

# Eastern Mediterranean status report on road safety

**Call for action** 



Regional Office for the Eastern Mediterranean

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## Foreword

The *Eastern Mediterranean status report on road safety* is part of the joint global initiative of WHO, its Member States and a range of international experts, which has been implemented with the financial support of Bloomberg Philanthropies. It draws on the *Global status report on road safety*, the first worldwide analysis of how well countries are implementing effective road safety measures: limiting speed, reducing drink-driving, and increasing seatbelt, child restraint and motorcycle helmet use. This first assessment found that almost half of the people who die on the world's roads each year are pedestrians, motorcyclists and cyclists. While progress has been made in protecting people in cars, the needs of these vulnerable users are not being met.

In the Eastern Mediterranean Region, the situation is not good. Indeed the findings are quite alarming. Deaths from road traffic injuries have witnessed a sharp rise in the past five years. Currently, the highest death rates across the world are seen in the Eastern Mediterranean and African regions, at 32.2 deaths per 100 000 population. This indicates a drastic rise compared to 2002 when the rate in the Eastern Mediterranean Region stood at 26.4 deaths per 100 000, second to the African Region. Road traffic crashes are not only a public health issue. They also have social and economic costs, claiming 1%–1.5% of the gross national product of most countries of the Region and disproportionately affecting the poor and vulnerable.

The implications of these figures alert us to the urgent need for comprehensive and concerted actions to address the rising toll of death and injury and the economic and social burden due to road traffic injuries. Solutions are known and have been proven to work elsewhere. The basic preventive elements are the same worldwide and can undoubtedly be applied effectively in this region too. By addressing road safety as a public health issue and employing a systems approach, a marked reduction in mortality and morbidity can be achieved.

Both the global and regional reports reaffirm such an understanding. Furthermore, they come at a time of collective momentum at the global and regional levels, addressing the apparently incessant road safety crisis. Regionally, a landmark resolution was endorsed by the WHO Regional Committee for the Eastern Mediterranean at its 56th session in October 2009. Resolution EM/RC56/R.7 calls for a national multisectoral mechanism to address road safety as a public health issue; for specific actions to minimize injuries and their consequences and evaluation of the impact of these actions; for multisectoral injury surveillance systems; for sufficient financial and human resources; for capacity development in primary prevention; and for development of partnerships. In November 2009, the First Global Ministerial Conference on Road Safety called for a Decade of Action for Road Safety, to be declared by the UN General Assembly with a goal of stabilizing and then reducing the forecast level of global road deaths by 2020.

With these break-through developments, and having in hand the global and regional reports, which for the first time provide solid data to hold us accountable and to target our efforts, the doors are definitely open. We have the mandate to take action globally, regionally and nationally. Supported by this report, let us use this undoubtedly golden opportunity to catalayse action, both in the Region and in countries.



Hussein A. Gezairy MD FRCS WHO Regional Director for the Eastern Mediterranean

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## **Executive summary**

Road traffic injury is a global public health problem. It disproportionately affects lowand middle-income countries and certain population groups such as young males. There has been a greater awareness among national and international policy-makers of the public health impact of these injuries and thus an interest in strengthening their prevention and control. In 2004, the World Health Organization (WHO) and the World Bank published the World report on road traffic injury prevention, which identified interventions and strategies that could be employed at the local, national and international levels in order to reduce the burden of road traffic injuries. Based on that report, the current publication describes the status of road safety in the WHO Eastern Mediterranean Region's Member countries. Based on structured interviews of representatives from various sectors involved in road safety, the report aims to identify road safety indicators, gaps in road safety systems and the key priorities for intervention at the national level among Member countries.

The key findings of the report are:

- the Eastern Mediterranean Region has one of the highest road traffic fatality rates in the world
- these injuries tend to affect younger, productive members of society
- only 40% of the countries of the Region have urban speed limits consistent with recommendations of the World report on road traffic injury prevention (50 km/h or less)
- only 30% of countries have national laws mandating seatbelt use by all car occupants
- only 10% of countries have child safety restraint laws
- only 20% of countries have a law for mandatory motorcycle helmet use and a defined standard for the type of helmet to be used
- 19 of the 20 countries studied have a law against drinking alcohol and driving, and 40% have a system of random breath testing or police check points for enforcement of this law









- only 40% of the countries have a lead agency for road safety with a separate funding allocated for the agency's activities
- about half of the countries (11 of 20) have national policies encouraging investment in public transportation
- based on the data presented in the report, the Region was found to have one of the highest level of underreporting of road traffic injuries in the world
- only 50% of countries use the standard definition of road mortality thus making comparisons across countries difficult
- most countries identified a universal access number for pre-hospital trauma care systems.

This report sets forth the following critical recommendations:

- the countries of the Region need to establish and strengthen lead agencies and manage their performance through target setting
- the countries of the Region need to encourage safe, healthy and environment-friendly transport choices such as walking, cycling and a larger dependence on public transport
- the countries of the Region need to implement the five most effective interventions that are likely to have the largest impact on the burden of injuries: control of speed, enforcement of seatbelt laws, promotion of child restraint use in cars, enforcement of standard motorcycle helmet use and establishment of the true burden of alcohol in road traffic crashes

- the countries of the Region need to ensure that vehicles on the road are safe through ensuring checks at the vehicle manufacturing sites and at the time of import in the country as well as implementation of vehicle inspection laws
- safe road design through safety audits at all levels needs to be ensured
- the trauma care system both pre-hospital and at the hospital level needs to be studied further.

## Introduction

## 1.1 Road traffic injuries: a global public health problem

Road traffic injuries are one of the leading causes of death worldwide resulting in more than 1.27 million deaths in 2004; almost equal to the number of deaths caused by HIV/AIDS, tuberculosis and malaria combined [1]. In addition, road traffic crashes are estimated to cause about 20 and 50 million non-fatal injuries every year [2]. Death and disability due to road traffic injuries affect all age groups but the most affected are those in the 5–44 years age group [1]. It is estimated that road traffic injuries will move up in the ranking of leading causes of deaths from tenth in 2004 to fifth in 2030, largely affecting the low- and middle-income countries [1,3].

For a given country, the economic cost of road traffic injuries is roughly estimated to be 1%–2% of its gross national product [2]. Direct economic costs of road traffic injuries in low- and middle-income countries were estimated to be US\$ 65 billion per year in 1999, more than the total development assistance received by these countries each year [4]. Furthermore, road traffic injuries lead to indirect costs such as productivity



loss caused by the disabled population and their care providers and loss of property [2].

#### 1.2 Road safety in the Eastern Mediterranean Region

#### Eastern Mediterranean Region

The Eastern Mediterranean Region of the World Health Organization comprises 22 countries (Figure 1) and is home to 546 million people. Five countries of the Region are high-income, 12 are middle-income, while five are low-income countries. The level of motorization is relatively low in the Eastern Mediterranean Region compared to other parts of the world. Only 4% of the world's motorized vehicles (or 52.7 million) are registered in the Region, which is home to 8.3% of the world's population (Table 1). Overall 96 vehicles are registered per 1000 population in the Region; however

wide variations are observed. For instance, the level of motorization is 721 vehicles per 1000 population in Qatar compared to 20 in the occupied Palestinian territory (West Bank and Gaza Strip). Many of the countries of the Region, such as Islamic Republic of Iran and Pakistan, have seen a significant increase in motorization levels from 2000 onwards. Currently, five highincome countries-Saudi Arabia (299), United Arab Emirates (401), Kuwait (479), Bahrain (509), Qatar (721)-and four middle-income countries-Islamic Republic of Iran (238), Jordan (142), Lebanon (296), Tunisia (122)-have higher than average motorization levels compared to the rest of the countries in their income groups worldwide.



Figure 1. WHO Eastern Mediterranean Region

|--|

Countries	High-income	Middle-income	Low-income	All
Population	33.6 million	299 million	213 million	545.6 million
% of global population	3.3	9.6	8.9	8.3
Vehicles	11.5 million	34.4 million	6.8 million	52.7 million
% of global vehicles	1.7	6.7	5.6	4.0

Source: Global Status report on road safety 2009



## Health burden of road traffic injuries in the Eastern Mediterranean Region

In 2004, road traffic injury was the sixth leading cause of death in the Eastern Mediterranean Region (Table 2). It caused an estimated 146 000 deaths and 2.8 million non-fatal injuries — a disturbingly high figure of 17 deaths and 320 injuries every hour. Most of the victims are young, productive members of society. For those between the ages of 15 and 29, road traffic injury is the leading cause of death. It is the second-leading cause of death among the 5–14 and 30–44 year age groups (Table 2). The road traffic injury death rate in the Region among men of between 15 and 29 years is highest

in the world (34.2 deaths per 100 000 inhabitants). Among children, particularly male children, road traffic injuries are the most common form of injury [5,6,7]. Overall, the number of deaths due to road traffic injury is greater than that of deaths caused by diseases such as tuberculosis, HIV and malaria (Figure 2).



Cause of death

Figure 2. Road traffic injury deaths compared to deaths due to tuberculosis, malaria and HIV/AIDS, Eastern Mediterranean Region estimates for 2004, both sexes

Source: WHO (2008). Global burden of disease: 2004 update

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Table

Rank	94	5-14	15–29	30-44	45-69	70+	Total
-	Perinatal causes	Lower respiratory infections	Road traffic injuries	Ischaemic heart disease	Ischaemic heart disease	Ischaemic heart disease	Ischaemic heart disease
ĸi	Lower respiratory infections	Road traffic injuries	War and conflict	Road traffic injuries	Cerebrovascular disease	Cerebrovascular disease	Perinatal causes
ઌં	Diarrhoeal diseases	War and conflict	Tuberculosis	War and conflict	Chronic obstructive pulmonary disorder	Lower respiratory infections	Lower respiratory infections
4.	Congenital anomalies	Malaria	Self-inflicted injuries	Tuberculosis	Tuberculosis	Hypertensive heart disease	Diarrhoeal diseases
<u>ى</u>	Measles	Drowning	Lower respiratory infections	Drug use disorders	Hypertensive heart disease	Chronic obstructive pulmonary disorder	Cerebrovascular disease
6.	Malaria	Measles	Violence	Lower respiratory infections	Cirrhosis of the liver	Nephritis and nephrosis	Road traffic injuries
7.	Whooping cough	Tuberculosis	Drowning	HIV/AIDS	Lower respiratory infections	Diabetes mellitus	Tuberculosis
αj	Meningitis	Cerebrovascular disease	Fires	Self-inflicted injuries	Nephritis and nephrosis	Cirrhosis of the liver	Hypertensive heart disease
ல்	Tetanus	Congenital anomalies	Ischaemic heart disease	Maternal haemorrhage	Road traffic injuries	Diarrhoeal diseases	War and conflict
10.	Protein-energy malnutrition	Meningitis	Maternal haemorrhage	Cerebrovascular disease	Diabetes mellitus	Inflammatory heart diseases	Chronic obstructive pulmonary disorder
11.	Syphilis	Fires	Cerebrovascular disease	Diarrhoeal diseases	Trachea, bronchus, lung cancers	Alzheimer disease and other dementias	Nephritis and nephrosis
12.	Road traffic injuries	Falls	Leukaemia	Asthma	War and conflict	Tuberculosis	Congenital anomalies
13.	Tuberculosis	Protein-energy malnutrition	Drug use disorders	Violence	Breast cancer	Trachea, bronchus, lung cancers	Cirrhosis of the liver
14.	Drowning	Leukaemia	HIV/AIDS	Nephritis and nephrosis	Diarrhoeal diseases	Road traffic injuries	Diabetes mellitus
15.	Fires	Lymphoma, multiple myeloma	Rheumatic heart disease	Breast cancer	Drug use disorders	Bladder cancer	Malaria
16.	Upper respiratory infections	Rheumatic heart disease	Lymphoma, multiple myeloma	Fires	Oesophageal cancer	Endocrine disorders	Measles
17.	Cerebrovascular disease	Epilepsy	Poisonings	Lymphoma, multiple myeloma	Mouth and oropharyngeal cancers	Stomach cancer	Self-inflicted injuries
18.	Endocrine disorders	Nephritis and nephrosis	Abortion	Rheumatic heart disease	Inflammatory heart diseases	Oesophagus cancer	Drug use disorders
19.	Iron deficiency anaemia	Cirrhosis of the liver	Nephritis and nephrosis	Cirrhosis of the liver	Endocrine disorders	Mouth and oropharyngeal cancers	Inflammatory heart diseases
20.	HIV/AIDS	Leishmaniasis	Hypertensive disorders	Hypertensive heart disease	Stomach cancer	Breast cancer	Tracheal, bronchus, lung cancers

Source: WHO (2008). Global burden of disease: 2004 update

## Economic burden of road traffic injuries in the Eastern Mediterranean Region

The direct cost of road deaths for Eastern Mediterranean Region countries is estimated to be US\$ 7.5 billion annually [8]. A study from the Islamic Republic of Iran showed that the cost of road traffic injuries only on rural roads was approximately US\$ 1.2 billion in the years 1997–98, which is equivalent to 1.9% of Islamic Republic of Iran's gross national product (Box 1) [10]. In Jordan the cost of road traffic injuries was estimated to be equal to 2% of gross national product (Box 2) [11]. Despite the evidence that preventing road traffic injuries can lead to significant gains in terms of economy, public spending on road safety in the countries of the Region is very low [12]. For instance, Pakistan spends as little as US\$ 0.07 per capita on road safety, which is 1% of its public spending on health and 0.2% of its military budget [13].

### Box 1. Successful interventions can reduce road traffic injuries; an example from the Islamic Republic of Iran

The Islamic Republic of Iran initiated a programme of comprehensive road safety interventions in 2005. Three enforcement-based interventions—seatbelt law, motorcycle helmet law and general traffic law enforcement (e.g. use of speed cameras, patrolling)—and mass media educational campaigns on national radio and television (e.g. broadcasts of animated movies for children, expert panels and educational programmes on road safety) were implemented in all 28 provinces of the country. Motorization level (registered vehicles per 1000 inhabitants) increased from 157 in 2004 to 230 in 2007. Fatalities per 100 000 inhabitants decreased 38.2 in 2004 to 31.8 in 2007 (odds ratio [OR] = 0.83, 95% confidence interval [95%CI] = 0.82–0.85) whereas fatalities per 10 000 vehicles decreased from 24.2 in 2004 to 13.4 in 2007 (OR = 0.56, 95%CI = 0.55–0.57). Similarly, road traffic injuries per 100 000 inhabitants decreased from 361.4 in 2004 to 345.7 in 2007 (OR = 0.97, 95%CI = 0.96–0.98) and road traffic injuries per 10 000 vehicles decreased from 227.6 in 2004 to 155.6 in 2007 (OR = 0.68, 95%CI = 0.67–0.68) (Figure 3) [9].





#### Box 2. The economic cost of road traffic injuries: an example from Jordan

To assess the magnitude of road traffic injuries to the Jordanian economy in a given year, an estimate was made for 1996. Unit cost of death, injury, property damage, and police and insurance activities were assessed and overall economic costs to the country were estimated. The unit cost per traffic fatality was 46 520 Jordanian dinars (US\$ 56 941) of which 59% was attributed to loss of productivity. Overall road traffic injuries resulted in a JD 103 million (US\$ 146 million) loss to the economy, equivalent to 2% of gross national product (GNP). Fatal crashes, which were 1.3% of all crashes, accounted for 28% of total cost whereas property damage crashes, which were 69% of all crashes, accounted for 32% of total cost (Figure 4).



### Box 3. Specific road traffic injury prevention and control recommendations from *World report on road traffic injury prevention*

- 1. Identify a lead agency in government to guide the national road traffic safety effort.
- 2. Assess the problem, policies and institutional settings relating to road traffic injury and the capacity for road traffic injury prevention in each country.
- 3. Prepare a national road safety strategy and plan of action.
- 4. Allocate financial and human resources to address the problem.
- 5. Implement specific actions to prevent road traffic crashes to minimize injuries and their consequences and evaluate the impact of these actions. These actions include measures to reduce excessive and inappropriate speed; to reduce drink-driving; and to increase the use of motorcycle helmets, seatbelts and child restraints.
- 6. Support the development of national capacity and international cooperation.

## 1.3 Purpose and scope of the regional status report on road safety

Prevention of road traffic injuries has been on the United Nations agenda for the past 60 years. These efforts gained further strength with the establishment of the Division of Violence and Injury Prevention at the World Health Organization during the past decade. Subsequently, the World report on road traffic injury prevention, published by the World Health Organization and World Bank in 2004, led to international focus and agreement on a way forward. The report made six specific recommendations to the member states for prevention and control of road traffic injuries (Box 3). Several countries, including many countries of the Region, have reported adoption of UN resolutions and its road safety agenda over the past five years, setting their national or subnational priorities and working on the prevention of road traffic injuries at different levels.

Comprehensive information on various aspects of road traffic injury prevention was not available from most countries of the Region. In order to define future priorities, it is crucial to evaluate and quantify initiatives taken by the countries. This assessment was particularly important for the Eastern Mediterranean Region for many reasons as follows.

- Road traffic injuries are known to contribute significantly to the burden of disease in the Region. The Region had the highest road mortality rate for men in the age group 15–29 years.
- In the Eastern Mediterranean Region the distribution of road traffic injuries was different from other regions. The road mortality rates in highincome countries in the Region were higher than low- and middle-income countries of the Region and highincome countries of other regions [14].
- 3. Research on road traffic injury prevention and control is rudimentary in most countries of the Region.
- 4. Data on important contributing factors to road traffic crashes were never reported, possibly due to the involvement of multiple agencies in overall transportation in any country and no structure to support multisectoral collaboration in many countries.

