Road Safety Key Performance Indicators in Greece

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Abstract

Based on the Greek Road Safety Strategic Plan for the decade 2021-2030, Greece aims to reduce the number of fatalities and serious injuries in road crashes by 50% in 2030 compared to the 2019 level. Additionally, a set of key performance indicators (KPIs) for road safety has been established, which are related to the prevention of road crash casualties, to better monitor road safety progress during this decade. The objective of this study is to measure and assess road safety performance in Greece based on the KPIs on speeding, seat-belt use, helmet use, drink-driving, driver distraction and vehicle safety. The results of the analysis allow to evaluate road safety performance in Greece, providing also useful support to decision makers working for the improvement of safety in Greece, based on which proper and more targeted road safety measures can be taken.

Keywords: *Road Safety, Key Performance Indicators, Risk Exposure, Greece.*

1. Introduction

Road safety constitutes a significant public health problem, with 1,35 million people being killed in road crashes every year worldwide (WHO, 2018). While Europe is the safest continent in terms of road safety, progress in reducing EU-wide road fatality rates has stagnated in recent years (EC, 2021). For the next decade, the European Union has set new targets of reducing the number of road deaths by 50% between 2020 and 2030 as well as reducing the number of serious injuries by 50% over the same period (EC, 2019). In order to monitor closely road safety progress, the European Commission (EC) has elaborated in close cooperation with Member State experts, a set of Key Performance Indicators - KPIs (EC, 2019), which are related to the prevention of road crash casualties and have been collected in 2021 and 2022 under a common methodological framework by most EU Member States.

In 2020, Greece recorded 579 fatalities in road crashes, achieving a 54% reduction compared to 2010 (1.258 fatalities) (ELSTAT, 2022). Despite this significant improvement, additional efforts are required in order to further improve its road safety performance. An important step to improve road safety performance is to better understand the factors leading to road crashes and casualties. On that purpose, the new Greek Road Safety Strategic Plan for the decade 2021-2030, has harmonized its policy with the European road safety strategic plan, and set a road safety monitoring system based on the 8 KPIs, as defined by the EC, in order to better monitor road safety progress during the next decade (YME, 2022).

The objective of this study is to measure and assess road safety performance in Greece based on the KPIs on speeding, seat-belt use, helmet use, drink-driving, driver distraction and vehicle safety. Roadside surveys were carried out during spring and summer 2022 to collect data for the first five

aforementioned road safety KPIs, based on the common European methodological framework, as developed in the Baseline project. The roadside surveys were carried out in appropriately selected locations in 15 regions of Greece. A total of 150 locations were selected for the data collection, 10 locations per region and by road type: urban roads, rural roads (excluding motorways) and motorways. In addition, data were collected from national databases for the KPI on vehicle safety.

2. Methodology

As mentioned in the previous section, the data collection process and calculation of the KPIs in Greece were performed within the Baseline project, an EC funded project, which aims to support the data collection and calculation of the KPIs under a common framework at European Union level. The definitions and the minimum data requirements for the calculation of the KPIs were set by the EC, as described in the Commission Staff Working Document SWD (2019) 283 and were taken as basis for the development of the methodological guidelines in the Baseline project. In brief, the KPIs proposed by the EC and the respective definitions are shown in Table 1.

Table 1. *EU KPI definitions (EC, 2019)*

KPI area	KPI definition
Speed	Percentage of vehicles travelling within the speed limit
Safety belt	Percentage of vehicle occupants using the safety belt or child restraint system correctly
Protective equipment	Percentage of riders of PTWs and bicycles wearing a protective helmet
DUI of Alcohol	Percentage of drivers driving within the legal limit for blood alcohol content (BAC)
Driver Distraction	Percentage of drivers not using a handheld mobile device
Vehicle Safety	Percentage of passenger cars with a Euro NCAP safety rating equal or above a threshold
Infrastructure	Percentage of distance driven over roads with a rating above an agreed threshold
Post-crash care	Time elapsed between the emergency call following a collision resulting in personal injury and the arrival at the scene of the collision of the emergency services

