



ROAD SAFETY ANNUAL REPORT 2019

ISRAEL

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Israel recorded 316 road fatalities in 2018, representing a 13% decrease compared to 2017. Since 2000, traffic in Israel has become safer for all road user groups, with the exception of motorcyclists. In 2018, the National Road Safety Authority set a new national goal to reduce the road fatality risk to no more than five fatalities per billion vehicle-kilometres (vkm) by 2021. In 2019, it began developing a new national road safety plan extending to 2030.

Trends

Israel¹ registered an overall **decrease in the number of road deaths in 2018**. According to the latest data, 316 persons lost their lives in traffic crashes in Israel in 2018. This represents a 13.2% decline from 2017. In 2017, 364 road deaths were reported, a 3.4% decline from 2016.

The **longer-term trend for road deaths** in Israel has demonstrated steady downwards progress. Between 2000 and 2018, the number of annual road fatalities fell by 38%. Since 2012, when a record-low 290 road deaths were recorded, road fatalities have increased, rising to a high of 377 in 2016.

The number of **traffic deaths per 100 000 inhabitants** in Israel fell 47% between 2000 and 2017, from 7.9 to 4.2 traffic deaths per 100 000 inhabitants. By way of comparison, the average in the European Union was 4.9 deaths per 100 000 inhabitants in 2018.

Measured as **traffic deaths per billion vkm** driven, the fatality risk of Israel showed a similar longer-term trend. In 2017, this metric stood at 6.1, 56% lower than in 2000.

Israel recorded 0.9 **road fatalities per 10 000 registered vehicles** in 2018, a decrease of 67% compared to the 2.8 recorded in the year 2000.

Country Profile

Population in 2017: 8.7 million

GDP per capita in 2017: 40 544 USD

Cost of road crashes: 1.2% of GDP (2015)

Road network: 19 555 kilometres (urban roads 57%, rural roads 9%, motorways 34%)

Registered motor vehicles in 2017: 3.5 million (cars 86%; good vehicles 9%; motorised two-wheelers 4%)

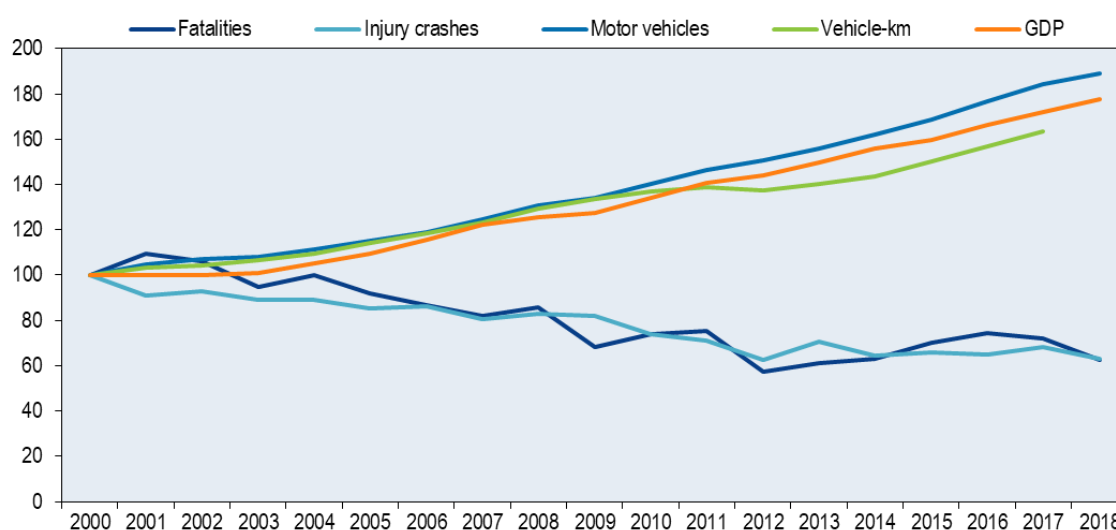
Volume of traffic: +63% between 2000 and 2017

Speed limits: 50-70 km/h on urban roads;
80/90/100 km/h on rural roads;
100/110/120 km/h on motorways

Limits on Blood Alcohol Content: 0.5 g/l for general drivers; 0.1 g/l for young, novice and professional drivers

¹ The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Figure 1. Road safety, vehicle stock, traffic and GDP trends
Index 2000 = 100



The picture for **fatalities by road user groups** shows that pedestrians remain the most severely affected by road crashes. In 2018, pedestrians accounted for the largest share of road deaths, with 31% of the total. They were followed by passenger car occupants at 30%, motorcyclists at 13% and cyclists at 5%.

