

# 1. General

The Central Bureau of Statistics publishes monthly and yearly data on road accidents with casualties. The data includes information on: time of accident, type of accident, type of road, location of accident, casualties in accident, vehicles involved in accident and drivers of those vehicles.

The database of the Central Bureau of Statistics is based upon an administrative file received each month from the Israel Police. The file is composed of accidents that were reported to the police, and for which an accident file was opened by the police.

The information for this publication for the year 2009 includes accidents in which there were casualties and were classified by the police in two types of files: "R.A." (files of road accidents with casualties) and "General with casualties" (files of road accidents with slight casualties).

Additional explanations about the types of files and the changes in criteria can be found in section 3.

**In order to allow tracking and comparison between data across the years and to prevent, as much as possible, breaks in time series, the CBS publishes accident data for Israel without the Judea and Samaria Area and separately for the Judea and Samaria area.**

The publication opens with summary tables (multi-year comparisons) of road accidents with casualties (R.A. files), followed by the following 8 chapters:

**Chapter 1:** Information on road accidents with casualties, for which an "R.A." type file was opened, excluding accidents that took place in the Judea and Samaria Area.

**Chapter 2:** Casualties in road accidents, for which an "R.A." type file was opened, excluding accidents that took place in the Judea and Samaria Area.

**Chapter 3:** Vehicles involved in road accidents, for which an "R.A." type file was opened, excluding accidents that took place in the Judea and Samaria Area.

**Chapter 4:** Drivers involved in road accidents, for which an "R.A." type file was opened, excluding accidents that took place in the Judea and Samaria Area.

**Chapter 5:** Information on road accidents with casualties that took place in the Judea and Samaria Area, for which an "R.A." type file was opened.

**Chapter 6:** Reports on road accidents with slightly injured casualties, for which a "General with casualties" type file was opened, excluding accidents that took place in the Judea and Samaria Area.

**Chapter 7:** Reports on road accidents with slightly injured casualties that took place in the Judea and Samaria Area, for which a "General with casualties" type file was opened.

**Chapter 8:** Comparative study on road accidents with casualties, for which an “R.A.” type file or a “General with casualties” type file was opened. The purpose of the study is to test the claim that there are more seriously injured casualties hospitalized than are reported to the police. The information integrates data received from the police and from the trauma registration system. The trauma registration system operated in 17 hospitals in 2009 (see list at the end of Chapter 3).

## 2. Main Findings

### 2.1 General

In 2009, the Israel Police opened approximately 98,000 road accident files. Since 1996, when the latest changes in criteria for opening road accident files were implemented, “R.A.” (road accidents with casualties) and “General with Casualties” (general with casualties) files constitute approximately 80% of all road accident files. However, until 2002, there was a steady downward trend in the proportion of “R.A.” files out of all files of road accidents with casualties (from one-third to one-fifth), and a concurrent increase in the proportion of “General with Casualties” files. Since 2002, the proportions of “R.A.” and “General with Casualties” files have remained stable.

**Table A.- Files Opened by the Police, by Type and Year**

Type of File	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Grand total</b>												
<b>- Thousands</b>	<b>99</b>	<b>108</b>	<b>106</b>	<b>108</b>	<b>112</b>	<b>109</b>	<b>105</b>	<b>103</b>	<b>105</b>	<b>106</b>	<b>101</b>	<b>98</b>
<b>- Percentages</b>	<b>100</b>											
R.A. – road accidents with casualties	26	24	19	17	16	16	17	16	17	16	17	17
General with casualties	53	56	61	63	64	64	64	65	64	65	62	63
DO – damage only	9	4	2	2	1	1	1	1	1	1	2	2
GDO – general, damage only	12	16	18	18	19	19	18	18	18	18	19	18

**The findings presented below are by type of file and the location of the accident.**

**2.2 “R.A.” files (not including the Judea and Samaria Area)**

**2.2.1 Road accidents with casualties**

**Table B.- Road Accidents with Casualties, for which an “R.A.” Type File was Opened, by Severity and Percentage of Change**

Severity of Accident	R.A.	Percentage of Change Compared with 2008
<b>All accidents</b>	<b>16,308</b>	<b>-1</b>
Fatal	284	-18
Serious	(1) 1,467	-11
Slight	14,557	-

In 2009, there were 16,308 road accidents with casualties recorded in Israel (not including the Judea and Samaria Area), a decrease of approximately 1% compared to 2008.