The KPIs collected in Greece concern speeding, use of seat-belts, use of helmet, driving under the influence of alcohol, driver distraction and vehicle safety. Alongside with the data collection on KPIs, data on the travelled kilometres per driver were also collected. Data collection for all KPIs, except the KPI vehicle safety, was performed through measurements/ observations on the roadside. The number and spatial distribution of census points along different road types (urban roads, rural roads, motorways) and different regions in Greece were carefully selected in order to obtain a representative sample for the whole country and estimate valid and representative indicators. It is noted that as urban roads are considered the roads within residential areas, while rural roads are defined as roads outside residential areas, excluding motorways.

In total, 130 locations were selected, in 15 regions in Greece, covering all road types. The measurements/observations took place during the period May-June 2022 on both weekdays (Monday-Friday) and weekends (Saturday-Sunday).

For all the above KPIs, two levels of stratification were considered (road type and time period or vehicle type). Since no traffic volume data are available at national level, a formula suggested by the Baseline project was used for the data weighting, taking into account the probability of a particular type of location and/or moment in time is chosen (sampling at stratum level) and the number of sampled vehicles/road users in the session divided by the total number of vehicles/road users that passed during the session (sampling at session level). For more detailed explanations of the data weighting, the reader can refer to Silverans & Boets, 2021.

3. Key Performance Indicators

3.1 KPI Speeding

Concerning the speed data collection, the instantaneous speed of passing vehicles in free-flowing traffic conditions was measured with the use of hand-held radar guns. The selection of the appropriate measurement locations were based on the respective Baseline guidelines, considering specific road design and surrounding environment characteristics, such as straight and uniform section of road, small gradient, away from junctions and pedestrian crossings, away from speed limit change or sign or from sections where speed is enforced etc., ensuring that they will not influence speeds at which drivers operate their vehicles and are suitable for free-flow speed measurements (Teuchies et al., 2021). Also, for the collection of speed data, locations with the same speed limit per road type were selected, i.e., 50km/h for urban roads, 90km/h for rural roads and 130 km/h for motorways. Additionally, measurements were conducted under good weather conditions.

Furthermore, speed data for four vehicle types were collected: a) passenger cars, b) vans, small trucks, c) trucks/buses/heavy goods vehicles (HGVs) and d) motorcycles. For the calculation of the KPI, different speed limits for heavy goods vehicles and buses on rural roads and motorways were considered, meaning 80km/h for both heavy goods vehicles and buses on rural roads and 85km/h for heavy goods vehicles and 100km/h for buses on motorways.

From the speed measurements, data were collected for 36.346 vehicles, of which the 73,4% were passenger cars, 12,7% vans and light trucks, 6,6% trucks, buses and HGVs and 7,3% motorcycles. The vehicle distribution by road type was: 39,5% on urban roads, 39,0% on rural roads and 21,5% on motorways.

Table 1 shows the KPIs on speeding with the corresponding 95% confidence intervals, the average speed, the standard deviation, and the 85th percentile of speed (V85) by road type and vehicle type.

The lowest percentage of vehicles travelling within the legal speed limits was observed on urban roads (55,8%), where the average speed was 48,4km/h and the V85 was equal to 57,0km/h. The respective KPIs for rural roads and motorways were 84,0% and 76,9% respectively. Concerning vehicle types, the lowest KPIs (lowest compliance with the speed limits) were recorded for motorcycles on urban and rural roads (46,8% and 71,4% respectively) and trucks, buses and HGVs on motorways (68,1%).

