International Transport Forum | irtad Road Safety Data

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Sweden recorded 204 road fatalities in 2020, a 7.7% decrease on 2019 and the lowest total since 2000. It is difficult to estimate the magnitude of the impact of the Covid-19 pandemic on road safety performance in 2020. The assessment is that the pandemic reduced the outcome of the number of deaths and serious injuries in 2020, but it did not have a dramatic impact. The basis of Swedish road safety work is Vision Zero. The Swedish government set new targets for 2030, including a 50% reduction in fatalities and a 25% reduction in serious injuries based on the average for 2017-19. The Road Safety Strategy 2021-2030 is still under development. The action plan 2022-2025 will be published in April 2022 and will include 111 measures designed to increase road traffic safety.

Road safety management and strategy

The number of road fatalities reached a peak in 1965 and 1966, at 1 313 road deaths each year. Since then, road deaths have decreased by about 85%.

This overall positive trend can be partly explained by gradual improvements in infrastructure, the safety of the vehicle fleet, an increased focus on injury prevention and reduced speeds. The safety performance indicators for vehicles and national roads are improving, and road design has long embraced more excellent safety.

Responsibility for road safety in Sweden lies with several agencies. *Transportstyrelsen*, the Swedish Transport Agency, has overall responsibility for drawing up regulations and ensuring that authorities, companies, organisations and citizens comply. *Trafikverket*, the Swedish Transport Administration, is responsible for the long-term planning of the transport system for all types of traffic and building, operating and maintaining public roads and railways. The Swedish Transport Administration is also responsible for administering the theoretical and practical driving tests needed to obtain a driving licence for both professional and private drivers. *Trafikanalys*, Transport Analysis, reviews the basis for decisions, assesses measures and generates statistics.

Sweden: Quick facts

Population: 10.3 million
GDP per capita: USD 52 056
Road network: 140 800 km (2018)
- urban roads: 30%
- rural roads: 69%
- motorways: 1%

Registered motor vehicles: 6.5 million
- cars: 77%
- goods vehicles: 11%
- motorcycles: 5%

Speed limits:
- urban roads: 30-50 km/h
- rural roads: 60-100 km/h
- motorways: 110 or 120 km/h

Limits on Blood Alcohol Content: 0.2 g/l
Road fatalities: 204
- pedestrians: 12%
- cyclists: 9%
- car occupants: 52%
- motorcyclists: 15%
- other: 11%

Road fatalities per 100 000 population: 2.0
Road fatalities per 10 000 vehicles: 0.3
Cost of road crashes: 2.6% of GDP (2017)

All data 2020 unless otherwise stated.

Sweden is divided into 290 municipalities and 20 county councils. These municipalities and counties hold responsibility for local road safety. The local government is well established in Sweden. The country's cities, county councils and regions provide a significant proportion of all public services, including road safety. They have a considerable degree of autonomy and independent powers of taxation. Local self-government and the right to levy taxes are stipulated in the Instrument of Government, one of the four pillars of the Swedish Constitution.

The basis of Swedish road safety work is Vision Zero, a strategic approach towards a safe system whereby no one is at risk of being fatally or severely injured while using the road transport system. There is no specific safety plan in a traditional sense. Road safety work has been carried out systematically using the management by objectives model. This model involved measuring and following up a series of current conditions in the road transport system, which have a verified relationship with the trend in road fatalities and seriously injured. These conditions are measured using road safety performance indicators (SPIs). Interim targets have been set for road fatalities, seriously injured and SPIs. The actual number of deaths and seriously injured indicators are followed up and analysed every year. The analysis of the road safety performance is presented at annual conferences attended by various stakeholders. The purpose of the management by objectives model is to apply a long-term, systematic approach to road safety work.

During 2015 and 2016, the Ministry of Enterprise relaunched Vision Zero. An extensive review of traffic safety work was undertaken in collaboration with relevant parties. In particular, three new assignments were presented. The Swedish Transport Administration was tasked to lead the national partnership for increased traffic safety. Since 2017, results have been reported annually each May. An investigation into a new default speed limit of 40 km/h in urban areas was undertaken by *Trafikanalys*, with results presented in October 2017. *Trafikanalys* was also assigned to investigate traffic safety goals and performance indicators post-2020.

The interim targets for 2020 were adopted by the Swedish Parliament in 2009 and specified that the number of road fatalities should be halved between 2007 and 2020, which translates to a maximum of 220 road deaths in 2020. The number of people seriously injured on the road would be reduced by a quarter over the same period. In addition to the national targets, there is an interim target at the EU level for halving the number of road deaths between 2010 and 2020, corresponding to a more stringent interim target of a maximum of 133 road deaths in 2020. The national target to halve the number of road fatalities until 2020 has been reached.

