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2.6 Injuries and Accidents

2.6.1 Road Traffic Accidents

The situation of road traffic accidents in Thailand can be categorized by the time period as follows:

The First Period, before 1986: Economic Recession. The number of accidents was not so high during this period. Each year, there were about 18,000-25,000 accidents with about 2,000-4,000 deaths or a mortality rate of 3.9-5.7 per 100,000 population. And there were approximately 8,000-9,000 injury cases each year, or an injury rate of 17.2 per 100,000 population.

The Second Period, 1987–1992: Economic Recovery. During this period there were annually about 40,000–60,000 accidents, nearly two times higher than during the previous period, with about 8,000–9,000 deaths or a mortality rate of 7.4–16.0 per 100,000 population. It was noteworthy that casualties had increased almost threefold. The number of injuries had increased to 20,000–25,000 each year or an injury rate of 24.0–43.9 per 100,000 population, a nearly twofold rise.

The Third Period, 1993–1996: Bubble Economy. Each year there were 80,000–100,000 accidents, a twofold increase, with about 14,000–16,000 deaths or a mortality rate of 16.3–28.2 per 100,000 population, a nearly twofold increase. And there were about 40,000–50,000 injuries each year or an injury rate of 43.4–85.6 per 100,000 population, a twofold increase.

The Fourth Period, 1997–2001: Economic Crisis. Each year there were 70,000–80,000 accidents with 12,000 deaths or a mortality rate of 20.0-22.7 per 100,000 population. And each year there were 48,000–52,000 injuries or an injury rate of 77.5–86.9 per 100,000 population. This was a declining trend compared with the previous period.

The Fifth Period, 2002 onward: Economic Recovery. Each year there were approximately 90,000–125,000 accidents with 13,000–14,000 deaths or a mortality rate of 21–22.26 per 100,000 population. And there were approximately 70,000–95,000 injuries a year or an injury rate of 110.8–151.72 per 100,000 population (Figure 5.42).

Primarily, traffic accidents are caused by humans (69.6) and a small proportion by the vehicles and environment (1.2% and 0.6%, respectively, Figure 5.44). By cause category of road traffic accidents, the most commonly found category is speeding (17.3%), followed by cutting across the path of another vehicle in short distance, illegal overtaking, violating traffic lights rules, and following another vehicle too closely (Figure 5.45).

It is noteworthy that the numbers of accidents, injuries, and deaths from accident are higher compared to those in the previous year probably as a result of economic expansion, grassroots-level economic stimulus measures with a low-interest monetary policy and tax measures enhancing the people's purchasing powers. With such higher purchasing powers, the volumes of auto sales have been rising after the economic crisis ended. Motor vehicles have become the fifth element of

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livelihood. But the increase in the number of automobiles has resulted in more road traffic accidents as evidenced by a study on the relationship between the number of accidents and the auto sales records. It has been found that the increase or decrease in auto sales is positively associated with the number of road accidents (r = 0.818; Table 5.26).

Besides, a study of Yordphol Tanaboriboon and colleagues (2006) revealed that the number of deaths from road traffic accidents tends to be in accordance with the economic situation and the level of fuel used in the country¹³ (Figure 5.46).

This kind of situation caused a direct loss of property worth 3,643.7 million baht in 2006 (Table 5.24). But actually there are other incalculable losses including life losses, medical expenses, disabilities, etc. According to the 2000-2002 study on economic losses from road traffic accidents, the economic loss is as high as 106,994 to 115,337 million baht or 2-2.3% of gross domestic product. ^{14,15}

¹³ Yordphol Tanaboriboon et al. Situation of Road Traffic Accidents in Thailand, 2006.

¹⁴ Centre for Development Policy Studies, Faculty of Economics, Chulalongkorn University. Loss Due to Road Traffic Accidents in Thailand, 2005.

¹⁵ Centre of Traffic and Transport Research and Development, King Mongkut's University of Technology at Thonburi. A Project on the Analysis of Causes of Road Traffic Accidents, 2002.

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Figure 5.42 Death and injury rates from road traffic accidents, Thailand, 1984–2006



Source: Police Information System Centre, Royal Thai Police.