Table 1. *KPIs on speeding by road and vehicle type*

Road Type/ Vehicle Type	**KPI** (95% CI)	**Average Speed** *(km/h)*	**Std. Deviation** *(km/h)*	**V85** *(km/h)*
Urban Roads	**55,8%** (55,0% - 56,6%)	48,4	9,3	57,0
Passenger Car	**55,8%** (54,9% - 56,8%)	48,4	9,2	57,2
Motorcycle	**46,8%** (44,3% - 49,4%)	51,5	10,9	60,3
Light trucks/vans	**66,3%** (64,1% - 68,6%)	44,5	8,3	52,5
Trucks/Buses/HGVs	**83,1%** (79,9% - 86,3%)	38,8	5,4	43,7
Rural Roads	**84,0%** (83,4% - 84,6%)	66,9	10,2	76,6
Passenger Car	**84,7%** (84,1% - 85,4%)	67,8	10,6	78,0
Motorcycle	**71,4%** (68,1% - 74,7%)	71,1	11,9	82,0
Light trucks/vans	**87,7%** (86,3% - 89,2%)	64,1	9,9	73,9
Trucks, Buses/HGVs	**80,0%** (76,7% - 83,3%)	61,2	6,5	66,2
Motorways	**76,9%** (77,2% - 79,2%)	103,2	14,9	117,8
Passenger Car	**76,2%** (75,0% - 77,4%)	109,6	16,0	125,4
Motorcycle	**84,8%** (77,5% - 92,0%)	106,3	14,4	117,0
Light trucks/vans	**89,9%** (88,2% - 91,6%)	91,3	15,5	107,1
Trucks, Buses/HGVs	**68,1%** (65,6% - 70,5%)	80,5	8,9	87,6

3.2 KPI Seat-belt use

The Key Performance Indicator for seat-belt use is defined as the percentage of drivers using the safety belt correctly. The collection of data on the use of seat belt was made through direct observation by trained observers on the roadside (Temmerman et al., 2021), in randomly selected locations in each region of Greece. Drivers and passengers of passenger cars and goods vehicles were observed.

The duration of each observation session was 1,5h. Data were collected for 47.563 vehicle occupants, of which 37.046 were drivers, 8.525 front passengers and 1.992 rear passengers (in passenger cars only). 40,5% of occupants were observed on urban roads, 32,7% on rural roads and 26,8% on motorways, Regarding the time period, 78,7% of occupants were observed during weekdays and 21,3% at weekends. Also, 80,5% of the observed persons were occupants of passenger cars and 19,5% were occupants of goods vehicles.

Table 2. *KPIs for seat-belt use among drivers by road type*

Road Type	**KPI** (95% CI)	
	Passenger Car	**Goods Vehicle**
Urban Roads	**71,2%** (70,4% - 72,0%)	**22,2%** (20,6% - 23,9%)
Rural Roads	**70,3%** (69,4% - 71,2%)	**43,5%** (41,5% - 45,6%)
Motorways	**83,5%** (82,6% - 84,4%)	**47,9%** (46,2% - 49,6%)
Total	**71,0%** (70,5% - 71,5%)	**36,2%** (35,1% - 37,2%)

Table 3. *KPIs for seat-belt use among drivers by time period*

Time Period	**KPI** (95% CI)	
	Passenger Car	**Goods Vehicle**
Weekday	**69,8%** (69,2% - 70,4%)	**33,8%** (32,6% - 34,9%)
Weekend	**73,6%** (72,5% - 74,7%)	**43,6%** (40,7% - 46,4%)
Total	**71,0%** (70,5% - 71,5%)	**36,2%** (35,1% - 37,2%)

At national level, only 71,8% of passenger cars drivers are using a seat-belt. This varies by road type with the respective KPIs being 85,3% for motorways, 70,8% for rural roads and 72,4% for urban roads. A slightly different behaviour of passenger car drivers is observed by time period, with the KPI being 70,6% for weekdays and 74,5% for weekends. The KPI on seat-belt use is significantly lower for drivers of goods vehicles (36,5%), with the lowest value being identified on urban roads (22,2%) and the highest on motorways (48,5%).