In 2018, most road user groups saw road fatalities decrease compared to 2017. Motorcyclists registered the largest year-on-year decrease, with 32.8% fewer deaths compared to 2017, according to preliminary 2018 data. They were followed by pedestrians, who suffered 12.5% fewer fatalities, and passenger car occupants, with 12.1% fewer road deaths.

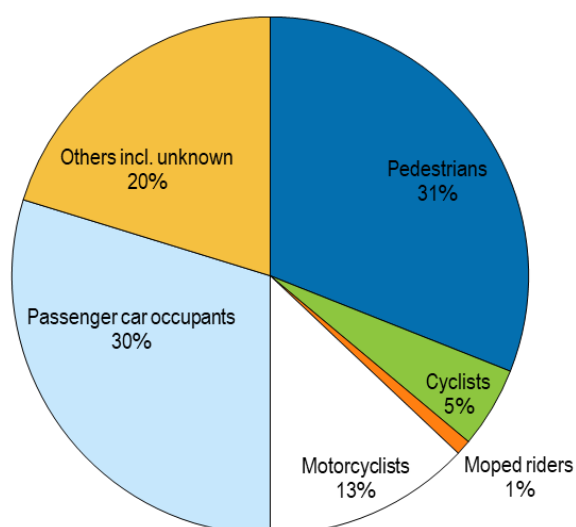
Cyclists and moped riders did not fare as well. Cyclists registered five more fatalities in 2018 than the year prior (16 road deaths in 2018). Likewise, moped riders (three road deaths in 2018) suffered two more fatalities than in 2017. There is growing concern regarding the safety of riders of electric bicycles. In 2018, 19 of them were killed in traffic.

The long-term trend shows that traffic in Israel has become safer for all road user groups save for motorcyclists. The strongest decline was registered among passenger car occupants for whom road fatalities halved between 2000 and 2018. Pedestrians experienced similar road safety improvements during this time, with 45% less fatalities recorded in 2018. Cyclists also shared in these improvements, albeit to a lesser degree, with four fewer fatalities in 2018 than in 2000.

Motorcyclists, however, have seen road safety stagnate if not worsen in the years since 2000. In 2017, a record-high 61 motorcyclists lost their lives on the road, a 56% increase on 2000. In 2018, 41 motorcyclists lost their lives. The increase in motorcyclist fatalities in the past five years mainly concerned riders under the age of 25. The heavy

motorcycle fleet has recently increased in Israel, as it has become much cheaper to buy this type of vehicle.

Figure 2. Road fatalities by road user group in percentage of total, 2018



Note: the "other including unknown" category includes drivers and passengers of buses, trucks and tractors, riders of electric bicycles, and unknown.

Road deaths by age group in 2018 showed some changes compared to 2017. Road users between 15 and 17 years of age experienced nine fewer fatalities in 2018 for a decrease of 40.9%. Similarly, 21-24 year olds experienced 11 fewer deaths for a decrease of 25% on 2017. Likewise, those aged 75 or older saw 24 fewer fatalities (-36.4%) in 2018.

On the other hand, those aged between 65 and 74 years old experienced seven more deaths on the road in 2018 than were recorded in the year prior.

Since 2000, the number of road deaths decreased for all groups. The strongest reduction fatalities over this period occurred among 18-20 year olds, who registered 39 fewer deaths (63%). Young road users, more generally, saw important road safety improvements this century. Those road users in the 0-14 and 15-17 age ranges saw 38.5% and 48% fewer fatalities in 2018 than in 2000. The decrease in the number of road deaths among young people mainly concerns pedestrians, with young people tending to walk less and drive more.

More recently, since 2010 the number of road deaths decreased for all groups, except the 18-20 and the 65-74.

Despite recent improvements, young people remain at high risk in traffic, with a mortality rate much above the average. 18-20 and 21-24 year olds suffer road fatalities at rates of 6.6 and 8.9 per 100 000 persons compared to a national average of 4.2.

Nonetheless, elderly people above 75 years of age form the group at highest risk in traffic. This age group suffers 15.6 road fatalities per 100 000 persons – nearly four times the national average. The elderly are particularly vulnerable as pedestrians. In 2018, 62% of deaths among road users older than 75 years occurred to pedestrians.