The Swedish Government set a new interim target for 2030 of reducing fatalities by 50% between 2020 and 2030 (based on the average number of deaths for 2017-19), which corresponds to a maximum of 133 road deaths in 2030. It also set a target to reduce the number of people seriously injured by 25% during the same period, which corresponds to a maximum of 3 100 seriously injured. There are two further targets, one on suicide prevention and one on pedestrian fall accidents, agreed upon by the Group for National Vision Zero Cooperation - Roads (*GNS Väg*). *GNS Väg* is an arena for exchanging knowledge and co-ordination of activities within road safety between essential players to realise Vision Zero.

As part of its assignment to lead overall collaboration in road safety work for road traffic, the Swedish Transport Administration has produced an action plan for safe road traffic for 2022-25. The plan includes 111 measures that 14 authorities and stakeholders have the ambition of implementing.

Latest road safety measures

The renewed commitment to Vision Zero, presented in 2016, aims to intensify transport safety work in Sweden due to the stagnation in road casualties since 2010. Future safety work should consider vulnerable road users, with infrastructure design and maintenance tailored to their needs.

The Swedish government presented a national strategy for cycling in April 2017 that is intended to function as a platform for future safety work. Five areas of action were highlighted: greater priority for cyclists in social planning, focus on different groups of cyclists, promotion of a more functional and user-friendly infrastructure and promotion of a safer environment for cyclists.

The Swedish Transport Administration has a mission to investigate how to make ISO 39001 Road Traffic Safety Management Systems more efficient and widespread.

A Vision Zero training in e-learning format has been developed. Targeted toward a professional audience working in the sphere of road transport systems, the training seeks to spread knowledge about Vision Zero, its safety philosophy, and the principles that apply to designing a safe road transport system. It is not currently available in English but can be accessed in Swedish here: www.trafikverket.se/tjanster/Utbildningar/nollvisionen-for-vagtrafik---webbutbildning/.

The introduction of advanced driver assistance systems has been rapid in Sweden. In 2019, the share of new cars in Sweden with auto-brake at low speeds was 85%, lane departure warning systems 63% and auto-brake for vulnerable road users 74%.

Anti-lock Braking Systems (ABS) development as standard equipment on motorcycles has moved quickly. ABS has become a standard piece of equipment on most major motorcycle models over the last three years, from being standard with only one manufacturer and an expensive option with the others. Moreover, since 2016-17 the EU has mandated ABS for new motorcycles with an engine displacement greater than 125 cc. The percentage of motorcycles by traffic volume fitted with ABS increased from 9% in 2007 to 55% in 2017.

A new Infrastructure Plan 2018-2029 has been published and can be accessed here: http://trafikverket.diva-portal.org/smash/get/diva2:1363916/FULLTEXT01.pdf.

Costs of road crashes

Traffic crashes represent a high cost for society, estimated in 2017 at around EUR 13.4 billion (2.6% of GDP). The cost of road crashes was first evaluated in 1990 by the ASEK Group based on a willingness-to-pay approach to assess the unit cost of a fatality, a hospitalised person, a slightly injured person and a property damage-only crash. Since then, these unit costs have been regularly re-evaluated, considering the evolution of GDP and the consumer price index (CPI). These costs are calculated using ASEK 7.0 and based

on the official statistics for 2017, using police reported accidents (not corrected for under-reporting).

Safety performance indicators

Speed

Inappropriate speed is one of the leading causes of road crashes. Improved speed compliance, resulting in lower speed levels, is estimated to have the most significant potential to reduce road fatalities. However, speed levels on Swedish roads have remained unchanged since 2012 and have not significantly improved.

In 2020, the proportion of traffic adhering to the speed limit on state roads was only 49%, around the same level as when measurements started in 1996. The goal of 80% compliance by 2020 was not reached.

It is essential to improve speed compliance via different monitoring forms in the short term. In 2020, around 2 200 speed camera units were used nationwide, with a target set of approximately 2 300 units. Speed cameras positively affect speed compliance, but route coverage remains insufficient. Therefore, it is essential to increase police presence. The fines issued for speeding through manual monitoring fell sharply between 2011 and 2016 and flattened.

It is essential to ensure that existing road infrastructure appropriately matches posted speed limits in the longer term. Starting in 2016 and 2017, the Swedish Transport Administration initiated a major speed limit review to adapt speed limits to current road safety standards. For the period up to and including 2020, around 2 200 kilometres of 90 km/h roads will be lowered to 80 km/h, while just over 400 kilometres of 90 km/h roads will have a median barrier installed and the speed limit increased to 100 km/h. So far, around 450 of the 2 200 kilometres have had speed limits reduced, while 270 kilometres have been separated. It is crucial that adapting speed limits continues according to existing plans and that road safety infrastructure of this type is intensified.