The KPI values for front seat passengers are similar to those for drivers for both vehicle types. Higher rates of seat belt use are found on motorways, compared to urban and rural networks (Table 4). Also, seat-belt use for front passengers is higher during the weekend than on weekdays (Table 5).

Additionally, seat-belt use by rear passengers in passenger cars is much lower (55,8%) compared to drivers and front-seat passengers. The highest rate of seat belt use is recorded for motorways (65,5%) and at weekends (63,1% vs. 52,4% on weekdays).

Table 4. *KPIs for seat-belt use among front passengers by road type and vehicle type*

Road Type	**KPI** (95% CI)	
	Passenger Car	**Goods Vehicle**
Urban Roads	**72,4%** (71,7% - 73,1%)	**22,2%** (20,7% - 23,7%)
Rural Roads	**70,8%** (70,0% - 71,6%)	**43,9%** (42,0% - 45,8%)
Motorways	**85,3%** (84,6% - 86,1%)	**48,5%** (46,9% - 50,1%)
Total	**71,8%** (71,4% - 72,3%)	**36,5%** (35,5% - 37,5%)

Table 5. *KPIs for seat-belt use among front passengers by time period and vehicle type*

Time Period	**KPI** (95% CI)	
	Passenger Car	**Goods Vehicle**
Weekday	**70,6%** (70,1% - 71,2%)	**33,9%** (32,8% - 34,9%)
Weekend	**74,5%** (73,6% - 75,4%)	**44,4%** (41,8% - 47,1%)
Total	**71,8%** (71,4% - 72,3%)	**36,5%** (35,5% - 37,5%)

3.3 KPI on Helmet use

The KPI on helmet use among powered two wheelers is defined as the percentage of riders wearing a protective helmet (EC, 2017). The collection of data on the use of helmet was made through direct observation by trained observers on the roadside, in randomly selected locations in each region of

Greece. The duration of each observation session was 1,5h. Data were collected for 4.079 motorcycle riders, of which 3.464 were drivers and 615 were passengers. 72,6% of motorcyclists were observed on urban roads, 22,3% on rural roads and 5,2% on motorways. Also, 78,1% of observations were collected during weekdays and 21,9% at weekends.

The national KPI on helmet use by motorcycle riders was 80,3% and 65,5% for passengers. The highest use of helmet by motorcyclists is observed on motorways (94,9%), with the respective KPIs on rural and urban roads being 83,7% and 75,5% respectively. Depending on the time period, no significant difference in the helmet use is observed between weekdays and weekends. It is noted that collected samples of passengers for specific strata were low, leading either to not being able to calculate a KPI (i.e. motorways) or with less accuracy (e.g. weekends).

Table 6. *KPIs on helmet use among motorcycle riders by road type*

Road Type	KPI (95% CI)	
	Driver	Passenger
Motorways	**94,9%** (91,7% - 98,0%)	-
Rural Roads	**83,7%** (81,1% - 86,3%)	**68,7%** (61,4% - 76,0%)
Urban Roads	**75,5%** (73,8% - 77,2%)	**60,5%** (55,9% - 65,0%)
All roads	**80,3%** (79,0% - 81,6%)	**65,5%** (61,8% - 69,3%)

Table 7. *KPIs on helmet use among motorcycle riders by time period*

Time Period	KPI (95% CI)	
	Driver	Passenger
Weekdays	**80,9%** (79,4% - 82,4%)	**68,2%** (64,0% - 72,4%)
Weekends	**79,0%** (76,2% - 81,9%)	**60,0%** (51,7% - 68,2%)
All roads	**80,3%** (79,0% - 81,6%)	**65,5%** (61,8% - 69,3%)

3.5 KPI on Driving Under the Influence (DUI) of Alcohol

The KPI on the DUI of Alcohol is defined as the percentage of drivers driving within the legal limit for blood alcohol concentration (BAC) (EC, 2017). The measurements were carried out by the Traffic Police in cooperation with researchers, since the latter do not have the legal right to stop drivers randomly on the road and take breath test from each driver stopped. It was crucial that both the measurement locations and the drivers were sampled randomly, in order to avoid biases and increase the representativeness of the data. Thus, for instance, the controls were not set up near places with a higher prevalence of DUI or the selection of drivers was undertaken irrespective of possible suspicion.