Figure 3. Road fatality rates by age group, 2000-2017
Deaths per 100 000 population in a given age group

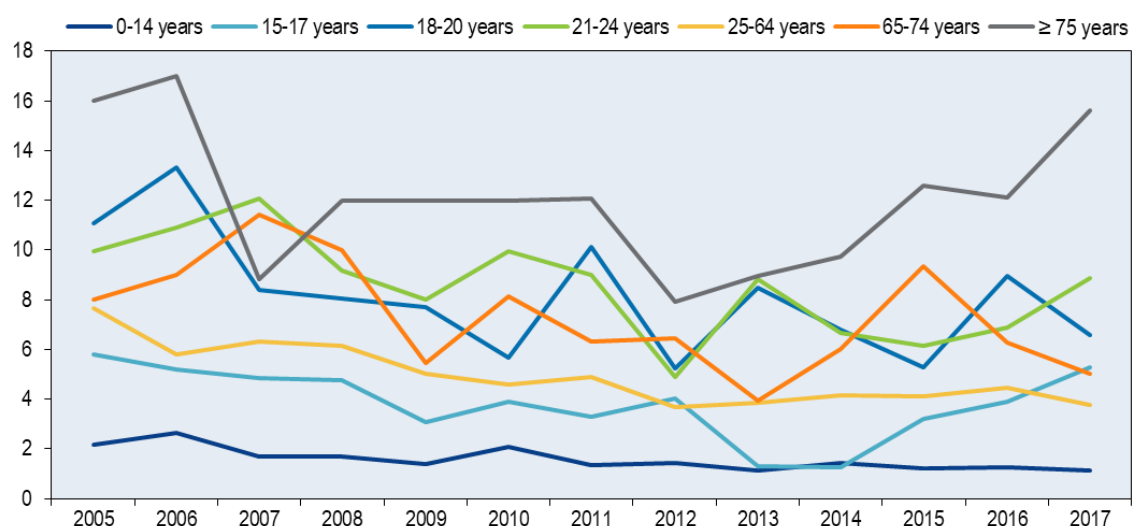
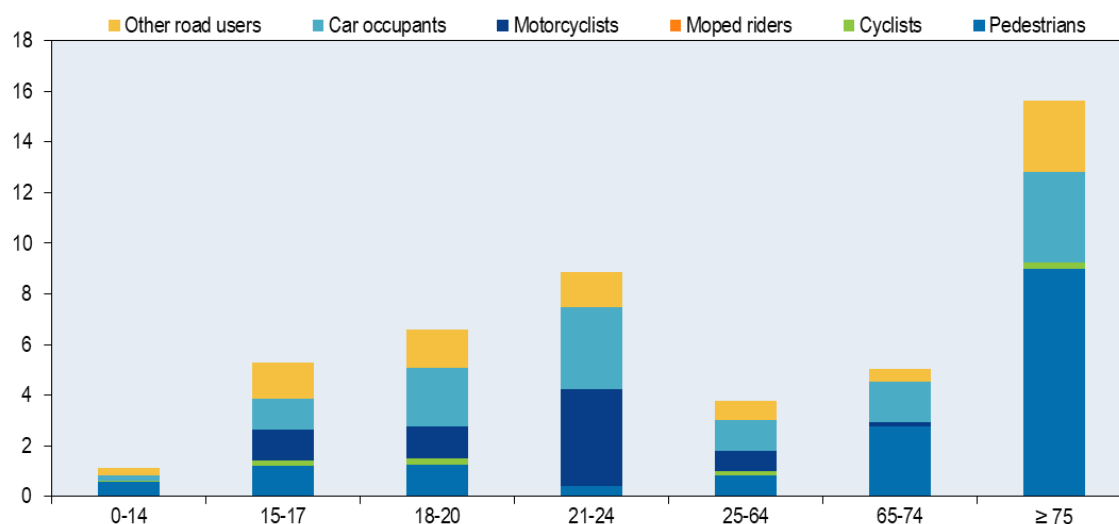


Figure 4. Road fatality rate by age and road user group, 2017
Fatalities per 100 000 population



Analysis of **fatalities by road type** shows that the non-urban road network is the deadliest. In 2018, 59% of deaths occurred outside of urban areas and 42% inside urban areas. This repartition has remained relatively stable in recent years.

In 2018, in comparison to 2017, the number of road deaths decreased by 14.4% on non-urban roads and by 11.5% on urban roads.

Since 2000, fatalities in non-urban areas decreased by 39% and by 35% in urban areas.

