Road Safety Country Overview October 2012

Sweden





Sweden has a low population density,

but a high GDP.

Structure and Culture

• Basic data

Table 1: Basic data of Sweden in relation to the European average. (Sources: [1]OECD/ITF, 2011; [2] Eurostat; [3] DG-TREN, 2005; [4] CIA).

Basic data of Sweden	European average
 Population: 9.3 million inhabitants (2010) 	17.1 million (2010 ¹) [1,2]
 Area: 410 300 km² (2010) 	156 225 km ² (2010) [1,3]
(8.9% water) (2010)	3% water (2010) [4]
 Climate and weather conditions (capital city; 2010): 	(2010)
Average winter temperature (Nov. to April): 5°C	6°C
Average summer temperature (May to Oct.): 9°C	16°C
Annual precipitation level: 490 mm (1997)	747 mm
 Exposure: 81.4 billion vehicle km (2009) 	168 billion vehicle km
(82% cars, 15% goods motor vehicles, 1% motorcycles,	(2010") [1]
1% buses)	
 0.61 motorised vehicles per person (2010) 	0.7(2010 ^{1, 11}) [1,2]

Country characteristics

Table 2: Characteristics of Sweden in comparison to the European average.

 (Sources: [1]] OECD/ITF, 2011; [2] Eurostat; [3] national sources)

Characteristics of Sweden	European average	
 Population density: 23 inhabitants/km² (2010) 	110 inhabitants km ² (2010 ⁱ)[1,2,3]	
 Population composition (2009): 17% children (0-14 years), 65% adults (15-64 years), 18% elderly (65 years and over) 	16% children, 67% adults, 17% elderly (2009 ⁱⁱⁱ)[1,2]	
 Gross Domestic Product (GDP) per capita: €36 900 (2010) 	€26 100 (2010)[1,2]	
 17% of population lives inside urban area 	42% (2010 ^{IV})[1,2]	
 Special characteristics: The northern part of Sweden (about 60% of the country) is sparsely populated, 		



Transport

- ⁱⁱ Based on 15 European countries (excl. BG, CY, EE, EL, ES, HU, IT, LT, LU, LV, MT, PL, PT, RO, SK);
- data of CZ, IE, SE, NO (2009); data of AT, BE, DK (2008); Data of UK (2006); data of NL (2003).
 - Based on 27 European countries (excl. LT, NO, PL); data of BE, UK (2008).

Based on 30 European countries; data of HU = 2009.

^{iv} Based on 29 European countries (excl. IS).

Structure of road safety management

- RS policy making is centralized in Sweden.
- There are three political levels in Sweden: the national level with the Parliament, the counties and the municipalities with their political boards.

The following key-actors are responsible for road safety (RS) management:

Table 3: Key actors per function in Sweden. (Source: DG-TREN, 2005; 2010; OECD/ITF, 2011)

Key functions	Key actors
1.	The Ministry of Industry, Employment and
 Formulation of national RS strategy 	Communication (MIEC): responsible.
 Setting targets 	The Swedish Transport Administration: lead
 Development of the RS programme 	agency.
2. Monitoring of the RS development in	Swedish Transport Administration (STA)
the country	
3. Improvements in road infrastructure	 Swedish Transport Administration
	 Road Traffic Safety Inspectorate: checks
	whether system designers and other
	stakeholders working systematically with road
	safety.
4. Vehicle improvement	The Swedish Transport Agency
	(<i>Transportstyrelsen</i>): overall responsibility for
	regulations and enforcement.
5. Improvement in road user education	Swedish Transport Administration
6. Publicity campaigns	Swedish Transport Administration and local
	authorities
7. Enforcement of road traffic laws	The National Police Board
8. Other relevant actors	 National Society for Road Safety (NTF), with
	its member organisations, and transport
	organisations;
	 The Group for National Road Safety Co-
	operation (GNS): coordinates co-operation
	between the STA, the local authorities and the
	Police;
	 Research: Swedish National Road and
	Transport Institute (VTI), Chalmers University
	and other universities;
	 Transport policy analysis and statistics:
	Transport Analysis (Trafikanalys).