The number of fatal accidents in 2009 decreased by 18% compared with 2008.

**The number of fatal accidents in 2009 (284) is the lowest in 43 years.**

(1) Including 6 accidents in which all of those killed died after 30 days from the day of the accident.

Of the total number of accidents, approximately 73% occurred on urban roads. 43% of the accidents on urban roads occurred at intersections, compared with only 41% on non-urban roads.

The severity of accidents was greater on non-urban roads than on urban roads. On non-urban roads approximately 4% of the accidents were fatal and another 12% were serious. Approximately 1% of the accidents on urban roads were fatal and approximately 8% were serious.

Approximately 66% of the accidents occurred during daytime and approximately 34% occurred at night.

Approximately 75% of the total number of accidents was collisions between vehicles, approximately 17% were hitting a pedestrian, and the rest were single-vehicle accidents.

## 2.2.2 Casualties in Road Accidents

**Table C.- Casualties in Road Accidents, by Severity and Percentage of Change**

Severity of Injury	Casualties	Percentage of Change Compared with 2008
<b>Total injured</b>	<b>31,832</b>	<b>+1</b>
Killed	314	-24
Seriously injured	(1) 1,741	-16
Slightly injured	29,777	+1.5

31,832 people were injured in the 16,308 road accidents mentioned above, an increase of approximately 1% as compared with 2008.

**In 2009, the number of people killed decrease by 24% compared to 2008 and was the lowest in 43 years.**

The number of people killed per 100,000 residents decreased from 5.6 in 2008 to 4.2 in 2009.

The number of casualties per accident in 2009 was 1.9, similar to that in 2008.

(1) Including 6 people who died after 30 days from the day of the accident.

The share of Arabs among the casualties is higher than their relative share of the general population. Although Arabs comprise approximately 20% of the general population in Israel, 27% of all road accident casualties (34% of all persons killed) are Arabs. 13 Arab children (up to the age of 14) were killed in 2009 – 52% of all children killed (double the share of Arab children in the general population of children).

Approximately 37% of all casualties were injured in accidents that occurred on non-urban roads, that constituted approximately 27% of all accidents.

Approximately 58% of the total number killed and approximately 40% of all those seriously injured, resulted from accidents on those roads.

Approximately 10% of all casualties (killed and injured), and approximately 34% of all those killed in accidents - were pedestrians. Those aged 65+ constitute 19% of all pedestrians who were killed or injured, 2 times greater than their share of the general population. Crosswalks do not ensure safe crossings. Of all pedestrians who were killed or injured while crossing the road, approximately 68% were killed or injured on crosswalks. Of the children (up to age 14) who were killed or injured while crossing the road, approximately 52% were killed or injured on crosswalks, and of those aged 65+ – approximately 69% were killed or injured on crosswalks.

### 2.2.3 Vehicles Involved in Accidents with Casualties

30,213 vehicles were involved in road accidents with casualties, a decrease of 2% compared with 2008.

**Table D.- Vehicles Involved in Accidents, by Type and Various Characteristics**

Percentages

Type of Vehicle	Percentage of Total Number of Motor Vehicles	Percentage of Annual Kilometers Travelled	Percentage Involved in Road Accidents	Percentage Involved in Fatal Road Accidents
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Thereof:				
Private cars	78.8	65.4	66.2	50.8
Truck – up to 3.5 tons (gross weight)	12.0	19.1	10.4	13.3
Truck – 16+ tons (gross weight)	0.8	2.8	1.2	6.8
Motorcycles	4.4	1.8	11.2	7.2

The share of small trucks (up to 3.5 tons) and big trucks (16+ tons) involved in road accidents with casualties was significantly less than their share of kilometers travelled, but the share of heavy trucks (16+ tons) involved in fatal accidents was twice as high their share of kilometers travelled. The share of motorcycles involved in road accidents with casualties was 4 times greater than the share of kilometers they travelled.

### 2.2.4 Drivers Involved in Accidents with Casualties

There were 30,213 drivers involved in accidents with casualties, a decrease of approximately 2% compared with 2008.

Approximately 75% of the drivers involved in road accidents with casualties were men, and approximately 25% were women. It should be noted that the percentage of women out of all licenced drivers was 42%. The percentage of women out of total drivers involved in fatal accidents was 9%.

The proportion of young drivers up to age 24 out of all drivers involved in accidents with casualties was approximately 39% greater than their proportion out of all licenced drivers. In comparison, the proportion of drivers aged 65+ involved in accidents with casualties was approximately 17% lower than their relative share of all licenced drivers.