The *Global status report on road safety* was commissioned with the following objectives:

- To assess the status of road safety in all WHO Member States using a core set of road safety indicators and a standardized methodology.
- To indicate the gaps in road safety.
- To help countries identify the key priorities for intervention and to stimulate road safety activities at a national level.





#### 2.1 Data collection strategy

In August 2007, WHO began to work on the *Global status report on road safety* (GSSRS). As a first step, a self-administered questionnaire was developed. A complete questionnaire, including Arabic translation, is available at: www.who.int/violence\_ injury\_prevention/road\_safety\_status/2009.

In each participating country, a national data coordinator was nominated and trained.

The coordinator facilitated a consensus meeting involving six to eight road safety experts from different backgrounds: health, transport, police (ministry of interior), nongovernmental organizations, academics and other road safety practitioners. In contrast to questionnaires in other regions, the questionnaires in the Eastern Mediterranean Region countries were completed by face-to-face interviews with the participants (Figure 5).



Figure 5. Data collection strategy

#### Table 3. Sectors represented in the survey

Sector	Number of countries with participation of sector	%
Lead agency	11	58
Transport	5	26
Health	17	89
Traffic police/interior	8	42
Educational/research institution	6	32
Other governmental	12	63
Others/nongovernmental organizations	8	42

In the Eastern Mediterranean Region, 19 out of the 21 Member States and the occupied Palestinian territory participated in the survey. Djibouti and Somalia, representing 1.7% of the Region's population, were the only two countries which did not participate.

An attempt was made to include all the relevant stakeholders and sectors in the survey. Table 3 summarizes the sectors involved. Of the 19 countries reporting details of the survey respondents, 17 (89%) had a representative of the health sector while only 5 (26%) had a representative of the transport sector.

#### 2.2 Data processing and analysis

Data were entered into an online database, and each response was examined for accuracy, consistency and validity.

Only three countries were found to have vital registration completeness greater than or equal to 85% and external causes of death coded to undetermined intent less than 30%. Estimates of road traffic deaths for other countries were made based on a negative binomial regression model. Details of the methodology are available at www. who.int/injury\_violence\_prevention/road\_ safety\_status/2009.

Data were extracted from the tables presented in the global report. For data not presented in the global report, the questionnaires from all participating countries of the Region were obtained, and the data were reanalysed. Key informants and WHO country focal persons for injury were contacted to obtain further information. For questions regarding enforcement of laws, a score of 7 or more out of 10 was classified as effective enforcement. A data search was carried out for road traffic injury related publications from the Region and included as references where required. Other WHO reports were also searched and included in the discussion (more details on data available in the statistical annex).

# **S Results**

## 3.1 Magnitude of road traffic injuries

#### Overview

Based on the modelled estimates<sup>1</sup>, highincome and middle-income countries of the Eastern Mediterranean Region have the highest road traffic injury fatality rates (per 100 000 population) in the world. With the African Region, the Eastern Mediterranean Region has the unfortunate distinction of the highest overall road traffic injuries fatality rate (of 32 per 100 000 population) in the world (Table 4).

Pakistan contributes to 24% of all deaths in the Region. Consistent with population share, Pakistan, Islamic Republic of Iran and Egypt are responsible for almost 60% of all road traffic injuries deaths in the Region. High-income countries of the Region have the highest fatality rates from road traffic injuries compared to any other region of the world. The estimated fatality rate of 28.5 per 100 000 population is more than double the next highest, the Region of the Americas, and four times that of the European and Western Pacific regions (Figure 6). Despite having only 3.3% of the world's high-income countries' population and only 1.7% of world high-income countries' vehicles, the Region is responsible for 9.1% of all deaths in high-income countries worldwide. The Eastern Mediterranean Region is the only region where fatality rates are higher in high-income countries than in low-income countries. Three of the five high-income countries with the highest fatality rates are from the Eastern Mediterranean Region (United Arab Emirates, Saudi Arabia and

Table 4. Eastern Mediterranean Region road traffic injury fatality rates (per 100 000population) compared to global estimates

	High-inco	me	Middle-income		Low-income		Total	
	Eastern Mediterranean Region	Global	Eastern Mediterranean Region	Global	Eastern Mediterranean Region	Global	Eastern Mediterranean Region	Global
Modelled fatality rates	29	10	36	20	28	22	32	19

<sup>&</sup>lt;sup>1</sup> Modelling was done to adjust for underreporting of data between countries, lack of standard definitions for road traffic deaths, use of different data sources and varying quality of the reporting systems.



Figure 6. Modelled road traffic injury fatality rates (per 100 000 population) by WHO Region

Qatar). This relationship between income and road safety highlights the rapid and relatively recent increase in income of many countries where rapid infrastructure development has overtaken the growth in safety systems.

The middle-income countries of the Region, with 9.6% of the world's middle-income countries' population, account for 17.6% of global deaths in these countries. The fatality rate of 35.8 per 100 000 population is again the highest in the world. Egypt,

a middle-income country, has one of the highest fatality rates in the world (Figure 7).

In the Eastern Mediterranean Region about 80% of road deaths are among males (Figure 8). One possible reason is lower exposure to road risks for females as they tend to drive less compared to men in the Region compared to other regions.



Figure 7. Modelled road traffic injury fatality rates (per 100 000 population) in the **Eastern Mediterranean Region** 



Figure 8. Proportion of road traffic deaths among males and females

## Road traffic fatalities by road user groups

What is already known about the issue? Vulnerable road users (pedestrians, cyclists and users of motorized and non-motorized two- and three-wheelers) constitute 46% of overall global traffic deaths and up to 80% of deaths in certain groups. In many countries the vulnerable road users face risks because of poor planning and construction of roads [15]. Effective interventions such as enforcement of helmet use by cyclists can prevent 60% of head injuries [16].

#### What does the survey reveal?

Based on data from only 10 countries, 56% of all fatalities were among the occupants of four-wheeled motorized vehicles (Figure 9). This proportion is higher in high-income countries where almost 66% of fatalities are seen in this group. Vulnerable road users account for around 32% of all fatalities with pedestrians, occupants of motorized two-or three-wheelers and cyclists contributing to 22%, 5% and 5% of road traffic deaths respectively (Table 5).



Figure 9. Proportion of modelled deaths by road users (%)

### Table 5. Percentage distribution of fatalities by road user type in the EasternMediterranean Region\*

	All	High-income	Middle-income
Occupants of four- wheeled vehicles	56	66	51
Occupants of motorized two- or three-wheelers	5	4	6
Cyclists	5	11	2
Pedestrian	22	19	24
Other/unspecified	12	0	17

\* No data available for low-income countries.

The absence of data from low-income countries such as Pakistan, Afghanistan and Yemen needs special mention. These three countries contribute 33% to the total burden of road traffic deaths in the Region.

The distribution of vehicles and thus the exposure vary considerably by the economic status of the country. While motorized two- and three-wheelers constitute almost half of all vehicles in lowincome countries, their numbers are less than 1% among high-income countries of the Eastern Mediterranean Region (Table 6). Availability of data from low-income countries is therefore likely to add to the total number of injuries of two- and threewheelers and pedestrians in the region because of the higher number of small and unprotected vehicles and poor road management in these countries.

Vehicle type	Low-income	Middle-income	High-income
Four-wheeled motorized vehicles	31.2	54.4	73.8
Motorized two- and three-wheelers	46.8	22.3	0.8
Minibus/pick up/van/ jeep	12.2	7.5	15.9
Trucks	4.1	8.9	6.3
Buses	5.7	1.4	1.8
Non-motorized vehicles	0.0	0.4	0.0
Other	0.0	5.2	1.5

#### Table 6. Percentage distribution of vehicles in the Eastern Mediterranean Region

#### What action is needed?

Occupants of cars and pedestrians are two high-risk groups in the Region. Interventions focused on these groups such as speed control, use of seatbelts and child restraints, and separating pedestrians from vehicles need to be considered. It is important to collect data from low-income countries in the Region to ascertain the role of motorized two- and three-wheelers in these settings.

## 3.2 Level of road safety legislation enforcement

#### Speed control

#### What is known about this issue?

- High speed is associated with higher risk of crash. For instance a study showed that an average increase in speed of 1 km/h was associated with a 3% higher risk of a crash involving an injury [17].
- The probability of a pedestrian being killed rises by a factor of 8 as the impact speed of the car increases from 30 km/h to 50 km/h [18].

GSRRS recommended that the speed limits on urban roads should not exceed 50 km/h. It is also important that local authorities further reduce these limits based on local use patterns.

#### What does the survey reveal?

Only 40% (n = 8) of Eastern Mediterranean Region countries had urban speed limits of 50 km/h or less. Four countries (Iraq, Lebanon, Oman and Qatar) reported their urban speed limits higher than 90 km/h.

Speed limits on rural roads<sup>2</sup> in most of the countries of the Region varied from 45 to 90 km/h; in Jordan, Morocco and Oman, this limit is set at above 90 km/h. Only half (11 of 20) of the countries allow modification in the speed limits at the local rather than on national level (Table 7).

Only two of the 21 countries reported perceived effectiveness of overall speed enforcement at 7 or above 7 on a scale of 0 to 10.

Country/area	Maximur	n speed
	On urban roads (km/h)	On rural roads (km/h)
Afghanistan	50	90
Bahrain	50	80
Islamic Republic of Iran	50	60
Kuwait	45	80
Libyan Arab Jamahiriya	50	70
Sudan	50	_
Tunisia	50	50
Occupied Palestinian territory	50	80

#### Table 7. Countries with urban speed limit of 50 km/h or less

<sup>&</sup>lt;sup>2</sup> Countries may have different definitions for rural roads. However, the United Nations Economic and Social Commission for Asia and the Pacific study defines the connections from villages to markets or to the nearest road of a higher category as rural roads and also those which directly serve farms.

#### Box 4. Seatbelt use reduces road traffic injuries-evidence from the Region

A study done in United Arab Emirates in 1992 on 706 drivers admitted to the emergency department with road traffic injuries showed that the rate of 10.5% of drivers "always" used seatbelt while 5.8% of drivers used seatbelts "frequently". This retrospective, interview based study showed a reduction in the number of road traffic injuries due to use of seatbelts. Those drivers who were not wearing seatbelts were at risk twice as often as drivers who were restrained by belts. A majority of the patients stated that seatbelts were the best protective measure against all injuries (62.1%) and severe injuries (29.1%) from road traffic accidents. Also, there was strong support for the mandatory use of seatbelts (56%) [22].

#### What action is needed?

- Member countries should adopt speed limits consistent with known safety standards at the national and local levels taking into consideration the state of the road infrastructure.
- Rapid road infrastructure development in many of the countries of the Region needs to be linked to incorporation of safety features in road design.
- Enforcement of speed limits through the use of speed enforcement detection devices needs to be carried out.
- Local or provincial administrations need to be given the authority, resources and political support to implement measures to reduce speed limits to levels consistent with local safety requirements.
- Legislation and enforcement can be made more effective through targeted public awareness and education campaigns on the adverse effects of speeding and the reasons for enforcing speed limits.

#### Seatbelts

#### What is known about this issue?

- Seatbelt use is one of the most effective measures for reducing fatal and nonfatal road traffic injuries [Box 4].
- Seatbelt use reduces crash death risk by 40%–65%, moderate and severe injuries by 43%–65% and all injuries by 40%–50%.

 Wearing a vehicle safety belt reduces the risk of being killed or seriously injured in a road crash by about 40%–50% for front seat and 25%–75% among rear seat passengers [19,20,21].

#### What does the survey reveal?

All countries of the Region except Afghanistan and Yemen have a national seatbelt law. However, there are only six countries (30%) where the national law on seatbelts applies to all car occupants.

Seatbelt wearing rates were available from 11 countries. For front seat (drivers or passenger) the seatbelt wearing rates vary from 5% in Libyan Arab Jamahiriya to 95% in Oman. There were only two countries with rear passenger seatbelt use rate, with Oman reporting wearing rate of 1% and Morocco reporting 19%. In only one country in the Region did seatbelt wearing rates exceed 90% (Table 8).

The effectiveness of the seatbelt wearing law enforcement is poor in most of the countries of the Region. Half of the countries have law enforcement effectiveness scores of less than 7 on a scale of 0 to 10.



Table 8. Seatbelt wearing rates for drivers and front seat passengers in EasternMediterranean Region

Country	National seatbelt wearing rate	
Bahrain	22%	
Egypt	70% driver only	
Islamic Republic of Iran	75%–80%	
Jordan	65% drivers; 10% front passenger	
Lebanon	15%	
Libyan Arab Jamahiriya	5%	
Могоссо	75% front seats; 19% rear seats	
Oman	95% front seats; 1% rear seats	
Qatar	50% front seats	
Syrian Arab Republic	81% front seats	
United Arab Emirates	61% front seats	

#### What action is needed?

- Almost half of road traffic fatalities in the Eastern Mediterranean Region are the occupants of motorized fourwheelers (all four-wheelers as indicated in GSRRS). Mandatory seatbelt use laws for both front and rear seats and strict enforcement could save up to 50% of these fatalities.
- All countries should enact laws that require car occupants to use seatbelts in both front and rear seats.
- Countries should strengthen enforcement of such laws.

#### Use of child restraints

#### What is known about this issue?

- Road traffic injuries are the second leading cause of death among children aged 5–14 years of age (Table 9). Children are killed at a rate of 18.3 and 17.4 per 100 000 in high-income countries and low- and middle-income countries of the Region respectively every year. Road traffic injuries bring indirect psychological trauma to children when they are injured or lose a parent to injury.
- Correct use of child restraints can reduce deaths among infants by 70% and small children by 80% [18].
- Unrestrained children were three times more likely to be hospitalized due to road traffic injuries as compared to restrained children [23].
- Enforcement of mandatory child restraint laws can increase the use of child restraints

#### What does the survey reveal?

According to the survey, only two of the 20 countries surveyed have child restraint laws (Figure 10) compared to about half of countries globally. In these two countries the laws were considered ineffective: in the case of Saudi Arabia the effectiveness was rated less than 3 on a score of 0 to 10 by all the respondents whereas in the case of the occupied Palestinian territory only two of the eight respondents rated it more than 7.

#### What action is needed?

- All countries should enact laws mandating use of child restraints.
- In countries where such laws exist, better enforcement by police and education of parents will enhance compliance.
- Research is needed in most countries of the Region to establish baseline evidence on the frequency of road traffic injuries among children and the use of restraints, so that the impact of legislation and education can be measured.

#### Motorcycle helmet use

#### What is known about the issue?

- Use of helmets is one of the most successful approaches for preventing injury among motorized two-wheeler riders [2].
- Use of helmets when riding a motorcycle can cut the fatality and severe injury rates by almost 40% and 70% respectively [25].
- Effective enforcement of helmet wearing laws can improve helmet wearing rates almost up to 100% [19].
- After the repeal of mandatory helmet

Table 9. Estimated mortality due to road traffic injuries (rate per 100 000 population), age group and income level (both sexes), 2004, Eastern Mediterranean Region

Income level	<1 year	1–4 years	5–9 years	10–14 years	15–19 years	< 20 years
All	27.7	16.3	19.6	11.7	19.8	17.4
High- income	116.6	9.8	9.0	8.8	22.9	18.3
Low- and middle- income	22.6	16.6	20.2	11.9	19.7	17.4



#### Figure 10. Child restraint laws by country in the Eastern Mediterranean Region

laws, the deaths from motorcycle accidents in two states<sup>3</sup> in the United States of America increased by 50% and 100% respectively [26].

#### What does the survey reveal?

Results of the survey showed that only four countries out of the 20 surveyed have a mandatory helmet law as well as a helmet standard. Thirteen countries have a law but no standard (Figure 11). Only four countries shared their helmet wearing rates, which ranged from 90% in Qatar to 13% in Islamic Republic of Iran (Table 10). Only the United Arab Emirates rated the effectiveness of its overall enforcement regime above 7.

#### What action is needed?

- In countries where injuries to motorcyclists are common, laws are needed requiring helmet wearing for both rider and pillion passenger.
- Laws should also define a standard motorcycle helmet, in order to ensure availability and use of the most effective motorcycle helmets.
- In countries with high motorcycle use, helmet wearing rates should be measured as a performance indicator for traffic law enforcement.



<sup>&</sup>lt;sup>3</sup> Motorcycle helmet laws were repealed in Kentucky and Louisiana.



Figure 11. Motorcycle helmet laws and standards by country in the Eastern Mediterranean Region

Table 10. Levels of motorcycle neimet wearing in the Eastern Mediterran	ean
Region	

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Country	Estimated national helmet wearing rate (%)	National helmet law	Helmet standards
Egypt	70	Yes	No
Islamic Republic of Iran	13–15	Yes	Yes
Morocco	67 <sup>a</sup>	Yes	Yes
Qatar	90	Yes	No

<sup>a</sup> Drivers only

## Alcohol use and road safety in the Eastern Mediterranean Region

#### What is known about the issue?

- Drivers and motorcyclists with blood alcohol concentration greater than zero are at higher risk of a crash than those whose blood alcohol concentration is zero [27,28].
- The risk of involvement in a fatal crash doubles with each 0.02% increase in blood alcohol concentration [29].
- If a blood alcohol concentration limit is fixed at 0.10 g/dl, this will result in three times the risk of a crash that exists with the most common

limit in high-income countries of 0.05 g/dl. If the legal limit stands at 0.08 g/dl, there will still be twice the risk that there would be with a limit of 0.05 g/dl [2].

• Upper limits of 0.05 g/dl for the general driving population and 0.02 g/dl for young drivers and motorcycle riders are generally considered to be the best practice at this time [2].