Drink-driving

Driving under the influence of alcohol is another major cause of road crashes in Sweden, as in most IRTAD countries. In 2020, 53 people died in alcohol or drug-related crashes (28% of all road fatalities) compared with 53 people (23%) in 2019.

In Sweden, a crash is defined as alcohol related if a BAC level of above 0.2 g/l can be proven in the driver, rider, pedestrian or cyclist involved.

Enforcement against drink driving is becoming a challenge, as only a tiny proportion of the driving population is under the influence of alcohol. In 2019, only 0.25% of all drivers

in random tests were above the legal limit. The goal is that, by 2020, at least 99.9% of drivers operate under the legal BAC limit of 0.2 g/l. Police spot checks, which have decreased in number, represent an essential measure for improving this indicator. Quick and reliable breath tests also play a crucial role in future efforts to prevent drink driving.

New technology has great potential to combat drink driving in the long term. So-called "Alco-Gates" (gates equipped with a breathalyser test) automate part of the sobriety check systems at ports, and the government is currently considering installing the equipment in three to five additional ports. Nonetheless, in the short-term, police surveillance plays an integral part in reducing drink driving and improving measures in reducing reoffending.

Drugs and driving

Drug usage and driving are other worrying causes of crashes in Sweden. A drug-related crash is defined as any crash where one of the persons involved has any trace of an illegal drug in the body. In 2020, 17 fatalities (or 8% of all traffic fatalities) involved a driver under the influence of illegal drugs, with amphetamines being the substance most commonly found. There is some overlap with alcohol-related fatalities where a driver had been under the influence of both alcohol and drugs.

It is forbidden to drive a motor vehicle under the influence of illegal drugs. A driver under suspicion of driving after taking illegal drugs must leave a sample of blood or saliva to be analysed. It is up to the driver to decide whether to drive when using medication. If the medication has a negative effect on driving, the person is not allowed to drive.

Use of mobile phones while driving

The Swedish Road Traffic Ordinance requires drivers to pay sufficient attention to driving. To avoid crashes, road users shall "observe the care and attention that the circumstances demand". However, starting in 2013, the government strengthened this by-law, forbidding the use of communications devices when driving if "the use influences the driving unfavourably". In 2015, the government decided to assess the safety effect of the new bylaw. The Swedish Transport Agency carried out an evaluation. The result showed a need for further research and investment in technological developments that discourage the use of handheld phones while driving. In 2018, handheld mobile phone use while driving was prohibited.

Seat belt and helmet use

Seat belt wearing has been compulsory in Sweden since 1975 in front seats and since 1986 for rear seats. It has been mandatory for children under 135 cm to use a child restraint system since 1988. The medical recommendation is that a booster seat or similar device must be used for up to 12.

There has been a long-term upward trend in the use of seat belts. This trend will likely continue due to the increasing percentage of cars with seat-belt reminders or warning functions. Driver's use of seat belts in passenger cars was recorded at 97.6% during 2020. The proportion of passenger car drivers killed who were unrestrained has decreased since 2001 and stood at 32% in 2020. Children have always had a much higher seat belt wearing rate than adults in rear seats. In 2020, 96.8% of children and 86.2% of adults in the rear seats wore seat belts.