Approximately 53% of all drivers involved in road accidents with casualties did not commit any driving offence at the time of the accident. Of all the drivers involved in road accidents

with casualties, approximately 55% of the Jewish drivers and approximately 45% of the Arab drivers did not commit any driving offence at the time of the accident.

In 2009, 14,285 drivers committed a driving offence at the time of the accident. Following is a breakdown by type of offence.

**Table E.- Drivers who Committed Driving Offence at the time of the Accident, by Type of Offence**

Type of Offence	Drivers who Committed Driving Offences at the Time of the Accident			
	Grand Total (1)	Percentage of Grand Total	Percentage of Total Jews	Percentage of Total Arabs
<b>Grand Total</b>	<b>14,285</b>	<b>100</b>	<b>100</b>	<b>100</b>
Deviation from lane	2,126	15	15	14
Not complying with traffic light	2,051	14	14	14
Failure to maintain distance	1,409	10	8	15
Failure to give right of way to a vehicle	1,264	9	9	10
Failure to stop for a pedestrian	1,219	9	10	4
Not complying with a "stop" sign	972	7	8	4
Not complying with a "priority" sign	964	7	7	6
Speed	739	5	3	11
Wrong turn	723	5	5	5
Other offences	2,818	20	20	17

(1) Including: non-Arab Christians, persons not classified by religion and foreigners.

The three most common driving offences were: deviation from lane, not complying with a traffic light, and failure to maintain distance.

**Table F.- Drivers who Committed Driving Offence at the Time of the Accident, by Type of Offence and Age Group**

Percentages

Type of Offence	Drivers who Committed a Driving Offence at the Time the Accident	Thereof:	
		Up to Age 18	Ages 55-64
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Speed	5.2	16.8	1.1
Deviation from lane	14.8	18.2	15.3
Failure to stop for a pedestrian	8.5	3.9	12.2
Not complying with a traffic light	14.3	5.9	18.3

The breakdown of driving offences committed during accidents is not uniform among all age groups. Among young drivers (up to age 18), the rates of speeding and deviation from a lane were high, whereas the rates of failure to stop for pedestrians and failure to obey a traffic light were relatively low. A different distribution was found among older drivers (aged 55-64).

### **2.3 “R.A.” files - Judea and Samaria Area**

**Since May 1994 the data do not include accidents that occurred in areas of the Palestinian Authority. Those areas have grown gradually; therefore a comparison of data from different years should be made cautiously.**

#### **2.3.1 Road Accidents with Casualties**

In 2009, 548 road accidents with casualties were recorded in the Judea and Samaria Area. The number of fatal road accidents in this area, reached 24 (compared with 20 fatal road accidents in 2008).

Approximately 10% of all accidents were of the “Hitting a Pedestrian” type (similar to 2008).

#### **2.3.2 Casualties in Road Accidents**

In the road accidents mentioned above, there were 1,403 casualties. Of those, 32 people were killed (compared with 21 in 2008), and 141 were seriously injured (compared with 154 in 2008). 185 of the casualties were children (aged up to 14), and 39 were persons aged 65+.

### **2.3.3 Vehicles Involved in Road Accidents**

In 2009, 986 vehicles were involved in road accidents with casualties. Of those, approximately 65% were private cars, approximately 23% were trucks, and 7% were public vehicles. Approximately 16% of the vehicles involved in road accidents with casualties were registered in the Palestinian Authority.

### **2.4 “General with Casualties” files - reports on road accidents with slightly injured casualties (not including the Judea and Samaria Area)**

In 2009, there were 60,124 reports on road accidents with slightly injured casualties in Israel listed in “General with Casualties” files, a decrease of approximately 2% compared with 2008.

The data indicate that approximately 80% of those accidents occurred on urban roads, and of those, only 4% occurred at intersections. However, approximately 32% occurred on non-urban roads at intersections.

Approximately 75% of the reported events occurred during the day, and approximately 25% occurred at night; approximately 70% were collisions between vehicles (approximately 68% of them were front to rear end); approximately 11% of the cases were “hitting a pedestrian” type, and the rest were single-vehicle accidents.

In the above reports, 83,870 persons were slightly injured, (a decrease of approximately 14% compared with 2008), and 104,714 vehicles were involved (a decrease of approximately 1% compared with 2008).

