



ISRAEL

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Israel recorded 355 road fatalities in 2019, representing a 12.3% increase compared to 2018. There is growing concern regarding the safety of cyclists and riders of electric bicycles, in particular. Since 2000, traffic in Israel has become safer for all road user groups, with the exception of motorcyclists and cyclists. In 2019, the National Road Safety Agency began developing a new national road safety plan extending to 2030 in accordance with the Stockholm road safety declaration.

Impact of Covid-19

In response to the Covid-19 pandemic, Israel introduced lockdown measures on 15 March 2020, which affected the movement of people and goods on the road and in turn the exposure to road crashes. Compared with the average for 2017-19, traffic volumes decreased 60% in April 2020, while the number of road deaths decreased 19%.

Overall during the lockdown period road deaths decreased 40%, severe injuries 52% and light crashes 74% when compared to the same period in the years 2015-19. An increase in single motor vehicle collisions and motorcycle crashes was observed during this period, compared to previous years.

Table 1. Road fatalities by month

	Average 2017-19	2020	% change
January	31	24	-22.6
February	29	22	-24.1
March	23	18	-21.7
April	26	21	-19.2
May	26	27	3.8
June	32	26	-18.8
July	31	31	0.0
August	24	39	62.5
September	23	27	17.4
October	38	24	-36.8
November	30	14	-53.3
December	31	32	3.2

Trends

Israel¹ registered an overall **increase in the number of road deaths in 2019**. According to the latest data, 355 persons lost their lives in traffic crashes in Israel in 2019. This represents a 12.3% increase from 2018. In 2018, 316 road deaths were reported, a 13.2% decline from 2017.

The **longer-term trend for road deaths** in Israel has demonstrated steady downward progress. Between 2000 and 2019, the number of annual road fatalities fell by 30%. 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 by 51% between 2000 and 2019, from 7.9 to 3.9 traffic deaths per 100 000 inhabitants. By way of comparison, the average in the European Union was 5.1 deaths per 100 000 inhabitants in 2019.

Measured as **traffic deaths per billion vkm** (vehicle-kilometres) driven, the fatality risk of Israel showed a similar longer-term trend. In 2019, this metric stood at 5.6, 60% lower than in 2000.

Israel recorded 1.0 **road fatality per 10 000 registered vehicles** in 2019, a decrease of 64% compared to the 2.8 recorded in the year 2000.

Country Profile

Population in 2019: 9.14 million

GDP per capita in 2017: USD 40 544

Cost of road crashes: 1.2% of GDP (2018)

Road network: 19 758 kilometres (urban roads 57%, rural roads 9%, motorways 34%)

Registered motor vehicles in 2019: 3.6 million (cars 86%; good vehicles 9%; motorised two-wheelers 4%)

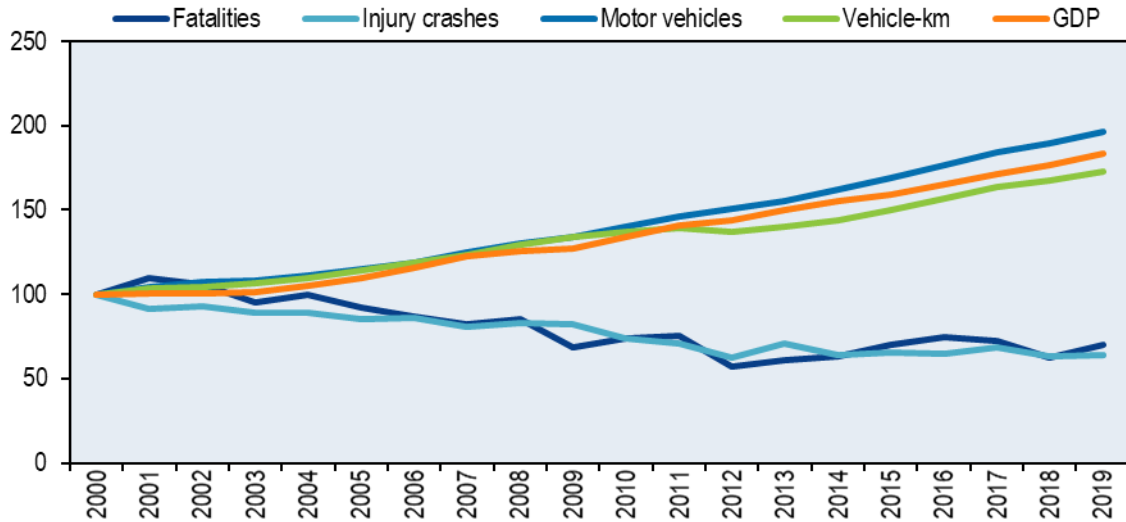
Volume of traffic: +73% between 2000 and 2019