Figure 5. Road fatalities by road type

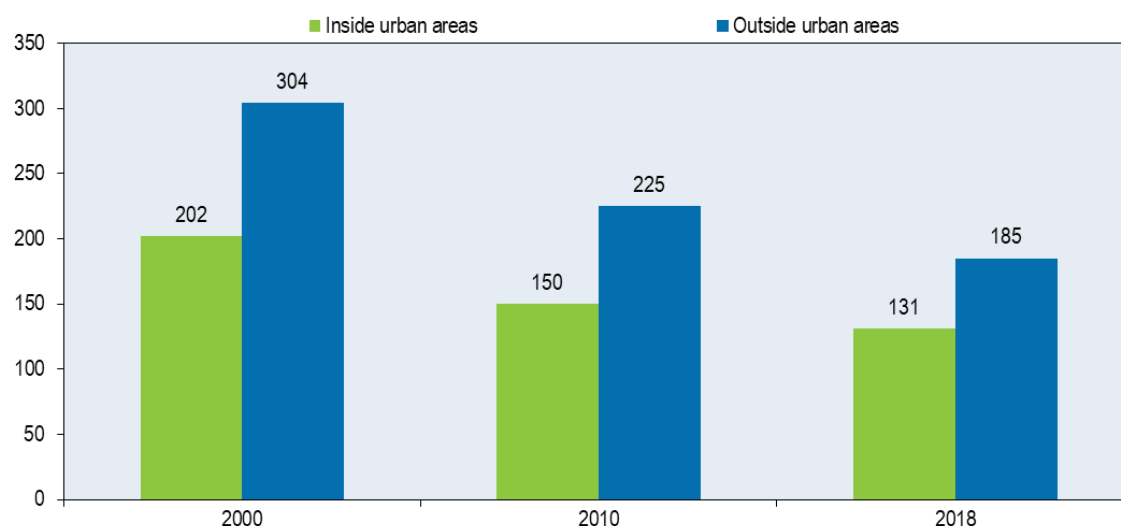
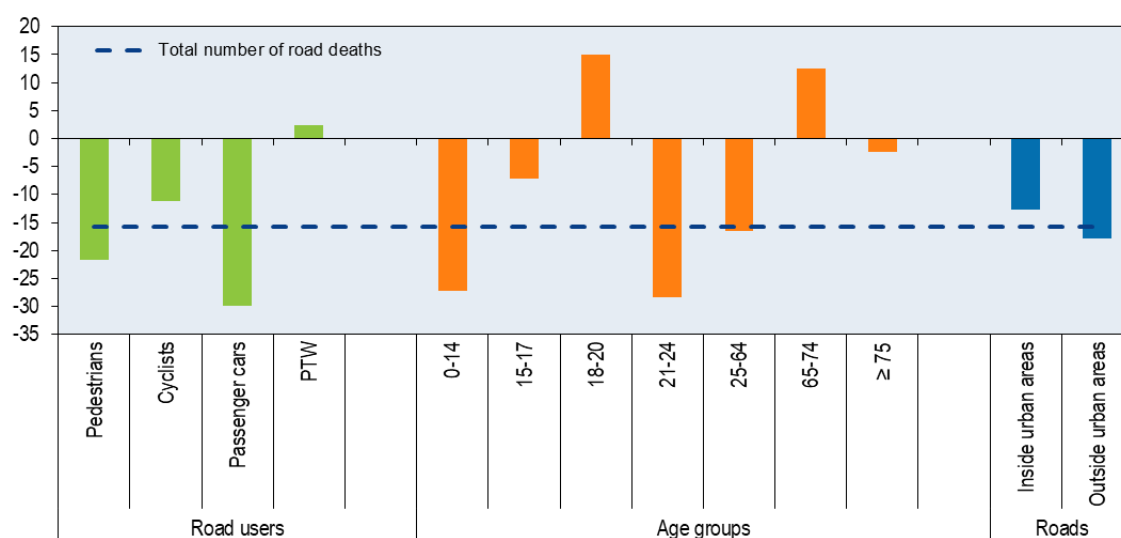


Figure 6. Evolution of road deaths by user category, age group and road type 2010-2018



Fatality data are essential to understand road safety issues, but hardly sufficient. Information on **serious injuries from crashes** is also critically important. Yet injury data are much more difficult to obtain, validate and - where available - compare. Since 2013, police data is linked with hospital data. When the casualty is identified in both data sources, the severity of the injury is defined based on the Maximum Abbreviated Injury Score (MAIS). When the casualty cannot be identified in hospital data, the severity of

injury is defined by the police based on the duration of the hospitalisation (see more information on the section on Definitions).

Economic costs of road crashes

Traffic crashes represent a significant cost for society, estimated for the year 2017 at around ILS 14 billion, representing 1.2% of GDP.

The methodology for assessing road crash costs was developed in 2004 using a combination of all available data sources. The injury and crash cost values were recently updated. Calculations are based on crash data from the Israel Police.