#### What does the survey reveal?

The survey found that 19 out the 20 countries surveyed have a law against drinking and driving. Morocco is the only country where such a law does not exist

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but alcohol consumption is prohibited. The data showed that nine of the 20 countries of the Region had completely prohibited alcohol use for the general population. Four had a blood alcohol concentration limit of 0.05 g/dl and three had a blood alcohol concentration limit of 0.08 g/dl for the general population (Figure 12). United Arab Emirates is the only country in the Region with a blood alcohol concentration limit of 0.1 g/dl. None of the countries of the Region has defined a lower limit for young or novice drivers as recommended in the World report on road traffic injury. Only eight countries reported a system of random breath testing or police check points used for enforcement.

Data on alcohol's role in road traffic injuries were not available for most countries of the Region. Of the 20 countries surveyed, only four provided data on deaths attributable to drink-driving. Bahrain had the highest proportion of road deaths attributed to alcohol (7.7%) followed by Morocco, Libyan Arab Jamahiriya and Tunisia (Table 11). Five out the 20 countries surveyed stated that they considered the enforcement level above 7 on a scale of 0 to 10. Three countries ranked enforcement effectiveness at the level of 1.



### Figure 12. Blood alcohol concentration (g/dl) by country in the Eastern Mediterranean Region

## Table 11. Proportion of alcohol-related fatal crashes in the Eastern Mediterranean Region

Country	Fatalities attributable to alcohol (%)
Bahrain	7.7
Могоссо	2.97
Libyan Arab Jamahiriya	2
Tunisia	0.7
Afghanistan, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Pakistan, occupied Palestinian territory, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, United Arab Emirates, Yemen	No data

#### What action is needed?

- The system of random checks on drivers and availability of data related to this needs to be strengthened to assess the true contribution of alcohol consumption towards road traffic injuries in the Region.
- Countries permitting alcohol use need to define a lower blood alcohol concentration limit for younger and novice drivers, ideally at the level of 0.02 g/dl or less.
- Behaviour change strategies focusing especially youth to discourage alcohol consumption can reduce the injuries resulting from drunk driving among them.
- More research needs to be carried out on the role of other drugs of abuse such as khat, marijuana, narcotics and benzodiazepines in the incidence of road traffic injuries in the Region.

#### 3.3 Institutions and policies

#### Institutional framework for road safety in the Eastern Mediterranean Region

### Why is an institutional framework important for road safety?

Experience worldwide has shown that the prevention of road traffic injuries cannot be achieved by one single sector, be it transport, police or health. It often requires multidisciplinary, multilevel involvement of governments, businesses and civil society. The effort of coordinating these activities would require a lead agency with an appropriate amount of resources and a clear legislative mandate. Without funding the agency is not likely to be effective. One of the roles of the lead agency or group is to produce a national strategic document for road safety. Countries with a history of success have set of achievable targets to ensure serious consistent efforts.

### What are the best practices for an institutional framework?

The first recommendation of the World report on road traffic injury was to "identify a lead agency in government to guide the national road traffic safety effort". The lead agency, with funding and a government mandate, defines a coherent national strategy. A set of targets is then defined to ensure consistent focused interventions [2].

#### What does the survey reveal?

Fourteen of the 20 countries of the Region identified a lead agency responsible for road safety although only eight of these agencies had funding allocated in the national budget for agency's activities. Of these, seven (50%) had an agency at the interministerial level. Countries without a lead agency included high-income countries such as Kuwait and Qatar, and middle-income countries such as Lebanon, Libyan Arab Jamahiriya, Sudan, Tunisia and the occupied Palestinian territory. All three low-income countries had identified a lead agency.





Only Egypt, Jordan, Lebanon, Morocco, Tunisia and United Arab Emirates had a single national road safety strategy. Nine countries had either subnational plans or multiple road safety strategic plans.

Of those with a national strategy, only half had measureable targets in their strategies (Table 12). Morocco, Tunisia and United Arab Emirates are the only countries in the Region with measurable road safety targets backed by funding to achieve these targets.

#### What action is needed?

 Countries need to establish lead agencies with funding defined in the national budget and legislative mandate as the primary requirement for further action in road safety.

- Each country needs to develop a national road safety strategy through a national consultative process.
- Each country needs to define measureable indicators and set targets which are formally endorsed by the government and supported by specific budgetary allocations.

Lead agency	Number of countries	Percentage of total countries	
No	6	30	
Yes	14	70	
Lead agency is funded (of the 14 countries with a lead agency)			
No	6	43	
Yes	8	57	
National road safety strategy			
No	5	25	
Yes	6	30	
Subnational	3	15	
Multiple strategies	6	30	
Strategy includes measureable national targets (of the six countries with national strategy)			
No	1	17	
Yes	3	50	
Not formally endorsed	2	33	

#### Table 12. Road safety institutional framework in the Eastern Mediterranean Region



#### National policies on alternative transportation

What is already known about this issue? It is well known that travel by a well regulated public transportation system, such as buses or trains, is safer than any other mode of road travel. According to the World report on road traffic injury prevention, countries should encourage the use of public transportation and their

combination with cycling and walking [2].

Strategies are needed to: improve mass transit systems and taxi services (including improvements to routes covered and ticketing procedures, shorter distances between stops, and greater comfort and safety of both the vehicle and the waiting areas); better coordinate between different modes of travel; create secure shelters for bicycles and "park and ride" facilities, where users can park their cars near public transport stops; and raise fuel taxes and instigate other pricing reforms that discourage private car use in favour of public transport.

#### What does the survey reveal?

Eleven out of the 20 countries surveyed in the Region had national policies encouraging investment in public transportation. All of the three low-income countries (Afghanistan, Pakistan and Yemen), some of the middleincome countries (Sudan, Oman, Lebanon and occupied Palestinian territory) and one high-income country (Kuwait) did not have policies that support public transportation development. Libyan Arab Jamahiriya had no national policy, although there were subnational policies. The most common way of supporting public transportation was through subsidizing its pricing and improving access and frequency of public transport service (Table 13).

Only two countries (Islamic Republic of Iran and United Arab Emirates) had policies encouraging walking and cycling. Both of the countries increased investment in bicycle lanes and footpaths as well as instituted traffic calming measures to decrease speed in areas used by cyclists and pedestrians.

#### Table 13. National policies to support public transport

Country	Subsidized pricing of public transport	Improved service of public transport	Disincentives for private car use
Bahrain	Yes	No	No
Egypt	Yes	Yes	Yes
Iraq	Yes	Yes	Yes
Islamic Republic of Iran	Yes	Yes	Yes
Jordan	No	Yes	No
Morocco	Yes	Yes	No
Qatar	Yes	Yes	No
Saudi Arabia	No	Yes	No
Syrian Arab Republic	Yes	Yes	No
Tunisia	Yes	Yes	No

Note. Libyan Arab Jamahiriya reported subnational policies. Other countries in the Region did not report policies. Yes denotes presence of policy; No denotes no mention of policy.

#### What action is needed?

- It is critical that countries develop policies to encourage investment in public transport.
- In many countries public transport is run by private transport groups with a focus on profit-making; the additional cost of ensuring safety may not be thought of as good investment. Public transport should be either owned by government or tightly regulated by government to ensure safety.
- Each country in the Region needs to develop policies to encourage walking and/or cycling as an alternative to car travel.
- As about 90% of the countries had no policies for the promotion of walking and cycling and only about half of the countries had national policies for investment in public transport, measures need be taken to provide alternative modes of transport such as walking or cycling which will not only ensure gains in terms of road safety but also help reduce air pollution and improve opportunities for physical activity and exercise, hence reducing the burden of obesity and other chronic illnesses.

## Systems to ensure safe roads and safe vehicles

#### What is already known about the issue?

- Vehicle safety standards—improvements in vehicle design, occupant protection and vehicle maintenance—have reduced road crashes significantly in developed countries.
- Periodic vehicle inspection in addition to frequent random checking of vehicles on the road is practised in many countries.
- Road safety audits should be included during the design, construction and maintenance phases of any new road construction projects.
- Road maintenance includes fixing potholes, cleaning drainage facilities, replacing missing traffic signs, guardrails, road markings and other safety measures.

#### What does the survey reveal?

Most of the countries had a standard system of assessment/test for new drivers of cars to undergo in order to obtain a driving licence and almost all of the countries required the drivers to take a theoretical assessment/ test (e.g. written exam, computer test) and practical assessment (i.e. in a car). Eleven countries had a mandatory system that ensured the designs of new major road construction projects be submitted for a road safety audit, and 13 countries reported that the road safety audits (or inspections) of existing road infrastructure were conducted on a regular basis. Most of these audits were performed either by the transport or works department/ministry of these countries.

Thirteen countries did not manufacture vehicles, and there was no national legislation that required the car importers in these countries to adhere to standards of fuel consumption and seatbelt installation in front and rear seats; only three countries had all three standards in place. Periodic vehicle inspection was performed in 16 countries (Table 14).

#### What action is needed?

- Countries should implement mandatory road safety audits for new road construction projects as well as for existing road infrastructure.
- Countries need to implement a system of periodic vehicle inspection to ensure compliance with the basic safety standards.
- Each country needs to define safety • standards for all cars, both locally manufactured and imported. No car should be allowed on the road without seatbelts installed in the front and back seats.

	Number of countries	Percentage of total countries
Type of test for driving licence (theoretical and practical)		
Both	18	90
Practical only	2	10
Designs of road construction submitted for a formal road safety audit		
Yes	11	55
No	4	20
Informal checks	5	25
Regular road safety audits of existing roads		
Yes	13	65
No	7	35
Periodic vehicle inspection process		
All vehicles	16	80
Except motorized two-wheelers	4	20

#### Table 14. Infrastructure and vehicle standards
#### 3.4 Data quality

#### What does the survey reveal?

Data are one of the primary drivers of policy. In the Eastern Mediterranean Region, the data on road traffic injuries have three major shortcomings: the underreporting of road fatalities and non-fatal injuries; lack of data on risk factors; and differences in the definition of road traffic injury death, making regional comparison difficult.

All the participating countries reported that they had some mechanism of collecting national data on road traffic deaths on a regular basis. However, when estimates of underreporting were done, the Region was found to have one of the highest levels of underreporting in the world.

Only two countries, Iraq and Pakistan, identified underreporting as an issue during the survey. In Iraq, deaths at the scene of injury were not reported while in Pakistan, the main data source was police reporting and did not include other deaths that occur, for instance, in hospital.

In the case of Afghanistan the deaths reported were from the General Directorate of Road Care, which collects data only from the traffic highways. Hence the data from smaller roadways and data from the hospitals were missing. Also, data on important risk factors were found to be missing. In particular, data were not available for many countries on seatbelt and helmet use rates and alcohol-related fatal injuries. Data on road traffic deaths by road users were missing in many countries. The standard definition<sup>4</sup> of road mortality is a road death occurring within 30 days of a road crash. Only half of the countries follow this definition. Others have different definitions, as shown in Annex 1.

#### What action is needed?

- Accurate data collection would require improved data linkages between various stakeholders, increased resources to undertake data collection and processing and involvement of health sector to facilitate road traffic injury surveillance.
- Countries need to use the 30-day definition of road traffic deaths for harmonization across data sources.
- Countries need to establish a system to collect data on rates of seatbelt use, helmet wearing and child restraint use.
- Data need to be gathered on deaths attributable to alcohol.



<sup>&</sup>lt;sup>4</sup> United Nations Economic Commission for Europe (2003) definition of 30 days to define road fatality.

#### 3.5 Pre-hospital care system

### Why is pre-hospital care important in road traffic injuries?

- An effective and efficient chain of interventions is required for timely and appropriate care of trauma patients. This chain of intervention is now called a trauma system.
- Well organized trauma systems have decreased mortality among all treated trauma patients by 15%–20% and decreased medically preventable deaths by 50% [30,31].
- An important component of trauma systems is care before reaching the hospital. There is evidence to support improvement in outcomes through improvements in the pre-hospital care system. For details of development of pre-hospital and trauma care, visit: http://www.who.int/violence\_injury\_ prevention/publications/services/ guidelines\_traumacare/en/index.html.
- A well established pre-hospital care system means lifesaving and immediate care with the activation of emergency response system through a single well disseminated universal access phone

number and lifesaving interventions in the field, provision of efficient and safe transportation to hospital and immediate attention by hospital staff trained in trauma care.

#### What does the survey reveal?

The survey showed that a formal prehospital care system did not exist in three of the countries of the Region surveyed and was present only in certain parts of Pakistan. Most of the countries of the Region have a universal access phone number for pre-hospital care—a single nationwide emergency telephone number. However the effectiveness and reliance of the system is unknown.

#### What action is needed?

- The pre-hospital care system in each country needs to be integrated into an effective trauma care system at local and regional levels.
- Countries should study the utilization of pre-hospital services and their quality. Quality standards need to be adopted, where they do not exist.





#### 4.1 Conclusions

The main strength of the report is that the data were collected on a standard questionnaire from all the countries surveyed, and a homogenous methodology was adopted in the processing of data. Weakness was due to paucity of data on certain themes such as proportion of alcohol-related fatal crashes, road traffic deaths by road users, seatbelt use for nine countries and motorcycle helmet wearing rates. Data were absent for nine of the countries surveyed for the variable on seatbelt wearing rates; therefore the analysis was only possible for 11 countries.

While significant variation exists between countries in the Region, the following are some of the important facts that apply generically to most if not all countries of the Region (Annex 3). 1. Road traffic injury is a major threat to the health and development of the Eastern Mediterranean Region

The report clearly shows the health and to some extent economic burden of road traffic injuries in the Region. The average regional road fatality rate is one of the highest (32.2 per 100 000 inhabitants) in the world, resulting in 176 000 deaths every year. Regional high-income countries have the highest road fatality and injury rates compared to countries with similar socioeconomic status elsewhere. For the economically productive age groups of 15-44 years, road traffic injuries are the leading cause of death and disease burden. Considering reported deaths, the Islamic Republic of Iran has one of the highest road traffic injuries fatality and injury rates in the world, and if estimates are adjusted for the 30-day definition of road fatality then Pakistan has one of leading road fatality





counts in the world. Costing studies for burden of injuries and deaths due to road traffic injury were performed in half of the countries of the Region.

### 2. No institutional frameworks exist in many countries of the Region

There was no lead agency for road safety in six out the 20 countries surveyed. Only six countries had a single national road safety strategy, and only three countries had measurable road safety targets for future. About 90% of the countries of the Region do not have national policies for promotion





of cycling and walking and only half of the countries of the Region have policies to invest in public transport.

#### 3. Legislation and enforcement of key road safety interventions need to be strengthened in many countries of the Region

Only 40% of the countries surveyed have set optimum urban speed limits ( $\leq$  50 km/h) on the roads. No law exists in Afghanistan, Iraq and Yemen obliging motorcyclists to wear helmets. Data on helmet wearing rates were available for four countries only. Seatbelt wearing rates above 90% were reported from only one country out of the 11 which reported the use rate. Only two places; Saudi Arabia and the occupied Palestinian territory had child restraint laws. However, enforcement of these laws was rated very poor ( $\leq$  2). Overall, there was poor enforcement of these laws in the Region.

#### 4. Adherence to vehicle and road design safety standards is low in the Eastern Mediterranean Region

In seven countries of the Region, no regular audits for existing road infrastructure were conducted whereas in two other countries no formal audits were required for new road construction projects. Vehicles were manufactured in six countries of the Region, four of which reported that they implemented standards on fuel consumption and seatbelt installation.

### 5. Some important data are non-existent or incomplete

A number of problems were identified in the regional road traffic data. Only nine countries followed the United Nations Economic Commission for Europe (2003) definition of 30 days to define road fatality. The breakdown of road deaths by road user was available for only 10 countries in which a large proportion of involved vehicle type was not specified for Sudan (56%), Egypt (30%) and Islamic Republic of Iran (11%). Road fatality trend was available for 12 countries only.

#### 4.2 Recommendations

Following is the summary of the recommendations based on the findings of the survey. Some of these recommendations apply more to some countries than others.

- 1. Establish and strengthen lead agencies and manage performance through target setting. A government-funded lead road safety agency should be established in each member country. The status of this agency should be interministerial and have a well defined budget in the national budget. This agency should take the lead in data collection, inviting all stakeholder institutions to a central location at least once a year to discuss nationwide road safety problems in the light of international recommendations and national priorities. It should announce measurable road safety targets for the next five years with the help of prominent political/governmental figures to assert the political will for achieving these targets.
- 2. Make safe, healthy, environment-friendly transport choices; design transport around walking, cycling and public transport. Unlike other regions, the Region completely lacks any policies to promote safe walking, cycling and public transport. This should be inculcated in all future transport policies in member countries.
- 3. Focus on implementing the five most effective interventions to reduce chances of injury during a crash.
  - a. Control speed. Speed limits on urban and rural roads and motorways should be set by defining each road type in the countries of the Region. Speed enforcement should be done by fixed and mobile speed cameras. Moreover, engineering interventions should be evaluated in the Region so that other member countries can benefit from these interventions being tested with similar settings.
  - b. *Implement seatbelt laws*. Seatbelt laws should apply to all vehicle occupants; and these laws should be better enforced.

- c. Promote child restraint in cars. Child restraint laws need to be developed in most of the countries of the Region. Moreover, enforcement should be improved in those countries where these laws exist.
- d. Enforce use of standard motorcycle helmets. Motorcycle helmet law should include pillion riders, and a standard needs to be defined for these helmets in the countries of the Region. More efforts are required to measure helmet wearing rates in the countries of the Region.
- e. Ascertain the role of alcohol in road crashes and control it, if found to be a problem. Drink driving should be measured in the countries of the Region using standard devices. Moreover, it is possible that other illicit drugs/substances are used before or while driving. Laws should include all these substances, and measurement devices should be made available to the local traffic police.
- 4. Allow only safe vehicles on the roads. Vehicle manufacturing and import standards should be evaluated in the Region to ensure that only vehicles that follow international safety standards, such as those of the European Union, are allowed to be on the market. Safety features should not be treated as "optional" but rather as essential features of a car in the Region.
- 5. Ensure safe road design through safety audits at all stages of road construction and maintenance. Road safety audits should be conducted by national, regional and local road authorities to implement preventive measures on the roads under their jurisdiction.
- 6. *Improve trauma care.* A pre-hospital care system of ambulances connected through a universal access number is an important but just one component of a comprehensive trauma system. The quality of emergency and trauma care needs to be studied in the Region, and benchmarks for outcomes need to be defined.