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 (BAC): 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 passenger car occupants are the most severely affected by road crashes. In 2019, passenger car occupants accounted for the largest share of road deaths, with 36% of the total. They were followed by pedestrians at 25%, motorcyclists at 18% and cyclists at 10%.

In 2019, most road user groups saw road fatalities increase compared to 2018. Cyclists registered the largest year-on-year increase, with 112% the number of road deaths compared to 2018, from 16 to 34. There is growing concern regarding the safety of riders of electric bicycles. The increase also concerns motorcyclists (56% more fatalities) and passenger car occupants (35% more fatalities). On the other hand, moped riders and pedestrians saw improvements in the number of road fatalities compared to 2018. Moped riders registered two road deaths in 2019, one less than the previous year. Likewise, pedestrians suffered 89 road deaths in 2019, nine fewer fatalities compared to 2018.

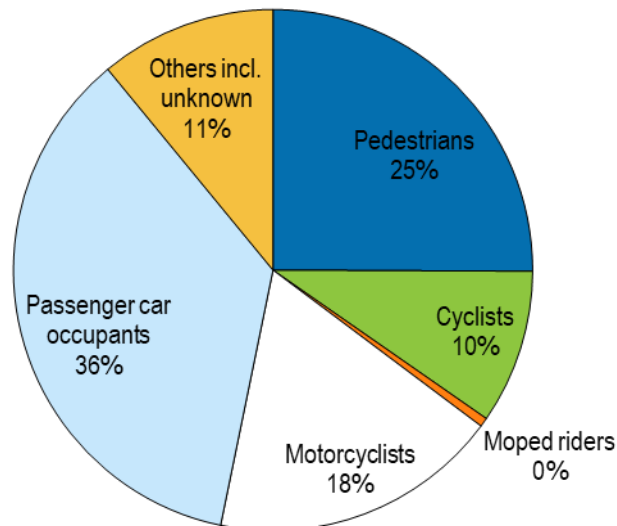
The long-term trend shows that traffic in Israel has become safer for moped riders, pedestrians and passenger car occupants. The strongest decline was registered among moped riders, for whom road fatalities decreased 71.4% between 2000 and 2019. Pedestrians' road fatalities halved since 2000. Passenger car occupants also shared in these improvements, with 60 fewer fatalities in 2019 than in 2000.

Cyclists and motorcyclists, however, have seen road safety worsen in the years since 2000. In 2019, cyclists suffered a 70% increase in the number of road fatalities compared to 2000, with 14 more road deaths registered. This deterioration in road safety is also seen in the record-high of 64 motorcyclists who lost their lives on the road in 2019, representing a 64% increase in the number of road deaths compared to 2000.

More recently, since 2010 (Figure 6) the same patterns have been observed, with a strong increase in the number of cyclists and motorcyclists killed. The increase in motorcyclist fatalities in the past five years has mainly concerned riders under the age of 25. The fleet

of large motorcycles 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, 2019



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

Road deaths by age group in 2019 showed some changes compared to 2018. The 15-17 age group had one fewer fatality in 2019. All the others road users under 65 had an increase in their number of road deaths compared to 2018. The 18-20 age group had the highest increase, with 10 more fatalities (43.5%). The 0-14 age group had two more fatalities (6.0%), 21-24-year-olds suffered two more fatalities (6.0%) and those 25-64 had 37 more fatalities (27.0%). On the other hand, road users over 65 had 11 fewer deaths, a decrease of 14.0% in 2019. Those over 75 had the largest improvement, with 19.0% fewer road fatalities compared to 2018.

