



Gemeente Amsterdam



30 km/h in Amsterdam

Research report

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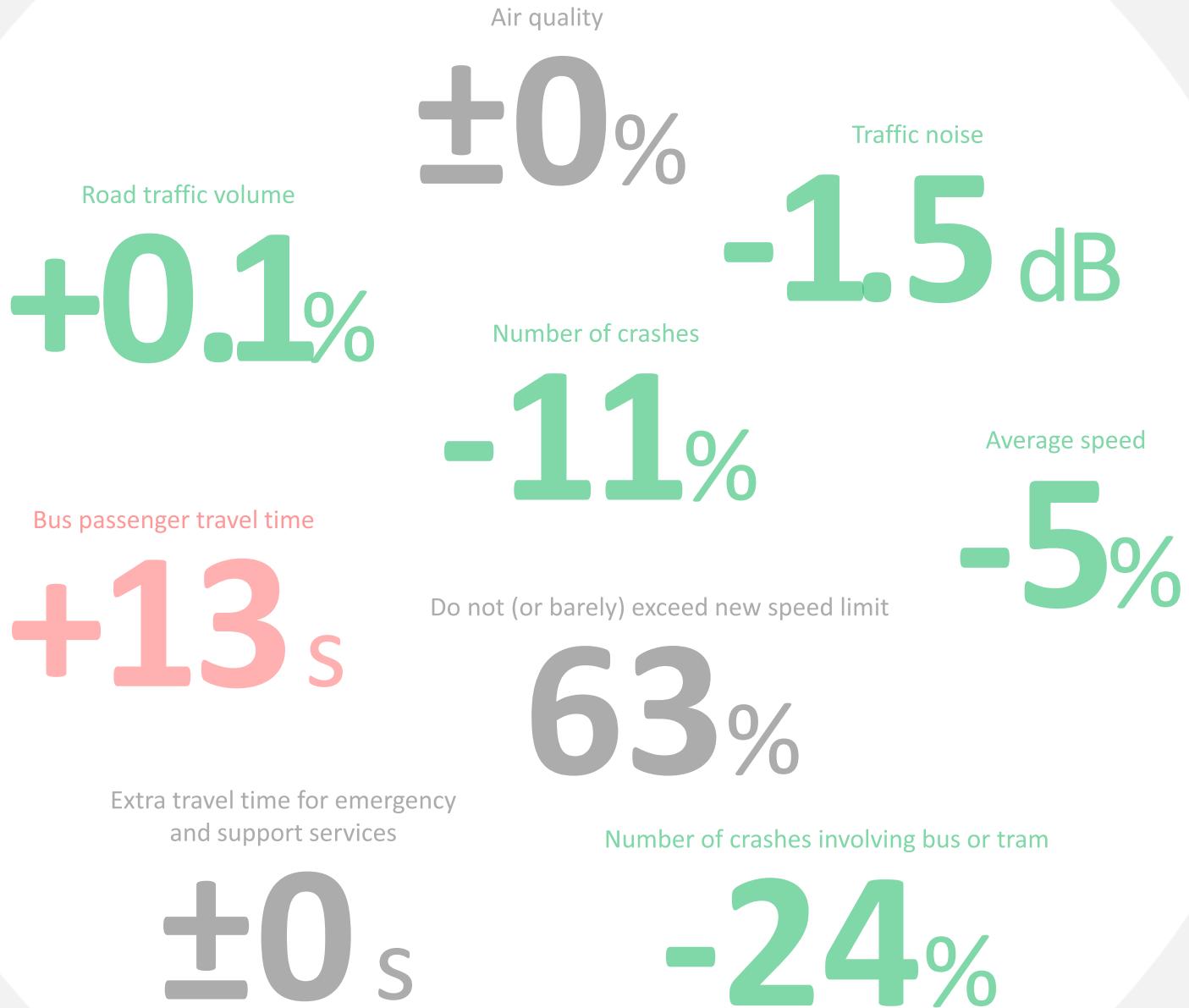
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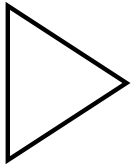
City of Amsterdam
Mobility and Public Space

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Edwin van Eis and others



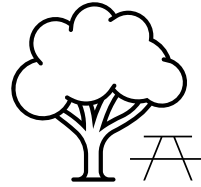
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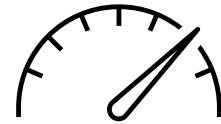
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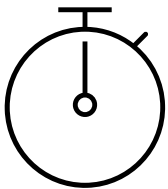
Road safety



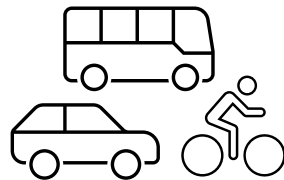
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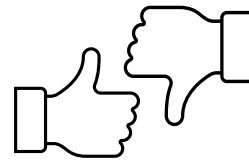
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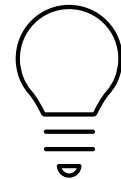
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Introduction

Background and purpose

In December 2023, the City of Amsterdam introduced a 30 km/h speed limit on its roads. The speed limit was lowered from 50 to 30 km/h on a large number of distributor roads, which were designated as 'GOW30' roads. These roads have a relatively high volume of traffic, but residential functions are given more emphasis. In total, approximately 4,500 road signs were installed and 140 traffic lights were reconfigured. In the autumn of 2024, over 200 kilometres of road markings were changed. The aim of a lower speed limit ties in with the broader objectives to ensure safety, quality of life and accessibility in and around the city.

Topics evaluated

The effects of the speed limit were monitored and compared with the situation beforehand, focusing on six topics:

1. Road safety
2. Quality of life
3. Speeds
4. Travel times
5. Traffic volume
6. Support base for limit

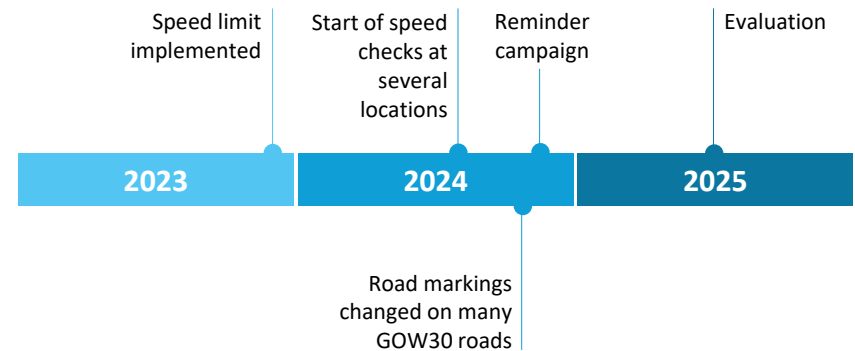
Approach

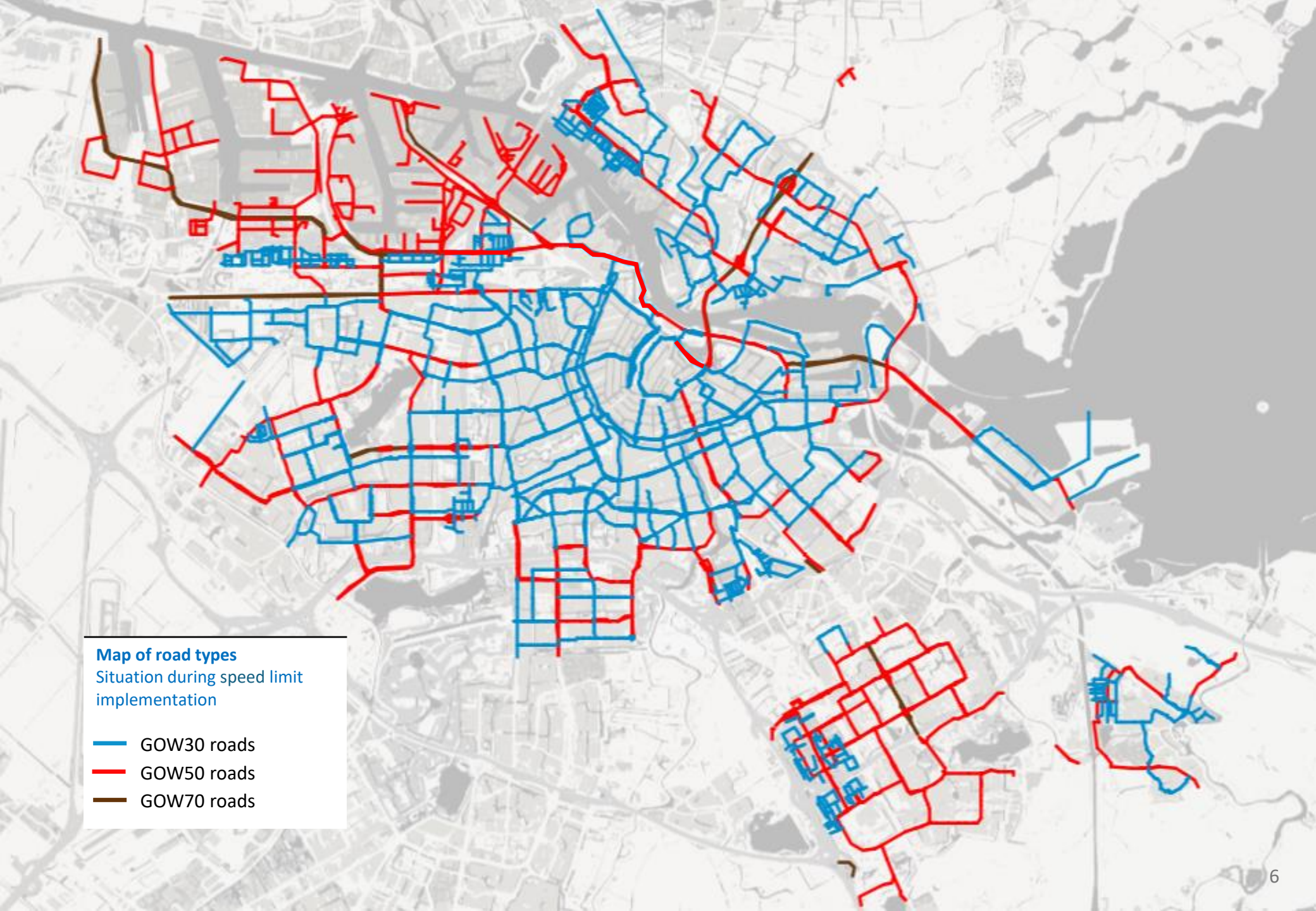
This evaluation was commissioned by the City Council of Amsterdam. Various municipal and non-municipal stakeholders took part in the

research, including GVB (Amsterdam public transport operator), DAT Mobility, TNO (Netherlands Organisation for Applied Scientific Research), GGD (Public Health Service) and Amsterdam UMC (Medical Research Institute). This research report provides an objective and factual description of the effects of the 30 km/h limit.

Milestones of speed limit implementation




The table below depicts several milestones during the implementation and monitoring of the '30 km/h in the city' limit.





Map of road types

Situation during speed limit implementation

-  GOW30 roads
-  GOW50 roads
-  GOW70 roads

Road safety



Decline in number of crashes on GOW30 roads

One of the speed limit's key objectives is to improve road safety. This appears to have worked, with the number of crashes declining from 926 to 823 (-11%) from 2023 to 2024. This figure relates only to crashes on GOW30 roads involving a motor vehicle*. It does not include crashes involving only cyclists or crashes involving cyclists and pedestrians, as these are not influenced by the speed limit but by external factors.

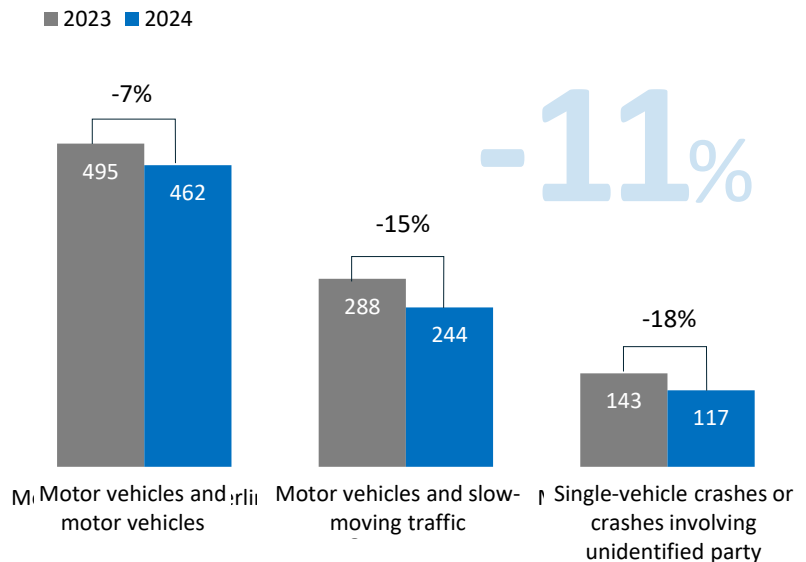
Marked decline in crashes involving slow-moving traffic

The number of crashes on GOW30 roads involving slow-moving traffic (i.e. between a motor vehicle and a pedestrian or a non-electric or electric bicycle) decreased by 15%. This contrasts with a large increase in the number of (singular) crashes involving just non-electric or electric bicycles (+50%) on GOW30 roads, which may be explained in part by the increased traffic (+9%) and speeds on bicycle lanes (see [traffic volume](#) for more information).