- 7. Define data needs; harmonize definitions and data collection methodology. Costing studies should be performed using standard methods in all member countries in order to advocate the need for road safety targets.
- 8. Enhance institutional capacity for data gathering, analysis and dissemination. The Region needs to agree on the data needs, harmonize definitions and data collection methodology. Collaborative relationships between health, police and traffic authorities will need to be established for setting up surveillance

systems. Countries of the Region need to foster institutional development on injury prevention. This can be achieved through governmental stewardship of various institutes working on injury research and prevention.

### Annex 1. Definition of road fatality in countries of the Eastern Mediterranean Region

Country	At scene	Within 24 hours	Within 7 days	Within 30 days	Within 1 year
Afghanistan	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Bahrain	NA	NA	NA	NA	NA
Egypt	$\checkmark$	NA	NA	NA	NA
Iran, Islamic Republic of	NA	NA	NA	$\checkmark$	NA
Iraq	$\checkmark$	V	$\checkmark$		NA
Jordan	NA	NA	NA	$\checkmark$	NA
Kuwait	NA	NA	NA	$\checkmark$	NA
Lebanon	NA	NA	$\checkmark$	NA	NA
Libyan Arab Jamahiriya	NA	NA	NA	$\checkmark$	NA
Могоссо	NA	NA	NA	$\checkmark$	NA
Occupied Palestinian territory	NA	NA	NA	$\checkmark$	NA
Oman	NA	NA	NA	$\checkmark$	
Pakistan	NA	NA	NA	NA	NA
Qatar	NA	NA	NA	$\checkmark$	NA
Saudi Arabia	NA	NA	NA	$\checkmark$	NA
Sudan	NA	NA	NA	NA	NA
Syrian Arab Republic	$\checkmark$	NA	NA	NA	NA
Tunisia	NA	NA	NA	$\checkmark$	NA
United Arab Emirates	NA	NA	NA	$\checkmark$	NA
Yemen	$\checkmark$	$\checkmark$	$\checkmark$	NA	NA

Annex 2. Deaths per 10 000 registered vehicles in countries of the Eastern
Mediterranean Region

Country	Reported deaths per 10 000 vehicles	Reported vehicle occupant deaths per 10 000 vehicles	Modelled deaths per 10 000 vehicles	Modelled vehicle occupant deaths per 10 000 vehicles
Afghanistan	2.5		14.5	
Bahrain	2.4	1.5	2.4	1.5
Egypt	28.6	17.0	73.1	43.5
Iran, Islamic Republic of	13.5	11.2	15.0	12.4
Iraq	8.0		49.3	
Jordan	11.8	9.1	24.1	18.6
Kuwait	3.5		3.5	
Lebanon	3.6		8.4	
Libyan Arab Jamahiriya	11.7	7.2	13.7	8.4
Morocco	16.8	7.8	38.7	18.0
Occupied Palestinian territory	23.9		110.5	
Oman	12.7		8.8	
Pakistan	10.5		78.5	
Qatar	3.3		3.3	
Saudi Arabia	8.6		9.7	
Sudan	18.6	6.4	111.4	38.4
Syrian Arab Republic	20.3		47.2	
Tunisia	12.0	6.8	28.7	16.2
United Arab Emirates	6.0	4.4	9.3	6.9
Yemen	35.8		84.3	

### Annex 3. Overview of status of major recommendations in the Eastern Mediterranean Region

Country	Lead agency	Urban speed ≤ 50 km/h	Blood alcohol concentration ≤ 0.05 g/dl	Helmet law	Seat-belt Iaw	Child restraint law
Afghanistan	V	V	V	x	x	x
Bahrain	$\checkmark$	1	V	$\checkmark$	√a	х
Egypt	$\checkmark$	V	х	√ <sup>a</sup>	√ <sup>a</sup>	х
Iran, Islamic Republic of	V	V	V	V	V	x
Iraq	V	x	х		V	x
Jordan	V	√*	x	V	√a	х
Kuwait	х	V	V	V	√ <sup>a</sup>	х
Lebanon	х	x	$\checkmark$	$\checkmark$	√a	х
Libyan Arab Jamahiriya	x	V	$\checkmark$	√a	V	x
Morocco	$\checkmark$	x	х	√a	V	х
Occupied Palestinian territory	x	V	$\checkmark$	V	V	V
Oman	V	x	х	V	√a	x
Pakistan	$\checkmark$	x	$\checkmark$	√a	√ <sup>a</sup>	х
Qatar	х	x	$\checkmark$	V	√a	х
Saudi Arabia	$\checkmark$	x	$\checkmark$	√ <sup>a</sup>	V	$\checkmark$
Sudan	х	1	$\checkmark$	$\checkmark$	√a	x
Syrian Arab Republic	V	√*		V	û	x
Tunisia	V	V	V	V	√a	x
United Arab Emirates	V	x	x	V	√ <sup>a</sup>	x
Yemen	$\checkmark$	x	$\checkmark$	х	x	х

 $\sqrt{M}$ eets the defined standard

x Does not meet the defined standard

\* Speed limits may exceed 50 km/h in some settings

<sup>a</sup> Not applied to all occupants/riders

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# **Country profiles**

- 1. Explanatory notes
  - Background
  - Methodological variations
  - Terminology and interpretation
  - Presentation of data
- 2. Individual country profiles

### **Explanatory notes**

### Background

The country profiles presented in this section of the report present a selection of information about road safety as reported by each of the 20 participating countries from the Eastern Mediterranean Region. Additional country level data can be found in the Statistical Annex (Tables A.2 – A.7). The country survey tools may be downloaded from the following website: www.who.int/violence\_injury\_prevention/road\_traffic/road\_safety\_status/2009.

#### **Methodological variations**

One hundred and seventy eight countries/areas including 20 from the Eastern Mediterranean Region participated in the Global status report on road safety. In this Eastern Mediterranean status report on road safety, only profiles from the Region are presented.

While most of the 178 participating countries/areas followed the standardized methodology, in eight (Australia, Germany, Kazakhstan, Puerto Rico, Saint Vincent and the Grenadines, Singapore, Ukraine and Uzbekistan) the questionnaire was completed by the National Data Coordinator(s), and no consensus meeting was held. In addition, in all countries of the Eastern Mediterranean Region the questionnaire was not self-administered but was completed through face-to-face interviews between the National Data Coordinator and individual respondents. Consensus meetings, however, were held in these countries/areas according to the project methodology.

Data reported for population, income group and gross national income per capita are for the latest year available (see Statistical Annex explanatory notes for more details).

#### **Terminology and interpretation**

The following terms and issues should be considered when reviewing the individual country profiles:

- The questionnaire asked for information on a number of topics, with follow-up questions exploring each topic in further detail. For many topics respondents were asked to skip follow-up questions depending on their answer to the top-level question. Consequently, the country profiles do not report information from follow-up questions if these should have been skipped. However, if these questions were answered, responses are shown in the statistical annex.
- Road classifications (in particular the definition of urban/rural roads or a highway) vary greatly from country to country, so respondents were asked to report on speed limits of roads according to the definitions they use.
- Respondents were asked, as individuals, to rate the effectiveness of enforcement of various national road safety legislation based on their professional opinion or perception. A scale of 0 to 10 was used, where 0 was not effective and 10 was highly effective. The group of respondents then tried to reach consensus on an enforcement score. These scores are thus subjective and should only be seen as an indication of how enforcement is perceived at a country level. Many respondents expressed difficulty in assessing enforcement at a national level, since it often varies from region to region within a country and the intensity of enforcement may vary during different time periods.
- Blood alcohol concentration (BAC) limits refer to the maximum amount of alcohol allowed in the blood that is legally acceptable for a driver on the road, i.e. the blood alcohol level above which a driver may be punished by law. For the purposes of this report, the BAC limit in countries where alcohol consumption is prohibited has been recorded as zero, with an explanatory footnote.
- Where respondents provided explanatory information on helmet wearing and/or seat-belt wearing rates for instance, a description of methodology or geographical coverage this information is reported in the footnotes.
- A motorcycle helmet law is assessed as "applies to all riders yes" if the law requires drivers and passengers (both adults and children) to wear a helmet. Laws with exceptions on the grounds of religion or medical conditions or other reasons are indicated with the footnote "some exceptions."
- Respondents were asked to report on vehicle standards required for car manufacturers or assemblers in the country. No information is thus included on vehicle standards from countries where manufacture or assembly

do not take place. Some countries apply stringent standards relating to imported vehicles; however data on such standards were not collected as part of this survey.

Variables have been coded "Data not available (-)" if the information was not provided through the national data • collection process.

#### Presentation of data

Country profiles contain data on road traffic fatalities and non-fatal injuries as reported by countries/areas.

- Data from different countries are not necessarily comparable, as different definitions and timeframes have been used.
- Due to space constraints in footnotes, the data source has been summarized as Police, Transport or Health if the data is from the Ministry of Interior, Transport or Health, respectively.
- The proportion of deaths where sex is unknown has not been reported in the profiles.

In the charts presenting data on deaths by road user category, proportions may not sum to 100% due to rounding. Some countries classify road traffic fatalities according to the vehicle or road user "at fault" rather than according to who died, or use categories different from those requested in the questionnaire. In these countries deaths among vulnerable road users are even more likely to be underreported.

The standard colour coding of the pie charts used to represent the road user categories requested in the questionnaire are shown below. Additional categories are represented by non-standard colours.



Trend graphs are shown either as road traffic death rates per 100 000 population (on a green background) or as an absolute number of road traffic deaths (on a blue background), depending on which figures were supplied by the country. Due to space constraints, an arbitrary cut-off point of 1970 was applied for the few countries that provided many decades of trend data.

Where the primary source of information for both the pie and trend graphs was not stipulated, the source has been reported as 'Country questionnaire'.

Information about the number of vehicles in the country includes only registered vehicles, and proportions of various types of such vehicles. These proportions may not sum to 100% due to rounding. In some countries, respondents noted that a substantial proportion of the vehicle fleet may not be registered.

Population and income data from the United Nations Population Division and the World Bank were used for this analysis (see references 3,4 of the statistical annex).

### **AFGHANISTAN**

#### Population: 27 145 275

#### Income group: Low

#### Gross national income per capita: \$319

INSTITUTIONAL FRAMEWORK	
Lead agency	Yes
Funded in national budget	Yes
National road safety strategy	No
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
<b>Speed limits set nationally</b>	Yes
Local authorities can set lower limits	Yes
Maximum limit urban roads	50 km/h
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 9 10
Drink-driving law	Yes
BAC limit – general population	0.0 g/dl <sup>b</sup>
BAC limit – young or novice drivers	0.0 g/dl <sup>b</sup>
Random breath testing and/or police c	heckpoints
Road traffic deaths involving alcohol	—
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 9 10
Motorcycle helmet law	No
Applies to all riders	n/a
Helmet standards mandated	n/a
Helmet wearing rate	
Enforcement <sup>a</sup>	n/a
Seat-belt law	No
Applies to all occupants	n/a
Seat-belt wearing rate	—
Enforcement <sup>a</sup>	n/a
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Alcohol consumption prohibited by law.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	No
National universal access number	n/a

#### DATA

Reported	road traffic t	fatalities	(2007)
1 835°			

Reported non-fatal road traffic injuries (2007) 3 212<sup>d</sup>

Costing study available

No

<sup>c</sup> Police data, defined as died within 1 year of the crash.
 <sup>d</sup> Police data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
731 607 total (2008)	
Motorcars	59%
Motorized 2- and 3-wheelers	12%
Minibuses, vans, etc. (seating <20)	20%
Trucks	1%
Buses	8%

Data not available.
 n/a Data not required/not applicable.

### BAHRAIN

#### Population: 752 648

#### Income group: High

#### Gross national income per capita: \$20 610

INSTITUTIONAL FRAMEWORK	
Lead agency	General Directorate of Traffic
Funded in national budget	Yes
National road safety strategy	Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION			
<b>Speed limits set nationally</b>	Yes		
Local authorities can set lower limits	No		
Maximum limit urban roads	50 km/h		
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 9 10		
Drink-driving law	۲es		
BAC limit – general population	0.0 g/dl <sup>b</sup>		
BAC limit – young or novice drivers	0.0 g/dl <sup>b</sup>		
Random breath testing and/or police che	eckpoints No		
Road traffic deaths involving alcohol	8%°		
	0 1 2 3 <b>(4)</b> 5 6 7 8 9 10 Vac		
Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	Ves No 		
Seat-belt law	Yes		
Applies to all occupants	No		
Seat-belt wearing rate	22% <sup>d</sup>		
Enforcement <sup>a</sup>	0 1 2 3 <b>4</b> 5 6 7 8 9 10		
Child restraints law	No		
Enforcement <sup>a</sup>	n/a		
<ul> <li><sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.</li> <li><sup>b</sup> Alcohol consumption prohibited by law.</li> </ul>			

2007, General Directorate of Traffic. 2008, Ministry of Works. d

#### **VEHICLE STANDARDS** No car manufacturers **ROAD SAFETY AUDITS**

Formal audits required for major new road construction projects	Yes
Regular audits of existing road infrastructure	Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling	No
National policies to promote public transportation	Yes

#### **POST-CRASH CARE** Formal, publicly available pre-hospital care system Yes National universal access number Yes

Data not available.
 n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities (2007) 91° (91% males, 9% females)

Reported non-fatal road traffic injuries (2007) 3 415<sup>f</sup>

#### Costing study available

Yes (deaths only)

<sup>e</sup> Police data, defined as any death caused directly by road traffic injury,

regardless of time period. f General Directorate of Traffic data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2007, General Directorate of Traffic

#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
382 977 total (2008)	
Motorcars	81%
Motorized 2- and 3-wheelers	1%
Minibuses, vans, etc. (seating <20)	13%
Trucks	<1%
Buses	2%
Other	3%

### EGYPT

#### Population: 75 497 913

#### Income group: Middle

#### Gross national income per capita: \$1 580

INSTITUTIONAL FRAMEWORK	
Lead agency	National Council for Road Safety
Funded in national budget	Yes
National road safety strategy	Yes
Measurable targets	No
Funded	No

NATIONAL LEGISLATION							
Speed limits set nationally Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0	1	2	3	Ą	5	Yes No 60 km/h 678910
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>a</sup>	oin 0	ts 1	2	3	4	)5	Yes None <sup>b</sup> None <sup>b</sup> No 6 7 8 9 10
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0	1	2	8	 7 4	<b>0%</b> 5(	Yes No Passengers <sup>o</sup> 678910
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	Ą		Yes No 70% Drivers° 6(7)8 9 10
Child restraints law Enforcement <sup>a</sup>							No n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Drink-driving not defined by BAC limit.
 <sup>c</sup> 2003, Ministry of Interior.

VEHICLE STANDARDS	
<b>Car manufacturers required to adhere to standards on</b> Fuel consumption Seat-belt installation for all seats	No No
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### DATA

Reported road traffic fatalities (2007) 12 295<sup>d</sup> (70% males, 30% females)

Reported non-fatal road traffic injuries (2007) 154 000°

#### Costing study available

No

<sup>d</sup> Health data, defined as died at the crash scene.
 <sup>e</sup> 2007, Health data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2005, National Information Center for Health & Population

#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
4 300 000 total (2008)	
Motorcars	60%
Motorized 2- and 3-wheelers	19%
Trucks	18%
Buses	2%
Other	1%

Data cleared by the Ministry of Health and Population.

### **IRAN** (Islamic Republic of)

Population: 71 208 384

#### Income group: Middle

#### Gross national income per capita: \$3 470

INSTITUTIONAL FRA	MEWORK
Lead agency	Headquarter for Transportation and Fuel Management
Funded in national budge	t Yes
National road safety st	rategy Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION						
<b>Speed limits set nationally</b> Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0	1	2	3	4	Yes No 50 km/h 5 67 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>a</sup>	oin ©	ts	)2	3	4	Yes 0.0 g/dl <sup>b</sup> 0.0 g/dl <sup>b</sup> Yes — 5 6 7 8 9 10
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0	1	2	3	承	Yes Yes 13–15%° 5678910
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	Ą	Yes Yes 75–80% <sup>d</sup> 5 6 7 <b>(8</b> )9 10
Child restraints law Enforcement <sup>a</sup>						No n/a

Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective. Alcohol consumption prohibited by law. 2008, Traffic Police, 20–25% drivers, 3–4% passengers. 2007, Traffic Police. а

b

d

VEHICLE STANDARDS	
<b>Car manufacturers required to adhere to standards on</b> Fuel consumption Seat-belt installation for all seats	Yes Yes
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	Yes Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

- Data not available.
- n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities
(2007–2008 Iranian Calendar)
<b>22 918</b> <sup>e</sup> (80% males, 20% females)
Dependence fatal read traffic init

Reported non-fatal road traffic injuries (2007–2008 Iranian Calendar) 685 611<sup>f</sup>

Costing study available Yes (deaths and injuries)

<sup>e</sup> Forensic Medicine data, defined as died within 30 days of the crash. f Health data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
17 000 000 total (2008)	
Motorcars	48%
Motorized 2- and 3-wheelers	37%
Minibuses, vans, etc. (seating <20)	<1%
Trucks	5%
Buses	<1%
Other	9%

Data cleared by the Ministry of Health and Medical Education.