Road safety management is centralised in Sweden, with the Swedish Transport Administration as lead agency.



🔿 Transport

Attitudes towards risk taking

- The perceived probability to be checked for speeding is very low.
- Swedish support for stricter speeding penalties is much lower than in other countries.
- Speeding on motorways is admitted to more often by Swedish drivers than in other countries.

Table 4: Road safety attitudes and behaviour of drivers (Source: SARTRE, 2004)

	Sweden	SARTRE average
Self-reported driving behaviour	% of drivers th	nat show behaviour
	often or more	
Too close following	9%	9%
Inappropriate overtaking	2%	5%
Exceeding speed limit on motorways	35%	25%
Exceeding speed limit on main inter-urban roads	27%	18%
Exceeding speed limit on country roads	14%	13%
Exceeding speed limit in built-up areas	5%	8%
Support of stricter legislation	% of drivers th	at support strictor

	legislation	
Higher penalties for speeding offences	39%	60%
Higher penalties for drink-driving offences	92%	88%
Lower BAC limits	4%	8%
Perceived probability of being checked	% of drivers that belie probability is high	eve that
Speeding	3%	18%

2%

9%

Legend

Alcohol use

(comparison of country attitude in relation to average attitude of other SARTRE countries):

2-9% better 10-19% better

 \geq 20% better

2-9% worse

10-19% worse

 \geq 20% worse



There is a much lower support in Sweden than in other countries for higher speeding

penalties.





The Swedish RS management is based on the safe system approach Vision Zero.

Programs and measures

Road safety strategy of the country

- The Swedish road safety management is based on Vision Zero, a safe system approach where no one should be at risk of being fatally or severely injured while using road transport.
- Vision Zero is based on four principles: 1) ethics of the human life, 2) responsibility of authorities and users of the systems, 3) safety from a human centered approach, 4) mechanisms for change by cooperation of all stakeholders.

National strategic plans and targets

- Sweden does not have a road safety plan in a traditional sense. However, a number of agencies and stakeholders, representing municipalities, the police, the insurance industry, the car industry and others, along with the Swedish Transport Administration, have adopted a management-by-objective approach to road safety in order to achieve the new interim target towards Vision Zero.
- Targets (referred to 2006-2008):

Table 5: Road safety targets for Sweden.

Year	Fatalities	Serious injuries
2020	-50%	-25%

All the stakeholders have also agreed upon objectives for a number of performance indicators, such as speed compliance and seat-belt usage.

- Priority topics:

- Speed compliance (on state roads and municipal streets),
- o Sober drivers,
- o Fatigued drivers,
- o Seat-belt use,
- o Bicycle helmet use,
- Safe vehicles (passenger cars and heavy vehicles),
- Safe roads (state roads and municipal streets),
- o Rescue, care and rehabilitation,
- Valuation of road safety.

(Source: DG-MOVE, 2005; DG-TREN, 2010; OECD/ITF, 2011; national sources)

Road infrastructure

Table 6: Description of the road categories and their characteristics in Sweden (Source: TiS.PT, 2003; DG-TREN, 2010).

Road type	Speed limits (km/h)
Urban roads	50 (30-50)
Rural roads	70 (70-90)
Motorways	110 (100-120)

Special rules for:

- Light motorcycles (A1): 80 km/h
- Guidelines and strategic plans for infrastructure are available in Sweden.



Transport

Sweden implements mainly proactive infrastructural RS measures.

Sweden has a 0.2 limit for drinkdriving, which is lower than in most other countries. **Table 7:** Obligatory parts of infrastructure management in Sweden and other

 European countries. (Sources: DG-TREN, 2010)

Obligatory parts in Sweden:	European countries with obligation
Safety impact assessment: -	-
Road safety audits: no	50%
Road safety inspections: no	60%
Black spot treatment: -	47% ^v

Recent infrastructural actions have been addressing:

- o Improvement of urban roads for pedestrians and cyclists
- o Median barrier installation
- Section improvements
- o Traffic calming
- EuroRAP protocol

Traffic laws and regulations

Table 8: Description of the regulations in Sweden in relation to the most common regulations in other European countries. (Sources: [1] DG-TREN, 2005; [2] national sources; [3] DG-TREN, 2010; [4] DG-TREN, 2008).