The alcohol measurements were undertaken in 115 locations in 10 regions in Greece, covering the three road types, i.e. urban roads, rural roads, motorways and in four different time periods, i.e. weekday/daytime, weekday/night-time, weekend/daytime, weekend/night-time. The duration of each session was 3 hours. Also, only passenger car drivers were tested for DUI of alcohol.

The sample includes 2.894 passenger car drivers; 59,4% of them were travelling on urban roads, 17,3% on rural roads and 23,3% on motorways. Also, regarding time period, 30,2% of drivers were tested on a weekday during daytime, 43,8% were tested on a weekday during night-time, 14,7% at weekends

during daytime and 11,4% at weekends during night-time. Table 8 and Table 9 show the KPI on DUI of Alcohol with the corresponding 95% confidence intervals by road type and time period respectively.

Concerning road types, no significant difference in the performance of passenger car drivers was identified among the different road types. A slightly higher compliance with the alcohol limits was found on the motorways. On the other hand, a significant differentiation in DUI of alcohol is identified among the different time periods examined. More specifically, the KPI is lower during night-time and especially during weekends (96,0%).

Table 8. *KPIs on DUI of alcohol by road type*

Road Type	KPI	CI (95%)	
		Lower	Upper Bound
Urban Roads	98,7%	98,3%	99,2%
Rural Roads	98,8%	98,2%	99,5%
Motorways	99,6%	99,3%	100,0%
All roads	98,8%	98,5%	99,2%

Table 9. *KPIs on DUI of alcohol by time period*

Time Period	KPI	CI (95%)	
		Lower Bound	Upper Bound
Weekdays/daytime	99,7%	99,4%	100,0%
Weekdays/night-time	98,7%	98,2%	99,3%
Weekends/daytime	99,7%	99,3%	100,0%
Weekends/night-time	96,0%	94,2%	97,7%
All periods	98,8%	98,5%	99,2%

3.4 KPI on Driver Distraction

Concerning the driver distraction, the use of a handheld mobile phone was directly observed on the roadside and coded by the observers (Boets et. al. 2021). Additionally, only drivers who were driving were observed and not drivers who were stationary.

In total, 38.020 drivers were observed, of which the 39,8% of drivers were observed on urban roads, 32,8% on rural roads and 27,4% on motorways. Concerning the vehicle types, 76,4% of the sample were passenger cars, 15,1% light goods vehicles (LGVs) and 8,5% buses.

The national KPI on driver distraction is 92,6%, meaning that about 7,4% of drivers use a handheld mobile phone while driving. Drivers' behavior concerning the mobile phone use does not differentiate significantly when travelling on motorways and rural, while the KPI on urban roads is lower (90,8%). A different behavior among drivers of different vehicle types is also observed, with the performance of LGV and bus drivers being higher compared to the passenger car drivers.

Regarding time period, a slightly higher use of mobile phone during weekdays is observed for passenger car drivers compared to the weekends, while the opposite was recorded for LGV and bus drivers.