## **IRA**

#### Population: 28 993 374

#### Income group: Middle

#### Gross national income per capita: \$1 646

INSTITUTIONAL FRAMEWORK	
Lead agency	Supreme Council Road Safety
Funded in national budget	No
National road safety strategy	No (subnational)
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION							
<b>Speed limits set nationally</b> Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0	1	2	3	4) <b>(</b>	5	Yes No 100 km/h 6 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>a</sup>	oin	ts	0	0	A (		Yes 0.08 g/dl 0.08 g/dl No 
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>		U	<u> </u>				No n/a n/a  n/a
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	4	5	Yes Yes — 6 7 <b>8</b> 9 10
Child restraints law Enforcement <sup>a</sup>							No n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No No
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### DATA

Reported road traffic fatalities (2005) 1789<sup>b</sup> (83% males, 17% females)

Reported non-fatal road traffic injuries (2005) 7 467°

Costing study available

#### No

- <sup>b</sup> Central Organization for Statistics and Information Technology and Police Statistics, defined as died within 7 days of the crash, excludes Kurdistan
- region. Central Organization for Statistics and Information Technology and Police Statistics, excludes Kurdistan region. C

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



Source: Central Organization for Statistics and Information Technology, data since 1990 exclude Kurdistan region

REGISTERED VEHICLES	
2 242 269 total (2006) Motorcars Minibuses, vans, etc. (seating <20) Trucks Buses	35% 53% 7% 5%

— Data not available. n/a Data not required/not applicable.

### JORDAN

#### Population: 5 924 245

#### Income group: Middle

#### Gross national income per capita: \$2 850

INSTITUTIONAL FRAMEWORK	
Lead agency Funded in national budget	Road Safety Council No
National road safety strategy Measurable targets Funded	Yesª n/a n/a
	liva

Not formally endorsed by government.

NATIONAL LEGISLATION	
Speed limits set nationally	Yes
Local authorities can set lower limits	Yes
Maximum limit urban roads	50–80 km/h
Enforcement <sup>b</sup>	0 1 2 3 4 5 <mark>6</mark> 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police Road traffic deaths involving alcohol Enforcement <sup>b</sup>	Yes 0.08 g/dl 0.08 g/dl checkpoints — —
Motorcycle helmet law	0 1 2 3 4 5 6 7 8 9 10
Applies to all riders	Yes
Helmet standards mandated	No
Helmet wearing rate	
Enforcement <sup>b</sup>	0 1 2 3 4 5 6 7 8 9 10
Seat-belt law	Yes
Applies to all occupants	No
Seat-belt wearing rate	65% Drivers, 10% Front passengers <sup>c</sup>
Enforcement <sup>b</sup>	0 1 2 3 4 <b>5</b> 6 7 8 9 10
Child restraints law	No
Enforcement <sup>b</sup>	n/a

Enforcement score represents consensus based on professional opinion of respondents, on a

scale of 0 to 10 where 0 is not effective and 10 is highly effective. 2006, Jordan Traffic Institute.

#### **VEHICLE STANDARDS** No car manufacturers **ROAD SAFETY AUDITS** Formal audits required for major new road construction projects Nn Regular audits of existing road infrastructure No **PROMOTING ALTERNATIVE TRANSPORT** National policies to promote walking or cycling No National policies to promote public transportation Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

— Data not available. n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities (2007) 992<sup>d</sup> (80% males, 20% females)

Reported non-fatal road traffic injuries (2007) 17 969°

Costing study available

Yes (deaths and injuries)

<sup>d</sup> Public Security Directorate/Jordan Traffic Institute data, defined as died

within 30 days of the crash. <sup>e</sup> Public Security Directorate/Jordan Traffic Institute data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2007, Road Safety Youth Fund, Jordan

#### TRENDS IN ROAD TRAFFIC DEATHS



Source: Country questionnaire

REGISTERED VEHICLES	
841 933 total (2007)	
Motorcars	65%
Motorized 2- and 3-wheelers	<1%
Minibuses, vans, etc. (seating <20)	12%
Trucks	18%
Buses	2%
Other	3%

### KUWAIT

#### Population: 2 851 144

#### Income group: High

#### Gross national income per capita: \$40 114

INSTITUTIONAL FRAMEWORK	
Lead agency Funded in national budget	No n/a
National road safety strategy	No
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
<b>Speed limits set nationally</b>	Yes
Local authorities can set lower limits	Yes
Maximum limit urban roads	45 km/h
Enforcement <sup>a</sup>	0 1 2 3 4 5 678 9 10
Drink-driving law	Yes
BAC limit – general population	0.0 g/dl <sup>b</sup>
BAC limit – young or novice drivers	0.0 g/dl <sup>b</sup>
Random breath testing and/or police of	checkpoints
Road traffic deaths involving alcohol	—
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 <b>9</b> 10
Motorcycle helmet law	Yes
Applies to all riders	Yes
Helmet standards mandated	No
Helmet wearing rate	—
Enforcement <sup>a</sup>	0 1 2 <b>3</b> 4 5 6 7 8 9 10
Seat-belt law	Yes
Applies to all occupants	No
Seat-belt wearing rate	—
Enforcement <sup>a</sup>	0 1 2 <b>3</b> 4 5 6 7 8 9 10
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Alcohol consumption prohibited by law.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No No
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### DATA

Reported road traffic fatalities (2006) 482° (62% males, 38% females)

Reported non-fatal road traffic injuries (2007) 8 584<sup>d</sup>

Costing study available

No

<sup>c</sup> Health data, defined as died within 30 days of the crash.

<sup>d</sup> Health data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
Redio reiced verhoeed	
1 364 790 total (2007)	
Motorcars	55%
Motorized 2- and 3-wheelers	<1%
Minibuses, vans, etc. (seating <20)	35%
Trucks	7%
Buses	2%
Other	<1%

Data cleared by the Ministry of Health.

— Data not available. n/a Data not required/not applicable.

### **LEBANON**

#### Population: 4 099 115

#### Income group: Middle

#### Gross national income per capita: \$5 770

INSTITUTIONAL FRAMEWORK	
Lead agency	No
Funded in national budget	n/a
National road safety strategy	Yesª
Measurable targets	n/a
Funded	n/a

<sup>a</sup> Not formally endorsed by government.

NATIONAL LEGISLATION							
Speed limits set nationally Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>b</sup>	0	1	2	3 (	4	1	Yes Yes 00 km/h 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>b</sup>	oin ©	ts	) 2	3	4	0 0 5 6	Yes 0.05 g/dl 0.05 g/dl Yes 
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>b</sup>	0	1	2	) 3	4	56	Yes Yes No 7 8 9 10
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>b</sup>	0	1	2	3 (	4	56	Yes No 15%° 7 8 9 10
Child restraints law Enforcement <sup>b</sup>							No n/a

<sup>b</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>c</sup> 2007, Internal Security Forces.

VEHICLE STANDARDS		
No car manufacturers		
ROAD SAFETY AUDITS		
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes No	
PROMOTING ALTERNATIVE TRANSPORT		
National policies to promote walking or cycling National policies to promote public transportation	No No	

#### POST-CRASH CARE

Formal, publicly available pre-hospital care system	No
National universal access number	n/a

— Data not available. n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities (20	)07)
<b>497</b> <sup>d</sup> (80% males, 20% females)	

Reported non-fatal road traffic injuries (2007) 6 266<sup>e</sup>

- Costing study available
- Yes (deaths and injuries)
- <sup>d</sup> Internal Security Forces data, defined as died within 7 days of the crash. <sup>e</sup> Internal Security Forces data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



	REGISTERED VEHICLES
	<b>1 400 000</b> <sup>f</sup> total (2007) Registered vehicle types: data not available
Ì	<sup>f</sup> Estimation by consensus group.

### LIBYAN ARAB JAMAHIRIYA

Population: 6 160 483

#### Income group: Middle

#### Gross national income per capita: \$9 010

INSTITUTIONAL FRAMEWORK	
Lead agency	No
Funded in national budget	n/a
National road safety strategy	No
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION							
<b>Speed limits set nationally</b> Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0	1	2	3	<b>)</b> Ą	G	Yes No 50 km/h 6 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police check Road traffic deaths involving alcohol	poin	ts					Yes 0.0 g/dl <sup>b</sup> 0.0 g/dl <sup>b</sup> No 2%°
Enforcement <sup>a</sup>	0	1	2	3	4(	5	678910
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0	1	2	3	4	5	Yes No 
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	4	5	Yes Yes 5%° 6 7 8 9 10
Child restraints law Enforcement <sup>a</sup>							No n/a
<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective. <sup>b</sup> Alcohol consumption prohibited by law							

ion prohib ohol consu

<sup>c</sup> 2007, General Traffic Department.

VEHICLE STANDARDS					
No car manufacturers					
ROAD SAFETY AUDITS					
Formal audits required for major new road construction projects Regular audits of existing road infrastructure					
PROMOTING ALTERNATIVE TRANSPORT					
National policies to promote walking or cyclingNational policies to promote public transportationNo (subn	No ational)				

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	No

#### DATA

Reported road traffic fatalities (2007)	
2 138 <sup>d</sup> (65% males, 35% females)	

Reported non-fatal road traffic injuries (2007) 6 850<sup>e</sup>

Costing study available Yes (deaths and injuries)

 $^{\rm d}~$  General Traffic Department data, defined as died within 30 days of the

crash. <sup>e</sup> General Traffic Department data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2008, General Traffic Department

#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
1 826 533 total (2007)	
Motorcars	76%
Motorized 2- and 3-wheelers	2%
Minibuses, vans, etc. (seating <20)	12%
Trucks	5%
Buses	5%

### MOROCCO

#### Population: 31 224 137

Income group: Middle

#### Gross national income per capita: \$2 250

INSTITUTIONAL FRAMEWORK		
Lead agency	Interministerial Committee of Road Safety	
Funded in national budget	No	
National road safety strategy	Yes	
Measurable targets	Yes	
Funded	Yes	

NATIONAL LEGISLATION				
<b>Speed limits set nationally</b> Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0 1	2	3	Yes Yes 60 km/h 4 <b>5</b> 6 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police check Road traffic deaths involving alcohol Enforcement <sup>a</sup>	points			No⁵ n/a n/a 3%° n/a
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0 1	2	3	Yes No Yes 67% Drivers <sup>d</sup> 4) 5 6 7 8 9 10
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0 1	<b>7</b> 2	<b>5%</b> 3	Yes Yes Front, 19% Rear <sup>d</sup> 4 5 6 7 <b>8</b> 9 10
Child restraints law Enforcement <sup>a</sup>				No n/a
<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.				

<sup>b</sup> Alcohol consumption is prohibited.
 <sup>c</sup> 2007, National Road Administration, Ministry of Equipment and Transport.
 <sup>d</sup> 2007, National Committee of Prevention from Traffic Accidents, urban areas only.

VEHICLE STANDARDS	
<b>Car manufacturers required to adhere to standards on</b> Fuel consumption Seat-belt installation for all seats	No Yes
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities (2007) 3 838° (81% males, 18% females)

Reported non-fatal road traffic injuries (2007) 89 264<sup>f</sup>

#### Costing study available

No

Transport data, defined as died within 30 days of the crash. Transport data. e f

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



Source: National Road Administration, and National Statistic Administration

REGISTERED VEHICLES	
2 284 060 total (2007)	
Motorcars	72%
Motorized 2- and 3-wheelers	1%
Trucks	23%
Buses	1%
Other	3%

### OMAN

#### Population: 2 595 133

#### Income group: Middle

#### Gross national income per capita: \$11 275

INSTITUTIONAL FRAMEWORK	
Lead agency	Yes
Funded in national budget	Yes
National road safety strategy	No
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
Speed limits set nationally	Yes
Local authorities can set lower limits	No
Maximum limit urban roads	120 km/h
Enforcement <sup>a</sup>	0 1 2 3 4 5 <b>6</b> 7 8 9 10
Drink-driving law	Yes
BAC limit – general population	0.08 g/dl
BAC limit – young or novice drivers	0.08 g/dl
Random breath testing and/or police che	eckpoints
Road traffic deaths involving alcohol	
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 9 10
Motorcycle helmet law	Yes
Applies to all riders	Yes
Helmet standards mandated	No
Helmet wearing rate	—
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 <b>(7)</b> 8 9 10
Seat-belt law	Yes
Applies to all occupants	No
Seat-belt wearing rate	95% Front, 1% Rear <sup>b</sup>
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 7 8 <b>9</b> 10
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Estimation by consensus group, based on 4% of traffic offences relating to seat-belts.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### DATA

Reported road to	raffic fatalities (2007)
<b>798</b> ° (84% males,	16% females)

Reported non-fatal road traffic injuries (2007) 8 531<sup>d</sup>

Costing study available

No

<sup>c</sup> Police data, defined as died within 30 days of the crash.
 <sup>d</sup> Police data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



Source: Directorate General of Traffic Services of the Royal Oman Police

REGISTERED VEHICLES	
629 670 total (2007) Motorcars Motorized 2- and 3-wheelers Minibuses, vans, etc. (seating <20) Trucks Buses	72% 1% 12% 6% 4%
Other	6%

### PAKISTAN

#### Population: 163 902 405

Income group: Low

#### Gross national income per capita: \$870

INSTITUTIONAL FRAMEWORK	
Lead agency	National Road Safety Secretariat
Funded in national budget	No
National road safety strategy	Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
Speed limits set nationally	Yes
Local authorities can set lower limits	Yes
Maximum limit urban roads	70 km/h
Enforcement <sup>a</sup>	0 1 2 3 <b>4</b> 5 6 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police che Road traffic deaths involving alcohol Enforcement <sup>a</sup>	Yes 0.0 g/dl <sup>b</sup> 0.0 g/dl <sup>b</sup> eckpoints 
Motorcycle helmet law	Yes
Applies to all riders	No
Helmet standards mandated	No
Helmet wearing rate	—
Enforcement <sup>a</sup>	0 1 2 3 (4) 5 6 7 8 9 10
Seat-belt law	Yes
Applies to all occupants	No
Seat-belt wearing rate	—
Enforcement <sup>a</sup>	0 1 2 <b>3</b> 4 5 6 7 8 9 10
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Alcohol consumption prohibited by law.

VEHICLE STANDARDS	
<b>Car manufacturers required to adhere to standards on</b> Fuel consumption Seat-belt installation for all seats	No No
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No No
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

#### **POST-CRASH CARE** Formal, publicly available pre-hospital care system Yes Yes National universal access number

— Data not available. n/a Data not required/not applicable.

#### DATA

- Reported road traffic fatalities (2007) 5 565°
- Reported non-fatal road traffic injuries (2007) 12 990<sup>d</sup>

Costing study available

#### No

<sup>c</sup> Police data, defined as died at the crash scene or anytime after the

crash. <sup>d</sup> Police data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
5 287 152 total (2006)	
Motorcars	27%
Motorized 2- and 3-wheelers	51%
Minibuses, vans, etc. (seating <20)	11%
Trucks	4%
Buses	5%
Unspecified	2%

### ATAR

#### Population: 840 635

#### Income group: High

#### Gross national income per capita: \$66 063

INSTITUTIONAL FRAMEWORK	
Lead agency	No
Funded in national budget	n/a
National road safety strategy	No
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
<b>Speed limits set nationally</b>	Yes
Local authorities can set lower limits	No
Maximum limit urban roads	100 km/h
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 78 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police che Road traffic deaths involving alcohol Enforcement <sup>a</sup>	Yes 0.00 g/dl 0.00 g/dl eckpoints No 
Motorcycle helmet law	Yes
Applies to all riders	Yes
Helmet standards mandated	No
Helmet wearing rate	90% <sup>5</sup>
Enforcement <sup>a</sup>	0 1 2 3 4 <b>5</b> 6 7 8 9 10
Seat-belt law	Yes
Applies to all occupants	No
Seat-belt wearing rate	50% Front <sup>c</sup>
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 <b>7</b> 8 9 10
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>b</sup> Enforcement score represents consensus based on professional o scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> 2007, Traffic and Patrols Department.
 <sup>c</sup> 2008, Traffic and Patrols Department study.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

#### DATA

Reported road traffic fatalities (2007)	
199 <sup>d</sup> (93% males, 7% females)	

Reported non-fatal road traffic injuries (2007) 1 053°

Costing study available

Yes (deaths and injuries)

 $^{\rm d}~$  Hamad Medical Corporation and Police data, defined as died within 30 days of the crash. <sup>e</sup> Hamad Medical Corporation data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2007, Traffic and Patrols Department

#### TRENDS IN ROAD TRAFFIC DEATHS



POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

REGISTERED VEHICLES	
605 699 total (2007)	
Registered vehicle types: data not available	

— Data not available. n/a Data not required/not applicable.

### SAUDI ARABIA

#### Population: 24 734 533

#### Income group: High

#### Gross national income per capita: \$15 440

INSTITUTIONAL FRAMEWORK	
Lead agency	High Council for Traffic
Funded in national budget	Yes
National road safety strategy	Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
<b>Speed limits set nationally</b>	Yes
Local authorities can set lower limits	No
Maximum limit urban roads	80 km/h
Enforcement <sup>a</sup>	0 1 2 3 4 <b>5</b> 6 7 8 9 10
Drink-driving law	Yes
BAC limit – general population	0.0 g/dl
BAC limit – young or novice drivers	0.0 g/dl
Random breath testing and/or police c	heckpoints No
Road traffic deaths involving alcohol	
Enforcement <sup>a</sup>	0 1 2 3 4 5 6 <b>7</b> 8 9 10
Motorcycle helmet law	Yes
Applies to all riders	No
Helmet standards mandated	No
Helmet wearing rate	—
Enforcement <sup>a</sup>	0 1 (2) 3 4 5 6 7 8 9 10
Seat-belt law	Yes
Applies to all occupants	Yes
Seat-belt wearing rate	—
Enforcement <sup>a</sup>	0 1 2 3 4 <b>5</b> 6 7 8 9 10
Child restraints law	Yes
Enforcement <sup>a</sup>	0 1 (2) 3 4 5 6 7 8 9 10

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.