Regarding the longer-term trends, the number of road deaths has decreased for all groups since 2000. The strongest reduction in fatalities over this period occurred among the youngest, with an average 44.5% drop in fatalities among road users under 20. Those over 75 experienced a 37% decrease in their number of road fatalities compared to 2000.

Since 2010 (Figure 6) there has been a strong increase (+65%) in the number of deaths among 18-20-year-olds and a more moderate increase for the 25-64 age group (+6%), while the number of road deaths decreased for the other age groups.

Young people remain at high risk in traffic, with a mortality rate well above average. More precisely, 18-20-year-olds suffer road fatalities at a rate of 7.9 per 100 000 persons, compared to a national average of 3.9 in 2019. People over 75 are also at high risk in traffic and have a mortality rate of 7.7 road fatalities per 100 000 persons.

Figure 3. Road fatality rates by age group, 2010-19
Deaths per 100 000 inhabitants in a given age group

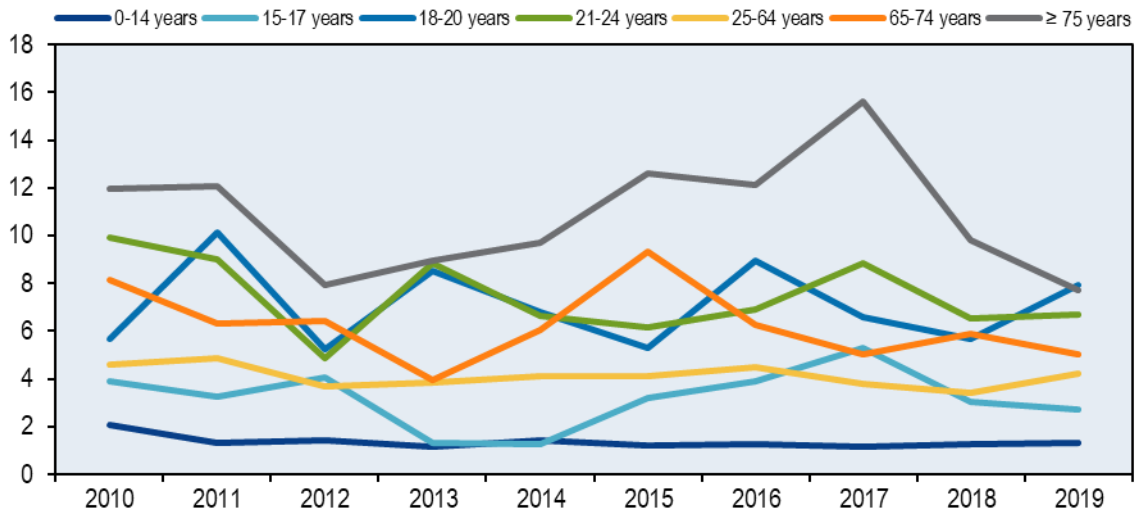
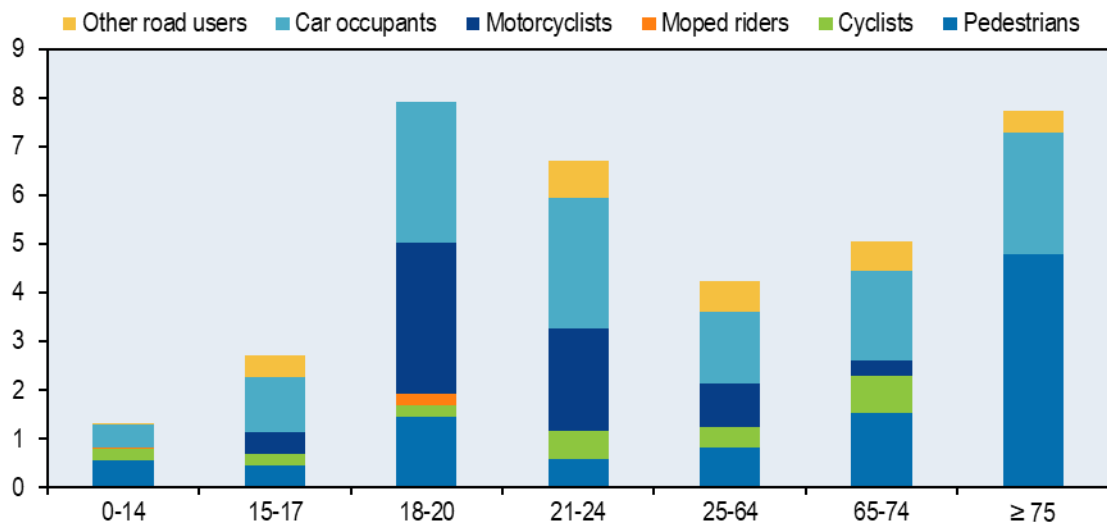


