



ROAD SAFETY ANNUAL REPORT 2018

KOREA

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In 2017, Korea reached its lowest level of road mortality, with 4 185 people killed. Still, Korea ranks among the less well performing of IRTAD member countries. Improving the safety of pedestrians and cyclists in urban areas is a key priority. Korea has adopted an ambitious transport safety plan for 2017-21 with the target of reducing the number of road deaths to under 2 700 by 2021. Since September 2018, the use of seat belts for rear seat passengers has become mandatory outside the motorway network.

Trends

Korea registered a **decrease in the number of road deaths in 2017**. This is the 5th consecutive year with a decrease in the number of fatalities. In 2017, 4 185 persons lost their lives in traffic crashes. This represents a 2.6% decline on 2016. In 2016, 4 282 road deaths were reported, a 7.1% decline on 2015.

The **longer-term trend for road deaths** in Korea has been downward. Between 1990 and 2017, the number of annual road fatalities fell by 71%. Over the more recent past, the number of road casualties fell by 59% during the 2000-17 period and by 24% in the 2010-17 period.

The mortality rate in Korea, measured as the number of **traffic deaths per 100 000 inhabitants**, has been divided by four between 1990 and 2017. In 2017, 8.1 road deaths per 100 000 inhabitants were recorded, compared to 33.1 in 1990. Despite this good progress, Korea ranked 29th among the 32 IRTAD countries with validated data.

Measured as **traffic deaths per billion vehicle-kilometres** (vkm) driven, the fatality risk also showed a positive longer-term trend. It stood at 13.8 in 2016 compared to 49.5 in 2000, thus representing a decrease of 72%. Korea recorded 1.6 **road fatalities per 10 000 registered vehicles** in 2017. This is 18 times less than in 1990, reflecting both the improvement in road safety but also the strong increase in motorisation as the number of motor vehicles was multiplied by five during the same period.

Country Profile

Population in 2016: 54.2 million

GDP per capita in 2016: USD 27 539

Cost of road crashes: 1.4% of GDP (2016)

Road network: 108 780 kilometres

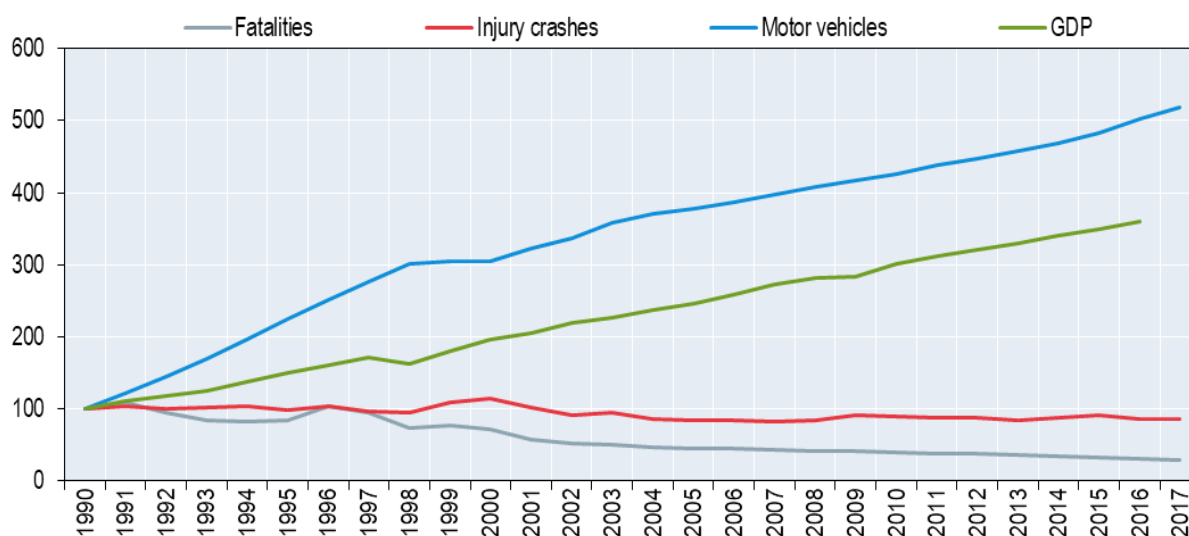
Registered motor vehicles in 2017: 25.4 million (cars 68%; goods vehicles 14%; motorcycles 9%; buses 4%)