Regulations in Sweden	Most common in Europe (% of countries)
Allowed BAC level: 0.2%;	0.5‰ (60%)
 Novice drivers: 0.2‰; 	0.5‰ and 0.2‰ (both 30%)
 Professional drivers: 0.2‰. 	0.5‰ (30%) [1,2]
Phoning:	
 Hand held: prohibited 	Not allowed (97%) [2,3]
 Hands free: allowed 	-
Use of restraint systems:	
 Driver: obligatory 	Obligatory (all countries)
 Front passenger: obligatory 	Obligatory (all countries)
 Rear passenger: obligatory 	Obligatory (all countries)
 Children: obligatory 	Obligatory on all seats (73%) [2,3]
Helmet wearing:	
 Motor riders: obligatory 	Obligatory (all countries)
 Moped riders: obligatory 	Obligatory (all countries)
 Cyclists: obligatory up to 15 	Recommended (25%") [2,3]
 Mandatory DRL [4]. 	
 A demerit point system is in place [3]. 	



^v Based on data of 18 countries (excl. AT, BE, CH, CZ, FI, FR, HU, IE, MT, NO, RO, SE).
 ^{vi} Based on data of 24 countries (excl. CH, CY, HU, LU, NO, PT).

Enforcement

Table 9: Effectiveness of enforcement effort in Sweden according to an international respondent consensus (scale = 0-10) (Source: DG-TREN, 2010)

Issue	Score for Sweden	Most common in Europe (% of countries)
Speed legislation enforcement	5	7 (35%)
Seat-belt law enforcement	3	7 (43%) ^{vii}
Child restraint law enforcement	2	6 (27% ^{viii})
Helmet legislation enforcement	1	9 (39% ^{ix})

Table 10: Performance of enforcement effort in Sweden according to an international respondent consensus (scale = is good, is improving, needs to do more) (Source: DG-TREN, 2010)

Issue	Score for Sweden	Most common in Europe (% of countries)
Speeding	Is improving	Is improving (50%)
Drink driving	Is improving	Is improving (79%) ^{ix}
Seat belt use	Is improving	Is improving (52% ^x)

Road user education and training

Table 11: Road user education and training in Sweden, compared to the situation in other European countries. (Sources: [1] ROSE25, 2005; [2] ETSC, 2011; [3] national sources)

Education and training in Sweden	Most common in Europe (% of countries)
General education programmes:	
 Primary school: compulsory 	Primary school - compulsory (65% ^{xi})
 Secondary school: compulsory 	Secondary school - compulsory (50% ^{XII}) [1,2]
 Other groups: no information 	-
Driving licences thresholds:	
 Passenger car: 18 years 	18 years (79%)
 Motorised two wheeler: 18 - 21 years 	18 years (low categories) and higher ages for
	faster vehicles (66%)
 Busses and coaches: 21 years 	21 years (76%)
 Lorries and trucks: 21 years 	21 years (79% ^{xiv}) [2,3]

- ^{ix} Based on data of 24 countries (excl. BG, CH, IS, NO, PL and RO).
- ^x Based on data of 25 countries (excl. BG, CH, IS, NO and RO).
- xi Based on data of 26 countries (excl. BG, CH, NO and RO). xii Based on data of 24 countries (excl. BG, CH, MT, NO, RO and SK).
- xiii Based on data of 29 countries (excl. NO).
- xiv Based on data of 28 countries (excl. IE and NO).





Effectiveness of enforcement is much lower in Sweden than the European average but is improving.

As in most other countries, Sweden has compulsory road safety education and similar driving licence thresholds as most other countries.

^{vii} Based on data of 23 countries (excl. DE, DK, IE, IS, LU, NL and UK). ^{viii} Based on data of 22 countries (excl. DE, DK, IE, IS, LU, NL, RO and UK).