There was also a significant drop (-18%) in the number of single-vehicle crashes (i.e. involving just one vehicle), which also includes crashes involving an unidentified party. The number of crashes involving only motor vehicles decreased by 7%.

Decrease in crashes involving motor vehicles on GOW30 roads

Figures relate to crashes involving a motor vehicle* on a GOW30 road.



Decline in number of crashes on GOW50

It is worth noting that the number of crashes involving a motor vehicle also declined on roads on which the 50 km/h speed limit remained in place (-11% compared with 2023). This may be due to the fact that road users also reduced their speed on these roads (see [speeds](#)).

* A 'motor vehicle' means all vehicles that use the carriageway or public transport lane: private cars, delivery vans, lorries, agricultural vehicles, mopeds, trams and buses. Source: police records (VIA). The figures for 2023 relate to crashes that occurred between December 2022 to November 2023 inclusive. The figures for 2024 are from January and December inclusive.

Road safety

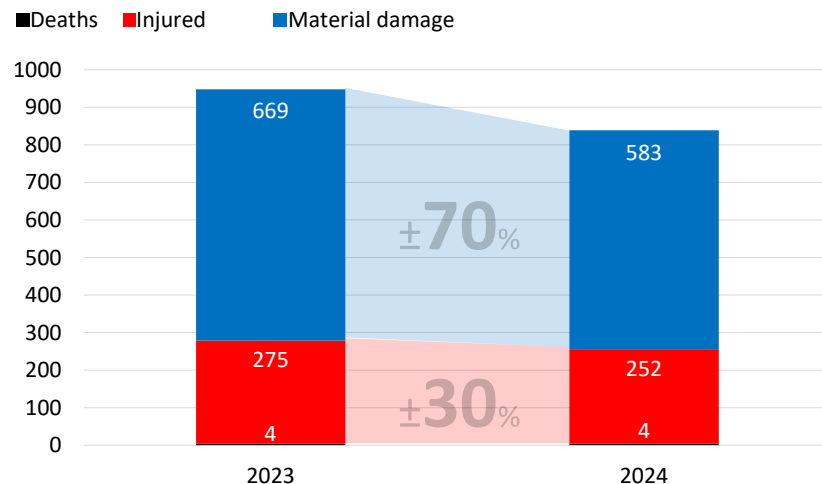


Few differences in consequences of crashes on GOW30

This research also looked at the consequences of crashes and found few changes. Around three out of ten crashes resulted in personal injury; the rest involved only material damage. The number of deaths due to crashes involving a motor vehicle on GOW30 roads remained the same (four in 2023 and 2024). The number of injuries on these roads declined from 275 to 252 (-8%) from 2023 to 2024.

Consequences of crashes more or less unchanged

Figures relate to crashes involving a motor vehicle* on GOW30 roads.



It is worth noting that the gravity of the personal injuries sustained is unknown, meaning it is impossible to establish whether lower speeds resulted in less serious injuries. However, we expect this to be the case.

Decrease in number of crashes involving public transport

Dual speed limits apply on large sections of roads where the public transport lane is separated from the GOW30 roads. In practice, this means that traffic in this lane may continue to travel at 50 km/h while traffic on the adjacent carriageway is limited to 30 km/h. On GOW30 roads that do not have separate public transport lanes, trams and buses share the road with other traffic and are limited to 30 km/h. Figures show that the number of crashes involving a tram or bus on and along GOW30 roads declined from 58 to 44 (-24%) from 2023* to 2024. The dual speed limit therefore did not negatively impact road safety.

* Source: police records (VIA/Traffic Information Department). The figures from 2023 relate to crashes that occurred from December 2022 to November 2023 inclusive. The figures for 2024 are from January to December inclusive.

Quality of life



Slight decline in traffic noise

The lower speed limit led to a slight decrease in traffic noise, with noise levels falling by 1.5 decibel on GOW₃₀ roads. This decrease is imperceptible to the human ear, however, which can only detect changes in sound of 3 decibels or more. The decrease in traffic noise is lower than expected, but that may be because not all road users adhere to the lower speed limit (see chapter on speeds). Traffic noise also decreased on GOW₅₀ roads (-1 decibel), probably due to road users also driving slower on these roads. It must be noted that only a very limited number of such measurements were made. As a result, this data cannot be applied to the city as a whole.

Air quality more or less unchanged

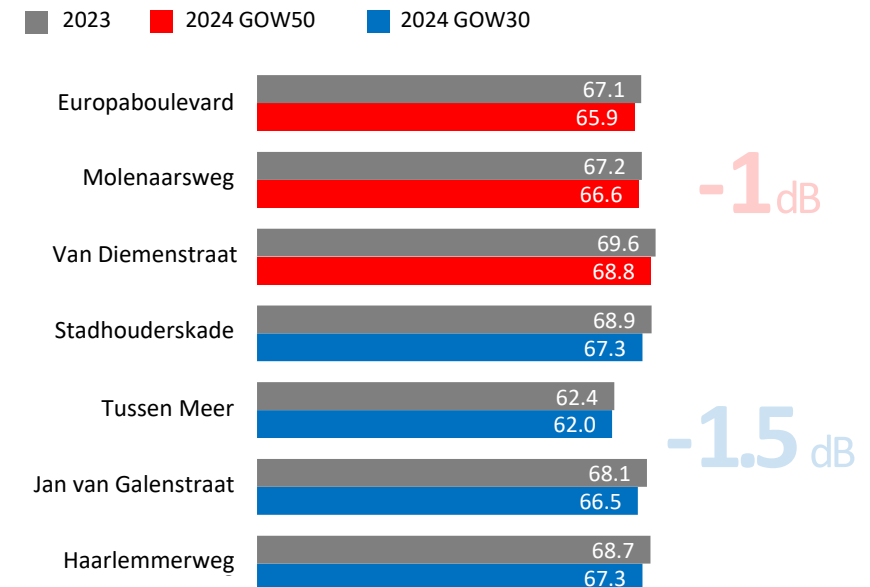
Internal combustion vehicles (ICVs) release harmful emissions that negatively impact air quality. Although ICVs are less efficient at 30 km/h than 50 km/h, accelerating to 50 km/h produces higher emissions. Researchers at Amsterdam UMC looked at how the '30 km/h in the city' limit affected nitrogen dioxide concentrations (NO₂) in the city. Using the GGD Amsterdam Public Health Service's NO₂ measurement network, they observed no differences in NO₂ concentrations between the roads on which the 30 km/h limit had been introduced and those on which the 50 km/h limit had remained in place. The limit therefore had no observable positive or negative impact on air quality. This is corroborated by model calculations by TNO, which also showed negligible effects.

No effects on climate change

The lower speed limit has no positive or negative effects on climate change. CO₂ emissions from traffic remain more or less the same, according to model calculations by TNO.