Volume of traffic: +50% between 2000 and 2016

Speed limits: 60 km/h on urban roads; 60 km/h on one-lane roads; 80 km/h on others; 100 km/h on motorways in urban areas; 110 km/h on motorways outside urban areas

Limits on Blood Alcohol Content: 0.5 g/l

Figure 1. Road safety, vehicle stock and GDP trends
Index 1990 = 100

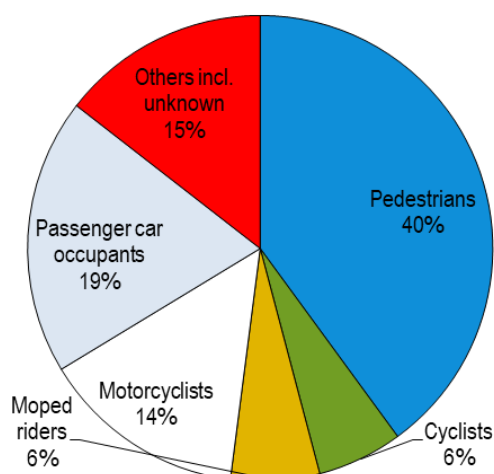


Note: registered vehicles do not include mopeds.

The picture for **fatalities by road user group** is characterised by a very high share of pedestrians among road casualties. In 2016, pedestrians represented by far the largest share of road deaths with 40% of the total. They were followed by users of motorised two-wheelers (20%), car occupants (19%) and cyclists (6%). Compared to 2000, the share of pedestrians rose a little, the share of cyclists killed doubled from 3% to 6%, while the share of car occupants in total deaths decreased from 27% to 19%.

In 2016, in the context of an overall decline of 7% in road deaths compared to 2015, road mortality decreased for all road users except motorcyclists, for whom the number of fatal casualties went from 558 to 613, representing an increase of 10%. This increase is explained by the rapid increase of delivery services by motorcycles and the lack of safety consciousness of young motorcyclists. The largest decrease in 2016 was registered among car occupants (-17%), followed by moped riders (-15%), cyclists (-6%) and pedestrians (-4.5%).

Improving the safety of pedestrians in urban areas remains a key priority of the Korean government.

Figure 2. Road fatalities by road user group in percentage of total, 2016

Road deaths by age group in 2016 showed a strong decrease of the mortality of the 18-20 age group compared to 2015 (-22% against an overall 7% reduction in total road deaths). Since 2010, while on average the total number of road deaths decreased by 22%, the situation has deteriorated strongly for older persons aged 75 and above, for whom the number of road deaths increased by 31%. They are particularly vulnerable as pedestrians, and represent nearly half of all pedestrian fatalities and they are increasingly represented in cyclists fatalities.

The 65 and above age group is disproportionately at risk in traffic. While the average mortality rate is of 8.1 road deaths per 100 000 population, the mortality rate of the senior population was 26 in 2016, more than three times the rate of the overall population. Compared to other IRTAD countries, the young population does not have a high mortality rate, maybe due to the fact that young people tend to start driving at a later age. According to a mobility survey undertaken in Seoul in 2017, only 10% of young people in their 20s travel by car. This share rises to 35% for adults in their 40s.

Figure 3. Road fatality rates by age group, 1993-2016
Deaths per 100 000 population in a given age group