Crash costs include direct and indirect costs, such as loss of productivity due to a fatal or severe injury, medical expenses, assistance and nursing care; work disability; property damage costs; time lost due to traffic congestion caused by the crash; administrative costs; damage to the environment.

Table 1. Costs of road crashes, 2015

	Unit cost [ILS]	Total cost [ILS]
Fatalities	8 million	
Critical injuries	5.4 million	
Severe injuries	2.1 million	
Moderate injuries	1.4 million	
Slight injuries	174 000	
Non hospitalised injuries	31 000	
Total		14 billion
Total as % of GDP		1.2%

Behaviour

The behaviour of road users is an important determinant of a country's road safety performance. **Inappropriate speed**, in particular, is one of the main causes of road crashes. In 2018, 12.6% of fatal crashes were due to excessive speed.

In Israel, non-compliance with speed limits on non-urban road types remains high. This is especially prevalent for lorry drivers on high-speed roads, where about 90% of drivers operate their vehicles over the speed limit (Troitsky, 2018).

Since 2008, periodic safety surveys have been performed in Israel. The current survey presents travel speeds in Israel by road type, geographical region, lane and time of day. Speed measurements were conducted at 135 sites. In total, speed data were collected for over half a million vehicles. All surveys were conducted on free-flowing traffic. The survey found that over 50% of drivers were operating above the speed limit on certain types of roads. Significant differences were found in speeding behaviour on different types of roads.

The table below summarises the main speed limits in Israel.

Table 2. Passenger car speed limits by road type, 2019

	General speed limit
Motorways	110 km/h
Dual carriageway roads without at-grade junctions	90-100 km/h
Other dual-carriageway roads	90 km/h
Single-carriageway roads	80 km/h
Local roads	80 km/h
Urban arterial roads	70 km/h
Other urban roads	50 km/h

The extent of **drink driving** was long underestimated and not recognised as a major problem. This perception has now changed; police have increased roadside alcohol checks and testing for drivers involved in crashes. Conservative estimates indicate that alcohol is a contributing factor in 7-15% of fatal crashes.

The maximum authorised blood alcohol content (BAC) is 0.5 g/l for general drivers. This limit is lowered to 0.1 g/l for drivers under 24 years old, novice drivers for the first two years after receiving their licence and professional and public transport drivers.

Drivers are not routinely checked for **drugs**. In the case of fatal crashes, all involved parties are tested for drug use. Fatalities due to drugs and driving are estimated at 2% per year.

An increasing problem for traffic safety in Israel is **distraction**, for instance through the use of smart phones while driving. In Israel, it is legal to drive while operating a hands-free mobile phone but not with a hand-held phone. In 2018, NRSA started to monitor the usage of smartphones including for reading and writing text messages. NRSA is also developing Safety Performance Indicators for this issue.

The share of **sleepiness and fatigue** as a causal factor in crashes is especially challenging to detect. Based on police reports, the share of fatal crashes due to fatigue was 1% between 2000 and 2017. This percentage is understood to underestimate the true scope of the issue.

Seat-belt use has been compulsory in front seats since 1975 and in rear seats since 1995. Dedicated child restraint use is compulsory for children up to eight years old. Children in their first year must sit in a rear-facing restraint. Children aged one to three must sit in a forward-facing restraint. Children aged three to eight must be seated in a booster seat. The NRSA has issued stricter recommendations for children up to age two to sit in a rear-facing child restraint; children between two and five to sit in a forward-facing restraint; and children aged five to ten to be seated in a booster seat.

In 2019, the seatbelt use rate was 94% for drivers, 91% for front seat passengers and 72% for rear seat passengers. For children, according to a 2016 roadside survey, the

overall usage rate of a dedicated child restraint system is 87%. However, only 50% of children are correctly buckled.

In line with previous years, 12% of all car occupant fatalities in 2016 were not wearing seat belts when the crash occurred.

Table 3. Seat belt wearing rate by car occupancy and road type
Percentages

	2003	2010	2016	2019
Front seats				
Driver	89	89	91	94
Passenger	85	85	89	91
Rear seats				
General	23	70	70	72
Children (use of child restraint)	..	78	87 (50% are correctly buckled)	..

Helmet use is compulsory for all motorcycle and moped riders. The rate of use by motorcyclists is close to 100% but varies according to riding conditions (alone or in group), the age of the rider, type of site, size of town, etc.

Helmets are compulsory for child cyclists and for adults on non-urban roads. A 2013 roadside survey found that over 90% of cyclists wear helmets while riding outside urban areas. As of July 2019, helmet wearing has been compulsory when riding an e-bike, regardless of the age of the cyclists or the type of road.