### **2.5 “General with Casualties” files - reports on road accidents with slightly injured casualties in the Judea and Samaria Area**

In 2009 the Israel Police recorded 1,266 reports on road accidents with slightly injured casualties in “General with Casualties” files, that occurred in the Judea and Samaria Area (an increase of approximately 14% compared with 2008).

The data indicate that approximately 41% of those accidents occurred on urban roads, and only 4% occurred at intersections. However, approximately 14% occurred on non-urban roads at intersections.

Approximately 72% of the reported events occurred during daytime, and approximately 28% occurred at night; approximately 62% were collisions between vehicles (approximately 46% of them were front to rear end); approximately 12% of the cases were of “hitting a pedestrian” casualties, and the rest were single-vehicle accidents.

In the above reports, 1,856 persons were slightly injured, an increase of approximately 16% compared with 2008, and 1,935 vehicles were involved, an increase of approximately 15% compared with 2008.

## **2.6 Comparative Study: Casualties in Road Accidents – Israel Police Data Integrated with Data from 17 Hospitals**

### **2.6.1 General**

The database of the Central Bureau of Statistics is based upon an administrative file received monthly from the Israel Police. The file is composed of accidents that were reported to the police, and for which an accident file was opened by the police. Due to a claim that there are more seriously injured casualties hospitalized than are reported by the police, the CBS conducted special research in 2004 which compared the data on road accident casualties received from the police with data on road accident casualties received from 9 trauma centers located in hospitals.

The purpose of the research was to examine the possibility of enriching the existing information at the CBS and expanding the existing database.

A survey of the literature indicated that almost all countries in the world base their statistics of road accidents on police data.

A comparison of the police files with the hospital files showed that in most of the variables not related to severity of injury or severity of accident, there is a high correlation between the police data and the hospital data.

When analyzing the severity of injury according to the length of hospitalization listed in the hospital file, it was found that of the casualties listed in both the hospital and police files, the number of seriously injured actually listed in the hospitals were about double the number appearing in the police files. Most of these casualties were listed in the police file as slightly injured in “R.A.” type accidents or as slightly injured in “General with casualties” type accidents.

It is common practice to define the severity of an injury in one of the following two ways: length of hospitalization or chance of survival. A seriously injured person is defined by the police and the CBS as “a person who was hospitalized following a road accident for a period of 24 hours or more, not for observation only”. This is the accepted definition in international organizations (IRTAD, ECE, MEDSTAT),<sup>1</sup> and in most of the other countries in the world. Most countries refer to hospitalization for more than 24 hours, and there is no reference to the issue of observation.

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<sup>1</sup> IRTAD = International Road Traffic and Accident Data; ECE = Economic Commission For Europe; MEDSTAT = Mediterranean Statistics.

On the other hand, the hospitals define the severity of injury according to the ISS index, which is a medical measurement of the chance of survival of the injured. This measurement is calculated according to the data on the severity of the injury, based on medical diagnosis. The index ranges from 1 (for the slightest injury) to 75 (for the most serious injury).

In 2004 the CBS turned to the Public Council for Statistics with a request to appoint a public committee that would be composed of representatives of the various bodies and would deliberate on the various aspects of the database of road accidents. The committee was asked to advise the CBS in regards to definitions of road accidents for national statistics and reporting to international bodies, and also to deal with the systems needed to implement the definitions and various classifications related to the statistical systems of road accidents in the State of Israel. Following the CBS request, the Public Council for Statistics appointed a public advisory committee on the topic of “a road accidents database” in June 2004.

The committee included representatives from the following bodies: Central Bureau of Statistics, Israel Police, Ben-Gurion University, the Technion, National Road Safety Authority, Gertner Institute, Public Council for Statistics, “Or Yarok” organization and Israel National Roads Company.

Among the recommendations of the committee:

- Police files will continue to constitute the main source of data. When new sources are added, such as hospital data, they should be viewed as complementary or reinforcing elements, and not as an alternative source for police data.
- The definitions of accident severity and severity of injury will not be changed in their essence.
- The definitions of severity of injury and accident severity will continue to be based on length of hospitalization (as presently defined).
- The source of data for the variable “length of hospitalization” will be taken from the hospitals (and not from the police file); i.e., severity of injury and accident severity will be based on hospital data, while all the rest of the data will be based on police data.

Following the research conducted by the CBS, and recommendations by the public advisory committee on the topic of a road accidents database, and funded by the National Road Safety Authority, as of 2008, the CBS has received a file each month from the Gertner Institute, the National Center for Trauma & Emergency Medicine Research. This file includes information that appears in the trauma registration system on casualties of road accidents who were hospitalized in 17 hospitals out of 23 hospitals that treat road accident casualties.

