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Comparative analysis of junction safety in Europe

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Overview (1/2)

- Objective: macroscopic analysis of road safety related parameters in junctions in the European road networks
- Using data from:
  - the EU CARE database with disaggregate data on road accidents
  - combined with data from other international data files (e.g. IRTAD, as well as national sources).

Overview (2/2)

- Road accident data on junctions
  - for the period 1997-2006 and
  - 16 EU countries
- are correlated with basic safety parameters like
  - Vehicle type,
  - Prevailing weather and lighting conditions and
  - Socioeconomic characteristics.
- The data on which this analysis is based, along with much of the analysis, is obtained through the SAFETY-NET project and the European Road Safety Observatory (ERSO)

Overall trends

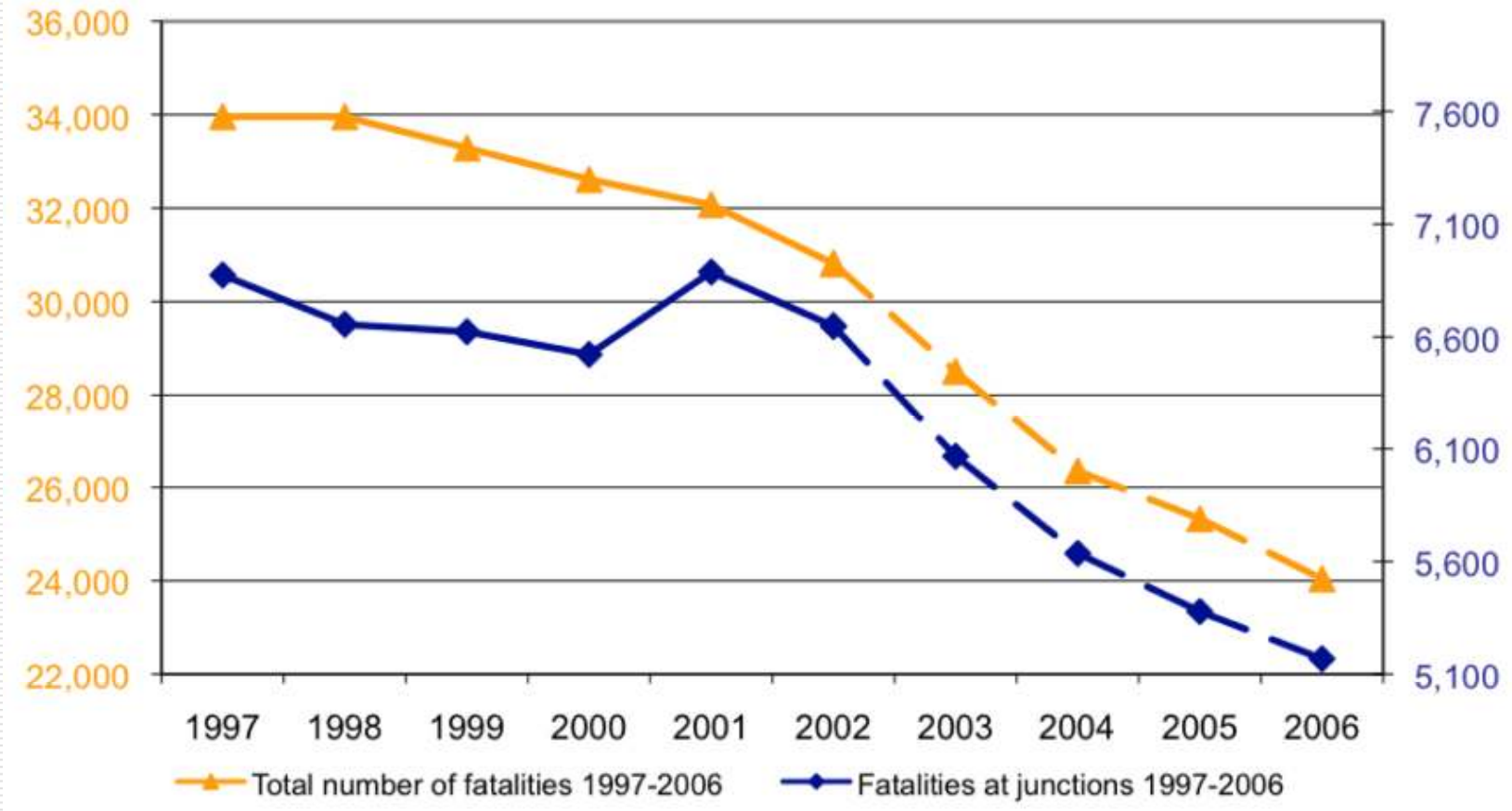
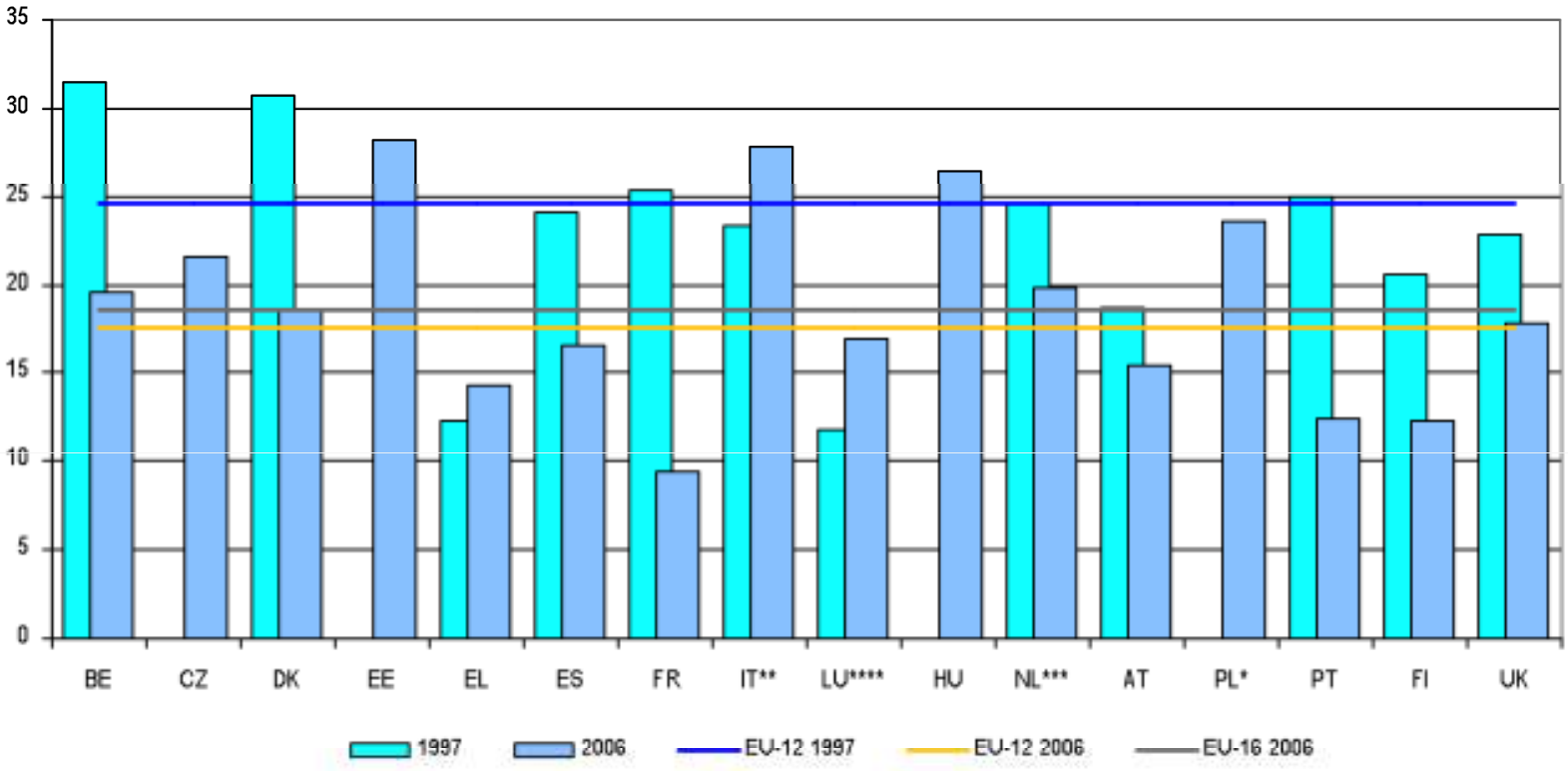