Road safety management and strategies

The number of road fatalities peaked in 1974, with 704 road deaths. Since then, the number of fatalities has decreased by 57%. During the same period, motorisation and traffic have grown rapidly. Even in recent years, motorisation has continued to expand. Between 2000 and 2018, the number of motorised registered vehicles almost doubled.

Israel reached its lowest number of road deaths in 2012, with 290 road fatalities. Between 2012 and 2016, there was a deterioration in road safety with a 30% increase in the number of road deaths, partly explained by the increase in traffic volume, the increase in motorcyclist fatalities, the increase in the usage of e-bikes and electric scooters and the growing issue regarding the use of mobile phone while driving. In 2017 and 2018, the number of road deaths started decreasing again.

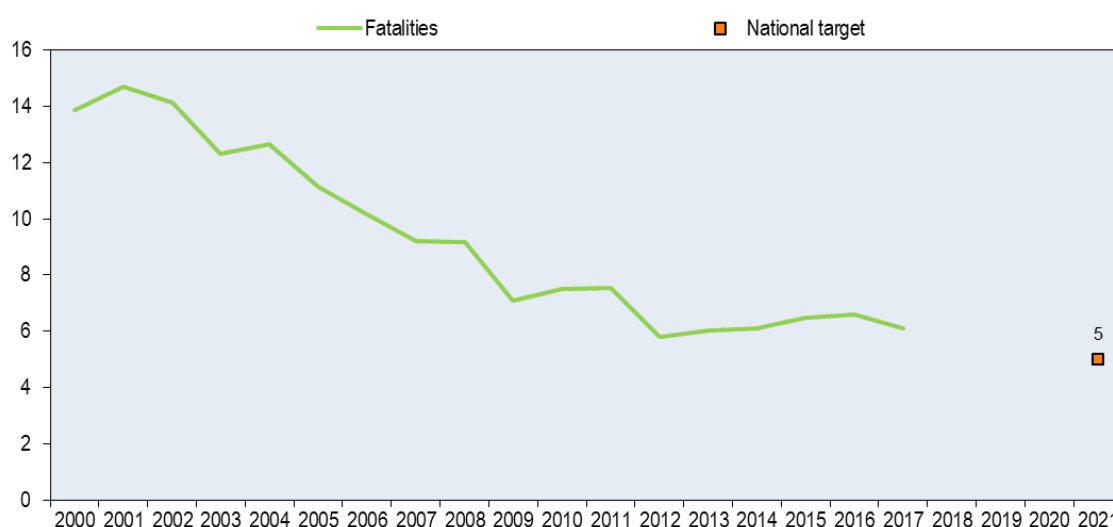
Responsibility for the organisation of road safety in Israel lies with the National Road Safety Authority (NRSA), created in 2007. The agency is charged with:

- advising the Minister of Transport, National Infrastructure and Road Safety as well as the government on road safety issues

- formulating, approving and implementing annual and multiannual work plans to improve road safety and setting measurable goals to reduce the rates and severities of road crashes and injuries
- managing the National Information Centre for Road Safety Research and Data
- formulating an integrated multiannual plan for promoting road safety in Israel and ensuring its implementation
- establishing supervision over the operations of local road sign placement authorities
- strengthening road safety operations in local councils, including actions to improve transportation infrastructure and safety measures
- developing campaigns to raise public awareness of road safety issues
- advising and aiding the school system on the subject of road safety
- facilitating the strengthening of the traffic law enforcement system.

The NRSA operates according to a multidisciplinary work plan that relies on information and research and on the analysis of high risk zones and populations that are overrepresented in casualty data. Accordingly, the five population groups that were identified as disproportionately represented in Israeli casualty data and therefore require more focused attention are: pedestrians, young drivers under the age of 24, minorities, drivers of heavy vehicles, pedestrians over the age of 75 and motorcyclists.

Figure 7. Trends in fatality risk towards national target
Number of road deaths per billion vkm



In 2018, the NRSA set a new national goal to reduce the road fatality risk to no more than five fatalities per billion vehicle-kilometres by 2021. To achieve this goal, the NRSA

is formulating a multiannual work plan, in partnership with all parties responsible for road safety in Israel and based on the Safe System approach.

In 2019, the NRSA began developing a new national road safety plan up to 2030, to guide actions from all governmental agencies responsible for road safety.