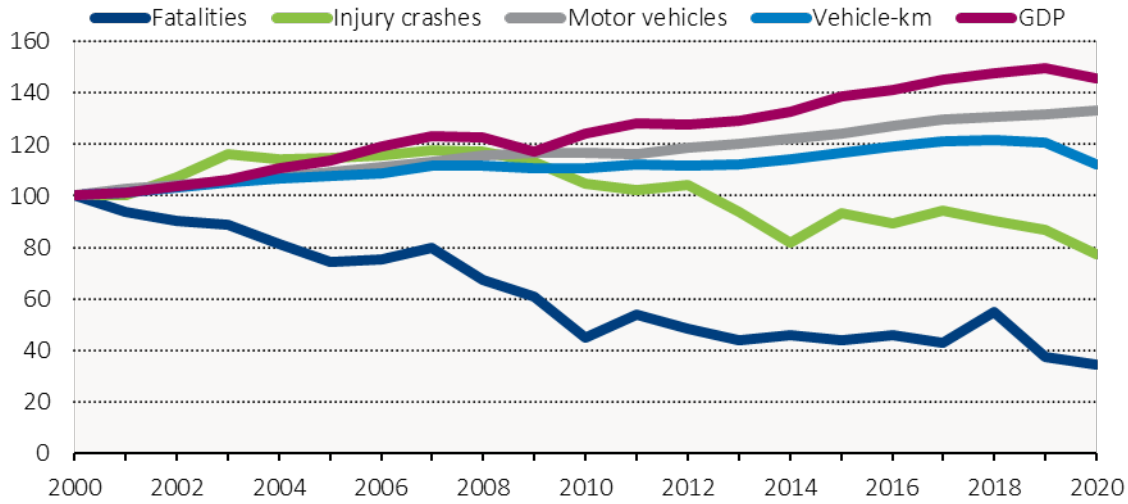
Road safety data for Sweden at a glance

Long-term road safety trends for Sweden

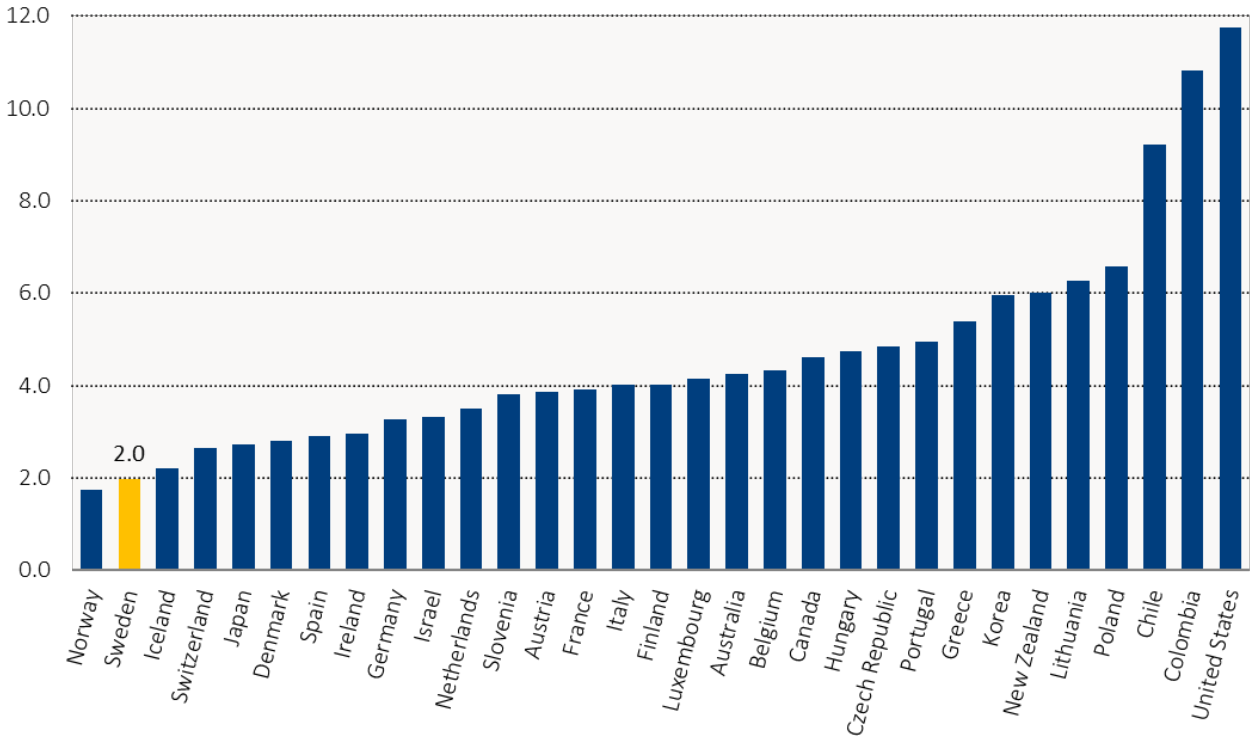
							2020 % change over			
	1990	2000	2010	2018	2019	2020	*2019*	*2010*	*2000*	*1990*
Reported safety data										
Fatalities	772	591	266	324	221	204	-7.7	-23.3	-65.5	-73.6
Injury crashes	16 975	15 770	16 499	14 233	13 684	12 217	-10.7	-26.0	-22.5	-28.0
Injured persons hospitalised	17 180	10 897	7 701	..	..	..	..	..	..	..
Deaths per 100 000 population	9.1	6.7	2.8	3.2	2.2	2.0	-8.6	-30.6	-70.4	-78.2
Deaths per 10 000 registered vehicles	1.7	1.2	0.5	0.5	0.3	0.3	-9.0	-32.8	-74.1	-81.7
Deaths per billion vehicle kilometres	12.0	8.5	3.5	3.8	2.6	2.6	-0.6	-24.3	-69.2	-78.1
Fatalities by road user										
Pedestrians	134	73	31	34	27	25	-7.4	-19.4	-65.8	-81.3
Cyclists	68	47	21	23	17	18	5.9	-14.3	-61.7	-73.5
Moped riders	22	10	8	7	4	2	-50.0	-75.0	-80.0	-90.9
Motorcyclists	46	39	37	47	31	30	-3.2	-18.9	-23.1	-34.8
Passenger car occupants	468	393	151	181	103	106	2.9	-29.8	-73.0	-77.4
Other road users	34	29	18	32	39	23	-41.0	27.8	-20.7	-32.4
Fatalities by age group										
0-14 years	35	19	10	7	4	7	75.0	-30.0	-63.2	-80.0
15-17 years	34	16	9	9	5	8	60.0	-11.1	-50.0	-76.5
18-20 years	88	52	20	13	7	13	85.7	-35.0	-75.0	-85.2
21-24 years	66	50	26	17	12	17	41.7	-34.6	-66.0	-74.2
25-64 years	357	300	137	158	118	91	-22.9	-33.6	-69.7	-74.5
65-74 years	..	50	28	47	35	26	-25.7	-7.1	-48.0	..
≥ 75 years	..	104	36	73	40	42	5.0	16.7	-59.6	..
Fatalities by road type										
Urban roads	218	162	67	77	49	60	22.4	-10.4	-63.0	-72.5
Rural roads	484	404	167	212	142	121	-14.8	-27.5	-70.0	-75.0
Motorways	70	25	23	24	20	13	-35.0	-43.5	-48.0	-81.4
Traffic data										
Vehicle kilometres (millions)	64 310	69 267	76 731	84 433	83 723	77 737	-7.1	1.3	12.2	20.9
Registered vehicles (thousands)	4 461	4 842	5 654	6 331	6 364	6 454	1.4	14.1	33.3	44.7
Registered vehicles per 1 000 population	523.2	546.4	605.3	625.6	622.1	624.9	0.5	3.2	14.4	19.4