Figure 1. Overall trends in number of fatalities (1997-2006)

Fatalities at junctions (per population)



* Data from 2005 (UK = GB 2006 + NI 2005)
** Data from 2004
*** Data from 2003
**** Data from 2002

Source: CARE Database / EC
Date of query: July 2008

Figure 2: Fatalities at junctions per million inhabitants in the EU-12/16, 1997 versus 2006

Number of fatalities by type of junction by country, 2006

	Not at junction	At junction					Not defined	Total
		Cross road	Level crossing	T or Y junction	Other junction	Round about		
BE	862	0	0	0	194	13	0	1.069
CZ	838	89	33	99	0	0	4	1.063
DK	205	51	2	1	43	4	0	306
EE	146	11	0	15	11	1	20	204
EL	1.498	0	0	0	0	0	0	1.657
ES	3.376	259	0	285	115	69	0	4.104
FR	4.116	243	24	150	123	53	0	4.709
IE***	0	16	0	48	5	4	264	337
IT**	3.984	774	7	0	789	71	0	5.625
LU****	54	6	0	2	0	0	0	62
HU	1.037	234	20	0	9	3	0	1.303
MT	0	0	0	0	0	0	11	11
NL***	704	161	29	122	0	9	0	1.028
AT	402	81	18	26	0	3	200	730
PL*	4.546	892	0	0	0	6	0	5.444
PT	620	30	7	80	2	13	218	969
FI	264	0	0	0	65	0	7	336
SE	9	83	0	0	11	5	337	445
UK*	2.172	169	0	655	243	68	0	3.307
EU-19	24.748	3.087	137	1.476	1.610	322	1.060	32.709
% by junction	75,9%	9,5%	0,4%	4,5%	4,9%	1,0%	3,3%	100,0%

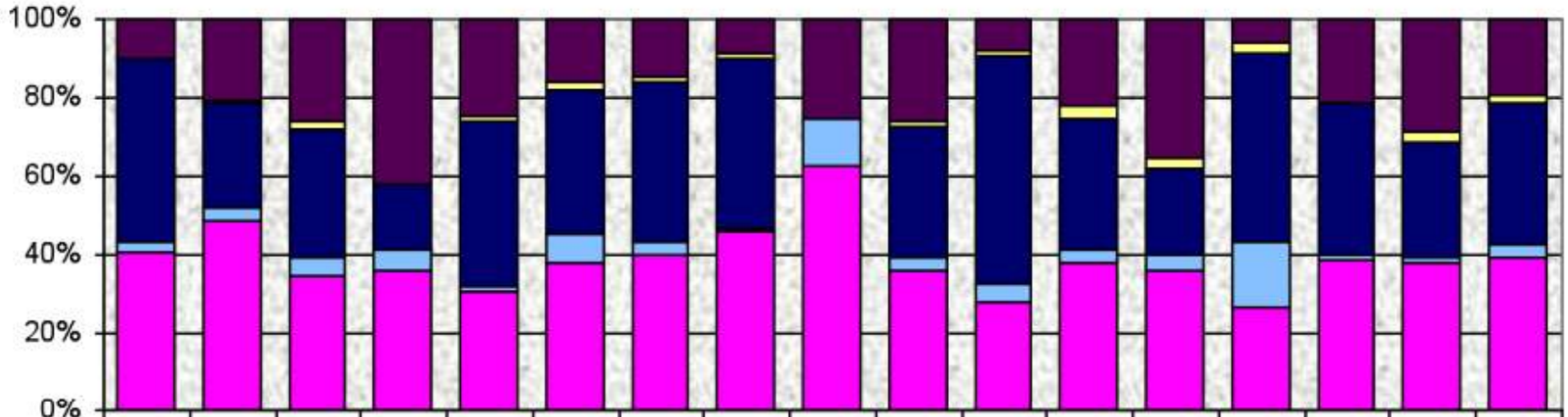
* Data 2005 (UK = GB(2006) + NI(2005))
** Data 2004
*** Data 2003
**** Data 2002