The file from the trauma registration system is linked at the CBS to the Israel Police files, thus producing a clearer and more accurate picture of the severity of injuries, based on the length of stay at the hospital and the medical severity of the injury.

A database that integrates police data with hospital data sets an international precedent, as most other countries base their road accident statistics on accident data received from the police (and not on hospital data). A large number of countries recognize that police data do not provide a full picture of the severity of accidents, and some countries (among them England, the Czech Republic, Denmark, Sweden and Spain) are in various stages of attempting to link police data with hospital data.

In many countries identification numbers do not appear in police files or in hospital files ., The link is created according to other variables found in the files, including sex, age, date of accident, location of accident, etc. With this method only 50% of the accidents listed in the hospital files are successfully linked.

### 2.6.2 Main Findings

Data from trauma registry, including data from 17 hospitals, were integrated at the CBS with police data. Following are the main findings.

**Table G.- Casualties, by severity of injury, 2009**

Police data and integrated data

	Total	Slightly Injured	Seriously Injured	Killed
<b>National total (police)</b>	<b>31,832</b>	<b>29,777</b>	<b>1,741</b>	<b>314</b>
17 hospitals: Severity of injury according to police	(1) 23,351	21,618	1,531	202
17 hospitals: Severity of injury according to hospitals	(1) 24,783	20,923	3,656	204

(1) After integrating police data (“R.A.” files and “General with casualties” files) with trauma registry data, accidents classified by the police as “General with casualties” were added.

**Table H.- Seriously Injured according to ISS (Injury Severity Score), 2009**

Integrated data

ISS (Injury Severity Score)	Seriously Injured	Distribution in Percentages
<b>Total</b>	<b>3,656</b>	<b>100.0</b>
1-8 (Slightly Injured)	1,992	54.5
9-15 (Moderately Injured)	831	22.7
16-24 (Seriously Injured)	383	10.5
25-75 (Very Seriously Injured)	301	8.2
Not known	149	4.1

**Table I.- Seriously Injured, by length of hospitalization by days, 2009**

Integrated data

Days of hospitalization	Seriously Injured	Distribution in Percentages
<b>Total</b>	<b>3,656</b>	<b>100.0</b>
Not known (1)	143	3.9
0-1 (2)	7	0.2
2	906	24.8
3	493	13.5
4	359	9.8
5	277	7.6
6	206	5.6
7-14	756	20.7
15-21	225	6.2
22+	284	7.8

(1) Casualties appearing only in the police file, and not found in the trauma registration file.

(2) Casualties transferred to a different hospital, not one of the 17 hospitals in which the trauma registration system works.

According to police data, in 2009, in the 17 hospitals that were examined, there were 1,531 seriously injured; whereas according to the integrated data, in the same hospitals, there were 3,656 seriously injured.

The difference stems from the following: 36 casualties who changed from seriously injured in “R.A.” files to slightly injured (deduction); 1,092 casualties who changed from slightly injured in “R.A.” files to seriously injured (addition); 1 casualty who changed from seriously injured to a fatality (deduction); 7 casualties who changed from involved persons not injured in “R.A.” files to seriously injured (addition); 1,059 casualties who changed from slightly injured in “General with casualties” files to seriously injured (addition); 4 casualties who changed from involved persons not injured in “General with casualties” files to seriously injured (addition).

**Table J.- Distribution of length of hospitalization according to ISS, for casualties defined by police as slightly injured or not injured but who were hospitalized for more than 24 hours, 2009**

Trauma registration data

Days of hospitalization	Total	ISS (Injury Severity Score)				
		1-8 (Slight)	9-15 (Moderate)	16-24 (Serious)	25-75 (Very Serious)	Not known
<b>Total – Absolute Value</b>	<b>2,163</b>	<b>1,525</b>	<b>447</b>	<b>150</b>	<b>39</b>	<b>2</b>
<b>Total – Percentages</b>		<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
2	799	44.2	22.6	14.7	2.6	
3	370	18.7	12.8	16.0	7.7	50.0
4	246	10.5	13.4	15.3	7.7	
5	167	7.2	9.8	8.0	2.6	
6	114	4.1	8.3	5.3	17.9	
7+	467	15.3	33.1	40.7	61.5	50.5