Table 10. *KPIs on driver distraction by road type and vehicle type*

Road Type	**KPI** (95% CI)		
	Passenger Car	**Goods Vehicle**	**Buses**
Urban Roads	**90,8%** (90,3% - 91,3%)	**93,8%** (92,9% - 94,8%)	**93,5%** (91,4% - 95,7%)
Rural Roads	**94,0%** (93,6% - 94,5%)	**94,0%** (93,0% - 95,0%)	**98,6%** (97,1% - 100,0%)
Motorways	**93,1%** (92,5% - 93,7%)	**93,7%** (92,9% - 94,5%)	**90,6%** (86,7% - 94,5%)
Total	**92,1%** (91,8% - 92,4%)	**93,8%** (93,3% - 94,4%)	**94,7%** (93,3% - 96,1%)

Table 11. *KPIs on driver distraction by time period and vehicle type*

Time Period	**KPI** (95% CI)		
	Passenger Car	**Goods Vehicle**	**Buses**
Weekdays	**91,6%** (91,3% - 92,0%)	**95,8%** (95,3% - 96,3%)	**95,3%** (93,8% - 96,7%)
Weekends	**93,6%** (93,0% - 94,2%)	**87,3%** (85,4% - 89,2%)	**93,6%** (89,7% - 97,4%)
Total	**92,1%** (91,8% - 92,4%)	**93,8%** (93,3% - 94,4%)	**94,7%** (93,3% - 96,1%)

3.6 KPI on Vehicle Safety

The KPI on vehicle safety is defined as the percentage of new passenger cars with a Euro NCAP safety rating equal to or above a predefined threshold (EC, 2017). As to the safety threshold, based on the European methodological guidelines, two thresholds were considered, i.e., a 'minimum' threshold, corresponding with a 4-star rating and a 'strong' threshold corresponding with a 5-star rating. For both definitions of the KPIs, the KPI percentages are calculated using as a denominator either the whole fleet of the new passenger cars or only those that could be corresponded to a EuroNCAP rating. Also, the average age of the whole passenger car fleet was calculated, as a complementary indicator.

Table 12. *KPIs on Vehicle Safety*

	2019	2020
KPI: at least 4 EuroNCAP stars (excl. passenger cars with no rating)	90,3%	92,4%
KPI: at least 4 EuroNCAP stars (incl. all passenger cars)	88,4%	89,2%
KPI: 5 EuroNCAP stars (excl. passenger cars with no rating)	61,3%	69,9%
KPI: 5 EuroNCAP stars (incl. all passenger cars)	60,0%	67,5%
Average age of passenger car fleet (years)	16,8	17,4

As shown in Table 12, the average age of the passenger car fleet in Greece was 16,8 years in 2019 and 17,4 years in 2020, with Greece having among the oldest fleets in the European Union, alongside with Estonia, Romania and Lithuania. It is noted that the average age of the passenger car fleet in the European Union is about 12 years (Wardenier & Silverans, 2023).

Concerning the newly registered passenger cars, in 2019, 88,4% of them was rated with at least 4 EuroNCAP stars and 60% with 5 stars, with Greece being among the first five EU Member States with the higher performance (Wardenier & Silverans, 2023). The respective KPIs were 89,2% and 67,5% in 2020.

