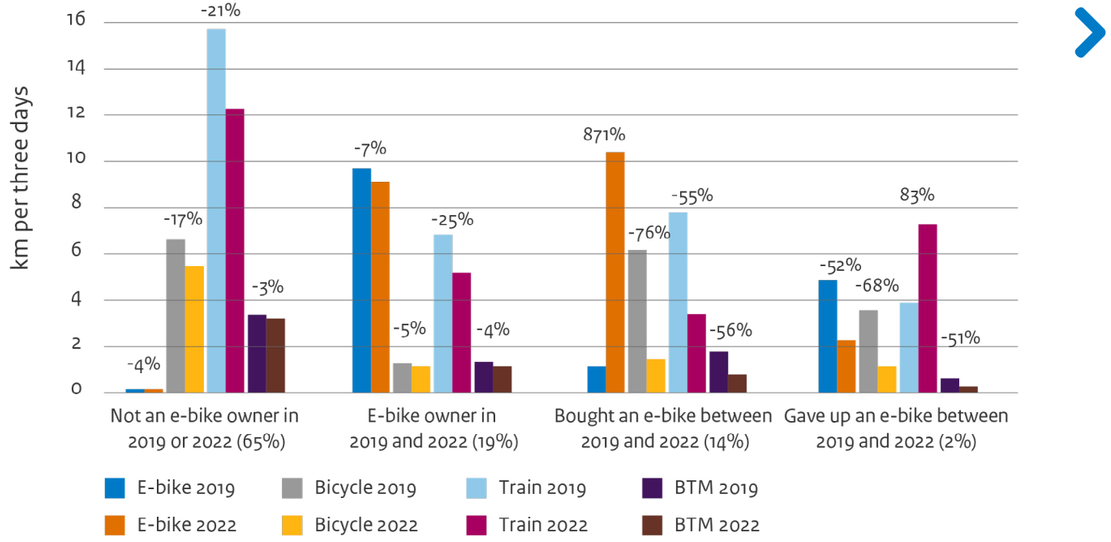
Distance travelled by car, train and BTM by car ownership in 2019 and 2022. The percentages above the bars show the relative change in distance travelled between 2019 and 2022 *(source: MPN)*



Buying an e-bike also leads to reduced public transport use, but the effect is less pronounced

About 14% of people bought an e-bike during the pandemic, while 2% gave it up. Between 2016 and 2019, the percentages stood at 10% and 2%, respectively. People who bought an e-bike during the pandemic reduced their public transport use. Train use among this group decreased by about 55% and BTM use by 56%. This decrease is therefore slightly less pronounced than after buying a car. Furthermore, public transport use for the group that bought an e-bike was about four times lower before the purchase than for the group that bought a car.

Distance travelled by e-bike, bicycle, train and BTM by e-bike ownership in 2019 and 2022. The percentages above the bars show the relative change in distance travelled between 2019 and 2022 *(source: MPN)*



5 Implications

Our study shows that the mobility behaviour of the Dutch population has changed since the COVID-19 pandemic. Furthermore, certain changes in behaviour have been found to have a more pronounced effect on public transport use than on the use of other modes of transport. It is plausible that the behavioural changes are to a large extent structural in nature because the COVID-19 containment measures have been lifted for some time now. This does not mean that overall public transport use will no longer increase. Other developments also have an impact, such as population growth and timetables. For example, we could expect some passengers to return if timetables were increased.

Scope to influence public transport use appears limited

It seems likely that the scope to convince travellers to use public transport more frequently is limited. This is true both when their travel has become less frequent and when they have chosen other modes of transport. For example, working from home and online meetings seem to have stabilised at a level that is structurally higher than before the pandemic, and this has an enduring impact on public transport use (and, to a lesser extent, on other modes of transport). Even for people who bought a car or e-bike during the pandemic, it does not seem likely that they can easily be convinced to travel by public transport more frequently. Buying your own mobility asset is a long-term investment, and we can therefore expect that people will use and continue to use it once they have the convenience of it.

Effects of discounts and trial promotions likely to be temporary and limited

It is by no means certain that people who now undertake fewer leisure activities can be induced by policy measures to use public transport more often. This would mean they would first have to be encouraged to undertake more activities generally. Many operators are currently offering various discounts or trial promotions to encourage travellers to come back to public transport. In a previous study, KiM concluded that lower prices primarily lead to more public transport use because people make more trips. However, the conclusion also stated that a temporary price decrease would likely only lead to a temporary increase in public transport use.

For the group of people who are now choosing some other mode of transport for specific activities, we can expect promotional discounts to have only a limited effect. It is possible, of course, that some passengers may rediscover their preference for public transport for a specific activity after being induced by a promotion. However, the aforementioned KiM study also found that lowering the price of public transport in isolation only resulted in a limited swing towards public transport. Furthermore, it is essential that people have a good experience with public transport. Some passengers currently tell us that they use public transport less due to reduced timetables and cancellations.

Implications for KiM's medium-term forecasts

The results of this study have implications for the medium-term forecasts of public transport use that KiM publishes yearly. In the forecasts made in 2022, we already factored in structural behavioural changes as a result of the COVID-19 pandemic and decreased timetables. Nevertheless, our estimates for 2022 proved to be on the high side (especially for BTM). The estimates we made for 2023 seem to be on the high side again, although we do not yet have enough data about actual use in the current year to date to offer a detailed assessment.
The results of this study justify a revision of structural effects on travel behaviour in future estimates. For example, the effect assumed in 2022 that working from home would have on commuting seems plausible, but the assumed effect on the number of business trips now appears too low. Furthermore, we only partly took changes in the choice of mode of transport for commuting into account.

Accountability

Method

This study relies on various data sources. We studied developments in public transport use based on check-ins registered by Translink. We examined developments on the supply side based on publicly available timetable information (GTFS data), processed and supplied by Hypercube.

To study changes in the behaviour of travellers, we primarily used information from the Netherlands Mobility Panel (MPN). Our base is a consistent sample of respondents who already participated in MPN before the pandemic.

Literature citations, the description of methods used and limitations in the analyses are described in the background report accompanying this brochure.

Background report

For more information about the method and results, please refer to the Dutch background report, which can be downloaded from the website: www.kimnet.nl

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