Decrease in traffic noise

Figures relate to average noise levels (in decibels) on three roads on which the 50 km/h limit was retained and four roads on which the speed limit was lowered from 50 to 30 km/h*.



* This analysis is based on data from measurement points between 1 October 2023 and 31 March 2024. Source: R&D

Quality of life



Potential increase of on-street social interactions

Researchers at Amsterdam UMC and Erasmus MC looked at wide-ranging effects on health and quality of life in Amsterdam caused by lowering the speed limit to 30 km/h. In 2023 and 2024, before and after the introduction of the speed limit, questionnaires and street observations at six locations were used to analyse movement behaviour, mobility and social interactions, including activities such as 'having a chat' on the street. The initial outcomes of the questionnaire study indicate a tentative increase in active forms of transport (walking and cycling) and a decrease in motorised forms. However, these differences were not significant, and the study population was not representative of all Amsterdam residents. The street observations, in contrast, did involve a representative population, and the initial outcomes indicate an uptick in walking. The researchers also observed an increase in on-street social interactions. Over the next months, these initial insights will be studied in greater detail in order to draw firmer conclusions.



Speeds

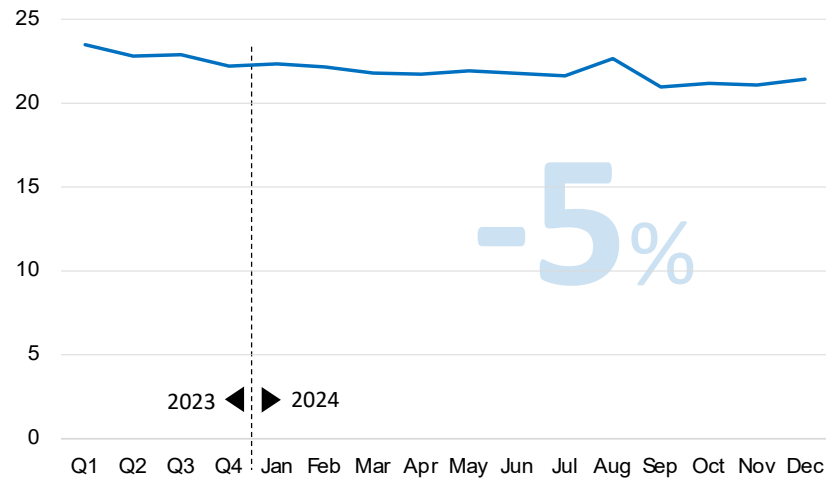


Drop in average speed on GOW30 roads

In 2024, the average speed of road traffic on GOW30 roads was around 5% lower than in 2023 (when the speed limit was still 50 km/h). This data relates to typical urban traffic involving cycles of acceleration, braking and stopping at traffic lights. The speeds show slight variations from month to month: this is normal and is influenced by factors such as traffic volume, which differs each month.

Decline in average speed of road traffic

Figures relate to average speeds driven on GOW30 roads (in km/h).

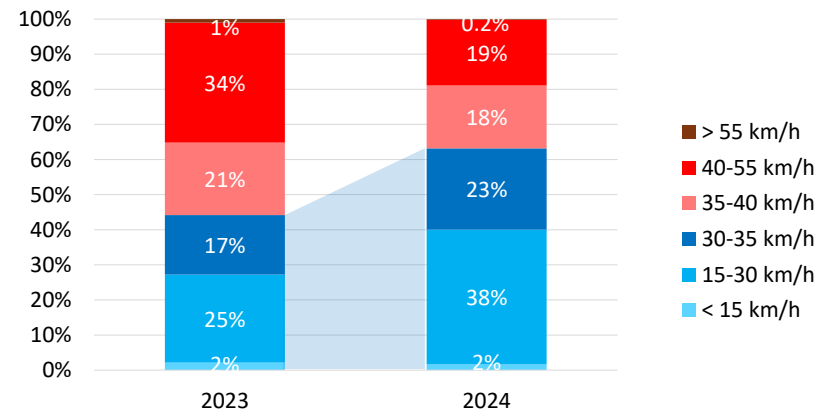


Over 60% of motorists do not (or barely) exceed the speed limit

Four out of ten motorists drive 30 km/h or slower on GOW30 road sections that have few interruptions. It can be said that this group adheres closely to the new speed limit. Around a quarter go slightly over the speed limit (max. 35 km/h), and around two out of ten exceed the limit by a significant margin (40 km/h or faster). The number of motorists driving far above the limit (over 55 km/h) declined from 1% in 2023 to 0.2% in 2024. The average speed on these uninterrupted road sections dropped by 8% from 2023 to 2024.

Distribution of speed categories in road traffic

Figures relate to average speeds driven in the daytime* on GOW30 road sections without interruptions**.



* 'In the daytime' means on workdays between 9 AM and 4 PM and between 6 PM and 7 PM, and between 11 AM and 4 PM and 6 PM and 7 PM at the weekend. Source data: TomTom.

** This analysis is based on a random sample of 64 road sections at various locations in the city at which speed is not influenced by traffic lights or other interruptions.

Speeds



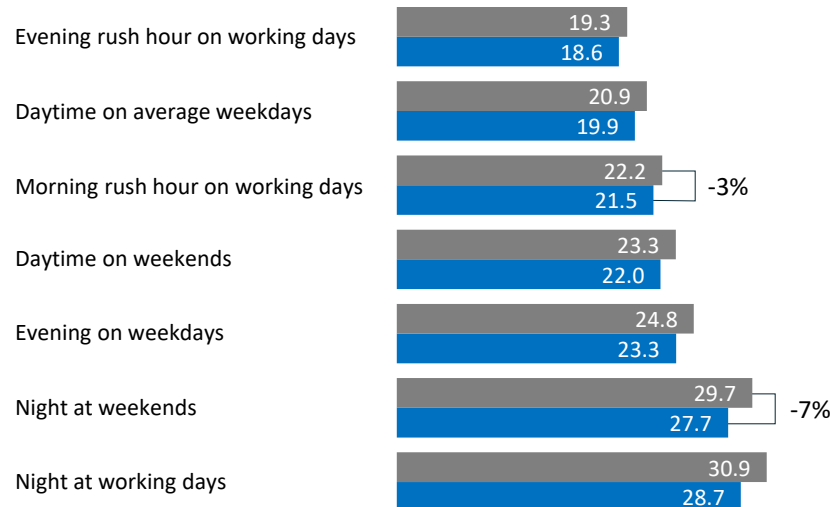
Speeds fluctuate throughout the week

The differences in traffic volume affect the speeds driven, with speeds lowest during the evening rush hour and highest at night. In 2024, average speeds throughout the week are at least 3% and at most 7% lower than those in 2023.

Speeds vary throughout the week

Figures relate to average speeds driven on GOW30 roads (in km/h).