• Public campaigns

Table 12: Public campaigns in Sweden, compared to the situation in other European countries. (Sources: SUPREME, 2007; national sources)

Campaigns in Sweden	Most common issues in Europe (% of countries)
Organisation:	
 Swedish Transport Administration; 	
 Local authorities. 	
Main themes:	
 Drink-driving 	Drink-driving (83%)
- Seatbelt	Seat-belt (73%)
 Speed cameras (information) 	Speeding (53%)

• Vehicles and technology (national developments)

Table 13: Developments of vehicles and technology in Sweden, compared to the situation in other European countries. (Sources: TiS.PT, 2003; national sources)

Mandatory technical inspections	Most common in Europe (% of countries)
Passenger cars: between 13 months to 5	Every 12 months (41%)
years, depending on the vehicle type	
Motorcycles: every 24 months	Every 12 months (35%)
Busses or coaches: between 13 months to	Every 12 months (41%)
5 years, depending on the vehicle type	
Lorries or trucks: between 13 months to 5	Every 12 months (41%) ^{xv}
years, depending on the vehicle type	

Mandatory vehicle inspection periods vary in Sweden, depending on the vehicle type.



^{xv} Based on data of 17 countries (excl.BG, CH, CY, CZ, EE, HU,LT, MT, NO, RO, SI, SK).



Road Safety Performance Indicators

Speed

Table 14: Number of speed checks in Sweden versus the European average (Source: ETSC, 2010)

Measure	2006	2008	% change	European average (2008)
Number of tickets/1000 population	21	25	19%	90.8 ^{xvi}

Table 15: Percentage of speed offenders per road type in Sweden compared to the European average (Source: ETSC, 2010)

Road type	2001	2004	Average annual change	European average (year)
Motorways	65%	68%	Not available	Not available
Rural roads	53% (70 km/h limit) 55% (90 km/h limit) 59% (110 km/h limit)	55% 53% 64%	Not available	Not available
Urban roads	55% (50 km/h limit) 28% (70 km/h limit)	53% (2003) 34% (2003)	Not available	Not available

Table 16: Mean speed per road type in Sweden compared to the European average (Source: ETSC, 2010)

Road type	2001	2004	Average annual change	European average (year)
Motorways	106 km/h	106 km/h	Not available	Not available
Rural roads	68 km/h (70 km/h limit) 88 km/h (90 km/h limit) 106 km/h (110 km/h limit)	68 km/h 88 km/h 108 km/h	Not available	Not available
Urban roads	48 km/h (50 km/h limit) 61 km/h (70 km/h limit)	48 km/h* 63 km/h*	Not available	Not available
*2003				

Alcohol

Table 17: Road side surveys for drink-driving in Sweden compared to the European average (Source: ETSC, 2010)

Measure	2006	2008	% change	European average (2008)
Number of tests/1000 population	264	287	12.5%	145.8 ^{xvii}
% tested over the limit	0.9%	0.8%	-11%	Not available

^{xvi} Based on data of 21 countries (excl. BE, CH, DE, EE, IE, IS, MT, PT and UK).

xvii Based on data of 17 countries (excl. BE, BG, CH, CZ, DE, IS, LU, LV, MT, NL, RO, SK and UK.).

The amount of speed tickets per population in Sweden is below the European average.





The share of cars younger than 2 years and between 6 and 10 years is somewhat higher in Sweden than on average in Europe.

Seat-belt and helmet wearing rates are high in Sweden.