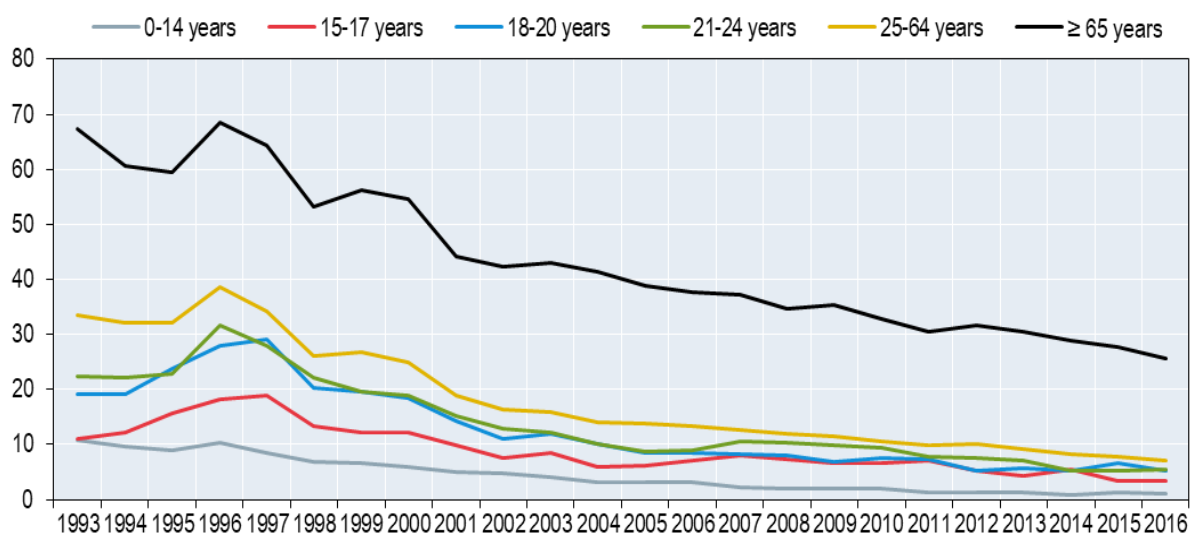
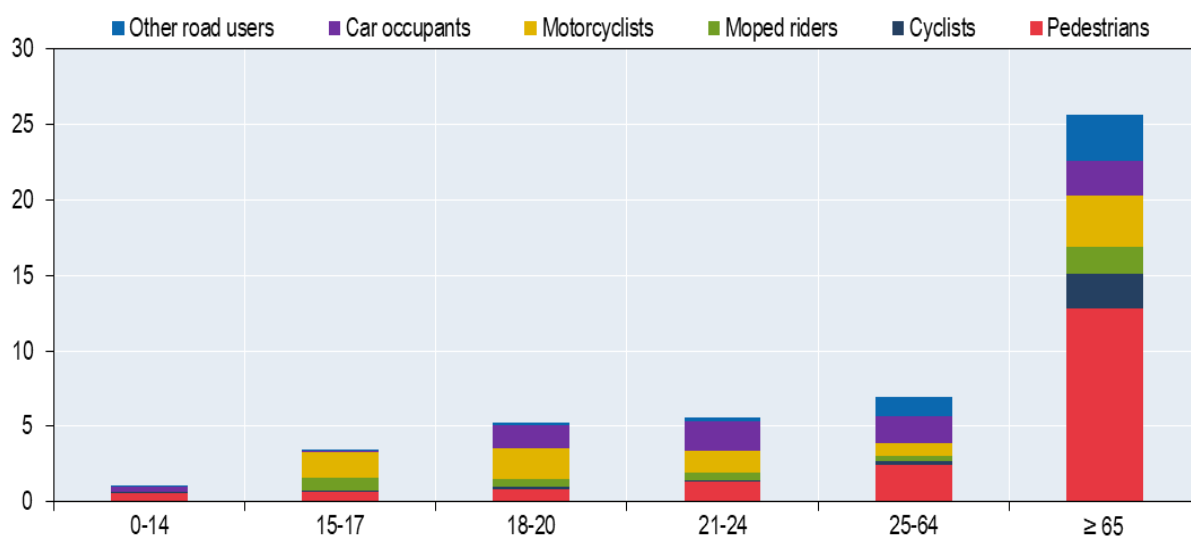


Figure 4. Road fatality rate by age and road user group, 2016
Fatalities per 100 000 population