Evolution of road fatalities, injury crashes, motorisation, traffic and GDP in Sweden, 2000-20

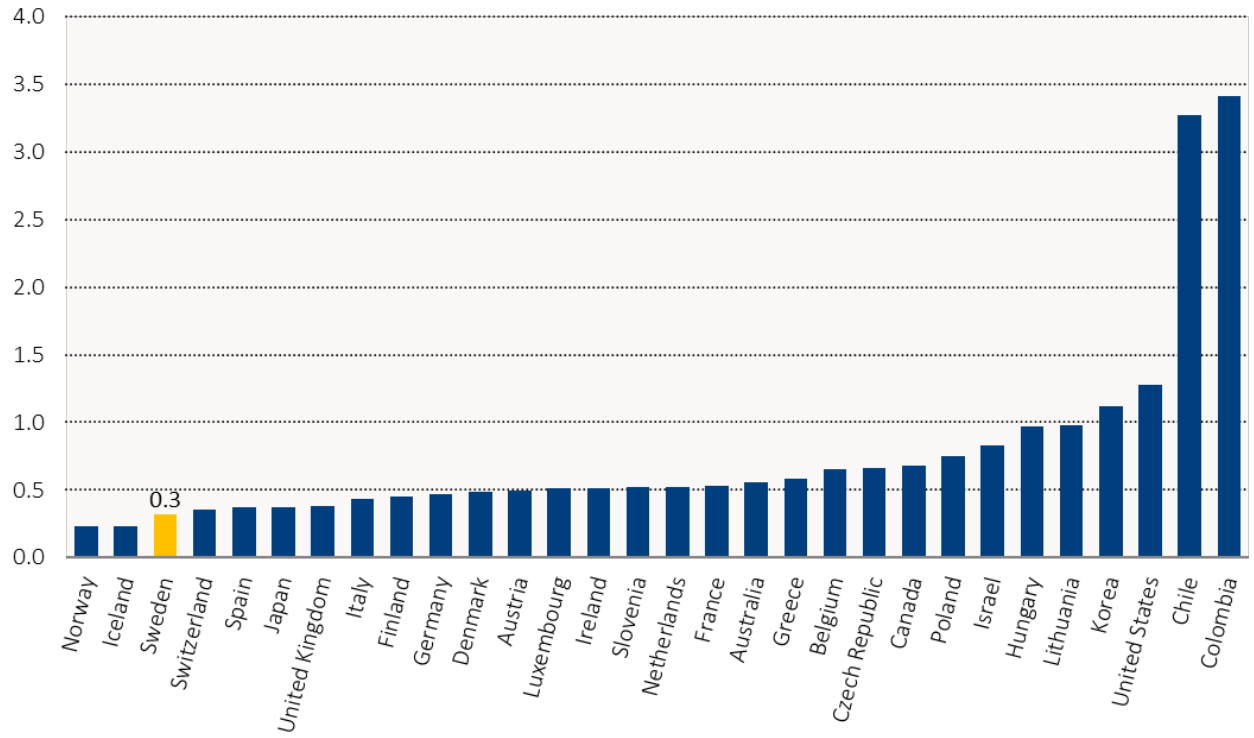
Index 2000 = 100



Road fatalities per 100 000 inhabitants in Sweden in comparison with IRTAD countries, 2020