• Vehicles

Table 18: State of the vehicle fleet in Sweden compared to the European average (Source: ETSC, 2009)

Vehicle fleet in Sweden	European average
Cars per age group (2009):	Passenger cars (2009) ^{xviii}
– 16% ≤ 2 years,	12% ≤ 2 years,
- 18% 2 to 5 years,	19% 2 to 5 years,
- 31% 6 to 10 years,	27 % 6 to 10 years,
- 35% > 10 year.	42% >10 years
EuroNCAP occupant protection scores of cars (new cars	
sold in 2008):	
- 5 stars: 64%	53%
– 4 stars: 27%	31%
- 3 stars: 2%	7%
- 2 stars: 0%	1%^^^

Protective systems

Table 19: Protective system use in Sweden versus the average in Europe (Source: Vis & Eksler, 2008, national sources; ETSC, 2010; OECD/ITF, 2011)

Use of protective systems in Sweden	European average
Daytime seat belt wearing in cars and vans (2009):	(2007)
 96% front, 	85% front ^{xx} ,
 No information on % driver 	Not available
 No information on % front passenger 	Not available
– 80% rear,	60% rear ^{***} ,
 95% child restraint systems (2005) 	Not available
Helmet use (2009):	
– 95% motor rides,	Not available
 90% moped riders, 	Not available
 27% cyclists 	Not available



- ^{xviii} Based on data of 22 countries (excl. BG, DK, EL, FR, IS, MT, PT and SK).
- xix Based on data of 27 countries (excl. CY, IS and MT).

^{xx} Based on data of 25 countries (excl. AT, EL, IS, LT and RO); data of SK (2008); data of BE, CH, DK, IE, MT, NL (2006); data of HU, IT, NO, PT (2005); data of LU (2003)

^{xxi} Based on data of 22 countries (excl. CY, EL, ES, IS, IT, LT, RO and SK); data of BE, CH, DK, IE, MT, NL (2006); data of HU, NO, PT (2005); data of LU (2003).



Road Safety Outcomes

General positioning



Figure 1: Fatalities per million inhabitants (2010). (Source: CARE, Eurostat).



Figure 2: Development of fatalities per million inhabitants between 1991 and 2010. (Source: CARE, Eurostat).

Sweden is one of the best performing countries; the decline in fatalities per inhabitants is about average.



Transport

The largest share of road fatalities in Sweden are among car occupants, far more than the European average.

The elderly and females are somewhat overrepresented in fatalities in Sweden.

By far the most – and relative much fatal crashes in Sweden happen on rural roads.



Transport mode

Table 20: Reported fatalities by mode of road transport in Sweden compared to the European average of the last year available (Source: CARE, national sources).

Transport mode	2001	2008	Average annual change	% in 2008	European average (2009 ^{xxii})
Pedestrians	87	45	-7%	11%	18%
Car occupants	496	348	-5%	88%	47%
Motorcyclists	38	51	6%	13%	13%
Mopeds	9	11	16%	3%	2%
Cyclists	43	30	-2%	8%	5%
Bus/coach occupants	6	1	104%	0%	<1%
Lorries or truck occupants	20	16	2%	4%	4%

Age, gender and nationality

Table 21: Reported fatalities by age, gender and nationality in Sweden versus the European average of the last year available (Source: CARE, national sources).

Age and gender	2001	2008	Average annual change	% in 2008	European average (2009 ^{VIII})		
Females	149	111	-4%	28%	24%		
0-14 years	9	1	36%	0%	1%		
15 – 17 years	7	5	3%	1%	1%		
18 – 24 years	17	11	-1%	3%	4%		
25 – 49 years	42	37	-0%	9%	7%		
50 – 64 years	26	17	-2%	4%	3%		
65+ years	48	40	2%	10%	7%		
Males	433	286	-6%	72%	75%		
0-14 years	9	5	6%	1%	2%		
15 – 17 years	15	8	-5%	2%	2%		
18 – 24 years	83	53	-5%	13%	13%		
25 – 49 years	145	105	-4%	26%	31%		
50 – 64 years	82	53	-5%	13%	12%		
65+ years	99	62	-6%	16%	12%		
Nationality of driver or rider killed							
Non-national drivers	n.a.	8	n.a.	2%	Not available		
Non-national riders	n.a.	1	n.a.	0%	Not available		

Location

Table 22: Reported fatalities by location in Sweden compared to the European average of the last year available (Source: CARE, national sources). Junctions are part of built-up areas and rural areas.