VEHICLE STANDARDS	
<b>Car manufacturers required to adhere to standards on</b> Fuel consumption Seat-belt installation for all seats	Yes Yes
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

#### POST-CRASH CARE

Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

Data not available.
 n/a Data not required/not applicable.

**Reported road traffic fatalities** (2007) **6 358**<sup>b</sup> (86% males, 14% females)

Reported non-fatal road traffic injuries (2007) 36 025°

Costing study available Yes (deaths and injuries)

<sup>b</sup> Police data, defined as died within 30 days of the crash.

<sup>c</sup> Police data.

DATA

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS

YEAR	NUMBER OF DEATHS
2006	5 883
2007	6 358

REGISTERED VEHICLES
<b>7 398 600</b> total (2007)
Registered vehicle types: data not available

### SUDAN

#### Population: 38 560 488

#### Income group: Middle

#### Gross national income per capita: \$960

INSTITUTIONAL FRAMEWORK	
Lead agency	No
Funded in national budget	n/a
National road safety strategy	No (subnational)
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION							
<b>Speed limits set nationally</b> Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>a</sup>	0	1	2	3	4	5	Yes Yes 50 km/h 6 7 8 9 10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>a</sup>	oin	its 1	2	ঙ্গ	A	5	Yes 0.0 g/dl <sup>b</sup> 0.0 g/dl <sup>b</sup> No  ® 7 ⊗ 9 10
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0	1	2	3	 4	5	Yes Yes Yes 
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	Ą	6	Yes No 
Child restraints law Enforcement <sup>a</sup>							No n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Alcohol consumption prohibited by law.

VEHICLE STANDARDS	
Car manufacturers required to adhere to standards on Fuel consumption Seat-belt installation for all seats	Yes Yes
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	No
National universal access number	n/a

#### DATA

Reported road traffic fatalities (2007) **2 227**° (76% males, 24% females)

Reported non-fatal road traffic injuries (2007) 21 329<sup>d</sup>

Costing study available

Yes (deaths and injuries)

 $^{\rm c}~$  Police data, defined as doctor report states that death was due to the

crash. Data exclude South Sudan states. Police data, exclude South Sudan states. d

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
1 200 000 total (2007)	
Motorcars	64%
Motorized 2- and 3-wheelers	3%
Minibuses, vans, etc. (seating <20)	13%
Trucks	12%
Buses	1%
Other	7%

Data cleared by the Federal Ministry of Health.

— Data not available. n/a Data not required/not applicable.

### SYRIAN ARAB REPUBLIC

#### Population: 19 928 516

#### Income group: Middle

#### Gross national income per capita: \$1 760

INSTITUTIONAL FRAMEWORK	
Lead agency	National Committee for Road Safety
Funded in national budget	No
National road safety strategy	Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION							
Speed limits set nationally Local authorities can set lower limits Maximum limit urban roads							Yes Yes 45–60 km/h
Enforcement	0	1	2	3	4	5	67(8)910
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police check Road traffic deaths involving alcohol	kpoir	Its					Yes 0.05 g/dl 0.05 g/dl No 
Enforcement <sup>a</sup>	0	1	2	3	4	5	6 7 <b>8</b> 9 10
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	0	1	2	3	4	)5	Yes Yes No 6 7 8 9 10
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>a</sup>	0	1	2	3	 Ą	5	Yes No 81% Front <sup>▷</sup> 6 7 8 <b>9</b> 10
Child restraints law Enforcement <sup>a</sup>							No n/a
<ul> <li><sup>a</sup> Enforcement score represents consensus based on professi scale of 0 to 10 where 0 is not effective and 10 is highly effe</li> <li><sup>b</sup> 2007, Syrian Society for Road Accident Prevention.</li> </ul>	ional op ective.	ini	on o	f re	espo	nde	ents, on a

#### **VEHICLE STANDARDS** Car manufacturers required to adhere to standards on Fuel consumption Yes Seat-belt installation for all seats No **ROAD SAFETY AUDITS** Formal audits required for major new road construction projects Yes Yes Regular audits of existing road infrastructure **PROMOTING ALTERNATIVE TRANSPORT** National policies to promote walking or cycling No National policies to promote public transportation Yes

# POST-CRASH CARE Formal, publicly available pre-hospital care system Yes National universal access number Yes

— Data not available.

n/a Data not required/not applicable.

#### DATA

Reported road traffic fatalities (2007) 2818°

Reported non-fatal road traffic injuries (2007) 16 145<sup>d</sup>

Costing study available

Yes (deaths and injuries)

<sup>c</sup> Police data, defined as died at the crash scene or in hospital.

<sup>d</sup> Police data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
1 389 346 total (2007)	
Motorcars	55%
Motorized 2- and 3-wheelers	9%
Minibuses, vans, etc. (seating <20)	25%
Trucks	7%
Buses	3%
Non-motorized vehicles	1%

### TUNISIA

#### Population: 10 327 285

#### Income group: Middle

#### Gross national income per capita: \$3 200

INSTITUTIONAL FRAMEW	ORK
Lead agency	National Observatory for Information, Training, Documentation and Study on Road Safety
Funded in national budget	Yes
National road safety strateg	gy Yes
Measurable targets	Yes
Funded	Yes

#### DATA

Reported road traffic fatalities (2007) 1 497° (82% males, 18% females)

Reported non-fatal road traffic injuries (2007) 14 559<sup>d</sup>

#### Costing study available

Yes (deaths and injuries)

<sup>c</sup> Police data, defined as died within 30 days of the crash.

<sup>d</sup> Lead Agency and Police data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2007, Ministry of Interior and Local Development

#### TRENDS IN ROAD TRAFFIC DEATHS



Source: "Statitiscs of Road Accidents", Ministry of Interior and Local Development

REGISTERED VEHICLES	
1 244 918 total (2007)	
Motorcars	62%
Motorized 2- and 3-wheelers	1%
Minibuses, vans, etc. (seating <20)	24%
Trucks	4%
Buses	1%
Non-motorized vehicles	8%
Other	1%

NATIONAL LEGISLATION Speed limits set nationally Yes Local authorities can set lower limits Yes Maximum limit urban roads 50 km/h Enforcement<sup>a</sup> 0 1 2 3 4 5 6 7 8 9 10 Drink-driving law Yes BAC limit – general population 0.05 g/dl BAC limit - young or novice drivers 0.05 g/dl Random breath testing and/or police checkpoints Yes Road traffic deaths involving alcohol **1%**<sup>b</sup> Enforcement<sup>a</sup> 0 1 2 3 4 5 6 7 8 9 10 Motorcycle helmet law Yes Applies to all riders Yes Helmet standards mandated Yes Helmet wearing rate **Enforcement**<sup>a</sup> 0 1 2 3 4 5 6 7 8 9 10 Seat-belt law Yes Applies to all occupants No Seat-belt wearing rate **Enforcement**<sup>a</sup> 0 1 (2) 3 4 5 6 7 8 9 10 Child restraints law No Enforcement<sup>a</sup> n/a <sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.

<sup>b</sup> 2007, Ministry of Interior and Local Development.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system National universal access number	Yes Yes

— Data not available. n/a Data not required/not applicable.

### UNITED ARAB EMIRATES

Population: 4 380 439

#### Income group: High

#### Gross national income per capita: \$41 082

INSTITUTIONAL FRAM	EWORK
Lead agency	Ministry of Interior and National Transport Authority
Funded in national budget	Yes
National road safety stra	ategy Yes
Measurable targets	Yes
Funded	Yes

#### DATA

Reported road traffic fatalities (2007) 1 056° (87% males, 13% females)

Reported non-fatal road traffic injuries (2007) 11 155<sup>d</sup>

#### Costing study available Yes (deaths only)

Police data, defined as died within 30 days of the crash.

d Police data.

#### DEATHS BY ROAD USER CATEGORY



Source: 2007, Ministry of Interior

#### TRENDS IN ROAD TRAFFIC DEATHS



REGISTERED VEHICLES	
1 754 420 total (2007) Motorcars Motorized 2- and 3-wheelers Minibuses, vans, etc. (seating <20) Trucks Buses Other	86% 1% 2% 7% 2% 3%

- Data not available.
- n/a Data not required/not applicable.

Data cleared by the Ministry of Health.

NATIONAL LEGISLATION Speed limits set nationally Yes Local authorities can set lower limits Yes Maximum limit urban roads 60 km/h Enforcement<sup>a</sup> 0 1 2 3 4 5 6 7 8 9 10 Drink-driving law Yes BAC limit – general population 0.10 g/dl BAC limit - young or novice drivers 0.10 g/dl Random breath testing and/or police checkpoints Yes Road traffic deaths involving alcohol **Enforcement**<sup>a</sup> 0 1 2 3 4 5 6 7 8 9 10 Motorcycle helmet law Yes Applies to all riders Yes Helmet standards mandated No Helmet wearing rate Enforcement<sup>a</sup> <u>0 1 2 3 4 5 6</u> 7**(8**)9 10 Seat-belt law Yes Applies to all occupants No Seat-belt wearing rate 61% Front<sup>b</sup> Enforcement<sup>a</sup>

Child restraints law Enforcement<sup>a</sup>

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a <sup>b</sup> 2006, Abu Dhabi National Campaign for seat-belt use.

0 1 2 3 4 5 6 7 8 9 10

No

n/a

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	Yes Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	Yes Yes

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

### WEST BANK AND GAZA STRIP

#### Population: 4 018 000

#### Income group: Middle

#### Gross national income per capita: \$1 422

INSTITUTIONAL FRAMEWORK	
Lead agency	No
Funded in national budget	n/a
National road safety strategy	No (subnational)
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION										
Speed limits set nationally Local authorities can set lower limits Maximum limit urban roads Enforcement <sup>b</sup>	0	1	2	3	4	5	50 6	Yes No ) km 7 8	/h 9	10
Drink-driving law BAC limit – general population BAC limit – young or novice drivers Random breath testing and/or police checkp Road traffic deaths involving alcohol Enforcement <sup>b</sup>	oin	ts	2	3	4	5	0.0 0.0	Yes 05 g 05 g No —	/dI /dI 9	10
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>b</sup>	0	1	2	3	4	5	6	Yes Yes° No —	9	10
Seat-belt law Applies to all occupants Seat-belt wearing rate Enforcement <sup>b</sup>	0	1	2	3	4	5	6	Yes Yes — 7 8	9	10
Child restraints law Enforcement <sup>b</sup>	0	1	2	3	4	5	6	Yes 78	9	10

<sup>b</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.

<sup>c</sup> Some exceptions.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No No
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

#### DATA

**Reported road traffic fatalities** (2006) **188**<sup>d</sup> (76% males, 23% females)<sup>e</sup>

Reported non-fatal road traffic injuries (2006) 5 838<sup>f</sup>

Costing study available

No

 $^{\rm d}~$  Police data, defined as died within 30 days of the crash.

<sup>e</sup> Health data 2007. <sup>f</sup> Central Bureau of

Central Bureau of Statistics, Government of Palestine.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



Source: General Commissariat of the Palestinian Police, data for remaining West Bank and Gaza Strip

# **REGISTERED VEHICLES 78 609** total (2008) Motorcars **76%** Motorized 2- and 3-wheelers <1%</td> Motorized 2- and 3-wheelers <2%</td>

Motorized 2- and 3-wheelers	<1%
Minibuses, vans, etc. (seating <20)	6%
Trucks	15%
Buses	1%
Non-motorized vehicles	<1%
Other	1%

Data cleared by the Ministry of Health.

— Data not available. n/a Data not required/not applicable.



#### Population: 22 389 169

Income group: Low

#### Gross national income per capita: \$870

INSTITUTIONAL FRAMEWOR	ĸ
Lead agency	The National Committee for Road Safety
Funded in national budget	No
National road safety strategy	Multiple
Measurable targets	n/a
Funded	n/a

NATIONAL LEGISLATION	
Speed limits set nationally	Yes
Local authorities can set lower limits	Yes
Maximum limit urban roads	
Enforcement <sup>a</sup>	2 3 4 5 6 7 8 9 10
Drink-driving law	Yes
BAC limit – general population	0.0 g/dl <sup>b</sup>
BAC limit – young or novice drivers	0.0 g/dl <sup>b</sup>
Random breath testing and/or police checkpoints	
Road traffic deaths involving alcohol	
Enforcement <sup>a</sup>	
Motorcycle helmet law Applies to all riders Helmet standards mandated Helmet wearing rate Enforcement <sup>a</sup>	No n/a  n/a
Seat-belt law	No
Applies to all occupants	n/a
Seat-belt wearing rate	
Enforcement <sup>a</sup>	n/a
Child restraints law	No
Enforcement <sup>a</sup>	n/a

<sup>a</sup> Enforcement score represents consensus based on professional opinion of respondents, on a scale of 0 to 10 where 0 is not effective and 10 is highly effective.
 <sup>b</sup> Alcohol consumption prohibited by law.

VEHICLE STANDARDS	
No car manufacturers	
ROAD SAFETY AUDITS	
Formal audits required for major new road construction projects Regular audits of existing road infrastructure	No Yes
PROMOTING ALTERNATIVE TRANSPORT	
National policies to promote walking or cycling National policies to promote public transportation	No No

#### DATA

Reported road traffic fatalities (2007) 2 781° (86% males, 14% females)

Reported non-fatal road traffic injuries (2007) 19 253<sup>d</sup>

Costing study available

No

<sup>c</sup> Police data, defined as died within 7 days of the crash.

<sup>d</sup> Police data.

#### DEATHS BY ROAD USER CATEGORY



#### TRENDS IN ROAD TRAFFIC DEATHS



POST-CRASH CARE	
Formal, publicly available pre-hospital care system	Yes
National universal access number	Yes

— Data not available. n/a Data not required/not applicable.

#### **REGISTERED VEHICLES** 777 734 total (2007) Registered vehicle types: data not available

Data cleared by the Ministry of Public Health and Population.
# **Statistical annex**

- 1. Explanatory notes
  - Background
  - Data processing
  - Types of data utilized
    - Reported data
    - Adjusted data
    - Modelled data
  - References
- 2. Tables
- A.1 National data coordinators and respondents by country/area
- A.2 Vehicles, road traffic deaths and proportion of road users by country/area
- A.3 Drinking and driving laws, enforcement and road traffic deaths attributed to alcohol by country/area
- A.4 Seat-belt and child restraint laws, enforcement and wearing rates by country/area
- A.5 Speed laws and enforcement by country/area
- A.6 Helmet laws, enforcement and wearing rates by country/area
- A.7 Road safety management, strategies and policies by country/area
- A.8 Pre-hospital care systems by country/area

# **Explanatory notes**

# Background

The data presented in the following pages were obtained from the 20 countries that participated in the first global survey on road safety in 2008. The survey focused on the recommendations of the *World report on road traffic injury prevention (1)* as the basis for its structure and content. Most countries used the same methodology for data collection, as outlined in a survey protocol developed for the study. In over 95% of the countries, the implementation of the survey was coordinated by a National Data Coordinator (NDC) identified by the country, and was completed by teams of 6–8 key respondents including the NDC. The NDCs were trained in the methodology and coordinated the collection, validation and clearance of data, as well as the data entry, in the countries concerned. The survey instrument, protocol and accompanying guidelines and training materials were all available in the six WHO languages (Arabic, Chinese, English, French, Russian and Spanish). Where needed, NDCs coordinated the translation of these documents into the local language and then back-translated them for the data entry which was done in English. More details on the methodology used for data collection can be found at www.who.int/violence\_injury\_prevention/road\_traffic/road\_safety\_ status/2009.

The following sections contain country-by-country data obtained from the survey.

- Table A.1 includes the list of NDCs who, in collaboration with national authorities, played a key part in conducting the survey. Respondents from different sectors are also listed.
- Table A.2 provides detailed data on the 30-day adjusted number and rates per population of road traffic deaths, and on the proportion of road users by country/area. The table also includes modelled road traffic death numbers which have been generated. A short description of the process is presented below.
- Tables A.3–A.6 provide information on the status of laws, the enforcement of laws, and the coverage/ wearing rates relating to the five road traffic risk factors (alcohol, seat-belts, child restraints, speed, and helmets)
- Table A.7 contains data on policy-related responses.
- Table A.8 includes information related to the availability of pre-hospital care.

The following section gives a brief description of the data processing, the comments on the obtained results (specifically on the reported, adjusted and modelled country-level death data) and the method used to develop the model.

# **Data processing**

The data processing involved completion of the survey instrument and data entry at a country level, and validation at a regional level. Data cleaning and analysis were done at WHO headquarters in Geneva.

# **Reporting of country-level data**

The final country responses were entered by NDCs into an online database specially prepared by WHO for this project. NDCs also uploaded supporting documents where applicable and available. Data was then validated at a regional level. Once finalized and approved by Regional Data Coordinators (RDCs), the data were then exported into Microsoft Excel for cleaning. At this stage, each country's data were examined for accuracy, consistency and validity on a question-by-question basis. Where necessary, NDCs were contacted and additional supporting documents were requested to clarify inconsistencies. A copy of the survey instrument and study protocol can be found at www.who.int/violence\_injury\_prevention/road\_traffic/ road\_safety\_status/2009.

As part of the data cleaning and validation process, exploratory analysis was done using STATA (2). The same software was used for all analysis and results presented in the earlier sections of this report.