■ 2023 ■ 2024



Lower speeds on roads with 50 km/h limit

It is worth noting that average speed also decreased on roads where the 50 km/h speed limit remained in place (-3%). It may be the case that motorists voluntarily lower their speed on those roads as well, or that it is unclear that the speed limit is still 50 km/h.

Decline in speed differences between cars

There was also a decline in the speed differences between cars. The spread (standard deviation) of speeds decreased by 6%, pointing to a more uniform and calmer traffic situation.

Speeds



Speed influenced by road design and environmental characteristics

Typical GOW₃₀ roads have certain design and environmental characteristics (see box). Figures show that speeds on roads with many GOW₃₀ characteristics are lower than on roads with few GOW₃₀ characteristics. It is worth noting that those differences became smaller after the '30 km/h in the city' measure was introduced: the difference was around 5 km/h (13%) in 2023 and around 3 km/h (8%) in 2024.

Typical GOW₃₀ characteristics

Road design characteristics

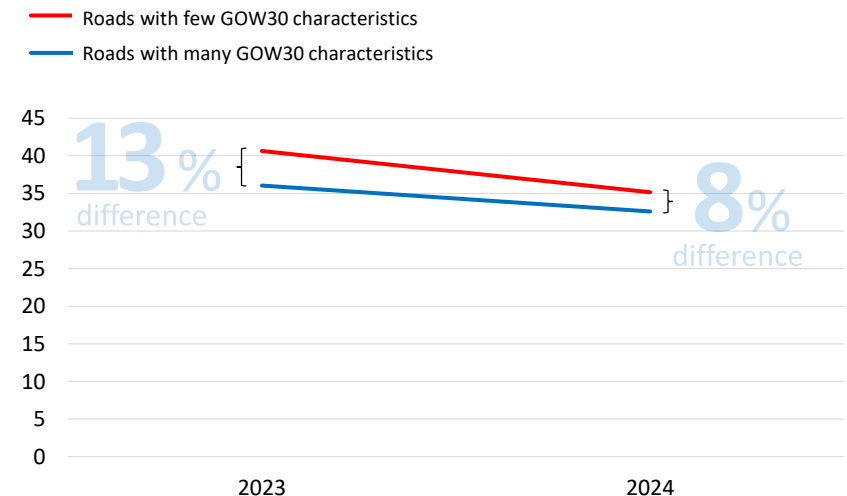
- Priority roads with exit constructions
- Narrow carriageway
- Wide unprotected bicycle lanes or protected bicycle lanes
- Buses stop on carriageway (no bay)
- Roadside parking spaces
- Speed reducers (bumps, raised zebra crossings, etc.)
- No physical or official lane separation (barriers or lines), but large central reservation or public transport lane is permitted
- Varied road characteristics (especially on roads with long straight sections)

Environmental characteristics

- Short distance from front of buildings
- Many roadside functions (residential, commercial, educational)
- No long straight sections

Lower speeds on roads with many GOW₃₀ characteristics

The graph shows speeds on road sections* with a relatively few or many characteristics of typical GOW₃₀ roads (in km/h).



Adding GOW₃₀ characteristics to existing roads is not an easy task, as it requires a redesign and restructuring of the roads. Many environmental characteristics, for example the number of roadside functions, cannot be changed at all. However, minor interventions, such as changes to existing road markings, are feasible.

* Figures relate to the speed of an average car on a selection of 34 road sections subject to a 30 km/h speed limit and without interruptions, at various locations in the city. Around half of those sections have many GOW₃₀ characteristics; the other half have few. Source for speeds: TomTom.

Speeds



Road markings appear to have some effect

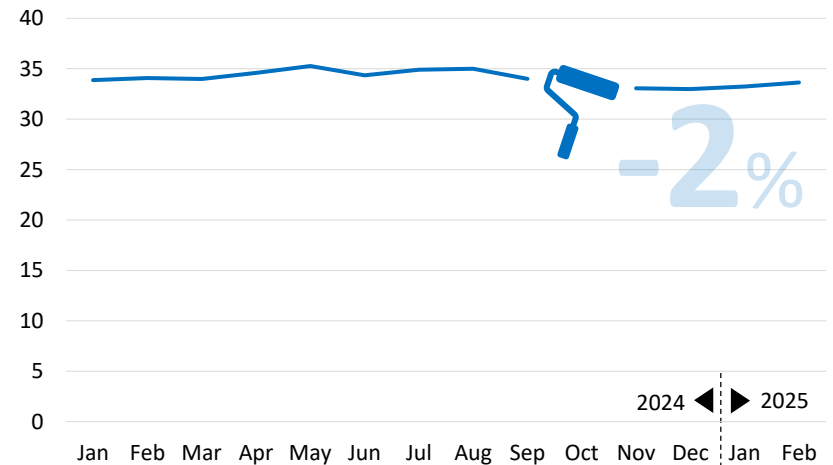
In October and November 2024, road markings were painted on the majority of roads where the speed limit was reduced from 50 to 30 km/h. The photo below is an example of a typical centre line on 30 km/h roads. Figures indicate that average speed dropped slightly after the markings had been applied: -1 km/h (-2%) compared with September (the month before the markings were modified). Due to natural fluctuations in speed each month, it cannot be said with certainty that the reduction is (fully) due to the markings. It is, however, reasonable to assume they have some effect.



Characteristic wide centre line on GOW30 roads

Effects of painting road markings

The graph shows the average speed (in km/h) on GOW30 road sections* on which road markings were painted in October 2024.



* Figures relate to the speed of an average car on a selection of approximately 40 road sections on which road markings were painted in October 2024 and with few stops. Source: TomTom.

Speeds

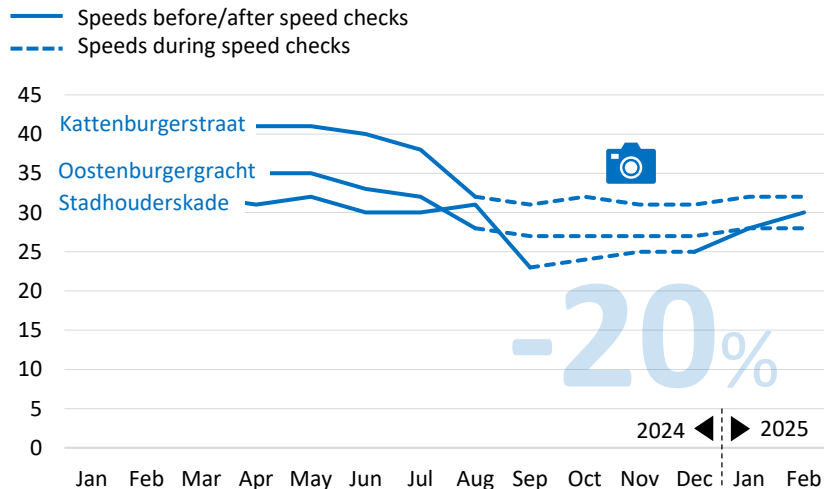


Speed checks have clear effect

Mobile speed cameras were installed at a limited number of locations after the summer of 2024. Following the installation of these speed cameras, driving speeds fell by 20% in both lanes (including in the lane not covered by the speed camera). Motorists reduced their speed for as long as the cameras were in place; once the cameras were removed, speeds went back up. This was observed at Stadhouderskade after the

Effects on speed checks

The graph shows the decrease in speed* at three speed camera locations (in km/h).