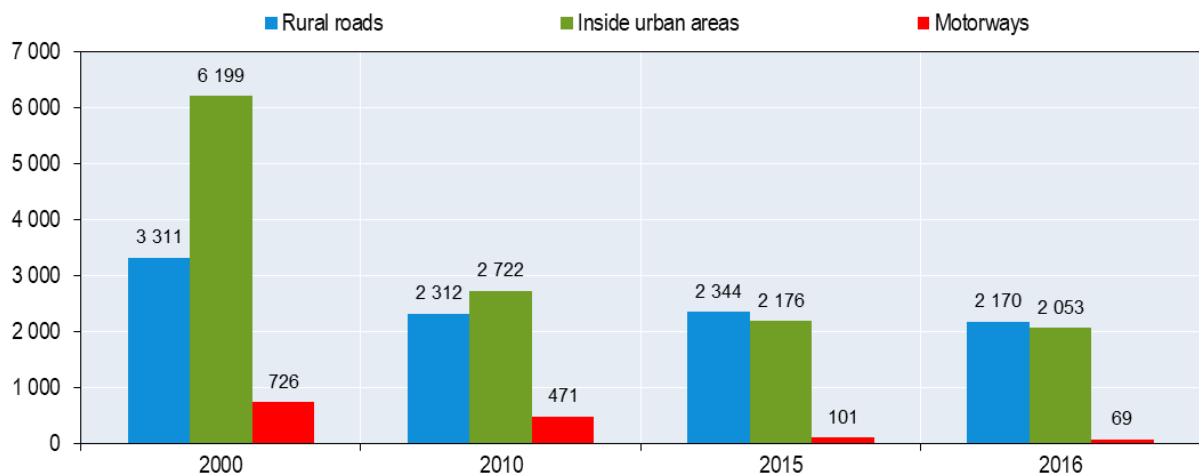


Analysis of **fatalities by road type** shows that in 2016, the number of fatalities was shared equally between urban and non-urban areas, with 47% of fatalities on rural roads, 51% on urban roads and about 2% on motorways. In 2016, motorways benefited the most from the reduction in the number of road deaths, with a reduction of 32% of the number of people killed on the motorway network compared to 2015. On a longer term trend motorways are also the network where the greatest reduction has been achieved. Between 2000 and 2016, the number of people killed on motorways decreased by more than 90% from 726 in 2000 to 69 in 2016. The good performance on motorways is explained by stronger police enforcement, treatment of black spots, construction of rumble strips, prevention campaigns on fatigue and the installation of rest areas and

median barrier improvement, as well as the compulsory use of seat belts for all users (on motorways) since 2008.

The share of fatalities in urban areas is increasing sharply. While 32% of road deaths occurred on urban roads in 2000, this share was 51% in 2016. Protecting pedestrians and cyclists in urban areas is a key priority for the Korean government.

Figure 5. Road fatalities by road type



Economic costs of road crashes

Traffic crashes represent a significant cost for society, estimated in 2016 at around USD 21 billion, or about 1.4% of Korea's GDP. The costs are based on police crash data and information from insurance companies. These costs do not take into account the cost of suffering and pain.

Since 1992, KoROAD has calculated the economic cost of road crashes using the Gross Loss of Output Approach. The most recently published estimation of road crash cost is based on 2016 crash data (KoROAD, 2017).

Table 1. Costs of road crashes, 2016

	Unit cost [USD]	Total [USD]
Fatalities	382 262	1.63 billion
Severe injuries	52 289	5.23 billion
Slight injuries	3 711	2.00 billion
Injuries less than 3 days treatment	1 689	1.76 billion
Total		20.99 billion
Total as % of GDP		1.4%

Behaviour

The behaviour of road users is an important determinant of a country's road safety performance. **Inappropriate or excessive speed** in particular is one of the main causes of road crashes. Based on police reports, in 2017, excessive speed was a primary contributing factor in 4.9% of all road fatalities.

The speed limits in Korea are summarised below. In 2012, the speed limit in urban areas was reduced from 80 km/h to 60 km/h for two-lane roads. In 2015, as part of a pilot project, the speed limit was lowered from 60 km/h to 50 km/h or 40 km/h in around 118 residential and shopping areas. In 2017, this measure was extended to most residential and shopping areas.

Table 2. Passenger car speed limits by road type, 2018

	General speed limit
Urban roads	60 km/h Pilot project underway with 50 and 40 km/h in residential and shopping areas
Rural roads	One-lane roads: 60 km/h Two or more lane roads: 80 km/h
Motorways	Urban areas: 100 km/h Outside urban areas: 110 km/h

Driving under the influence of alcohol is another major cause of road crashes in Korea, as in most IRTAD countries. In 2017, it was estimated that 10.2% of fatal crashes were alcohol related.

The maximum authorised blood alcohol content (BAC) is 0.5 g/l. A crash is categorised as "alcohol related" when at least one of the crash-related casualties has a BAC above the legal limit.

Drugs and driving is likely to be a problem in Korea, however there is no data to assess the prevalence of drugs and driving and its impact on crash occurrence. Drugs and driving is not classified in the police forms as a possible cause of a crash.

An increasing problem for traffic safety in Korea is **distraction**, for instance through mobile phone use while driving or crossing a street. There is no official data on the prevalence of distraction in crashes, as distraction is not classified as a possible cause of a crash in police forms. However, according to the Traffic Culture Index Survey undertaken in 2017 by KOTSA, 13.2% of pedestrians use their smart phone while crossing a road and 5.0% of drivers on urban roads use a mobile phone while driving.