Source: CARE Database / EC
Date of query: July 2008

Classification by area types

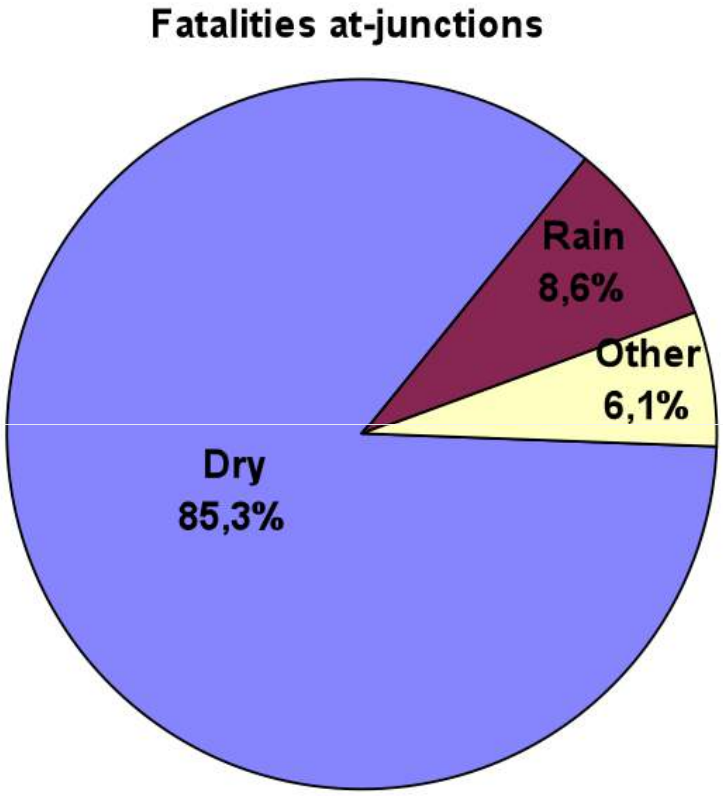
	Fatalities at junctions	
	inside urban areas	outside urban areas
BE	35.0%	65.0%
CZ	56.8%	43.2%
DK	47.5%	52.5%
EE	44.7%	55.3%
EL	75.5%	24.5%
ES	35.3%	64.7%
FR	50.4%	49.6%
IT	50.5%	49.5%
LU	75.0%	25.0%
HU	66.9%	33.1%
NL	51.9%	48.1%
AT	56.3%	43.8%
PL	65.9%	34.1%
PT	62.6%	37.4%
FI	55.4%	44.6%
UK	64.1%	35.9%
EU-12	**51.9%**	**48.1%**