Figure 4. Road fatality rates by age and road user group, 2019
Fatalities per 100 000 inhabitants



Analysis of **fatalities by road type** shows the non-urban road network is the deadliest. In 2019, 62% of deaths occurred outside of urban areas and 38% inside urban areas. This repartition has remained relatively stable in recent years.

Since 2000, fatalities have decreased 38% in non-urban areas and 43% in urban areas.

Figure 5. Road fatalities by road type

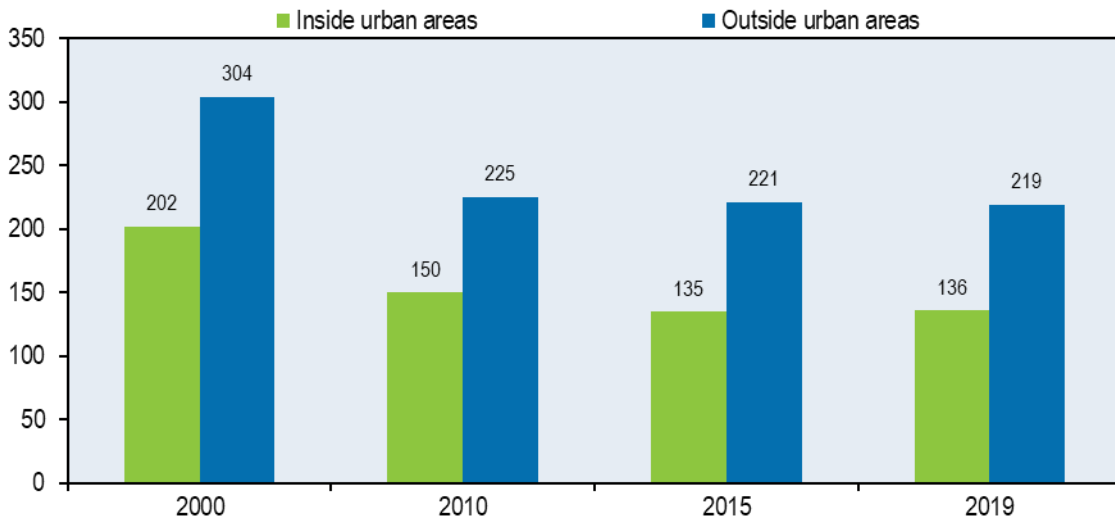
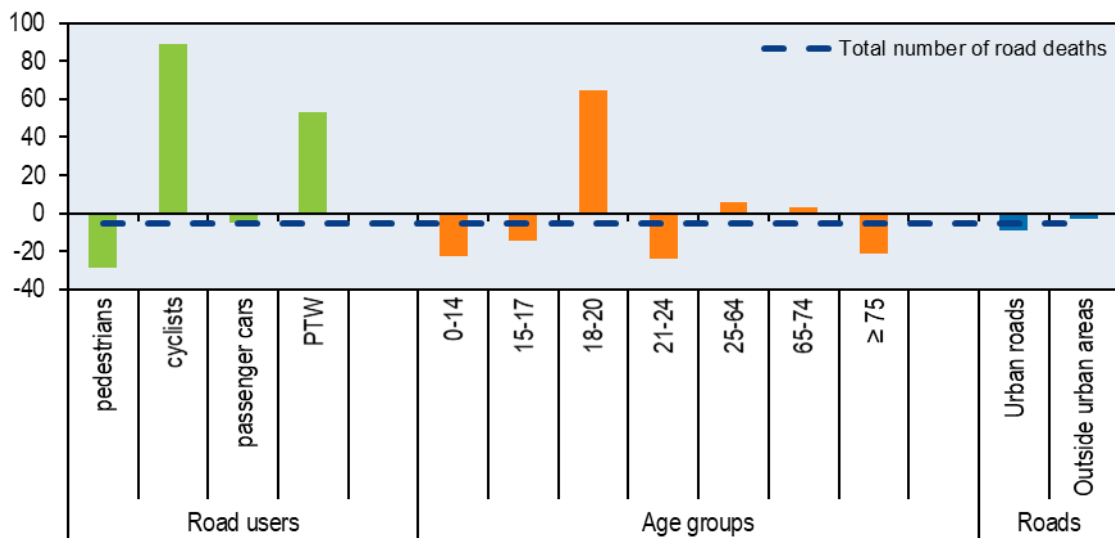