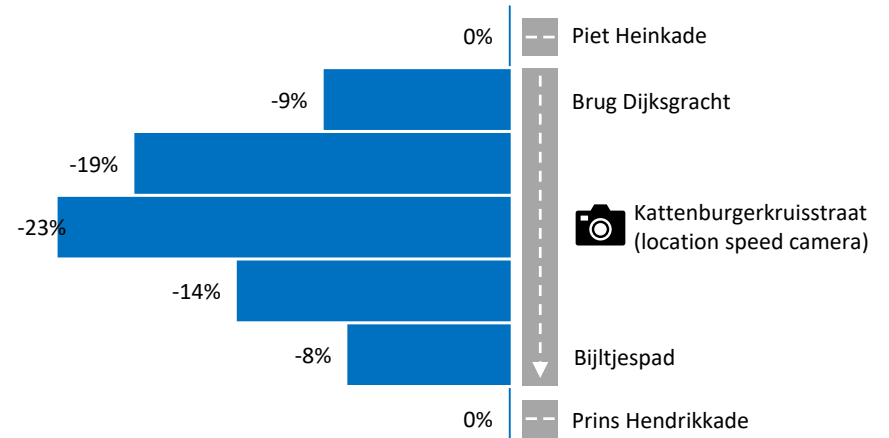
speed cameras were removed in January 2025.

Scope of effects of speed checks is limited

Speeds on road sections immediately before and after the speed cameras also decreased, but to a lesser extent than at the location of the speed camera. As shown in the graph below with data from Kattenburgerstraat, there is no observable effect on speeds driven after the following junction.

Scope of effects of speed checks in Kattenburgerstraat

The graph shows the relative decrease in speed** at the speed camera location and on the road sections before and after.



* Figures relate to the speed of an average car on the road section with speed cameras. Source: TomTom.

** Figures relate to the speed of an average car on the road section with a speed camera as well as the three road sections before and after it. Source: TomTom.

Speeds



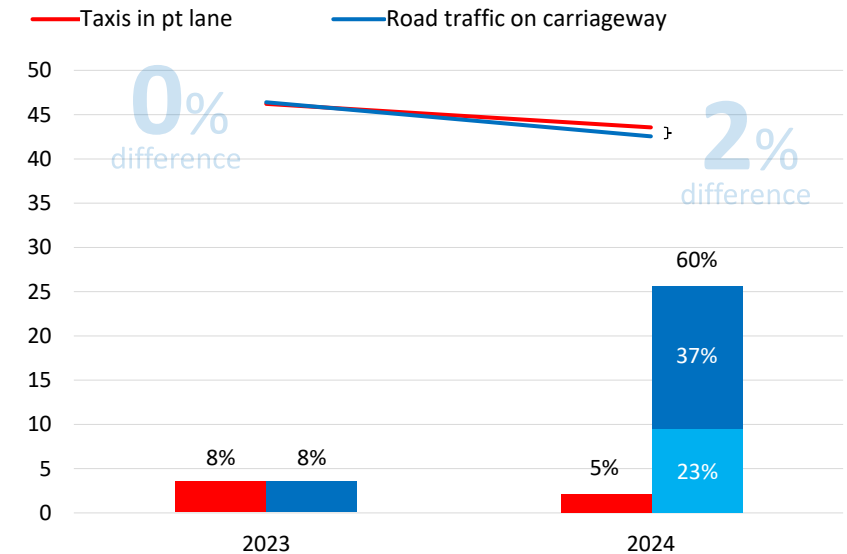
Almost no difference between speeds in public transport lane and carriageway

A 50 km/h speed limit still applies on many separate public transport lanes along GOW30 roads. This research looked at whether there were any increases in speed differences between taxis in the public transport lane and road traffic on the adjacent carriageway. The figures show that there were no differences in 2023, and the percentage of traffic exceeding the speed limit – 50 km/h in both lanes – was also the same (8%).

In 2024, speeds decreased on the carriageway (where the speed limit had been reduced to 30 km/h), but also on the public transport lane (where the speed limit was still 50 km/h). The speed differences between public transport lanes and carriageways increased very slightly, but not to an extent noticeable by street users. In 2024, the share of taxis exceeding the speed limit on public transport lanes dropped to 5%, predominantly at night. The share of cars exceeding the speed limit on the carriageway showed a marked increase (to 60%). However, this is due to the speed limit being lowered, not because motorists were driving faster. This percentage also includes cars that only slightly exceeded the speed limit (30 to 35 km/h), which accounted for a 23% share.

Few variations in speed on tramlines and adjacent carriageway

The graph shows the V85 speeds* of taxis in public transport lanes and road traffic on adjacent carriageways (in km/h). The percentage of road users exceeding the speed limit is shown below.



* Figures relate to the V85, the speed that 85% of cars do not exceed and 15% do exceed, on a selection of around 40 road sections without interruptions. These sections were located throughout the city. The V85 was chosen as it excludes the majority of disruptions due to buses or trams stopping. The V85 is generally considerably higher than the average speed. Source: VIA.

Travel times



No effect on response times to fire brigade emergency calls

A detailed analysis of around 8,000 journeys undertaken by the fire brigade indicated that response times were the same or only slightly different after the 30 km/h speed limit was introduced. This analysis was based on the highest-priority calls (priority 1). The median response time for priority 1 calls remained almost the same, at around 03:30 minutes. The small differences (response times were around 2 seconds faster in 2024) are statistically insignificant and negligible in terms of operations. On road sections where the limit was lowered from 50 to 30 km/h*, median speed decreased slightly (-1 km/h). However, this represents such a small share of total response time that it did not lead to longer response times. The figures also indicate that fire engine drivers may be slightly more likely to take other routes, although these variations are limited.