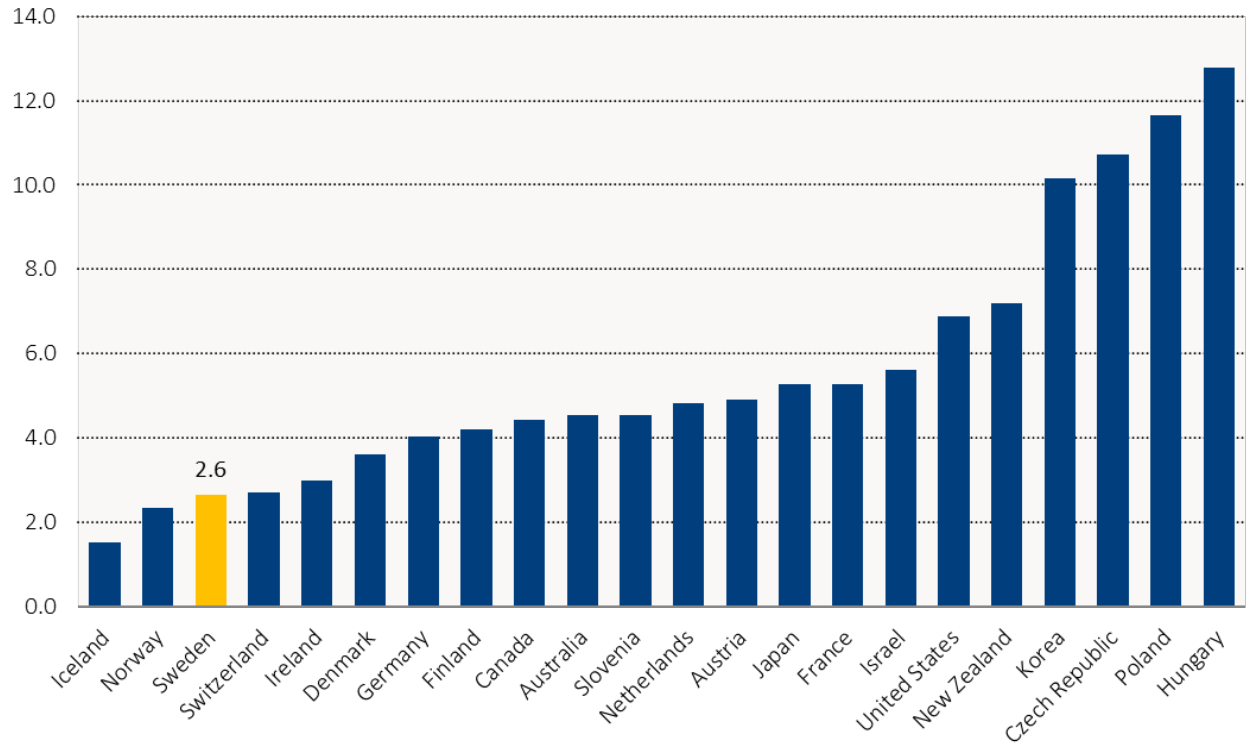


Road fatalities per 10 000 vehicles in Sweden in comparison with IRTAD countries, 2020