Figure 6. Evolution of road deaths by user category, age group and road type 2010-19



Fatality data are essential to understanding 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 has been linked to 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 Definitions, Methodology, Data Collection).

Economic cost of road crashes

Traffic crashes represent a significant cost for society, estimated for the year 2018 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. The injury and material costs were updated based on the change in real GDP from 2012 to 2018 and exchange rates as they appeared at year-end 2017. Calculations are based on crash data from the Israeli police.

Crash costs include direct and indirect costs, including: loss of productivity due to a fatal or severe injury and productivity loss for close family members; 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; and an approximation of costs of grief and suffering.

Table 2. Costs of road crashes, 2018

	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 2019, 17.1% of fatal crashes in Israel were due to excessive speed.

Non-compliance with speed limits on non-urban road types remains high. This is especially prevalent for truck drivers on high-speed roads, where about 90% 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. 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 3. Passenger car speed limits by road type, 2020

	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 BAC is 0.5 g/l for general drivers. This limit is lowered to 0.1 g/l for drivers under 24, novice drivers for the first two years after receiving their licence and professional and public transport drivers.

Drivers are not routinely checked for **drugs**. The Israel police is currently working on creating a routine check-up for this matter. In the case of fatal crashes, all involved parties are tested for drug use. Fatalities due to drugs and driving are estimated at 3% per year.

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

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 2019. However, researchers posit this percentage likely underestimates 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 mandatory 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 a forward-facing restraint; and children aged five to ten in a booster seat.

In 2019, the seat belt 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 dedicated child restraint systems was 87%. However, only 50% of children were correctly buckled up.

Table 4. 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 a 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 cyclist 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 registered motorised 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. This is partly explained by the increase in traffic volume, motorcyclist fatalities, the usage of e-bikes and electric scooters, and the growing issue of mobile phone use while driving.

The NRSA, created in 2007, is **responsible for organising road safety** in Israel. The agency is charged with the following:

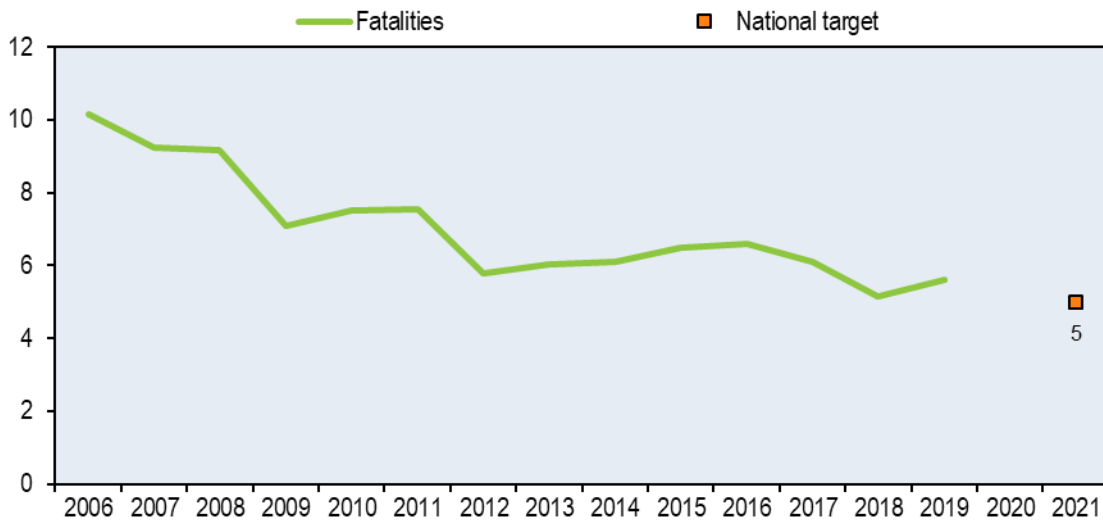
- advising the Minister of Transport, National Infrastructure and Road Safety, as well as the government on road safety issues