Measures

Road users

- Israeli minorities are disproportionately injured in car crashes. In 2018, the NRSA launched a prevention programme for minorities. The programme is being monitored and improved through formative and evaluative research. It has already demonstrated short-term effectiveness in its first year.
- An important focus of the NRSA is to better protect pedestrians and vulnerable road users through traffic regulation and speed reduction in urban areas. The NRSA is also working with the Israel police to increase traffic enforcement in urban areas, with additional police patrols and cameras.
- Measures are being developed to manage and regulate the usage of micromobility in urban areas: accelerated construction of bicycle paths, mandatory helmet wearing for all users of electric bicycles, obligation to complete a driver's knowledge test at 16 years of age, obligation to increase micro vehicles' visibility, and authorising local municipality inspectors to enforce these laws.
- The NRSA is promoting a special campaign for company managers to encourage their employees not to read or write text messages while driving.

Definition, methodology, data collection

- Road fatality: a person who died immediately or within 30 days of a crash due to injuries sustained during the crash.
- Seriously injured:
 - 1965-2012: A person injured in a road crash and hospitalised for a period of 24 hours or more (excluding hospitalisation for observation only).
 - 2013 onwards: Police data is linked with hospital data. When the casualty is identified in both data sources, the severity of the injury is defined based on the Maximum Abbreviated Injury Score (MAIS). The injury is classified as serious when the MAIS is of 3 or more. It is classified as light when the MAIS is of 1 or 2. When the casualty cannot be identified in the hospital data, the severity of the injury is defined by the police based on the duration of hospitalisation. The injury is classified as serious when the victim is hospitalised for a period of 24 hours or more (excluding hospitalisation for observation only).

Israeli Police collect crash data at the scene of the crash and subsequently send them to the Central Bureau of Statistics. The Road Safety Authority (NRSA) funds both the Traffic Police and the Transportation Unit at the Central Bureau of Statistics in order to manage and maintain the system.

Police data are regularly linked with other data sources, such as hospital databases (for fatalities up to 30 days and injuries), the Trauma Registry, the Ministry of Transportation (driver and vehicle registries) and Ministry of Interior (population registry). Crash data covers the entire population and geographical area.

Linking hospital data and police data showed that roughly 1 500 injured persons who were recorded by the police as slightly injured were recorded in hospital as severely injured. In addition, roughly 4 000 crash survivors who arrived at hospitals were not reported in police data. This mostly concerns single unit crashes, cyclists (including e-bikers) and motorcyclists. In addition to police data, Israel currently uses the Injury Severity Score (ISS) system to assess the severity of an injury. Police data is used as a basis for Israeli statistical publications.

In 2014, Israel collected data using the Maximum Abbreviated Injury Scale with scores of three or higher (MAIS3+) for the years 2008-16. These data has been integrated in the NRSA database from 2013 data onward.

It is assumed that all fatal crashes are reported to the police.

Resources

Recent research

In light of the high percentage of pedestrians injured at pedestrian crossings, the NRSA conducted an observational survey in 2018 to determine the frequency of unsafe behaviour by pedestrians when crossing urban roads. Over the course of the survey, 4 766 pedestrians were observed crossing streets in 57 locations, at signalised and non-signalised intersections and mid-block crossings. The survey findings indicate that 30% of pedestrians cross on red signals. In non-signalised intersections, approximately 10% of pedestrians failed to wait for traffic before crossing the street. 18% of pedestrians crossed while using devices that distracted them from traffic, such as headphones or mobile phones. For more information: Sharon, A. (2019), "Pedestrian crossing behaviour at urban crosswalks: the 2018 national observational survey", National Road Safety Authority, Jerusalem (Hebrew).

In 2019 NRSA conducted an observational survey to determine the frequency of unsafe behaviours of pedestrians while crossing at signalised junctions on urban roads with public transport routes. The findings are expected to be published by the end of 2019.

Minorities in Israel are disproportionately injured in car accidents. A major reason is a lower rate of seat-belt use. In mid-2018, the NRSA launched a campaign (mass media, local activities, and enforcement) to encourage the use of seat belts among drivers. For

more information: Gordoni-Lavy, Y. (2018), "A program for preventing the over-proportionate traffic injuries among Arab citizens: Results from an evaluation research a year after launching", National Road Safety Authority, Jerusalem (Hebrew).

Traffic safety culture is a major factor affecting drivers' behaviour and traffic law compliance. The NRSA conducted three phases of measurement between 2016 and 2018. The results revealed that social expectations are more important than personal interests in motivating Israeli drivers to obey the law; that the current level of traffic safety culture in Israel allows the development of some basic norm of safe behaviours but are not sufficient for preventing drivers from committing dangerous violations; and that traffic safety culture weakens over time and when drivers face external difficulties. For more information: Gordoni-Lavy, Y. (2019), "Traffic safety culture in Israel: Definition, current state, and integration within the traffic safety management", National Road Safety Authority, Jerusalem (Hebrew).