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Vaaa		N	Dea	ths	Inju	ries	Deserved	
Y ear	Population	No. of accidents (cases)	No. (persons)	Rate per 100,000	No. (persons)	Rate per 100,000	damages (baht)	
				pop.		pop.		
1984	50,583,105	18,334	2,904	5.74	8,770	17.34	56,265,453	
1985	51,795,651	18,955	2,788	5.38	8,901	17.18	60,645,504	
1986	52,696,204	24,432	2,086	3.94	9,242	17.45	55,061,650	
1987	53,873,172	25,639	3,991	7.41	12,947	24.03	129,539,616	
1988	54,960,917	43,439	8,651	15.74	22,370	40.70	329,527,667	
1989	55,888,393	43,557	8,967	16.04	23,083	41.30	439,028,000	
1990	56,303,273	43,646	7,997	14.20	23,161	41.14	477,603,000	
1991	56,961,030	49,625	8,608	15.11	24,995	43.88	639,616,000	
1992	57,788,965	61,329	8,184	14.16	20,702	35.82	607,793,000	
1993	58,336,072	84,892	9,496	16.28	25,330	43.42	1,021,464,000	
1994	59,095,419	102,610	15,176	25.68	43,541	73.68	1,408,216,000	
1995	59,277,900	94,362	16,727	28.22	50,718	85.56	1,631,117,000	
1996	60,116,182	88,556	14,405	23.96	50,044	83.24	1,561,708,187	
1997	60,816,227	82,386	13,836	22.75	48,711	80.09	1,571,786,469	
1998	61,155,888	73,725	12,234	20.00	52,538	85.91	1,378,673,826	
1999	61,577,827	67,800	12,040	19.55	47,770	77.58	1,345,985,811	
2000	61,770,259	73,737	11,988	19.41	53,111	85.98	1,242,205,524	
2001	62,093,855	77,616	11,652	18.76	53,960	86.90	1,240,801,187	
2002	62,554,482	91,623	13,116	20.97	69,313	110.80	1,494,936,815	
2003	62,939,819	107,565	14,012	22.26	79,692	126.62	1,750,964,040	
2004	62,526,693	124,530	13,766	22.01	94,164	150.60	1,623,081,112	
2005	62,195,839	122,040	12,858	20.67	94,364	151.72	3,238,226,110	
2006	62,623,416	110,686	12,693	20.27	83,290	133.00	3,643,747,912	

Table 5.24 Numbers and rates of accidental deaths and injuries and estimated damages, 1984-2006

Source: Police Information System Centre, Royal Thai Police.

 Table 5.25
 Number and percentage of deaths from road traffic accidents by age group, 1996-2006

06	Percent	1.3	1.4	3.6	13.5	13.5	11.9	9.5	9.2	8.5	7.2	6.2	4.0	3.4	2.7	2.2	1.2	0.4	0.3
20	No.	135	149	375	1,408	1,405	1,244	986	956	886	745	648	421	352	277	233	125	45	31
15	Percent	1.5	1.4	3.3	13.9	14.5	12.1	10.0	9.2	8.1	6.9	5.6	4.0	3.5	2.4	1.8	1.1	0.5	0.2
200	No. 1	158	151	359	1,534	1,598	1,334	1,103	1,016	891	759	614	449	395	272	201	123	52	32
4	Percent	1.3	1.5	3.4	14.7	14.7	12.4	10.0	8.9	7.7	6.8	5.3	4.1	3.4	2.4	1.9	1.0	0.3	0.2
200	No.	154	183	425	1,811	1,819	1,530	1,233	1,094	950	832	654	510	422	295	232	126	43	27
e	ercent	1.3	1.5	2.8	14.3	15.9	12.7	10.0	9.4	8.0	6.6	5.1	3.8	2.9	2.5	1.8	0.9	0.3	0.2
200	No. I	164	196	363	1,829	2,040	1,623	1,279	1,198	1,030	847	651	493	371	316	225	116	43	27
2	Percent	1.5	1.6	3.2	13.9	14.9	12.6	10.5	9.1	8.1	6.7	5.2	3.6	3.0	2.7	1.7	1.0	0.4	0.3
200	No. I	205	214	428	1,869	2,003	1,686	1,415	1,225	1,086	903	697	488	408	355	222	139	56	39
2001	Percent	1.9	2.0	2.7	12.5	14.0	12.2	11.1	10.1	8.2	7.0	5.0	3.6	3.5	2.6	1.6	1.0	0.5	0.5
	No. 1	243	256	356	1,623	1,810	1,575	1,437	1,306	1,063	912	650	463	450	341	204	124	65	60
0	Percent	2.2	2.2	2.9	12.5	14.1	12.4	11.0	9.3	8.3	6.7	4.8	3.8	3.4	2.7	1.8	1.0	0.5	0.3
200	No.]	287	287	387	1,647	1,861	1,641	1,452	1,221	1,092	884	638	507	448	352	241	135	59	46
66	Percent	2.2	2.2	2.6	13.0	14.6	12.6	11.1	9.6	7.9	6.8	4.8	3.8	3.4	2.4	1.4	0.7	0.5	0.2
199	No.]	254	261	300	1,501	1,702	1,470	1,286	1,113	914	785	561	444	392	283	168	83	56	26
8	Percent	2.6	1.8	3.0	13.5	14.8	13.2	10.4	9.3	8.3	6.1	4.1	4.0	3.6	2.6	1.5	0.8	0.3	0.1
199	No.	210	146	237	1,075	1,184	1,051	830	742	665	488	329	320	287	205	115	66	22	10
76	Percent	1.3	1.8	3.0	15.8	17.3	13.5	10.4	9.1	7.0	5.8	3.7	3.6	2.9	1.6	1.2	0.5	0.3	0.1
199	No.	175	227	392	2,052	2,236	1,743	1,343	1,177	904	750	484	468	371	209	157	67	37	21
96	Percent	1.7	2.3	3.6	16.6	17.8	13.5	10.3	8.4	6.1	5.2	3.6	3.3	2.5	1.8	1.0	0.6	0.2	0.1
19	No.	291	389	599	2,786	2,995	2,262	1,733	1,410	1,017	870	594	546	421	304	162	112	39	26
Age	group (years)	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 -39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	62 - 69	70 - 74	75 - 79	80 - 84	35 and over