Since 2008, the use of hand-held mobile phones while driving is prohibited. It is however a behaviour difficult to enforce, as it is strongly dependent on the driver's statement.

The share of **sleepiness and fatigue** as a causal factor in crashes is especially challenging to detect. Based on police data, 1.1% of all injury crashes and 2.3% of all road fatalities were caused by drowsiness.

To prevent driver fatigue and sleepiness, the Korea Expressway Corporation installed more than 290 rest areas on the motorway network. It is planned to install 84 additional rest areas by 2021.

Seat-belt wearing has been compulsory since 1990 in front seats. The use of rear seat belts was made compulsory on motorways in 2008 but it was not compulsory on other roads. Since September 2018, seat belt use became mandatory for all car occupants and all types of roads. The *Traffic Culture Index Survey 2017* shows that 94% of drivers, 86% of front seat passengers and 49% of rear seat passengers wear seat belts on motorways. The seat belt wearing rate of drivers on urban roads was 87%.

Children under 6 years of age must be seated in a dedicated child seat. In 2017, the wearing rate was 60% on motorways and 49% on urban roads.

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

	Percentages			
	2010	2015	2016	2017
Front seats				
Motorways (driver)	89	91	94	94
Motorways (passenger)	78	83	83	86
Rear seats				
Motorways (general)	6	28	30	49
Motorways (children)		45	40	60
Urban roads (children)			42	49

For motorcyclists, **helmet wearing** is the most effective passive safety habit. In Korea, helmets have been compulsory for users of all of motorised two-wheelers since 2007. In 2017, the overall helmet use rate was 84%. The wearing rate varies markedly between cities.

Wearing a cycle helmet has been mandatory since September 2018 following a revision to the Road Traffic Law in March to reduce the risks of serious head and face injuries.

Road safety management and strategies

There are several **factors of influence on Kporea's road safety performance** as captured by the above indicators. Fatalities peaked in 1991 at 13 429. Since then, road deaths have decreased (with some fluctuations) and were halved by 2004. In 2013, for the first time in 37 years the number of road deaths was below 5 000, and in 2017,

Korea reached its lowest level of road deaths. This important decrease is due in part to the following measures:

- the compulsory wearing of front seat belts (1990)
- drink driving enforcement (1998)
- installation of median barriers on national roads
- speed enforcement by the police, including automatic speed camera enforcement since 2008
- lower speed limits on urban roads in residential areas (ongoing pilot project since 2014).

However, Korea still faces a number of challenges and has fatality rates above the average for countries in the Organisation for Economic Co-operation and Development (OECD). Reasons for the elevated levels of deaths and serious injuries on the roads include high alcohol consumption, wide junctions, lack of sidewalk on rural roads, high speed limits on urban roads (usually 60 km/h and sometimes 80 km/h), a lack of road safety education in high schools and the low priority of road safety by local government. Also, Korea's older population (above 65) has a very high risk in traffic when compared to other OECD countries. This is a serious concern as the share of the senior population is increasing steadily.

Responsibility for the organisation of road safety in Korea is shared among various ministries and agencies.

The Ministry of Land, Transportation and Infrastructure is responsible for the national trunk road network of motorways and national highways. It also manages vehicle safety and runs the New Car Assessment Program.

The Ministry of Public Safety and Security oversees road safety particularly for local governments. It contributes to safety strategies for provincial, municipal and county roads.

The National Police Agency is mainly responsible for traffic enforcement and crash investigation. It also operates traffic signals, crossings and speed enforcement cameras.

The Korea Transportation Safety Authority is a government agency supporting the Ministry of Land, Transportation and Infrastructure, mainly responsible for vehicle safety.

KoROAD is a government agency, supporting the National Police Agency, responsible for road traffic management. The agency is in charge of traffic monitoring, drivers' licence examinations and management, training and education.

Road safety policy is co-ordinated by the National Transport Safety Committee, an inter-ministerial body. The committee is chaired by the Minister of Land, Transport and

Infrastructure. Private professionals can participate in the committee, but in practice the committee does not convene often. The role of the committee is to review road safety policies and measures implemented by the various agencies; however, it does not have a monitoring function, nor does it have a budget or budget allocation power.