In 2018 and 2019, NRSA conducted a qualitative study to identify the factors causing motorcycle crashes and concluded that a main cause of motorcycle accidents is the tendency of riders to enter risk situations.

For more information: Hadar Y. (*forthcoming*), "Safety of Motorcyclists in Israel" (Hebrew), National Road Safety Authority.

Distraction from smartphones while driving is one of the most significant causes of car crashes. In 2018, NRSA started to measure the usage of smartphones. For more information: Hadar Y., A. Bramnis and G. Soroker (*forthcoming*), "The usage of smartphones while driving" (Hebrew), National Road Safety Authority.

In 2017, the NRSA evaluated the safety performance of local municipalities in order to make safety information more accessible to local residents and encourage local governments to address road safety issues. In 2019, the study included measures for change in personal risk for each municipality and local authority in the last three years. Also, separate indexes for safety of the elderly population were included. For more information: Troitsky A. (2019), "Road safety risk measures in large and medium cities in Israel", National Road Safety Authority, Jerusalem (Hebrew).

Websites

National Road Safety Authority – Israel:

https://www.gov.il/he/Departments/israel_national_road_safety_authority

Transportation Research Institute – Technion: <https://tri.net.technion.ac.il/en/>

Central Bureau of Statistics: <http://www.cbs.gov.il/reader>

Or Yarok Association for Safer Driving in Israel: <https://www.oryarok.org.il/>

References

Troitsky A. (2018), *National survey of travel speeds in Israel 2017*, National Road Safety Authority, Jerusalem.
https://www.gov.il/en/departments/publications/reports/research_speed_2017

Road safety and traffic data

	1990	2000	2010	2016	2017	2018	2018 % change over			
							2017	2010	2000	1990
Reported safety data										
Fatalities	418	506	375	377	364	316	-13.2%	-15.7%	-37.5%	-24.4%
Injury crashes	17 496	19 925	14 724	12 966	13 628	12 557	-7.9%	-14.7%	-37.0%	-28.2%
Injured persons hospitalised	3 965	2 896	1 683	2 400	2 326	2 166	-6.9%	28.7%	-25.2%	-45.4%
Deaths per 100,000 population	8.7	7.9	4.9	4.4	4.2	..	..	..	..	..
Deaths per 10,000 registered vehicles	4.1	2.8	1.5	1.2	1.1	0.9	-15.5%	-37.6%	-67.0%	-77.8%
Deaths per billion vehicle kilometres	22.4	13.9	7.5	6.6	6.1	..	..	..	..	..
Fatalities by road user										
Pedestrians	..	179	125	105	112	98	-12.5%	-21.6%	-45.3%	..
Cyclists	..	20	18	10	11	16	45.5%	-11.1%	-20.0%	..
Moped riders	..	7	3	6	1	3	200.0%	0.0%	-57.1%	..
Motorcyclists	..	39	40	37	61	41	-32.8%	2.5%	5.1%	..
Passenger car occupants	..	187	134	153	107	94	-12.1%	-29.9%	-49.7%	..
Other road users	..	74	55	66	72	64	-11.1%	16.4%	-13.5%	..
Fatalities by age group										
0-14 years	..	52	44	31	28	32	14.3%	-27.3%	-38.5%	..
15-17 years	..	25	14	16	22	13	-40.9%	-7.1%	-48.0%	..
18-20 years	..	62	20	35	26	23	-11.5%	15.0%	-62.9%	..
21-24 years	..	51	46	34	44	33	-25.0%	-28.3%	-35.3%	..
25-64 years	..	224	164	175	149	137	-8.1%	-16.5%	-38.8%	..
65-74 years	..	38	32	35	29	36	24.1%	12.5%	-5.3%	..
≥ 75 years	..	54	43	51	66	42	-36.4%	-2.3%	-22.2%	..
Fatalities by road type										
Inside urban areas	..	202	150	127	148	131	-11.5%	-12.7%	-35.1%	..
Outside urban areas	..	304	225	250	216	185	-14.4%	-17.8%	-39.1%	..
Traffic data										
Registered vehicles (thousands)	1 015	1 832	2 566	3 239	3 373	3 465	2.7%	35.0%	89.2%	241.3%
Vehicle kilometres (millions)	18 668	36 482	49 870	57 220	59 602	..	..	..	..	..
Registered vehicles per 1,000 population	210.6	287.6	336.6	375.4	387.1	..	..	..	..	..