- formulating, approving and implementing annual and multiannual work plans to improve road safety and setting measurable goals to reduce the rates and severity 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
- supervising the operations of the 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, which relies on information, research and the analysis of high-risk zones and populations that are overrepresented in casualty data. Accordingly, the five population groups that it has identified as disproportionately represented in Israeli casualty data are: pedestrians, young drivers under 24, minorities, drivers of heavy vehicles, pedestrians over 75 and motorcyclists.

In 2018, the NRSA set a new national goal to reduce the road fatality risk to no more than five fatalities per billion vkm 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.

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



In 2019, the NRSA began developing a new national road safety plan until 2030 to guide actions from all governmental agencies responsible for road safety. In accordance with the 2020 Stockholm declaration, Israel developed a detailed multi-year national road safety plan to halve the number of fatalities and severe injuries by 2030 and is currently going through funding assessments.

Measures

Road users: Israeli minorities are disproportionately injured in car crashes. In 2018, the NRSA launched a prevention programme for minorities, which 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. A yearly measure of the safety performance of local municipalities is conducted in order to make safety information more accessible to local residents and encourage local governments to address road safety issues.

Measures are being developed to manage and regulate the usage of micro-mobility 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, obligation to increase micro vehicles' visibility and authorising local municipality inspectors to enforce these laws.

Definitions, methodology, data collection

A road fatality is defined as a person who dies immediately or within 30 days of a crash due to injuries sustained during the crash.

In Israel, from 1965 until 2012 a seriously injured person was a person injured in a road crash and hospitalised for a period of 24 hours or more (excluding hospitalisation for observation only). As of 2013 police data has been linked to 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 score is 3 or higher; it is classified as light when it is 1 or 2. When the police cannot identify the casualty in the hospital data, they classify the injury as serious if 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 it to the Central Bureau of Statistics. The NRSA funds both the Traffic Police and the Transportation Unit at the Central Bureau of Statistics 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 the Ministry of Interior (population registry). The crash data cover the entire population and geographical area of Israel.

In 2014, Israel collected data from 2008-16 using the Maximum Abbreviated Injury Scale with scores of 3 or higher (MAIS3+). As of 2013 these data have been integrated in the NRSA database.

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

Resources

Recent research

In 2019, the NRSA conducted an observational survey to determine the frequency of pedestrians' unsafe behaviours while crossing at signalised junctions on urban roads with public transport routes. The findings were published in 2020, revealing a disturbingly high incidence of pedestrian errors at junctions with a central two-way public transport route. For further information, see Sharon, A. and A. Troitsky (2020), "Pedestrian behaviour at junctions with prioritized Public Transport Arrangements pioneer study findings", National Road Safety Authority, Jerusalem (in Hebrew, Executive summary in English).

In 2019, the NRSA conducted a survey to estimate the frequency of driving under the influence of alcohol among Israeli drivers (self-declared) and measure their drinking habits and attitudes toward drink-driving. The findings, which were published in 2020, revealed a substantial percentage of drink-driving among the Jewish population, along with

widespread drinking habits, a higher inclination for drink-driving among young, non-novice, male drivers and a considerable lack of knowledge about the alcohol limit for drivers. For further information, see Lachmi, A. and Y. Gordoni-Lavy (2020), "Driving under the influence of alcohol in Israel: Scope, factors, and law awareness", National Road Safety Authority, Jerusalem (Hebrew).