# Types of data utilized

Three types of data are used in this report:

- reported data from countries and secondary sources;
- data adjusted for the 30-day definition of a road traffic death in order to facilitate comparability;
- modelled numbers.

# **Reported data**

In addition to the data obtained directly from countries, secondary data sources were used to:

- classify countries into income categories;
- generate road safety indicators such as the adjusted road traffic deaths and modelled road traffic death rates (with a 90% confidence interval) as reported in Table A.2.

Population and income data from the United Nations Population Division (3) and the World Bank (4) were used for this analysis.

Population estimates for 2007 are reported in Table A.2. Where there was no estimate available for a country for that year, published data for the latest year were used. For the modelling process, population estimates corresponding to the year of reporting were used (4).

In Table A.2, World Bank (Atlas method) gross national income per capita (GNI) for 2007 (5) (or latest available year) was used to categorize countries into:

- low-income = \$935 or less;
- middle-income = \$936 to \$11 455;
- high-income = 11456 or more.

More detailed subgroupings were used in the modelling process.

# Adjusted data

Underreporting has been acknowledged for many years as an important reason for the difficulty in comparing road traffic crash data between countries. Additionally, the lack of harmonized definitions for road traffic deaths, the use of different data sources, and the quality of the reporting system have also been documented. Consequently a number of mechanisms were employed to address some of these issues in order to make data more comparable. This global survey employed the following two methods:

- the European Conference of Ministers of Transport (ECMT) standardized 30-day road crash fatality factors (6) to adjust all reported country/area data;
- a model using negative binomial regression.

The "reported" data in Table A.2 have been adjusted to this 30-day definition (see Table 1 for adjustment factors) and the new adjusted number is therefore used in the corresponding model and its result is presented in Table A.2.

#### Table 1. ECMT standardized 30-day road crash fatality adjustment factors

	30-day total	adjustment factor
On the scene/1 day	77%	1.30
3 days	87%	1.15
6 days	92%	1.09
7 days	93%	1.08
30 days	days 100% 1.00	
365 days	103%	0.97

# **Modelled data**

# Developing a model

Before the modelling exercise, simple exploratory analyses were done to evaluate the distribution of the reported data, to identify potential outliers and to determine the extent of missing data. Decisions as to whether to include these outliers in the analyses, or whether to exclude them, were taken at several stages of the analysis. Where appropriate, imputation was done to compensate for missing information.

# Completeness of data

Having adjusted the reported data to a 30-day definition to facilitate comparability, the next step in the process was to explore the completeness of the reported death data on the basis of reported vital registration (VR) data. Information on the completeness of VR data was obtained from previous WHO published reports (7,8) and was updated with the latest information from the WHO mortality database. This information was then used to classify countries into two groups, namely:

- Group 1: countries with VR completeness greater or equal to 85% and external causes of death coded to undetermined intent less than 30% (Table 2);
- Group 2: countries with VR completeness less than 85% or external causes of death coded to undetermined intent greater than 30%.

**Group 1** countries include 3 high-income countries (Table 2). Data from these countries were used as a reference in constructing the negative binomial model. As such, no estimation was done for these countries.

**Group 2** countries include 2 high-income, 12 middle-income and 3 low-income countries. Estimated data based on the prediction model described above are provided for these countries.

In the global process, countries/areas with populations of less than 100 000 and thus very low numbers of deaths were also excluded from the modelling process.

Table A.2 gives the 30-day adjusted number of deaths for all countries, and for group 2 countries the modelled number of deaths with a 90% confidence interval. Those without a range are Group 1 countries.

#### Table 2. Countries in Group 1

Country/area	Income Level
Bahrain	HIC
Kuwait	HIC
Qatar	HIC

HIC = high-income countries

### Variables used in the model

Table 3 summarizes the independent variables used in the model and the data source.

#### Table 3. Independent variables used in modelling process

Variable	Source of information	Comments
Income (GNI)	World Bank (4,5)	
Income level	World Bank (5)	Grouping used: low, middle, lower middle, upper middle, high Designation based on 2000–2004 World Bank data, corresponding to year of income level used
Population		Estimated figures from UN Population Division (3)
Vehicle density: Number of cars per population	Number of vehicles: The GSRRS survey Population: World Bank (3)	
Road density: Total road per land area	2000–2006 World Road Statistics, International Road Federation, 2008 (9)	Total road/land km <sup>2</sup> Corresponding or latest year data
Existence of national helmet law	The GSRRS survey	WHO questionnaire
National policies that encourage walking and/or cycling	The GSRRS survey	WHO questionnaire
National policies that support investment in public transport	The GSRRS survey	WHO questionnaire
National speed limits on urban roads	The GSRRS survey	WHO questionnaire
National speed limits on rural roads	The GSRRS survey	WHO questionnaire
Alcohol consumption	World Health Statistics, 2008 (10)	Alcohol consumption among adults aged ≥15 years for 2003
Strength of health system	World Health Statistics, 2008 (10)	Hospital beds (per 10 000 population)

GSRRS = Global Status Report on Road Safety GNI = Gross National Income per capita

# Estimation method

The third stage used data from Group 1 countries to develop a statistical model to predict road traffic deaths (point estimates) for Group 2 countries including 90% confidence limits. The framework used to predict road traffic mortality was constructed using selected variables (identified through a literature review) which have direct relationship to the outcome variable (road traffic death). These variables were later grouped into three categories: exposure factors (Ej), risk or preventive factors (Rj), and mitigating factors (Mj). Gross national income (Ij) has an influence on the first two categories (Figure 1).

In this framework, the road traffic mortality outcome (Yj) is a function of a set of independent variables described as exposure factors (Ej), risk or preventive factors (Rj), mitigating factors (Mj) and gross national income (Ij). This can be expressed as follows: Yj = f(Rj, Mj, Ij, Ej).

The relationship between the outcome and the independent variables is a nonlinear function. The number of deaths (Yj) is a non-negative integer count data; thus the standard approach (11) to be used is the Poisson regression or another form of regression based on the Poisson. The most commonly used regression model for count data treats the response Y as a Poisson variable. In the Poisson regression model, the mean equals the variance, conditional on explanatory variables. In practice, however, this assumption was not satisfied. For this reason, a negative binomial regression model was chosen where the assumption for the dependent variance and Poisson's particular case of negative binomial model are adequately satisfied.



# DETERMINANTS OF ROAD TRAFFIC MORTALITY

Figure 1. Framework for determinants of road traffic mortality

At the end, a negative binomial regression modelling technique using STATA software (2) was used to predict the number of road traffic fatalities with population size as an exposure facture. The model was constructed on the basis of reported data from Group 1 countries.

The full in-depth description of the methodology and formulas for the modelling process are available at the following website www.who.int/violence\_injury\_prevention/road\_traffic/road\_safety\_status/2009.

# References

- 1. Peden M et al., eds. *World report on road traffic injury prevention*. Geneva, World Health Organization, 2004 (http://www.who.int/violence\_injury\_prevention/publications/ road\_traffic/world\_report/en/index. html, accessed 7 April 2009).
- 2. STATA Data analysis and statistical software (http://www.stata.com, accessed 14 April 2009).
- 3. *World population prospects: the 2006 Revision*. Highlights. New York, United Nations Population Division, 2007.
- 4. *World development indicators*. Washington, DC, International Bank for Reconstruction and Development/ The World Bank, 2007.
- 5. *GNI per capita 2007: Atlas method and PPP*. Washington, DC, The World Bank, 2007 (http://siteresources. worldbank.org/DATASTATISTICS/Resources/GNIPC.pdf, accessed 9 April 2009).
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- 7. *Global Burden of Disease, 2004 update*. Geneva, World Health Organization, 2008 (http://www.who.int/ healthinfo/global\_burden\_disease/ 2004\_report\_update/en/index.html, accessed 14 April 2009).
- 8. Mathers CD et al. Counting the dead and what they died from: an assessment of the global status of cause of death data. *Bulletin of the World Health Organization*, 2005, 83:171–177.
- 9. *World road statistics 2008*. Geneva, International Road Federation, 2008.
- 10. World health statistics 2008. Geneva, World Health Organization, 2008 (http://www.who.int/whosis/ whostat/2008/en/index.html, accessed 14 April 2009).
- 11. Cameron AC, Trivedi PK. Regression analysis of count data. *Econometric Society Monograph*, No. 30. New York, Cambridge University Press, 1998.

# Table A.1: National data coordinators and respondents by country in the Eastern MediterraneanRegion

Country	Name of national data coordinator(s)	Name of respondent(s)
Afghanistan	Wassima Qarizadah (Ministry of Public Health)	Rahile Arife (Central Statistics Organization) Mohamad Akram Jalalzadah (Ministry of Public Affairs) Abdul Naser (Italian Emergency Hospital) Karimullah (Ministry of Transport and Airlines) Jaffar Hussaini (Ministry of Public Health) Abdul Latife (Ministry of Interior) Abdul Asife Gardiziz (ICRC)
Bahrain	Amjad Obeid (Ministry of Health)	Jassim Al Mehza (Ministry of Health) Abdul Aziz Al Sabag (Ministry of Interior) Reem Akbari (Center for Transport and Road Studies) Shawqia Ebrahim Humidan (Ministry of Works)
Egypt	Rania Saad (Ministry of Health and Population)	Mohammed Hafez Amer (Ministry of Health and Population) Maged Abdelkarim Elsotohy (Ain Shams University) Hashim Ahmed Allam (Egyptian Road Traffic Safety Association) Hisham Fouad (General Authority of Roads and Bridges) Mourid Albert Zarif (Ministry of Interior) Hesham Fatehy Elsayed (Suez Canal University) Suzan Abdelaziz Abdullah (Ministry of Transport) Mohammed Ali Ahmed Sultan (Ministry of Health and Population)
Iran (Islamic Republic of)	Alireza Moghisi (Ministry of Health and Medical Education)	Masoumeh Afsari (Ministry of Health) Vafa Rahimimovaghar (Sina Trauma and Surgery Research Center) Ali Ahmadi Fini (HQ of Transportation and Fuel Management) Shahram Farshad (Ministry of Interior) Mohammad Raoofi (Harrekate Paydar Co.; NGO) Saadolah Moradi (Legal/Forensic medicine Organization) Hasan Abdoos (Ministry of Road and Transportation) Manoochehr Rouhi (Traffic Police HQ)
Iraq	Sundus Shoki Khalil (Ministry of Health)	Karim Ali (Ministry of Interior) Shakir Mahmood Al Hasani (Ministry of Finance) Sabah N. A. Rahman (Ministry of Transport) Amal Abdul Hadi (Ministry of Planning and Development Cooperation) Saad SH. Mkasad (Ministry of Health) Zuham Jaber Abed (State Committee for Roads and Bridges)
Jordan	Jamil Mujahed (Public Transport Regulatory Commission)	Lina Shbeeb (Jordan Society for Road Accidents Prevention) Maher Al Hussein (Jordan Insurance Federation) Zuheer Hattar (Ministry of Transport) Wafa Tarwneh (Ministry of Public Works and Housing) Wael Awad (Balqa Applied University) Emad Hajarat (Public Security Directorate) Malik Habashneh (Ministry of Health)
Kuwait	Hamed Al-Otaibi (Ministry of Health)	Mohammad Al-Sharhan (Ministry of Health) Abdullah Al-Toraiji (Ministry of Interior) Nezar Al-Sayeq (Head of Roads Studies)
Lebanon	Ziad Akl (Youth Association for YASA)	Joseph Douweihi (Internal Security Forces ISF) Yaser Yaghi (WHO) Bernard Gerbaka represented by Aida Ghosen (Child of Lebanon) Hani Koubaisi (Lebanese Association for School Safety Awareness LASSA) Joseph Abou Samra (Ministry of Public Works) Iman Nawayhid represented by Rima Habib (AUB) Sami Mouwakdiehl (Dentist)

#### Table A.1 continued

Country	Name of national data coordinator(s)	Name of respondent(s)
Libyan Arab Jamahiriya	Ibrahim Ali Jabeal (Tripoli Medical Center and Al Fateh Medical University)	Mohamed Ibrahim Saleh (Secretariat of Helalth and Environment) Salem Abouaisha Khalifa (General Information Authority) Ababaker S. Alazrak (Libyan Red Crescent) Taher A. Mahmoud (Secretariat od Justice) Omar AB. Haimar (Abo Salim Trauma Hospital)
Morocco	Benaceur Boulaajoul (National Committee for Prevention of Road Traffic Accidents)	Mohammed Hamouiyi (Ministry of Public Health) Mohamed El Metoui (Ministry of Equipment and Transport) Azeddine Chahidi (Ministry of Equipment and Transport) Mohammed Benjelloun (Ministry of Equipment and Transport) Abdelali Mounawar (Ministry of Industry)
Oman	Salim Al-Wahaibi (Ministry of Health)	Salah Nasser Al-Muzahmi (Ministry of Health) Ali Nasser Salim Al-Qasmi (Ministry of Regional Municipality and Water Resources) Ali Suleyem Jameel Al-Falahi (Royal Oman Police) Rashid Abdullah Al-Mahrooqi (Muscay Municipality) Salim Aid Al-Amri (Ministry of Transport and Communications) Hamed Salim Al-Bulushi (Ministry of Health) Ahmed Khamis Al-Salti (Ministry of Finance) Salim Said Al-Wahaibi (Ministry of Health)
Pakistan	Shahzad Ali Khan (Pakistan Health Policy Forum)	Saba Amjad (Heartfile Pakistan) Anjum Shikoh Qazi (Ministry of Interior) Tabinda Zaman (Social Security Hospital, Islamabad) Aslam Khan (National Road Safety Secretariat) Ejaz Ahmed Khan (Federal Ministry of Health) Zubair Hashmi (Traffic Police) Malik Matloob (Police Service of Pakistan) Syed Mohammed Abbas (Ministry of Communication)
Qatar	Abdul Wahab Almusleh (Ministry of Health)	Talebeldeen Mohammed (Hammad General Hospital) Ahmed Al-Ansari (Mowasalat) Mohammed A. Al-Malki (Traffic and Patrol Department) Khalid Mohammed Al-Emadi (Public Works Authority) Mohammed Ahmed A. Razzak (Hamad Medical Hospital) Muhammad Hardan (Hamad medical Hospital) Ademola Gideon Ibri (Traffic and Patrols Department) Malcolm Perry (Hamad Medical Hospital)
Saudi Arabia	Faisal Al Anazy (Ministry of Health)	Sami Alharbi (Ministry of Health) Ali Alrasheedi (Ministry of Interior) Tariq Gosty (Ministry of Transport)
Sudan	Amjad Idries (Federal Ministry of Health)	Moatasim Othman El Hassan (Federal Department of Traffic Police) Fatih El Rahman Abd Allah (Shiekan Insurance and Reinsurance Company) Kamal Masood Elmardi (Ministry of Transportation, Roads and Bridges) Zeinab Swar Eldahab (Federal Ministry of Health) Mohammed Dongus Yagoob (Police-College, National Ribatt University) El Tag Awad Abu Ras (Central Bureau of Statistics) Moatasim Sabil (Giad Automotive Industry Company)

Country	Name of national data coordinator(s)	Name of respondent(s)
Syrian Arab Republic	Ahmad Hamdan (Ministry of Health)	Ali Al-Dahoul (Ministry of Education) Mohamoud Alfadeel (General Directorate of Civil Defence) Bassam Saedy (Syrian Red Crescent) Saud Armaili (Ministry of Local Administration and Environment) Mazen Noffa (Ministry of Information) Abdulmouti Alsaleh (Ministry of Interior) Stalin Kaghado (Syrian Road Accident Prevention)
Tunisia	Naoufel Somrani (Ministry of Health) Afif Frigui (Tunisian Association for Prevention of Road Accidents)	Henda Chebbi (Ministry of Public Health) Ben Moussa Amor (Ministry of Equipment, Habitat and Territory Planning) Frel Louati (Ministry of Interior and Local Development) Dabbou Riadh (Tunisian Association for Prevention of Road Accidents) Lamouchi Mohamed Kamel (Ministry of Transport) Msaadi Taoufik (Ministry of Equipment, Habitat and Territory Planning) Khamari Hichem (National Observatory for Information, Training, Documentation and Study of Road Safety)
United Arab Emirates	Yousef Altair (Ministry of Health)	Hosam Osman Saleem (National Transport Authority) Hasan Ahmed Al Hosani (Emirates Traffic Safety Society) Gtheath Hassan Al Zaabi (Ministry of Interior)
West Bank and Gaza Strip	Basem Naji (Ministry of Health)	Ali B. Qdimat (Ministry of Labour) Bassam Mari (Ministry of Public Works and Housing) Abu Znaid Ibraheim (Ministry of Interior) Abedul- Samad Ibraheim (Ministry of Transport) Ihab Shukri (Ministry of Education and Higher Education) Muawi Rimawi (Roads and Environment Safety Center) Maher Mustafa Shami (Central Bureau of Statistics)
Yemen	Jamila Alraiby (Ministry of Public Health and Population)	Najeeb Alsolwy (Ministry of Interior) Mohammed Hadi (Traffic Department) Abdullah Alnomani (Road Safety Fund/Ministry of Pubic Works) Mohammed Issa (Althaerah Hospital) Ali Sarya (Ministry of Public Health and Population) Abdulkhalig Yehia Alama (Central Statistics)