Location	2001	2008	Average annual change	% in 2008	European average (2009 ^{VIII})
Built-up areas	180	99	-7%	25%	33%
Rural areas	403	286	-5%	72%	49%
Motorways	-	-	-	-	5%
Junctions	155	97	-5%	24%	12%

^{xxii} Based on data of 28 countries (excl. NO, LT); data of FR, IE, MT, SE (2008).

Lighting and weather conditions

Table 23: Reported fatalities by lighting and weather conditions in Sweden compared to the European average of the last year available (Source: CARE, national sources).

Conditions	2001	2008	Average annual change	% in 2008	European average (2009 ^{xxiii})
Lighting conditions					
During daylight	339	241	-5%	61%	55%
During nighttime	207	112	-7%	28%	39%
Weather condition					
While raining	48	42	2%	11%	10%

Single vehicle crashes

Table 24: Reported fatalities by type in Sweden compared to the European average of the last year available (Source: CARE, national sources).

Crash type	2001	2008	Average annual change	% in 2008	European average (2009 ^{xxiv})
Single vehicle crash	280	197	-5%	50%	40%

Under-reporting of casualties

- Fatalities: 100% (2008). This amount is suspected since adequate alternative registration systems are missing for a check.
- Hospitalised: 90% reported.

(Source: CARE, national sources)



^{xxiii} Based on 25 countries (excl. IE, IT, LT, NO, SI); data of AT, BE, DK, EE, FI, FR, MT, SE (2008). ^{xxiv} Based on 27 countries (excl. IE, LT, NO); data of AT, BE, DK, EE, FI, FR, MT, SE (2008).



• Risk figures







Figure 4: Fatalities by number of inhabitants in Sweden in 2008 (Sources: CARE, OECD/ITF, 2011).

Motorcyclists, moped riders, youngsters and the elderly are the highest risk groups in Sweden.





Social Cost

- Total costs of road crashes: 3.25 billion Euros (2006)
- Percentage of GDP: 1%

Table 25: Cost (in million Euro) per injury type in Sweden versus the European average (Source: Bickel et al., 2006).

Injury type	Value	European average ^{xxv}
Fatal	1.19	1.28
Hospitalised	0.27	0.18
Slightly injured	0.02	0.02





^{xxv} Based on data of 20 countries (excl. BG, DE, FI, FR, HU, IS, LT, NO, RO and SK).





Sweden was the first country that took Vision Zero as the basis for road safety policy. Recently, Sweden also adopted a management-byobjectives approach.



Synthesis

Safety position

- Sweden is one of the best safety-performing European countries.

• Scope of problem

- The largest share of road fatalities in Sweden are among car occupants, far more than the European average. Motorcyclists and moped riders are the highest risk groups in Sweden.
- The elderly and females are somewhat overrepresented in fatalities in Sweden. Youngsters and the elderly are the highest risk groups in Sweden.
- By far the most and relative much -fatal crashes in Sweden happen on rural roads.
- Relative many fatal crashes in Sweden happen during daylight and as single vehicle crash.
- The amount of speed tickets per population in Sweden is below the European average. In addition, speeding appears to be one of the major road safety problems in Sweden with more than 50% speed limit offenders on most roads.

Recent progress

- Over the last two decades the number of fatalities per population in Sweden has decreased by 67%.
- Over the last decade, in terms of average annual change in fatalities, a decrease was observed in pedestrian, car occupant and cyclist fatalities.
- Effectiveness of enforcement is much lower in Sweden than the European average but is improving. For instance, the amount of drink-driving tests per population increased in Sweden, and the percentage of offenders decreased.

Remarkable road safety policy issues

- The most remarkable road safety policy issue in Sweden is Vision Zero, a strategic approach towards a safe system where no one is at risk of being fatally or severely injured while using road transport.
- Sweden is also one of the first countries which adopted a management-by-objective approach to road safety.
- Sweden implements mainly proactive infrastructural RS measures.
- Sweden has a 0.2 limit for drink-driving, which is lower than in most other countries.
- Mandatory vehicle inspection periods vary in Sweden, depending on the vehicle type.



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