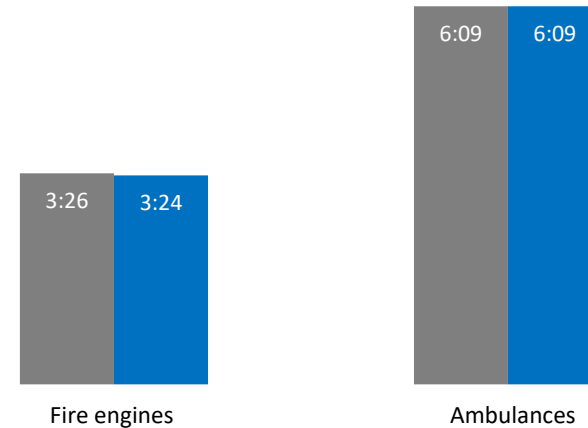
No change to response times of ambulance emergency calls

The response times for ambulances did not change after the 30 km/h speed limit was introduced, as shown by an analysis of around 50,000 ambulance journeys for highest-priority calls (A0 and A1 calls). The median response time, 06:09 minutes, was exactly the same before and after the limit was introduced. As with the fire department, the median speed for ambulance journeys on the new GOW30 road sections* also decreased slightly (-1 km/h). There were also small variations in the routes taken, as with the fire department. On balance, therefore, this did not result in changes to response times.

No change to response time for fire engines and ambulances

The graph shows the response times of an average fire brigade and ambulance emergency call within the City of Amsterdam (mm:ss)**.

■ 2023 ■ 2024



* This relates to GOW30 road sections *without* a separate public transport lane that ambulances can access.

** The figures relate to the median response time, being the time recorded by the median vehicle in the sample. Source: DAT Mobility.

Travel times



Longer travel times for public transport vehicles, but less than expected

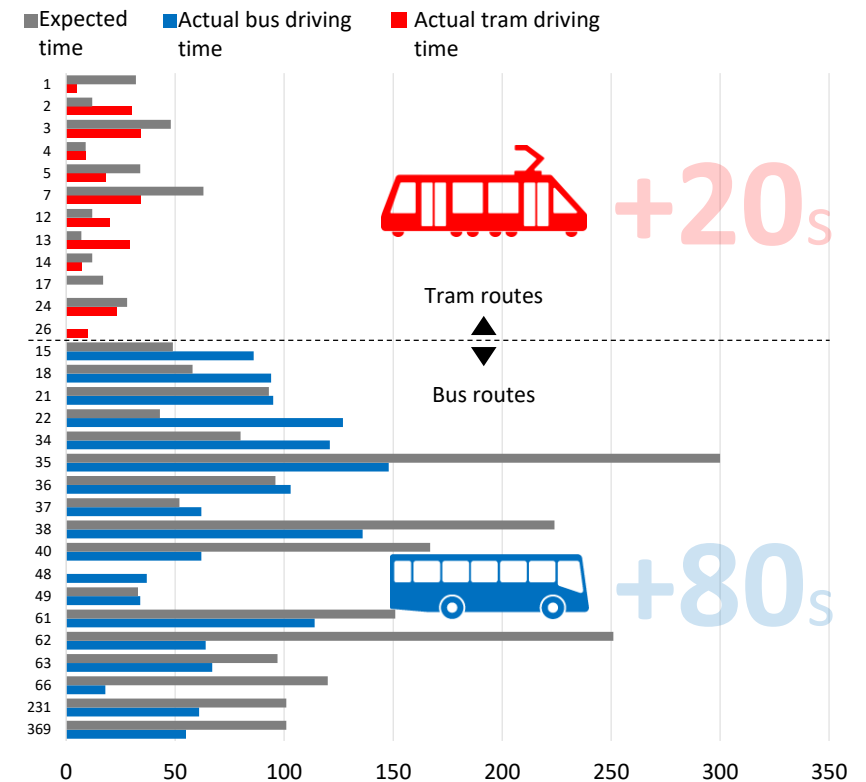
Amsterdam public transport operator (GVB) researched the effects of the '30 km/h in the city' limit on public transport by analysing* travel times on bus and tram routes and comparing actual travel times with expected travel times.

As expected, travel times on most bus routes are now longer. Bus timetables were therefore changed in response to the speed limit being introduced. On average, the speed limit added over 80 seconds to each circulation (a complete route); Given that the expected additional time was 110 seconds, the speed limit has a slightly less significant effect than GVB had anticipated. This may be because the speeds of other remaining traffic are somewhat higher than 30 km/h. Longer travel times have led to an increase in operating costs. The effect on passengers is limited, with an average bus journey of 10 minutes taking 13 seconds longer.

Longer travel times were also expected on many tram routes: GVB anticipated around 25 seconds extra per circulation per route on average. This number is lower than buses, as tram routes have much greater access to separate infrastructure where a 50 km/h limit applies. In reality, trams took on average 20 seconds longer to complete their route – again, slightly lower than expected. This has a negligible effect on tram passengers, amounting to 3 seconds extra travel time for a 10-minute journey.

Longer circulation times for bus and tram routes

The graph shows the differences in travel times (in seconds per route completion) for each tram and bus route in 2024 versus 2023*.



* The analysis compared travel times from 4 to 19 November 2024 inclusive (excluding 12 and 13 November) with the times in the benchmark week of 9 to 15 October 2023. The periods, routes and route sections were selected to minimise external distorting factors such as diversions and incidents. Source: GVB

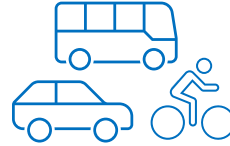
Travel times



Limited additional travel time for other motorised traffic

The lower speed also resulted in additional travel time for other motorised traffic, increasing an average car journey by about 30 seconds – only 1% of total travel time. This was based on an average car journey of 30 km, of which 3.5 km on GOW30 roads. To illustrate: this is equivalent to a journey from Bussum to the Plantage neighbourhood via A10 Oost. The additional travel time for short car journeys within the city is limited to a maximum of 5%.

Traffic volume



Volume of road traffic and public transport unchanged, bicycle volume up

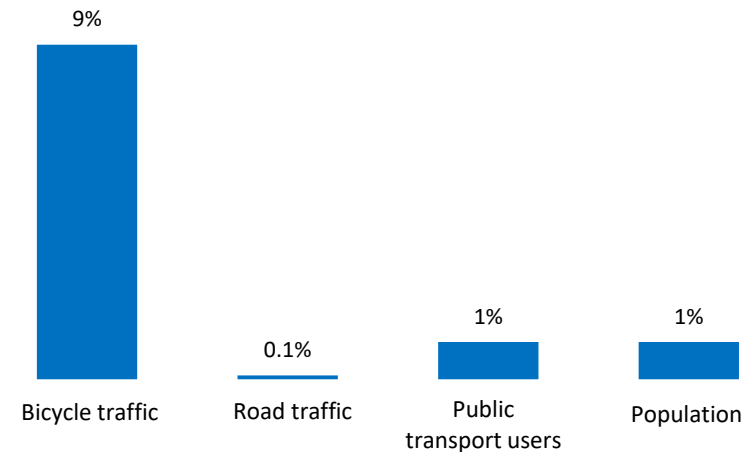
Road traffic volume remained more or less the same after the '30 km/h in the city' measure was introduced. This is despite the fact that the population and number of public transport users each grew by 1% in that time. There appears to be a strong increase in bicycle traffic (+9%). This figure, however, should be viewed with caution, given the limited number of bicycle counting stations in the city. It nevertheless aligns with the autonomous trend of the growing popularity of e-bikes, a development that raises average cycling distance and, as a result, the number of kilometres cycled in the city. This also increases speed differences in bicycle lanes, something which may explain the rise in the number of cycling crashes (see chapter on [road safety](#))

Growth in bicycle traffic largely autonomous

The growth in bicycle traffic is probably an autonomous trend that is uninfluenced by the introduction of the 30 km/h limit. In the year before the limit was introduced, bicycle traffic grew by around 10% compared with the previous year. Nevertheless, it cannot be ruled out that the introduction of the '30 km/h in the city' limit has led to a slight shift from cars to bicycles (including e-bikes). However, it is difficult to distinguish this effect from the autonomous e-bike trend.