# Table A.2: Vehicles, road traffic deaths and proportion of road users

Country	General information			Vehicles	
	Population numbersª for 2007	GNI per capita <sup>b</sup> for 2007 in US dollars	Income level <sup>c</sup>	Number of registered vehicles	Reported number of road traffic deaths <sup>d</sup>
Afghanistan	27 145 275	319 <sup>f</sup>	Low	731 607	1 779
Bahrain	752 648	20 610 <sup>f</sup>	High	382 977	91
Egypt	75 497 913	1 580	Middle	4 300 000	15 983
Iran (Islamic Republic of)	71 208 384	3 470	Middle	17 000 000	22 918
Iraq	28 993 374	1 646 <sup>f</sup>	Middle	2 242 269	1 932
Jordan	5 924 245	2 850	Middle	841 933	992
Kuwait	2 851 144	40 114 <sup>f</sup>	High	1 364 790	482
Lebanon	4 099 115	5 770	Middle	1 400 000	536
Libyan Arab Jamahiriya	6 160 483	9 010	Middle	1 826 533	2 138
Могоссо	31 224 137	2 250	Middle	2 284 060	3 838
Oman	2 595 133	11 275 <sup>f</sup>	Middle	629 670	798
Pakistan	163 902 405	870	Low	5 287 152	7 234
Qatar	840 635	66 063 <sup>f</sup>	High	605 699	199
Saudi Arabia	24 734 533	15 440	High	7 398 600	6 358
Sudan	38 560 488	960	Middle	1 200 000	2 227
Syrian Arab Republic	19 928 516	1 760	Middle	1 389 346	3 663
Tunisia	10 327 285	3 200	Middle	1 244 918	1 497
United Arab Emirates	4 380 439	41 082 <sup>f</sup>	High	1 754 420	1 056
West Bank and Gaza Strip	4 018 000 <sup>f</sup>	1 422 <sup>f</sup>	Middle	78 609	188
Yemen	22 389 169	870	Low	777 734	3 003

	Road traffic deat	hs	Road user deaths (%)				
Modelled r traffi	number of road ic deaths <sup>e</sup>	Estimated road traffic	Drivers/ passengers	Drivers/ passengers	Cyclists	Pedestrians	Other or unspecified
Point estimate	90% Confidence Interval	death rate per 100 000 population <sup>e</sup>	of 4-wheeled vehicles	of motorized 2- or 3-wheelers			users
10 593	6 234–22 894	39.0					
91		12.1	59.4	5.5	6.6	28.6	
31 439	19 411–47 668	41.6	47.5	0.1	1.9	20.1	30.4
25 491	18 726–34 337	35.8	44.9	11.4		33.3	11.0
11 059	6 933–21 500	38.1					
2 027	1 407–3 188	34.2	64.0 <sup>9</sup>			36.0	
482		16.9					
1 170	837–1 625	28.5					
2 497	1 518–3 760	40.5	60.0		5.0	15.0	20.0
8 850	6 273–12 783	28.3	45.7	16.3	7.1	27.9	3.0
553	347–920	21.3					
41 494	28 379–76 695	25.3					
199		23.7	69.0 <sup>g</sup>	4.0	27.0 <sup>h</sup>		
7 166	5 535–9 544	29.0					
13 362	8 820–19 143	34.7	31.5			12.7	55.8
6 552	5 024–8 684	32.9					
3 568	2 555–4 948	34.5	50.8	14.4	2.6	32.0	0.3
1 626	912–2 570	37.1	70.0	1.5		28.5	
896	627–1 287	4.9					
6 553	4 021–15 797	29.3					

<sup>a</sup> Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2007). World population Prospects: The 2006 Revision, Highlights. New York: United Nations.

<sup>b</sup> Gross National Income (GNI) per capita is the dollar value of a country's final income in a year divided by its population using Atlas methodology. Data from World Development Indicators database, World Bank, revised 17 October 2008.

<sup>c</sup> World Development Indicators database: Low income is \$935 or less, middle income is \$936 to \$11 455, high income is \$11 456 or more.

<sup>d</sup> Adjusted for 30-day definition of a road traffic death.

<sup>e</sup> Modelled using negative binomial regression. Data from countries with good vital registration and countries with a population of less than 100 000 were not included in the model.

<sup>f</sup> 2007 data not available. Latest available used from http://data.un.org/.

<sup>g</sup> Passengers and drivers of any motorized vehicle; includes category "unspecified".

<sup>h</sup> Cyclists and pedestrians.

# Table A.3: Drinking and driving laws, enforcement and road traffic deaths attributed to alcohol

Country	National drink– driving law	How drink-driving is defined			
		Blood alcohol concentration (BAC) level	Physician certificate	Breath content	
Afghanistan	Yes <sup>a</sup>	Yes	Yes	Yes	
Bahrain	Yesa	Yes		Yes	
Egypt	Yes <sup>b</sup>				
Iran (Islamic Republic of)	Yes <sup>a</sup>	Yes	Yes	Yes	
Iraq	Yes	Yes			
Jordan	Yes	Yes	Yes	Yes	
Kuwait	Yes <sup>a</sup>	Yes	Yes		
Lebanon	Yes	Yes			
Libyan Arab Jamahiriya	Yes <sup>a</sup>	Yes			
Могоссо	No <sup>a</sup>	n/a	n/a	n/a	
Oman	Yes	Yes	Yes	Yes	
Pakistan	Yes <sup>a</sup>		Yes		
Qatar	Yes	Yes			
Saudi Arabia	Yes	Yes	Yes		
Sudan	Yesa		Yes	Yes	
Syrian Arab Republic	Yes	Yes		Yes	
Tunisia	Yes	Yes			
United Arab Emirates	Yes	Yes	Yes		
West Bank and Gaza Strip	Yes	Yes	Yes		
Yemen	Yesa		Yes		

Random breath testing or police check	Effectiveness of overall enforcement	National maximum legal BAC levels			Proportion of road traffic deaths that are attributable to
points used for enforcement	(respondent consensus) (scale 0–10)	For the general population (g/dl)	For young or novice drivers (g/dl)	For professional or commercial drivers (g/dl)	alcohol (%)
Yes	10	0.00	0.00	0.00	
No	4	0.00	0.00	0.00	7.7
No	4				
Yes	1	0.00	0.00	0.00	
No	5	0.08	0.08	0.08	
	3	0.08	0.08	0.08	
	9	0.00	0.00	0.00	
Yes	1	0.05	0.05	0.05	
No	5	0.00	0.00	0.00	2.0
	n/a	n/a	n/a	n/a	3.0
Yes	4	0.08	0.08	0.08	
Yes	4	0.00	0.00	0.00	
No	6	0.00	0.00	0.00	
No	7	0.00	0.00	0.00	
No	10	0.00	0.00	0.00	
No	8	0.05	0.05	0.05	
Yes	3	0.05	0.05	0.05	0.7
Yes	8	0.10	0.10	0.10	
No	1	0.05	0.05	0.05	
		0.00	0.00	0.00	

<sup>a</sup> Alcohol is prohibited.

<sup>b</sup> Not defined by BAC or no standardized definition.

... Data not available.

# Table A.4: Seat-belt and child restraint laws, enforcement and wearing rates

Country	Seat-belts		
	There is a national seat-belt law	The law applies to all occupants	
Afghanistan	No	n/a	
Bahrain	Yes	No	
Egypt	Yes	No	
Iran (Islamic Republic of)	Yes	Yes	
Iraq	Yes	Yes	
Jordan	Yes	No	
Kuwait	Yes	No	
Lebanon	Yes	No	
Libyan Arab Jamahiriya	Yes	Yes	
Могоссо	Yes	Yes	
Oman	Yes	No	
Pakistan	Yes	No	
Qatar	Yes	No	
Saudi Arabia	Yes	Yes	
Sudan	Yes	No	
Syrian Arab Republic	Yes	No	
Tunisia	Yes	No	
United Arab Emirates	Yes	No	
West Bank and Gaza Strip	Yes	Yes	
Yemen	No	n/a	

	Seat-belts	C	Child restraints	
Enforcement is applied to the following occupants	Effectiveness of seat- belt law enforcement (respondent consensus) (scale 0–10)	National seat-belt wearing rate	There is a national child restraint law	Effectiveness of child restraint law enforcement (respondent consensus) (scale 0–10)
n/a	n/a		No	n/a
Front seat occupants only	4	22%	No	n/a
Front seat occupants only	7	70% driver only	No	n/a
Front seat occupants only	8	75%–80%	No	n/a
Front seat occupants only	8		No	n/a
Front seat occupants only	5	65% drivers; 10% front passenger	No	n/a
Front seat occupants only	3		No	n/a
Front seat occupants only	4	15%	No	n/a
All occupants	4	5%	No	n/a
Driver only	8	75% front seats; 19% rear seats	No	n/a
Front seat occupants only	9	95% front seats; 1% rear seats	No	n/a
Driver only	3		No	n/a
Front seat occupants only	7	50% front seats	No	n/a
All occupants	5		Yes	2
Front seat occupants only	7		No	n/a
Front seat occupants only	9	81% front seats	No	n/a
Front seat occupants only	2		No	n/a
Front seat occupants only	7	61% front seats	No	n/a
All occupants	3		Yes	1
n/a	n/a		No	n/a

... Data not available.

# Table A.5: Speed laws and enforcement

Country	Speed limits are set at a national level	Speed limits are modifiable at a local level	
Afghanistan	Yes	Yes	
Bahrain	Yes	No	
Egypt	Yes	No	
Iran (Islamic Republic of)	Yes	No	
Iraq	Yes	No	
Jordan	Yes	Yes	
Kuwait	Yes	Yes	
Lebanon	Yes	Yes	
Libyan Arab Jamahiriya	Yes	No	
Могоссо	Yes	Yes	
Oman	Yes	No	
Pakistan	Yes	Yes	
Qatar	Yes	No	
Saudi Arabia	Yes	No	
Sudan	Yes	Yes	
Syrian Arab Republic	Yes	Yes	
Tunisia	Yes	Yes	
United Arab Emirates	Yes	Yes	
West Bank and Gaza Strip	Yes	No	
Yemen	Yes	Yes	

Legislation differs by vehicle type	Maximu	Effectiveness of overall enforcement (respondent	
	On urban roads (km/h)	On rural roads (km/h)	consensus) (scale 0–10)
Yes	50	90	10
Yes	50	80	4
Yes	60	60	7
Yes	50	60	6
Yes	100		5
Yes	50–80	80–120	6
Yes	45	80	6
Yes	100	60	4
Yes	50	70	3
Yes	60	100	5
Yes	120	120	6
Yes	70		4
No	100	60	7
No	80		5
Yes	50		7
Yes	45–60	45–60	8
Yes	50	50 50	
Yes	60	60 40	
Yes	50	80	3
Yes			3

... Data not available.

# Table A.6: Helmet laws, enforcement and wearing rates

Country	There is a national helmet law	The law applies to the following road users		
		Drivers	Adult passengers	Child passengers
Afghanistan	No	n/a	n/a	n/a
Bahrain	Yes	Yes	Yes	Yes
Egypt	Yes	Yes	No	No
Iran (Islamic Republic of)	Yes	Yes	Yes	Yes
Iraq	No	n/a	n/a	n/a
Jordan	Yes	Yes	Yes	Yes
Kuwait	Yes	Yes	Yes	Yes
Lebanon	Yes	Yes	Yes	Yes
Libyan Arab Jamahiriya	Yes	Yes		
Могоссо	Yes	Yes	Yes	No
Oman	Yes	Yes	Yes	Yes
Pakistan	Yes	Yes	Yes	No
Qatar	Yes	Yes	Yes	Yes
Saudi Arabia	Yes	Yes	No	No
Sudan	Yes	Yes	Yes	Yes
Syrian Arab Republic	Yes	Yes	Yes	Yes
Tunisia	Yes	Yes	Yes	Yes
United Arab Emirates	Yes	Yes	Yes	Yes
West Bank and Gaza Strip	Yes	Yes	Yes	Yes
Yemen	No	n/a	n/a	n/a

Exceptions to law		Effectiveness of overall enforcement	There are helmet standards	Estimated national helmet wearing rate (%)	
There are exceptions to the helmet law	The helmet law applies to all road types	The helmet law applies to all engine types	(respondent consensus) (scale 0–10)		
n/a	n/a	n/a	n/a	n/a	
No	Yes	Yes	5	No	
Yes	Yes	Yes	6	No	70
No	Yes	Yes	6	Yes	13–15
n/a	n/a	n/a	n/a	n/a	
No	Yes	Yes	4	No	
No	Yes	Yes	3	No	
No	Yes	Yes	2	No	
Yes	Yes	No	7	No	
Yes	Yes	Yes	4	Yes	67 <sup>a</sup>
No	Yes	Yes	7	No	
Yes	Yes	Yes	4	No	
No	Yes	Yes	5	No	90
Yes	Yes	Yes	2	No	
No	Yes	Yes	7	Yes	
No	Yes	Yes	4	No	
No	Yes	Yes	5	Yes	
No	Yes	Yes	8	No	
Yes	No	No	3	No	
n/a	n/a	n/a	n/a	n/a	

<sup>a</sup> Drivers only.

... Data not available.

# Table A.7: Road safety management, strategies and policies

Country		Lead agency		Strategies		
	A lead agency is present	Lead agency status	The lead agency is funded	There is a national road safety strategy	The strategy includes measurable national targets	The strategy is funded
Afghanistan	Yes	Governmental	Yes	No	n/a	n/a
Bahrain	Yes	Governmental	Yes	Multiple strategies	n/a	n/a
Egypt	Yes	Interministerial	Yes	Yes	No	No
Iran (Islamic Republic of)	Yes	Other	Yes	Multiple strategies	n/a	n/a
Iraq	Yes	Governmental	No	Subnational	n/a	n/a
Jordan	Yes	Interministerial	No	Yes <sup>a</sup>	n/a	n/a
Kuwait	No	n/a	n/a	No	n/a	n/a
Lebanon	No	n/a	n/a	Yes <sup>a</sup>	n/a	n/a
Libyan Arab Jamahiriya	No	n/a	n/a	No	n/a	n/a
Morocco	Yes	Interministerial	No	Yes	Yes	Yes
Oman	Yes	Interministerial	Yes	No	n/a	n/a
Pakistan	Yes	Governmental	No	Multiple strategies	n/a	n/a
Qatar	No	n/a	n/a	No	n/a	n/a
Saudi Arabia	Yes	Interministerial	Yes	Multiple strategies	n/a	n/a
Sudan	No	n/a	n/a	Subnational	n/a	n/a
Syrian Arab Republic	Yes	Interministerial	No	Multiple strategies	n/a	n/a
Tunisia	Yes	Governmental	Yes	Yes	Yes	Yes
United Arab Emirates	Yes	Governmental	Yes	Yes	Yes	Yes
West Bank and Gaza Strip	No	n/a	n/a	Subnational	n/a	n/a
Yemen	Yes	Interministerial	No	Multiple strategies	n/a	n/a

Po	blicies	Αι	udits	Drivin		Driving tests	
There are policies to promote walking and cycling	There are policies to promote investment in public transportation	Formal audits on new roads	Regular audits on existing roads	Written	Practical	Medical	
No	No	Yes	Yes	Yes	Yes		No
No	Yes	Yes	Yes		Yes		Yes
No	Yes	Yes	Yes	Yes	Yes		Yes
Yes	Yes	Yes	Yes	Yes	Yes		Yes
No	Yes	No	No	Yes	Yes		Yes
No	Yes	No	No	Yes	Yes		Yes
No	No	No	No	Yes	Yes	Yes	Yes
No	No	Yes	No	Yes	Yes		Yes
No	Subnational	No	No		Yes		Yes
No	Yes	No	Yes	Yes	Yes		Yes
No	No	Yes	Yes	Yes	Yes		Yes
No	No	No	No	Yes	Yes		Yes
No	Yes	Yes	Yes	Yes	Yes		Yes
No	Yes	Yes	Yes	Yes	Yes		Yes
No	No	Yes	Yes	Yes	Yes		Yes
No	Yes	Yes	Yes	Yes	Yes		Yes
No	Yes	No	Yes	Yes	Yes		Yes
Yes	Yes	Yes	Yes	Yes	Yes		Yes
No	No	No	No	Yes	Yes	Yes	Yes
No	No	No	Yes	Yes	Yes		Yes

<sup>a</sup> Not formally endorsed by government.

... Data not available.

# Table A.8: Pre-hospital care systems

Country	Formal pre-hospital care system	rmal Universal access telephone ospital number system		Telephone number(s)
		National	Regional	
Afghanistan	No	n/a	n/a	
Bahrain	Yes	Yes		999
Egypt	Yes	Yes		123
Iran (Islamic Republic of)	Yes	Yes		115
Iraq	Yes	Yes		122
Jordan	Yes	Yes		199
Kuwait	Yes	Yes		777
Lebanon	No	n/a		
Libyan Arab Jamahiriya	Yes	No	Yes	151,191,193
Могоссо	Yes	Yes		115
Oman	Yes	Yes		9999
Pakistan	Yes	Yes		15
Qatar	Yes	Yes		999
Saudi Arabia	Yes	Yes		997
Sudan	No	n/a	n/a	n/a
Syrian Arab Republic	Yes	Yes		110
Tunisia	Yes	Yes		198
United Arab Emirates	Yes	Yes		999
West Bank and Gaza Strip	Yes	Yes		101
Yemen	Yes	Yes	Yes	195

... Data not available.





The Eastern Mediterranean status report on road safety is part of a joint global initiative that resulted in the Global status report on road safety — the first worldwide analysis of how well countries are implementing effective road safety measures: limiting speed, reducing drink-driving, and increasing seatbelt, child restraint and motorcycle helmet use. The findings alert us to the urgent need for comprehensive and concerted actions in the WHO Eastern Mediterranean Region to address the rising toll of death and injury and the economic and social burden due to road traffic injuries. Solutions are known and have been proven to work elsewhere. The basic preventive elements are the same worldwide and can undoubtedly be applied effectively in this region too. By addressing road safety as a public health issue and employing a systems approach, a marked reduction in mortality and morbidity can be achieved.