**Table K. Seriously Injured, by Type of Road, 2009**

Integrated data

Type of Road	Seriously Injured	Distribution in Percentages
<b>Total</b>	<b>3,656</b>	<b>100.0</b>
Urban Road	2,432	66.5
At intersection	557	15.2
Not at intersection	1,875	51.3
Non-urban Road	1,224	33.5
At intersection	348	9.5
Not at intersection	876	24.0

**Table L. Seriously Injured, by Type of Casualty, 2009**

Integrated data

Type of casualty	Seriously Injured	Distribution in Percentages
<b>Total</b>	<b>3,656</b>	<b>100.0</b>
Pedestrians	1,080	29.5
Vehicle passengers	933	25.5
Vehicle drivers	818	22.4
Motorcycle drivers	664	18.2
Bicycle riders	161	4.4

### 3. Definitions and Explanations

**Road accident with casualties:** a road accident in which a vehicle is involved and at least one person injured.<sup>1</sup>

In the framework of treatment of road accidents by the police, four types of files are opened:<sup>2</sup>

1. **Road accident with casualties of R.A. type:** a road accident in which a vehicle is involved and at least one person injured and is defined by the police as an accident that was investigated (“R.A.”). There is a distinction between an accident that is investigated by the police (“R.A.” file) and an accident that is not investigated (“General with Casualties” file). This distinction is dependant on the number of days that passed between the date the accident occurred and the date it was reported to the police (reporting gap) and other criteria, such as vehicle number, number of drivers and the number of casualties involved in the accident.

The data include only road accidents that were reported to the Israel Police. The Israel Police do not record accidents in which only army vehicles are involved. There is also a separation between national data (not including the Judea and Samaria Area) and data on accidents that occurred in the Judea and Samaria Area.

2. **Road Accident of “D.O.” type:** Damage only – road accident without casualties, with damage only (investigated by the police).

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<sup>1</sup> As of 1.8.1961, when it was no longer mandatory to report accidents in which there was only damage, there are no data at the Central Bureau of Statistics on road accidents without casualties.

<sup>2</sup> For details of the changes made to the criteria for opening different types of road accident files, see The Central Bureau of Statistics (2009). *Road Accidents with Casualties 2008, Part I: General Summaries*. Publication number 1378. Jerusalem. Section 4 of the introduction.

3. **Road Accident of “General with casualties” type:** Road accident that resulted in the slight injury of at least one person and was defined by the police as an accident not investigated by the police (“General with Casualties” file).
4. **Road Accident of General “D.O.” type:** Road accident without casualties, with damage only but not classified as D.O. (not investigated by the police).

**Road:** A paved strip of land intended for vehicular or pedestrian use, and open to the public. Includes tracks, streets, alleys, squares, paths, and bridges.

**Urban road:** A road within a local authority, where the entrance to the road is marked with a “B-24” traffic sign, and the exit is marked with a “B-25” traffic sign.

**Intersection:** The area at which two or more roads meet. Accidents at intersections also include accidents that occurred on one of the roads of the intersection, as a result of proximity to the intersection

**Fatal accident:** A road accident that resulted in the death of at least one person.

**Person killed in a road accident:** A person who died as a result of an accident, or died of his or her injuries within 30 days of the accident.

**Serious road accident:** A road accident that resulted in the serious injury of at least one person, and in which no one was killed.

**Person seriously injured:** A person who was hospitalized as a result of an accident for a period of 24 hours or more, not for observation only. The words “not for observation only” were added to the definition by the Israel Police in December 1995, in order to obtain a clear and uniform definition, because the previous definition was not applied uniformly in the field. The previous change in the definition “seriously injured” was made in the second half of 1970. Until then, only those hospitalized for at least six days were included. Attention should therefore be paid to the difference in definitions when comparing data for different years.

**Slight road accident:** An accident that resulted in the slight injury of at least one person, and in which no one was killed or seriously injured.

**Person slightly injured in a road accident:** A person who was injured as a result of a road accident and was not hospitalized, or was hospitalized for less than 24 hours or for observation only.

**Type of accident** is determined by the initial condition of the accident, unless the accident was specifically listed as a “final condition”. Thus, for example, an accident that began as a skid and ended by overturning would be classified as skidding; an accident that began as a collision and ended by hitting a pedestrian would be classified as a collision.

**Vehicle:** Any motorized or non-motorized vehicle, including wagons, bicycles, etc. For definitions and explanations of motorized vehicles, see: Central Bureau of Statistics (2009). *Motor Vehicles 2008*. Special Publication no.1381. Jerusalem.