Source: Bureau of Policy and Stategy, Office of the Permanent Secretary, Ministry of Public Health.

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Figure 5.43 Proportion of deaths from road traffic accidents by sex, 1996-2006

Source: Bureau of Policy and Strategy, Office of The Permanent Secretary, Ministry of Public Health.Figure 5.44 Major causes of road traffic accident, 2006











Source: Royal Thai Police.



	Number of cosidents ⁽¹⁾	Automobile sales								
Year	(cases)	Number ⁽²⁾ (units)	Increase from previous year							
1990	43,646	304,062	+46%							
1991	48,625	268,560	-11.7%							
1992	61,329	362,987	+35.2%							
1993	84,892	456,461	+25.8%							
1994	102,610	485,105	+6.4%							
1995	94,362	571,580	+17.7%							
1996	88,556	589,126	+3.1%							
1997	82,386	363,156	-38.4%							
1998	73,725	144,065	-60.3%							
1999	67,800	218,330	+51.5%							
2000	73,737	262,189	+20.1%							
2001	77,616	289,000	+10.2%							
2002	91,623	410,000	+41.9%							
2003	107,565	533,176	+30.0%							
2004	124,530	626,026	+17.4%							
2005	122,040	703,432	+12.4%							
2006	110,686	682,500	-3.1%							
Correlation coefficient		= 0.818								

 Table 5.26
 Correlation between the number of accidents and overall automobile sales, 1990-2006

Sources: ⁽¹⁾ Royal Thai Police.

(2) Toyota Motors (Thailand) Co., Ltd.

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Source: Yordphol Tanaboriboon el al. Situation of Road Traffic Accidents in Thailand, 2006.

Regarding the type of vehicles with accidents, it was found that motorcycles, pickup trucks, vans, private passenger cars, and bicycles/tricycles caused the highest number of injuries and deaths than other types of vehicles. But in terms of severity of accidents, the types of vehicles that caused the highest number of deaths during the three-year period (2001-2003) were private passenger cars, pickups/vans and motorcycles (Table 5.27).

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Table 5.27 Injuries and deaths from road traffic accidents by type of vehicles, 1997-2003