Traffic safety culture is a major factor affecting driver behaviour and traffic law compliance. The NRSA conducted three phases of measurement between 2016 and 2018. The results revealed social expectations are more important than personal interests in motivating Israeli drivers to obey the law; the current level of traffic safety culture in Israel allows the development of some basic norms of safe behaviours but is not sufficient for preventing drivers from committing dangerous violations; and traffic safety culture weakens both over time and when drivers face external difficulties. For further information, see 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, the NRSA conducted a qualitative study to identify the factors causing motorcycle crashes and concluded a main cause of motorcycle accidents is the tendency of riders to enter risk situations. For further information, see Hadar Y. (2020), "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, the NRSA started to measure the usage of smartphones. The research was conducted for a second time in 2019. For further information, see Hadar Y., A. Bramnis and G. Soroker (2020), "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 a change in personal risk for each municipality and local authority in the last three years. In addition, separate indexes for the safety of the elderly population and children were included. For further information, see Troitsky A. (2020), "Road safety risk measures in large and medium cities in Israel", National Road Safety Authority, Jerusalem (Hebrew).

In 2019, the NRSA conducted a study to determine the safety impacts of Israel's graduated driving licence programme and the extent of its application in the country. The findings are expected to be published in the first quarter of 2021.

In 2019, the NRSA conducted an observational survey to estimate seat belt use in Israel. The findings were published in 2020. For further information, see Sharon, A. and A. Lachmi (2020), "Seat belt use in Israel: results from the 2019 roadside survey", 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>.

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	2017	2018	2019	2019 % change over			
							2018	2010	2000	1990
Reported safety data										
Fatalities	418	506	375	364	316	355	12.3%	-5.3%	-29.8%	-15.1%
Injury crashes	17 496	19 925	14 724	13 628	12 557	12 670	0.9%	-14.0%	-36.4%	-27.6%
Injured persons hospitalised	3 965	2 896	1 683	2 326	2 166	2 394	10.5%	42.2%	-17.3%	-39.6%
Deaths per 100,000 population	8.7	7.9	4.9	4.2	3.6	3.9	9.2%	-21.1%	-51.1%	-55.2%
Deaths per 10,000 registered vehicles	4.1	2.8	1.5	1.1	0.9	1.0	8.1%	-32.5%	-64.3%	-76.1%
Deaths per billion vehicle kilometres	22.4	13.9	7.5	6.1	5.2	5.6	8.8%	-25.3%	-59.5%	-74.9%
Fatalities by road user										
Pedestrians	..	179	125	112	98	89	-9.2%	-28.8%	-50.3%	..
Cyclists	..	20	18	11	16	34	112.5%	88.9%	70.0%	..
Moped riders	..	7	3	1	3	2	-33.3%	-33.3%	-71.4%	..
Motorcyclists	..	39	40	61	41	64	56.1%	60.0%	64.1%	..
Passenger car occupants	..	187	134	107	94	127	35.1%	-5.2%	-32.1%	..
Other road users	..	74	55	72	64	39	-39.1%	-29.1%	-47.3%	..
Fatalities by age group										
0-14 years	..	52	44	28	32	34	6.3%	-22.7%	-34.6%	..
15-17 years	..	25	14	22	13	12	-7.7%	-14.3%	-52.0%	..
18-20 years	..	62	20	26	23	33	43.5%	65.0%	-46.8%	..
21-24 years	..	51	46	44	33	35	6.1%	-23.9%	-31.4%	..
25-64 years	..	224	164	149	137	174	27.0%	6.1%	-22.3%	..
65-74 years	..	38	32	29	36	33	-8.3%	3.1%	-13.2%	..
≥ 75 years	..	54	43	66	42	34	-19.0%	-20.9%	-37.0%	..
Fatalities by road type										
Urban roads	..	202	150	148	131	136	3.8%	-9.3%	-32.7%	..
Rural roads	..	304	225	216	185	219	18.4%	-2.7%	-28.0%	..
Traffic data										
Registered vehicles (thousands)	1 015	1 832	2 566	3 373	3 465	3 601	3.9%	40.3%	96.6%	254.6%
Vehicle kilometres (millions)	18 668	36 482	49 870	59 602	61 196	63 191	3.3%	26.7%	73.2%	238.5%
Registered vehicles per 1,000 population	210.6	287.6	336.6	387.1	390.1	394.0	1.0%	17.0%	37.0%	87.1%