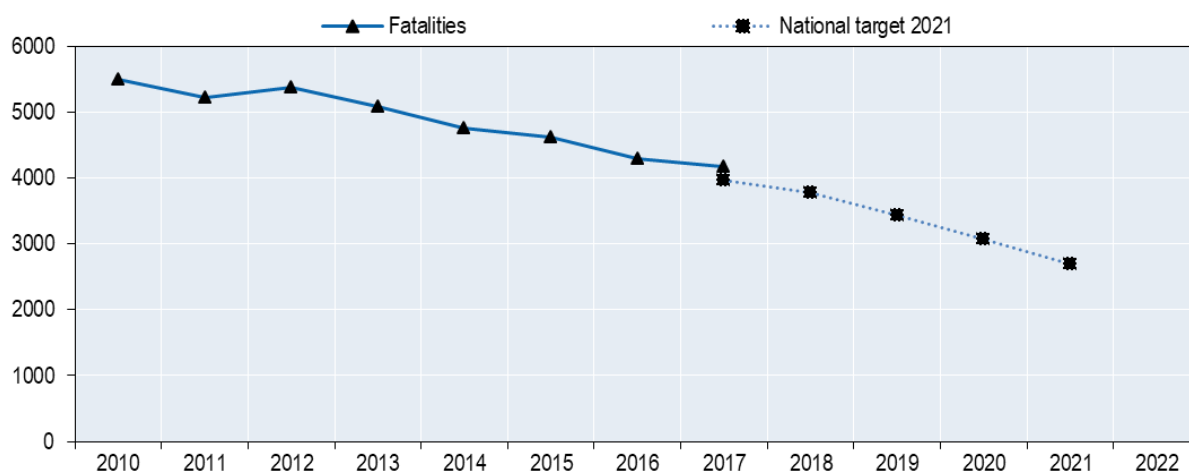
The 8th National Safety Transport Plan covers the period 2017-21. Three main targets have been set for 2021:

- Reducing the number of road fatalities to less than 2 700, with interim targets for each year from 2017 to 2021
- Reducing the rate of fatalities per 100 000 inhabitants to 5.2
- Reducing the rate of fatalities per 10 000 vehicles (including mopeds) to below 1.0, in order to be ranked in the middle range of OECD member countries

Table 4. Targets and interim targets to 2021

	2017	2018	2019	2020	2021
Fatality target (actual figure)	3 976 (4 185)	3 787	3 437	3 071	2 700
Fatalities per 100 000 inhabitants (actual figure)	7.8 (8.1)	7.4	6.7	6.0	5.2
Fatalities per 10 000 vehicles (including mopeds) (actual figure)	1.5 (1.6)	1.4	1.3	1.1	1.0

Figure 6. Trends in road fatalities towards national target



Measures

Several measures to improve **road safety management** have recently been put into place. In particular, the responsibility for developing road safety measures is being progressively transferred from the National Police Agency to local governments, with the

creation of local autonomous police agencies. Local governments manage and promote their traffic crash-reducing measures by creating their own police organisations.

Likewise, a number of **rules and regulations for road users** were introduced. Since September 2018, seat belt wearing was made compulsory for all car occupants on all types of road (until then, the use of seat belts for rear seat passengers was only mandatory on motorways). Also a bicycle helmet law entered into force in September 2018.

In terms of speed management, reduction of the **speed limit** from 60 km/h to 40 or 50 km/h in residential and shopping areas was introduced. This is being progressively extended to additional areas. In residential areas where there is dense pedestrian activity, the speed limit was reduced to 30 km/h. These measures are accompanied by intense enforcement campaigns, especially at black spot areas.

Several measures are being implemented to make the **infrastructure** safer: construction of additional roundabouts, the designation of Silver Zones near facilities for the elderly, the construction of additional rest areas along highways, the construction of additional pedestrian crossings to limit to less than 200 metres the distance between two crossings, the installation of safety fences to prevent jaywalking.

Definitions, methodology, data collection

Road fatality: Any person killed immediately or dying within 30 days as a result of a road crash.

Person seriously injured: Any injured person requiring medical treatment for more than three weeks.

Person slightly injured: Any injured person requiring medical treatment for less than three weeks.

Any road crash resulting in at least one person killed or injured must be reported to the police. The police investigate the crash, fill out a form and enter the information in the police Traffic Accident Management System database. The police refer to the medical diagnosis to classify the injuries by severity.

To complete police reported crash data, the Korea Road Traffic Authority (KoROAD) has developed an integrated road crash database, the Traffic Accident Analysis System (TAAS). This contains not only police data, but also inputs from car insurance companies and mutual aid associations. The TAAS data are collected regularly from these sources, and are refined to eliminate duplicated information.