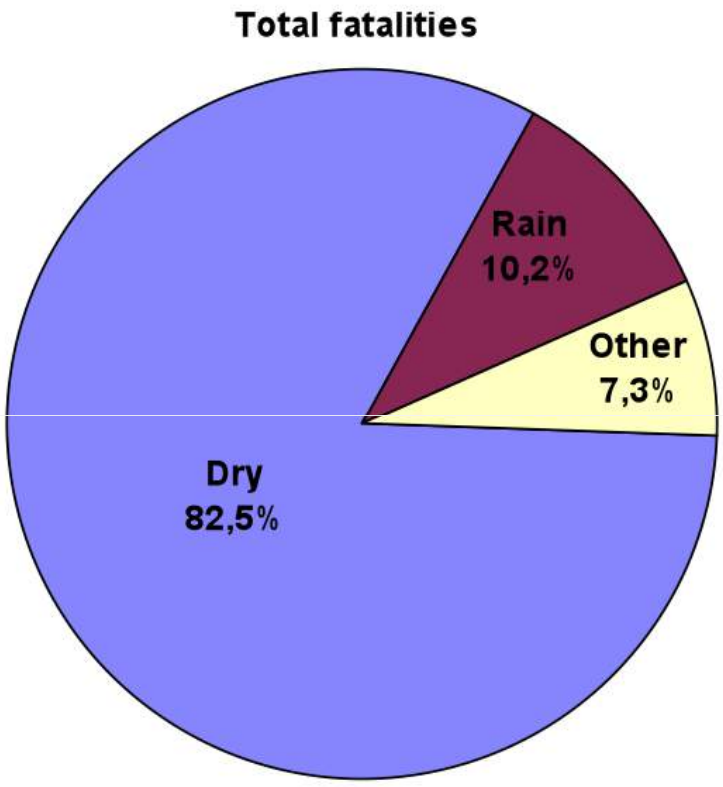
Classification by mode of transport



	BE	CZ	DK	EE	EL	ES	FR	IT**	LU****	HU	NL***	AT	PL*	PT	FI	UK*	EU-16
Pedestrian	9,7%	20,7%	25,7%	41,7%	24,5%	16,2%	14,8%	8,8%	25,0%	26,3%	8,0%	21,9%	35,5%	6,1%	21,5%	29,0%	19,5%
Others	0,5%	0,9%	2,0%	0,0%	1,3%	1,5%	1,2%	1,4%	0,0%	0,8%	1,5%	3,1%	2,4%	2,6%	0,0%	2,1%	1,6%
Two-wheelers	46,6%	26,6%	32,7%	16,7%	42,1%	36,7%	41,0%	42,9%	0,0%	33,8%	57,7%	33,6%	22,2%	47,8%	38,5%	29,3%	36,3%
Lorries	2,4%	3,2%	5,0%	5,6%	1,3%	7,6%	2,9%	0,8%	12,5%	3,0%	4,9%	3,1%	3,6%	16,5%	1,5%	1,5%	3,1%
Car / taxi	40,8%	48,6%	34,7%	36,1%	30,8%	38,0%	40,1%	46,0%	62,5%	36,1%	27,8%	38,3%	36,3%	27,0%	38,5%	38,1%	39,4%