2003	Death ate (%)	6.0	7.5	7.9		10.2	9.6	8.7		9.7	6.5	55.4	5.1	5.4	7.6	
	Deaths	108	3,144	34		06	359	70		7	13	11	20	10	3,866	
	Injuries	1,812	42,048	431		886	3,743	805		72	199	204	390	184	50,774	
2002	Death rate (%)	5.5	7.7	7.4		10.5	8.6	6.0		6.0	7.4	3.7	4.7	7.2	7.3	
	Deaths	127	3,525	36		107	403	58		Q	20	15	20	14	4,330	
	Injuries	2,296	48,740	488		1,020	4,668	971		83	270	406	428	195	59,565	
	Death rate (%)	6.1	7.3	8.4		10.2	8.4	6.8		8.6	4.8	8.2	5.2	4.1	7.3	
2001	Deaths	124	3,045	36		91	335	63		9	0	19	19	ω	3,755	
	Injuries	2,037	41,817	429		891	4,008	923		70	186	232	367	193	51,153	
	Death rate (%)	0.8	3.7	3.6		3.8	4.7	5.0		4.2	2.6	2.6	5.3	4.5	3.4	
2000	Deaths	118	3,129	42		102	402	76		0	19	25	22	12	3,956	
	Injuries	14,450	84,378	1,160		2,700	8,584	1,512		215	738	966	413	269	15,385	
	Death rate (%)	2.1	3.0	2.5		5.5	4.3	4.1		2.9	3.2	2.6	5.8	1.5	3.2	
1999	Deaths	45	1,274	10		58	221	28		£	13	10	10	ო	1,677	
	Injuries	2,183	41,947	407		1,064	5,172	677		172	411	385	173	201	52,792	
	Death rate (%)	2.3	3.4	5.5		7.2	4.7	5.6		2.2	2.5	2.9	2.2	6.3	3.6	
1998	Deaths	43	1,469	22		84	251	36		ო	ω	11	ო	14	1,944	
	Injuries	1,888	43,274	401		1,169	5,373	647		137	317	377	139	223	53,945	
	Death rate (%)	2.5	3.5	6.1		6.0	5.2	5.0		1.4	4.6	1.4	8.8	6.8	3.8	
1997	Deaths	45	1,707	24		65	348	43		CJ	20	0	13	14	2,290	
	Injuries	1,817	48,440	393		1,075	6,628	856		140	437	627	147	206	60,766	
	type of vehicles	Bicycles and tricycles	Motorcycles	Three-wheel/motor	vehicles	Private passenger cars	Pickups/vans	Trucks	(6-wheel or more)	Trailers	Transport pickups	Buses	Agricultural trucks	Farm trucks (E-taen)	Total	

Source: Report on Injury Surveillance in Thailand. Bureau of Epidemiology, Department of Disease Control.

Data for 2001-2003 include only severely injured cases (injuries/deaths before reaching hospital, deaths in emergency rooms, and injured cases admitted/hospitalized for observation or as inpatients). Note:

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Even though the Royal Decree on Anti-crash Helmets has been enforced in all provinces throughout the country since 1 January 1996, the data from the injury surveillance system have shown that motorcycle riders/passengers who do not wear helmets as well as motor vehicle drivers/passengers who do not use safety belts are 80% more likely to have serious injuries from traffic accidents than those who do so (Figure 5.47); and nearly half of those motorcycle accident victims with severe injuries have drunk alcohol before riding (Figure 5.48).

Figure 5.47 Proportion of serious injuries from traffic accidents among riders/drivers and passengers with and without safetybelt/helmet use, 2000-2005



Source: Report on Injury Surveillance in Thailand. Bureau of Epidemiology, Department of Disease Control.



Figure 5.48 Proportion of severe injuries among motorcycle riders with and without alcohol drinking, 2000-2005



Source: Report on Injury Surveillance in Thailand. Bureau of Epidemiology, Department of Disease Control.

2.6.2 Water-Related Accidents: Drowning and Falling into the Water

Water-related accidents are an important problem that has not received adequate attention as expected, compared to the problem of road traffic accidents even through the drowning rate in Thai children is 5 to 15 times higher than that in developed countries.¹⁶ During 1977-2006, the rate of deaths from drowning and falling into water was 4.4-7.5 cases per 100,000 population (Figure 5.49). An epidemiological analysis of water-related accidents in Thailand during the period 1996-2006 revealed that, among those who died from drowning, males were 3 times more likely than females to become the victims; **the highest number being among school-age children** (Figure 5.50). This might result from their lack of experience in playing safely in the water and thus being less capable of helping themselves.

¹⁶ Adisak Plitponkarnpim. Child Safety Promotion and Injury Prevention Research Centre of Ramathibodi Hospital, 2006.

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Figure 5.49 Rate of deaths from accidental drowning in Thailand, 1977-2006

Source: Bureau of Policy and Strategy, Ministry of Public Health.



Figure 5.50 Percentage of reported deaths from accidental drowning by age and gender in Thailand, 1996-2006





Source: Mortality Report. Bureau of Policy and Strategy, Ministry of Public Health.

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