**Types of vehicles: Beginning with this publication, the list of vehicle types involved in road accidents was revised and adjusted to the changes introduced by the Ministry of Transport in 2007.** An additional revision was made in 1994. Historical data was re-calculated in order to adapt to the new classification beginning in 2000.

The main changes were listed for the following types of vehicles:

1. Motorcycles - as of 2007, motorcycles are defined according to engine capacity in cc (up to 50; 51-125; 126-400; 401+). Consequently the tables were revised. The previous revision was made in 1991.
2. Trucks - the classification is based on the gross weight of the truck and a distinction is made between trucks exceeding 3.5 tons and trucks weighing up to 3.5 tons. Until 2008 there was a distinction made between trucks exceeding 4 tons and trucks weighing up to 4 tons.

As of 1994, minibuses are not included (see explanation below).

3. Minibuses – up to 1993, minibuses were included as vehicles with a special permit for carrying passengers, in the truck group of up to 4 tons. During 1993, those vehicles were classified separately and as of 1994, they have been presented as minibuses.

As a result of these changes, caution should be exercised in comparing data, especially data regarding motorcycles and trucks, with data from the years preceding the changes and published in previous publications.

**Driver's offence:** is recorded when, in the opinion of the accident examiner, it contributed to the accident. The driver involved does not necessarily have to be convicted or be prosecuted for this offence.

**Driver:** Any person driving a vehicle, when the vehicle is moving (even if he or she does not have a driver's licence).

**Passenger:** Any person (excluding the driver) travelling in the vehicle, or at the stage of entering or leaving it; including a passenger on a bicycle, motorcycle, etc. (excluding the driver).

**Pedestrian:** Any person (including children in strollers, and disabled people in non-motorized wheelchairs), walking or standing in the road, at the side of the road, or on the pavement.

**Accidents per 1,000 licenced vehicles and per 100,000 residents:** the data are annual averages, unless otherwise noted in the table.

**Day and night:** determined according to sunrise and sunset each day of the year.

**Population group:**

- **Jews**
- **Arabs** – incl. Moslems, Arab Christians, and Druze.
- **Total** – incl. also: non-Arab Christians, persons not classified by religion, and foreigners (from the Judea and Samaria Area and from other countries).

**Locality:** In all of the tables, except for Table 2.13, the locality is the one in which the accident occurred. In Table 2.13, data are presented on the localities of residence of road accident casualties .

**Additional Definitions Unique to the Comparative Study Chapter (Chapter 8)**

**Road accident of expanded “R.A.” type :** Road accident defined by the police as an “R.A.” type or as a “General with casualties” type, but after integrating the police data with the trauma registration data at the CBS, it became clear that at least one slightly injured casualty was hospitalized for a period of more than 24 hours. Therefore, the casualty was classified by the CBS as seriously injured, and the accident was classified by the CBS as a road accident of expanded “R.A.” type.

**ISS (Injury Severity Score) medical index: A medical index of the severity of an injury,** that examines the chance of survival of the injured person. This score is calculated from data on the severity of an injury determined by a medical diagnosis.

**17 hospitals in which the trauma registration database was active, in 2009:** the Sheba Medical Center, Tel Hashomer; Rambam Health Care Campus; Assaf Harofeh Medical Center; Edith Wolfson Medical Center; Ziv Medical Center; Hillel Yaffe Medical Center; the Western Galilee Hospital, Nahariyya; Barzilai Medical Center, Ashkelon; Poriah Hospital, Tiberias; the Tel Aviv Sourasky Medical Center, Ichilov; Rabin Medical Center, Beilinson Hospital; Soroka University Medical Center; Kaplan Medical Center; Hadassah University Hospital, Ein Karem; the Nazareth Hospital E.M.M.S.; Holy Family Italian Hospital; and Shaare Zedek Medical Center, Jerusalem.

# 4. Methodology

## 4.1 Chapters 1-7

### A. The Population Investigated

The information in this publication includes road accidents in which persons were killed or injured and were classified by the police in two types of files: "R.A." and "General with casualties".

### B. The period investigated

The information in this publication refers to road accidents that occurred in 2009.

A number of tables provide comparison between years and include data for 10 years, 2000-2009.

International comparison of accident data is published for the years 2004-2007.

### C. Method of investigation

The data are based on an administrative file received each month from the Israel Police.

### D. Working with data

The data that is received from the police undergo a quality check at the CBS that includes logical testing, editing, encoding, completion and imputation for missing data.