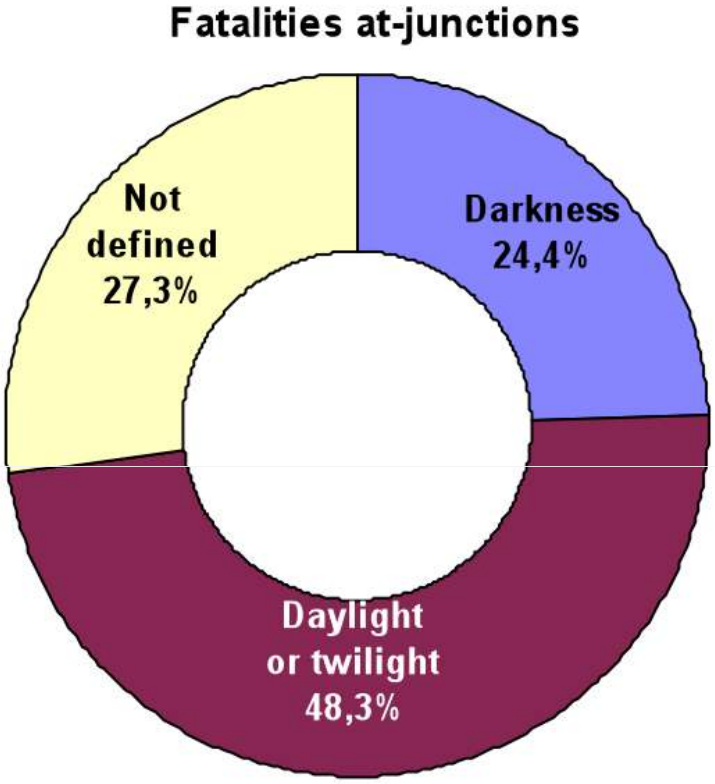
Classification by weather conditions

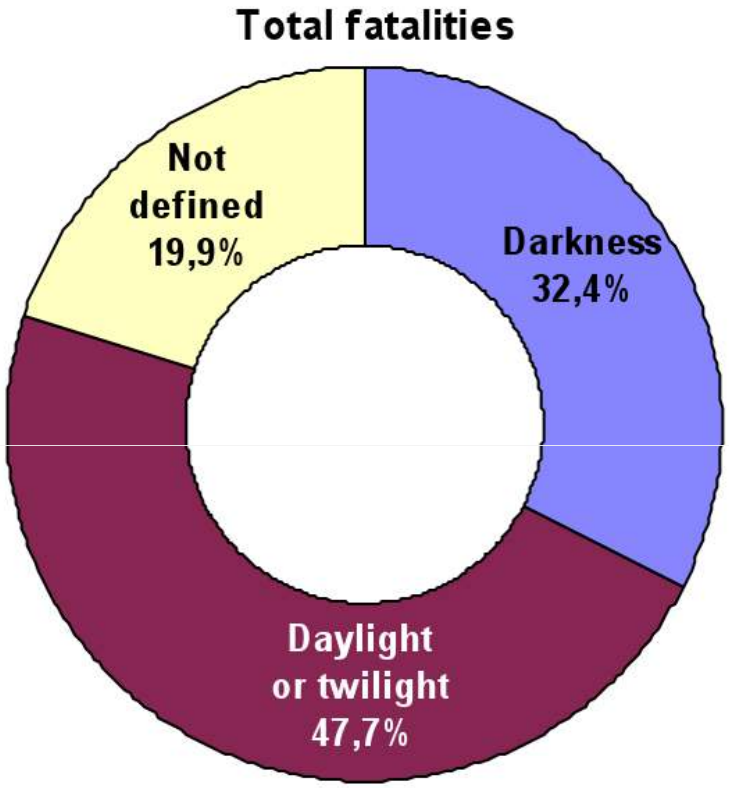




Source: CARE Database / EC
Date of query: July 2008

Classification by lighting conditions





Source: CARE Database / EC
Date of query: July 2008

Concluding remarks (1/2)

- Fatal accidents at junctions in 2006: 47% at crossroads and 22% at T or Y intersections, while only 5% occurred at roundabouts.
- Fatalities at junctions: ~40% are car or taxi occupants, followed by 35% two-wheeler users and almost 20% pedestrians.
  - More than half of the fatalities at junctions in the Netherlands are two-wheeler users, a higher proportion than the other 15 countries.
  - In Portugal the number of fatalities of lorry occupants at junctions is more than five times the average.

Concluding remarks (2/2)

- Accident involvement of female drivers at junctions is considerably lower than the involvement of male drivers (86% of all drivers) and male pedestrians (60% of all pedestrians), possibly due to a higher exposure of male drivers.
- Almost a quarter of the fatalities at junctions occurred during the night, somewhat less than the proportion of fatalities occurring during the night for all accidents (almost one third of all fatalities).