Resources

Recent research

Research is currently being undertaken on the following topics:

High risk drivers (on the major causes of crashes within this group)

Older drivers (crash patterns)

Methodologies to assess the driving ability of older drivers.

Websites

Ministry of Land, Infrastructure and Transport:

<http://www.molit.go.kr/english/intro.do>

Road Traffic Authority: www.koroad.or.kr

Korea Transportation Safety Authority: www.ts2020.kr

Korea Transport Institute (KOTI): <https://english.koti.re.kr/>

Contact

chrissy27@koroad.or.kr

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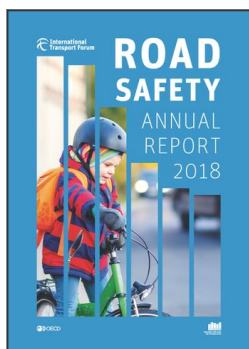
KOTSA (2017), *The Traffic Culture Index survey*, Korea Transportation Safety Authority

MOLIT (2017), *The 8th National Safety Transport Plan*, Ministry of Land, Infrastructure and Transport

Road safety and traffic data

	1990	2000	2010	2015	2016	2016 % change over				2017
						2015	2010	2000	1990	
Reported safety data										
Fatalities	14 174	10 236	5 505	4 621	4 292	-7.1%	-22.0%	-58.1%	-69.7%	4 182
Injury crashes	255 303	290 481	226 878	232 035	220 917	-4.8%	-2.6%	-23.9%	-13.5%	216 865
Serious injuries	..	211 613	116 902	93 047	92 522	-0.6%	-20.9%	-56.3%	..	..
Deaths per 100,000 population	33.1	21.8	11.3	9.1	8.4	-7.5%	-25.6%	-61.5%	-74.7%	8.1
Deaths per 10,000 registered vehicles	28.9	6.9	2.6	2.0	1.7	-10.6%	-33.9%	-74.5%	-94.0%	1.6
Deaths per billion vehicle kilometres	..	49.5	18.7	15.5	13.8	-11.0%	-26.1%	-72.1%	..	..
Fatalities by road user										
Pedestrians	7 063	3 764	2 082	1 795	1 714	-4.5%	-17.7%	-54.5%	-75.7%	..
Cyclists	644	317	294	272	255	-6.3%	-13.3%	-19.6%	-60.4%	..
Moped riders	..	343	450	312	265	-15.1%	-41.1%	-22.7%	..	..
Motorcyclists	..	1 221	633	558	613	9.9%	-3.2%	-49.8%	..	..
Passenger car occupants	2 100	2 792	1 228	989	823	-16.8%	-33.0%	-70.5%	-60.8%	..
Other road users	2 692	1 799	818	695	622	-10.5%	-24.0%	-65.4%	-76.9%	..
Fatalities by age group										
0-14 years	..	588	160	83	76	-8.4%	-52.5%	-87.1%	..	..
15-17 years	..	263	139	64	63	-1.6%	-54.7%	-76.0%	..	..
18-20 years	..	459	149	135	105	-22.2%	-29.5%	-77.1%	..	..
21-24 years	..	573	236	150	159	6.0%	-32.6%	-72.3%	..	..
25-64 years	..	6 474	3 068	2 375	2 156	-9.2%	-29.7%	-66.7%	..	..
65-74 years	..	1 117	1 030	857	782	-8.8%	-24.1%	-30.0%	..	..
≥ 75 years	..	736	722	957	951	-0.6%	31.7%	29.2%	..	..
Fatalities by road type										
Urban roads	..	3 311	2 312	2 344	2 170	-7.4%	-6.1%	-34.5%	..	..
Rural roads	..	6 199	2 722	2 176	2 053	-5.7%	-24.6%	-66.9%	..	..
Motorways	..	726	471	101	69	-31.7%	-85.4%	-90.5%	..	..
Traffic data										
Registered vehicles (thousands)	4 897	14 927	20 832	23 659	24 571	3.9%	17.9%	64.6%	401.7%	25 409
Vehicle kilometres (millions)	..	206 985	295 055	298 323	311 236	4.3%	5.5%	50.4%	..	..
Registered vehicles per 1,000 population	114.2	317.5	426.2	463.8	479.5	3.4%	12.5%	51.0%	319.7%	493.9

Note: registered vehicles do not include mopeds.



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