Growth in traffic volume*

The graph shows traffic and population growth rates in 2024 vs 2023.



* Source for bicycle traffic: Data from 17 permanent bicycle counting stations throughout the city. Source for road traffic: data from detector loops at traffic lights. Source for public transport users: GVB, figures include bus, tram and metro (excluding Noord/Zuidlijn, due to a change to connections with regional transport in Amsterdam-Noord). Source for population: O&S Amsterdam

Support base



Majority of Amsterdam residents support limit

In July 2024, a panel of around 1,500 Amsterdam residents were asked to give their opinion of the '30 km/h in the city' measure. A total of 817 people answered, providing a decent impression of the views of Amsterdam's population as a whole. The majority (75%) of people who do not have access to a car have a positive or very positive opinion of the measure, as do the majority (52%) of car owners. In total*, six out of ten Amsterdam residents have a positive or very positive opinion of the '30 km/h in the city' measure. Approximately 10% of people who do not own a car and 30% of those who do have a negative or very negative opinion of the measure.

People who have a positive opinion of the measure most often mention road safety as being the most important factor. Many of them are also positive about the traffic that has become calmer. Several people mention the positive effects on the environment and noise nuisance as benefits.

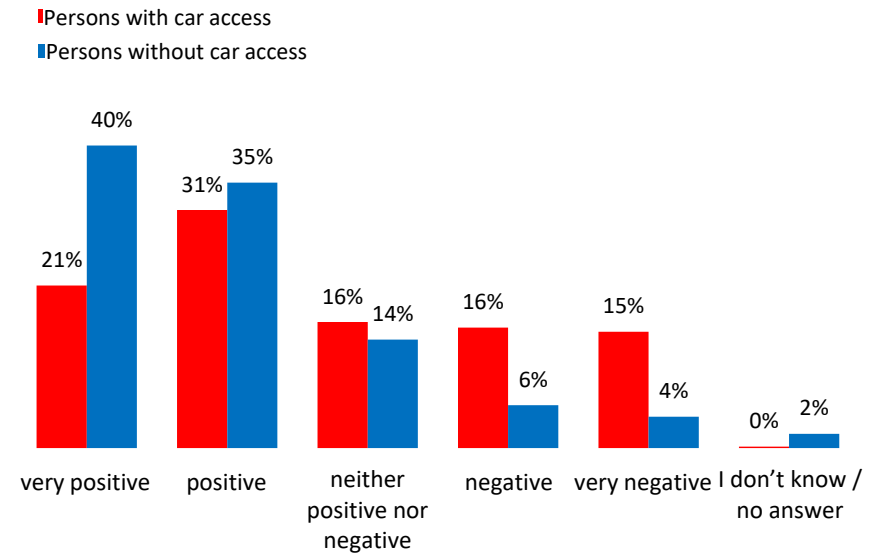
The people who have a negative opinion of the measure say that many motorists do not adhere to the speed limit and that they would like to see more speed checks. Many people are unhappy that fatbikes and mopeds now drive faster than cars. Some think 30 km/h is too slow and sometimes feel pressured into driving faster by motorists behind them.

People who have a more neutral opinion say the main issue is that it is not always clear where the 50 or 30 km/h limit applies, often mentioning the design of the road itself as the source of confusion. Others say it

can sometimes be difficult to drive at 30 km/h.

Support base for '30 km/h in the city' measure

In December 2023, the City of Amsterdam reduced the speed limit on many of its roads from 50 km/h to 30 km/h. This limit was introduced to improve road safety and quality of life in the city. What do you think about this new speed limit?



* The respondents include car owners, people who do not own a car and people from various income brackets and city districts. The share of people educated to tertiary level and people own a car is higher than Amsterdam's population as a whole. The calculation has been corrected to reflect this.

Conclusions



Positive results after one year

The '30 km/h in the city' measure was introduced to improve road safety and quality of life. Figures from the first year after the speed limit was introduced already show positive progress towards achieving these goals. The number of crashes on GOW₃₀ roads has declined by 11% and noise from road traffic has decreased by 1.5 decibels. Road traffic volume has shown little to no growth despite an increase in resident numbers (+1%). Over 60% of motorists do not (or barely) exceed the speed limit on GOW₃₀ roads, and the share of motorists who significantly exceed the speed limit (over 55 km/h) has decreased from 1% to 0.2%. Accordingly, a majority of Amsterdam residents hold a positive opinion of the measure.

Previous concerns not materialised or less serious than anticipated

Before the limit was introduced, there were concerns about its potential negative effects on public transport and emergency and support services, such as longer travel times. While travel times for public transport (in particular buses) are longer (on average 80 seconds per circulation), the delays are not as large as expected. The effect on passengers is limited: an average bus journey of 10 minutes takes 13 seconds longer, while an average tram journey takes only 3 seconds longer. Fire brigade and ambulance response times remain unchanged. There were other concerns about a deterioration in air quality, but these did not materialise.

Further improvements expected in coming years

Not all effects are fully visible yet, nor were they expected just one year after the measure was introduced. Speeds are expected to continue to fall, leading to further improvements in road safety and quality of life. Motorists are growing more accustomed to the 30 km/h limit. This is also because an increasing number of cities intend to introduce such a speed limit. Additionally, GOW₃₀ characteristics will progressively be added to more and more streets. In other cities that introduced the lower speed limit, such as Brussels, speeds continued to fall as time went on. This could also be encouraged by speed checks, but the effects of such checks have so far been local and temporary.

Not all outcomes are solely influenced by the measure

Practical measures – such as the implementation of a lower speed limit – will always have outcomes that are influenced by external factors. Examples of such factors are roadworks, the weather, the growing popularity of e-bikes and natural fluctuations in the number of crashes. While this research has corrected for these external factors as much as possible, we cannot rule out that part of the effects have been caused directly or indirectly by external factors. Nevertheless, the results observed are plausible and in line with international research into the effects of lower speed limits in cities.