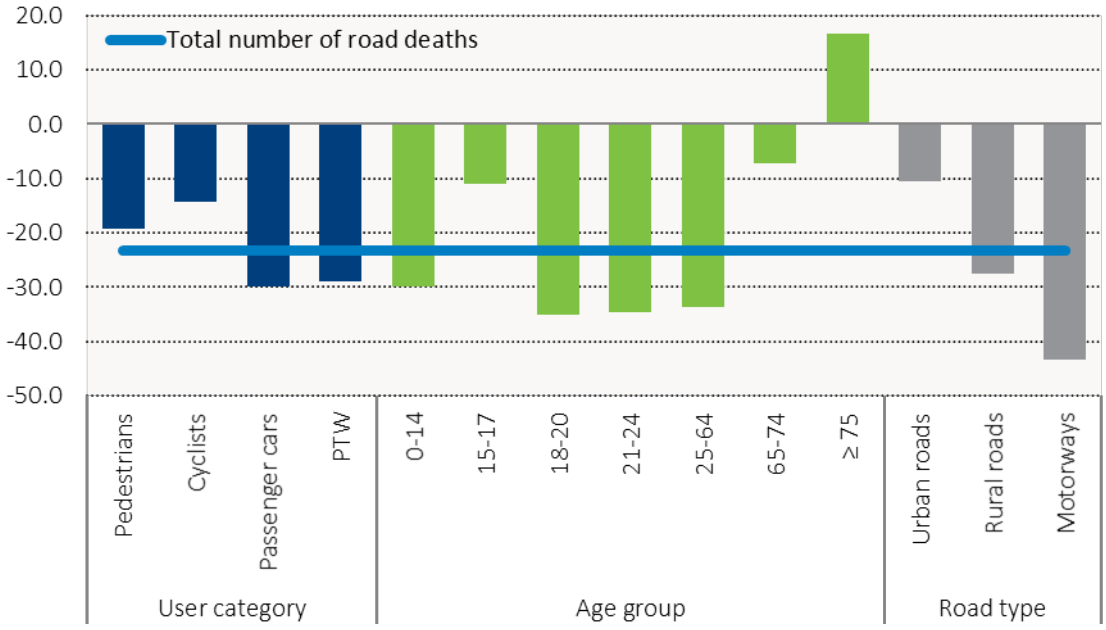


Note: in Belgium, Denmark, Germany and Hungary registered vehicles do not include mopeds.

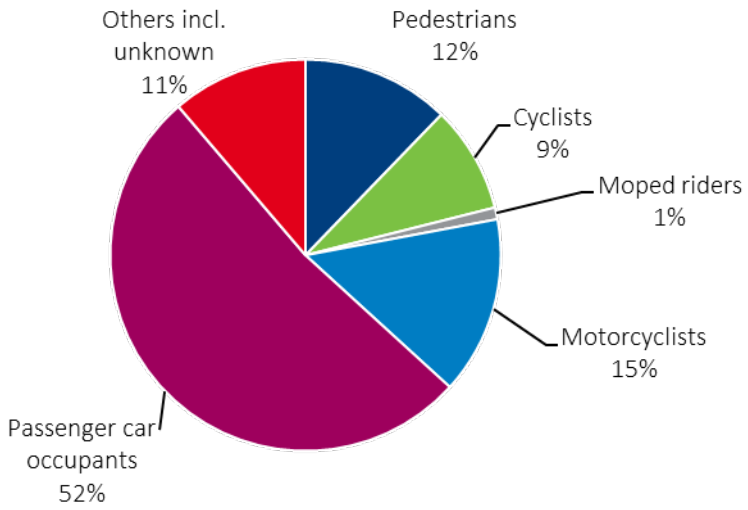
Road fatalities per billion vehicle-kilometres in Sweden in comparison with IRTAD countries, 2019



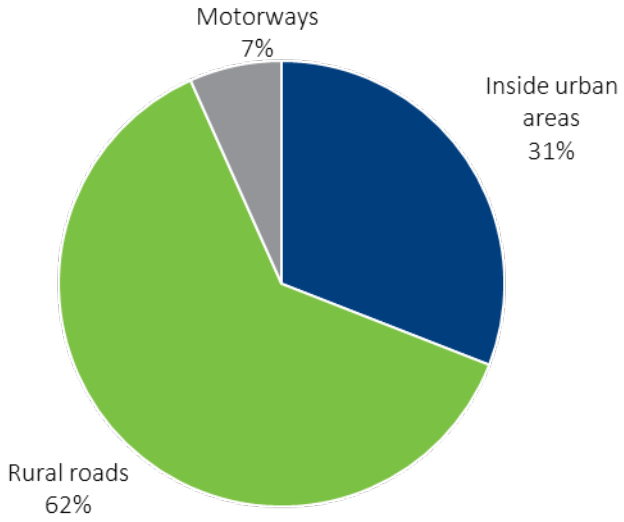
Evolution of road fatalities in Sweden by user category, age group and road type, 2010-20