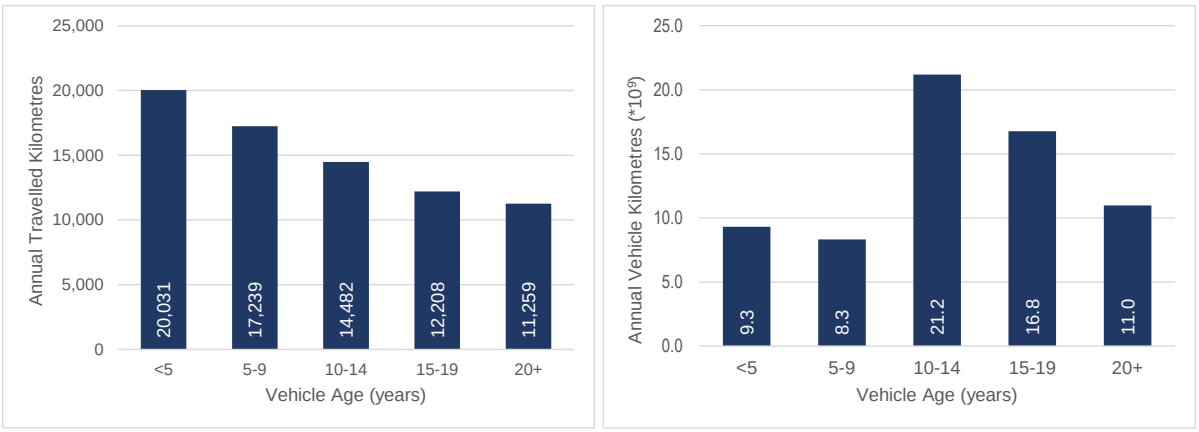
4. Risk Exposure Indicators

Additionally, in the context of the project exposure data were collected. More specifically, alongside the alcohol measurements, researchers on the field were recording the travelled kilometers of each passenger car and the date of first issue of the licence. Thus, the average annual travelled kilometres for the passenger car fleet were estimated. Two strata for the weighting of the sample data were used: region and age group of passenger cars. Thus, data were weighted taking into account the probability of a particular region and/or vehicle type is chosen (sampling at stratum level) and the number of sampled vehicles in the session divided by the total number of vehicles that passed during the session (sampling at session level).

The results of travelled kilometres and vehicle-kilometers for 2019 per passenger car age group are shown in Figure 1a and 1b. The average annual travelled distance for passenger cars in Greece is about 13.0000 kms, which varies from about 20.000 kms for passenger cars under 5 years and more than 11.000 kms for passenger cars older than 20 years. Considering the passenger car fleet of Greece in 2019, the number of travelled vehicle-kilometers is estimated at 60,3 billion, with the higher number of travelled vehicle-kms being recorded for the passenger cars between 10 and 14 years, followed by the age group 15-19. It was also found that male drivers aged between 35-54 years old recorded the highest number of travelled kilometres than women and men of the remaining age groups.

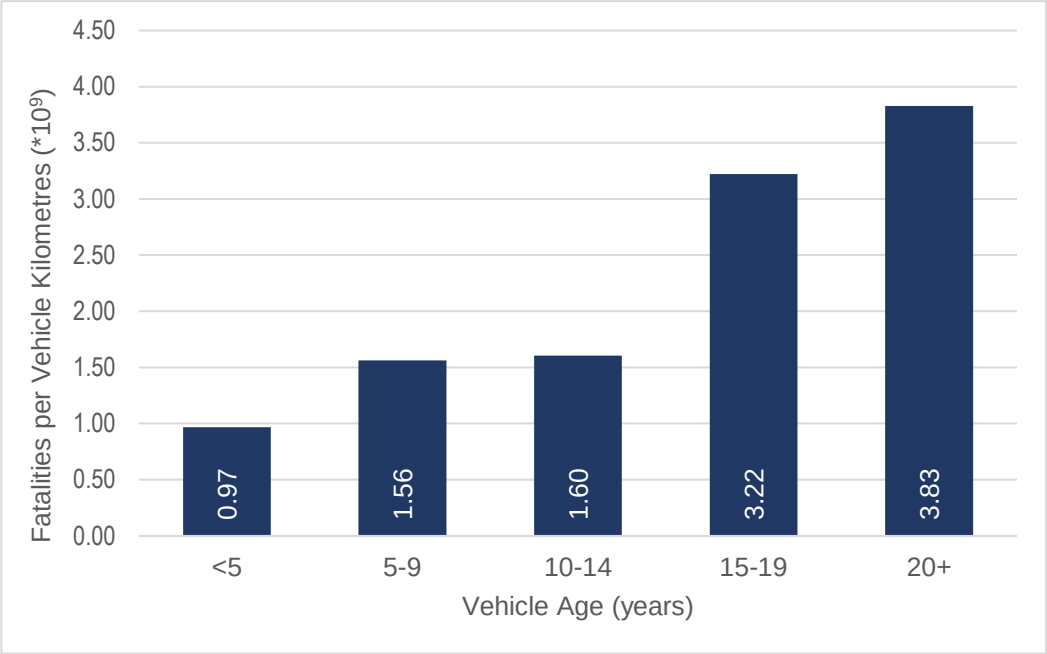
Figure 1. *(a) Travelled Kilometres per vehicle age group; (b) Travelled Vehicle-Kilometres per age group for passenger cars, 2019*