Imputation of data is done in cases where a vehicle or a driver - and sometimes a casualty - is missing. For example: in a front-to-side collision, if there is information on two vehicles and only one driver, an additional driver will be imputed to the second vehicle.

A comparison of the files with the Population Register revealed that the police file also includes persons killed in an accident, who died of their injuries after more than 30 days. Hence, according to the accepted definitions (see Definitions in Section 3), those cases should be classified as seriously injured; i.e., those cases should be deducted from the total number of persons killed in accidents, and added to the total number of persons seriously injured. As of 2008, the CBS has been carrying out regular comparisons of the accident file received from the Israel Police and the Population Register file, and every person who died after more than 30 days from the day of the accident is classified as "seriously injured". The Summary Tables that appear in the first part of the publication were also updated as of 2003.

Following is the number of persons who died after more than 30 days from the day of the accident, and were classified as seriously injured:

2003	2004	2005	2006	2007	2008	2009
6	13	11	9	16	16	6

As a result of the revision of killed persons data (described above), data on fatal accidents were also revised. Following is the number of accidents whose classification was changed from fatal accident to a serious accident, since all their casualties died of their injuries after more than 30 days from the day of the accident, :

2003	2004	2005	2006	2007	2008	2009
5	12	11	9	16	16	6

**E. Reliability of data**

The data is taken from the entire population and therefore is not affected by any sampling errors.

The administrative file on which the data is based, serves first and foremost the needs of the body responsible for it – the Israel Police. The changes that the police implement in the order of priority, definitions and in implementing its decisions, affect the data. For example, changes in the criteria for opening different types of files of road accidents affect the number of “R.A. files”, and cause a lack of regularity in the data series, as well as making it difficult to compare data from before the changes were implemented to data from the period after.

On the 15th of February each year, the CBS receives the file of the previous year from the police for the final time, and therefore the updating of the data and its quality are correct to that date.

**4.2 Chapter 8**

**A. The Investigated Population**

**The investigated population meets all the following three criteria:**

- Casualties in road accidents took place in Israel (excluding the Judea and Samaria Area).
- The accident was classified as expanded “R.A.” type (after integrating the trauma data there were accidents that were added by the CBS out of the group that had been classified by the police as “General with casualties”); see definition for “Road Accident of expanded “R.A.” type, Section 3 – “Definitions and Explanations”.
- The casualty was hospitalized in one of the 17 hospitals which participated in the trauma registration system in 2009 (see list in Section 3 – “Definitions and Explanation”).

In the records of, casualties that appeared in both the police file and in the file of the 17 hospitals, the hospital code was taken from the trauma file. In the rest of the records (found only in the police file) the hospital code was taken from the police file.

**B. The period investigated**

The information in this publication refers to casualties in road accidents that occurred in the year 2009.

### **C. Method of investigation**

Integration of data received in administrative files from the police and from the trauma registration system that includes data from 17 hospitals.

### **D. Treatment of the data**

1. The data that is received from the police and from the trauma registration center undergo a quality check at the CBS that includes logical testing, editing, encoding, completion, imputation for missing data and treatment of double records.
2. Integrating is done by ID number with completion of the integration by year of birth, date of accident, last name and first name.
3. Quality checking of the integration and treatment of double records.

Double records\double ID numbers may be of two types:

3.1 A person involved in one accident was listed more than once (For example: if hospitalized in more than one hospital). The treatment included a decision as to which record was relevant and eliminating the other record.

3.2 A person involved in more than one accident. The treatment included adjustment to match the relevant accidents.

**Severity of injury** – is determined according to the amount of time spent in hospital as it appears in the trauma file (calculated by date of release from hospital minus the date of arrival).

Seriously injured – is so defined if the date of release minus date of arrival is greater than 1.

Slightly injured – is so defined if the date of release minus date of arrival is less than, or equal to 1.

### **E. Reliability of data**

- On the 15th of February each year, the CBS receives the files of the previous year from the police and the trauma registration system for the final time, and therefore the updating of the data and its quality are correct to that date.
- The data is only partial, due to the fact that the trauma registration system functions in only 17 of the 23 hospitals that treat road accident casualties .

### **F. Tables**

In this study there are 5 tables. Each table appears in 2 versions:

Version A – Severity of injury is based on the variable “severity of injury” in the police file.

Version B – Severity of injury is based on the amount of time spent in hospital, calculated from the hospital data.