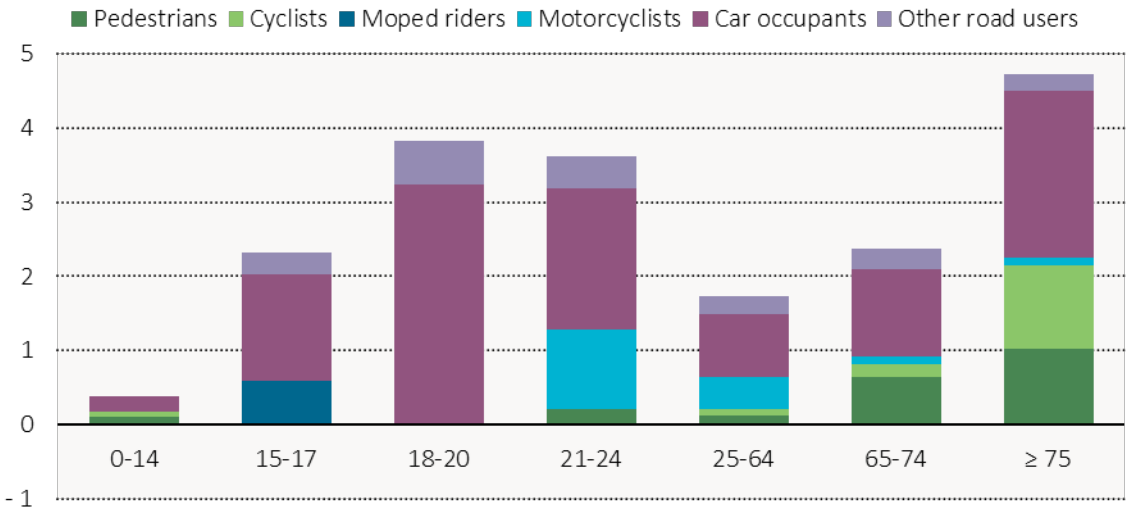
Road fatalities in Sweden by user category, 2020



Road fatalities in Sweden by road type, 2020



Road fatality rate in Sweden by user category and age group, 2020
Rate per 100 000 population in the same age group



Cost of road crashes in Sweden, 2017

	Total (EUR)
Fatalities	1.32 billion
Other reported injuries	12.07 billion
Total	**13.39 billion**
Total as % of GDP	**2.6**

Seat belt and helmet wearing rates
Percentages

	2000	2014	2016	2020
Front seats				
Driver	90	98	98	98
Passenger	92	96	96	98
Rear seats				
Adults	72	81	90	86
Children	89	95	94	97
Helmet				
Moped riders	..	96	95	98

Research and resources

Publications

Amin, K. et al. (2021), *Analysis of Road Safety Trends 2020. Management by objectives for road safety work towards the 2020 interim targets*, Swedish Transport Administration, Publication No. 2021:173.

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Renewed Commitment to Vision Zero: https://www.government.se/4a800b/contentassets/b38a99b2571e4116b81d6a5eb2aea71e/trafiksakerhet_160927_webny.pdf.

Swedish National Road and Transport Research Institute, VTI: www.vti.se.

Swedish Transport Administration: https://trafikverket.ineko.se/se/.

Swedish Transport Agency: https://transportstyrelsen.se/en/road/.

Transport Analysis: www.trafa.se/en/.

Vision Zero Training Academy: www.trafikverket.se/en/startpage/operations/Operations-road/vision-zero-academy/.

Definition, methodology, data collection

A road fatality is defined as any person killed in a traffic crash or who dies within 30 days due to injuries sustained in the crash. Suicides have been excluded from official statistics since 2010.

A slightly injured person is described as someone slightly injured in road traffic crashes reported by the police.

For serious injuries, two definitions are used. For generating official statistics, road traffic accidents with fatal and severe personal injuries reported by the police are used. For preventive road safety work, the definition of serious injury is based on health loss following a traffic injury. If the individual does not recover after a specific time, they are defined as seriously injured. The risk of permanent medical impairment (RPMI) can be calculated and used in preventive road safety work.

Medical impairment is a concept for evaluating various functional impairments, regardless of the reason. The disability scale is based on functional impairment; for example, total paralysis is regarded as 100% impairment, the loss of one hand as 50- 65% and the loss of the outer joint of the ring finger as 2%. Today, the medical impairment cut-off for a person to be defined as seriously injured is 1%, but discussions are ongoing regarding adding a complementary category of 10% or higher.

Therefore, Sweden does not use a score of three or more on the Maximum Abbreviated Injury Scale (MAIS3+) as a standard measure of a seriously injured person. MAIS3+ is used to calculate the number of persons seriously injured and is, therefore, an essential part of the Swedish efforts to increase road safety.

Sweden’s safety data system integrates police and health data. This system, called Swedish Traffic Accident Data Acquisition (STRADA), is composed of two parts: STRADA police, based on crash reports by the police, which include detailed information on

crashes; and STRADA hospital, based on medical information including information on the crash from the patient.

The system is based on a systematic link between police and health data and allows accurate information on the severity and consequences of crashes to be obtained. STRADA, however, only provides data on seriously injured people and acquires medical information about injured persons visiting the emergency department of a hospital following a crash. The number of people less seriously injured is likely to be underreported. For example, people suffering from a minor injury requiring only primary care, without being further directed to a hospital, are not recorded in STRADA. However, slightly injured persons known to the police are reported in STRADA.

There is a proposal that emergency hospitals be obliged by law to report to STRADA. Today, however, reporting to STRADA is based on patient consent.