(a) (b)



Based on these data, the risk exposure for the drivers of the passenger per vehicle age group cars was also estimated (Figure 2). The higher risk of being killed in a crash for a driver is found for passenger cars of more than 20 years, followed by the cars aged 15-19 years. In fact, the fatality risk for the drivers of old passenger cars (more than 20 years) is about 4 times higher compared to the newest passenger cars (less than 5 years). Additionally, male drivers present higher number of fatalities per travelled vehicle kilometres compared to female drivers in all age groups.

Figure 2. *Driver fatalities per travelled vehicle-kilometres per age group for passenger cars, 2019*



5. Discussion

The objective of this study is to measure and assess road safety performance in Greece based on the KPIs on speeding, seat-belt use, helmet use, drink-driving, driver distraction and vehicle safety. Data were collected through roadside measurements / observations at randomly selected locations in almost all regions of Greece, in order to obtain a representative sample. The related KPIs were calculated based on the EC definitions and the common European methodological protocol. Additionally, exposure data were also collected during the roadside measurements and risk exposure was estimated for passenger car drivers for 2019.

Concerning the national indicators, in most examined thematic areas, Greece presents a relatively poor performance. About 27% of Greek drivers were found to exceed the maximum legal speed limits on all roads, with higher percentages of drivers exceeding the speed limits being observed on urban roads (about 44%) and motorways (about 23%). Additionally, motorcyclists tend to observe the speed limits less often than the drivers of the remaining vehicle types, followed by passenger car drivers. Greek passenger car drivers tend to use the seat-belt more often when travelling on motorways in comparison with the remaining road types, which is also the case for the use of helmet among motorcyclists. It is noted that the use of helmet is relatively high at national level for drivers (80,3%), while the use of seat-belt is relatively low (about 71%). However, Greece presents the worst performance in relation to the helmet use and seat-belt use by passenger car drivers among the EU Member States. More specifically, the KPIs on helmet vary between 80,3% in Greece and 100% in Latvia (Yannis & Folla, 2022) and the KPI on seat-belt use for the drivers of the passenger cars between 71% in Greece and 98% in Portugal (Van den Broek B, 2022).

Moreover, high rates of handheld mobile phone use were observed at national level (about 9%), with the highest percentages of using a mobile phone while driving being recorded on urban roads by passenger car drivers. Concerning the DUI of alcohol, the KPI is lower during night-time and especially during weekends, with 4% of drivers being under the influence of Alcohol. It should be noted that while this value seems low the effect on road safety outcomes is much higher. More particular, previous studies have shown that while only 1,5%-2% of kilometres travelled in the EU are driven with an illegal BAC, around 25% of all road deaths in the EU are alcohol related (Calinescu & Adminaite, 2018).

Finally, Greece has a significantly old passenger car fleet (average age 16,8 years), despite the fact that most newly registered cars are safer and have a high Euro NCAP score. The size of the problem of vehicle safety in Greece is also highlighted when taking also into account exposure indicators. It was shown that the risk of dying in a road crash for a driver travelling with an old car is much higher compared to the drivers travelling with newer cars.

In Greece, KPIs were collected for the first time within the current project. KPIs are considered essential tools in order to monitor the level of road safety in Greece in relation to the targets set at the end of the decade, as well as to adequately identify the weaknesses and factors that mainly affect road crash occurrence and severity. These results could also be exploited in order to take more targeted road safety measures, including more targeted enforcement controls, road safety campaigns, etc. Further analysis of these results, alongside with the related exposure and road crash data could reveal the real dimension and main causes of the road safety problem in Greece, providing, thus, useful support to the related decision makers.

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