

Road Traffic Injuries in Thailand: Current Situation

Witaya Chadbunchachai MD*, Weraphan Suphanchaimaj MD**,
Anuchar Settasatien MD**, Thanapong Jinwong MD****

* WHO Collaborating Center for Injury Prevention and Safety Promotion, Khon Kaen Regional Hospital,
Khon Kaen, Thailand

** Khon Kaen Regional Hospital, Khon Kaen, Thailand

*** Udonthani Regional Hospital, Khon Kaen, Thailand

**** Department of Disease control, Ministry of Public Health, Khon Kaen, Thailand

Background: Road traffic injuries are a major public health problem in Thailand. The number of mortalities, morbidities and disabilities are huge, greatly affecting the individual victims, the families, society and the nation as a whole.

Objective: To study the current situation regarding traffic injuries in Thailand.

Material and Method: Retrospective study from multiple national data sources

Results: For over ten years, the annual death toll due to road accidents has been more than ten thousand Thais. The situation remains critical with a higher mortality and morbidity than many other low or middle income countries. Two-thirds of the victims were males: 80% were under 40 years of age. Most (80%) of the injured and dead were motorcyclists. The large number of traffic crashes, injuries, disabilities and deaths resulted in more than 168 thousand million Baht in economic losses in 2002. These losses are trending to increase.

Conclusion: Traffic injuries are a persistent major public health concern primarily because of a lack of adherence to the use of safety restraints and obedience of traffic laws. The nation must not hesitate to increase efforts to address these problems, as they are costing life and limb of Thais every hour of every day, as well as adding a huge economic burden.

Keywords: Road Traffic Injury, Current Situation, Risk behaviour

J Med Assoc Thai 2012; 95 (Suppl.): S274-S281

Full text. e-Journal: <http://jmat.mat.or.th>

Road traffic injuries (RTI's) are a worldwide public health problem due to their being a major cause of morbidity and death. An estimated 1.2 million people die and more than 10 million are disabled in traffic accidents each year. The cost is both economic and psychosocial, as it affects individuals, families, communities and whole societies. The cost includes a large burden to all levels of emergency medical services, and has been estimated at more than 1-2 percent of Gross National Product (GNP). In developing countries, as their economies grows, the number of RTIs tends to increase. If the national government is slow to effectively address this problem, great economic and human losses will occur and it is frequently the poor who, lacking travel options, risk their lives as pedestrians and cyclists on unsafe and/or busy roads.

In 2004, Lee Jong-wook, the previous WHO

Director General, said that "Every day thousands of people are killed and injured on our roads. Men, women or children walking, biking or riding to school or work, playing in the streets or setting out on long trips, will never return home, leaving behind shattered families and communities. Millions of people each year will spend long weeks in hospital after severe crashes and many will never be able to live, work or play as they used to do. Current efforts to address road safety are minimal in comparison to this growing human suffering"⁽¹⁾.

Objective

To study the situation of traffic injuries in Thailand. The information from a retrospective study from multiple national data sources was widely distributed in order to raise awareness among the authorities as well as all stakeholders.

Material and Method

A retrospective review of several national data sources was conducted, including (a) WHO World report on road traffic injury prevention (2004)⁽¹⁾ (b) Strategic Map for Decade of Action 2011-2020 (2011),

Correspondence to:

Chadbunchachai W, WHO Collaborating Center for Injury Prevention and Safety Promotion, Khon Kaen Regional Hospital, Khon Kaen University, 40002, Thailand

Phone: 081-871-6132

E-mail: buncha96@yahoo.com

Directing Center for Road Safety⁽²⁾ (c) 13 Years Anniversary Trauma Registry 1997-2008, Trauma and Critical Center, Khon Kaen Regional Hospital⁽³⁾ (d) Study of Traffic Accident Costs in Thailand (2006), Faculty of Engineering, Prince of Songkhla University⁽⁴⁾ (e) Global status report on road safety: Time for Action (WHO)⁽⁵⁾ and (f) Thailand Road Traffic Injury Statistics 2009, Thai Road Foundation⁽⁶⁾.

Results

Part 1: Current situation regarding traffic injuries in Thailand

Several thousand Thai people are killed on the road every year. In terms of death and severe injury, the situation is critical and has persisted for more than 10 years. Several indicator such as death rate per 100,000 population, death rate per 10,000 vehicles, death rate per 100 million GDP, death rate per million liters of petrol used, rate per 100 million car-km traveled, and rate per high way distance all confirmed that the situation is critical^(2,6).

Age distribution

Traffic injuries most affect vulnerable groups of road users (*viz.*, motorcycle riders, bicyclists, pedestrians) who are frequently also among the underprivileged—because it is the poor in Thailand who are limited to these means of road transportation. 80% are under 40 year of age. More than half of the people killed in traffic accidents are children and young adults (between 15 and 45). The latter group are also the most likely segment of the population to be actively raising children, so the socioeconomic impact is multiplied⁽³⁾.

The percentage of injuries among 15-30 year-olds was 35-40 % of all injuries and has been trend to decrease. By comparison, injuries among those over 45 are trending to increase⁽³⁾.

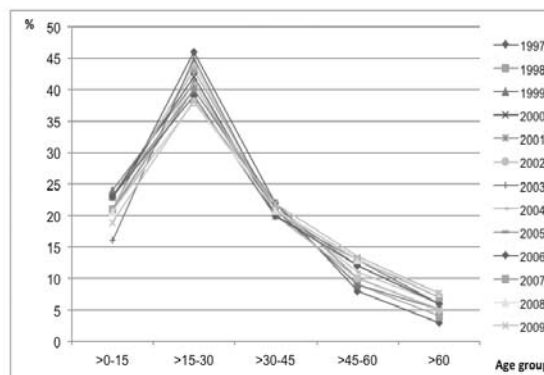
The most commonly injured age group was the 15-30 year-olds (with 32-47% of all injuries) albeit there has been a downward trend⁽³⁾ (Fig. 1, Fig. 2).

Sex distribution

The number and proportion of injuries and fatalities among males were two times greater than females⁽³⁾ (Fig. 3).

Occupation of the victims

Laborers are the group most commonly involved in traffic accidents, followed by students, farmers, house wives, office personnel⁽³⁾ (Fig 4).



Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

Fig. 1 Percentage of injury by age

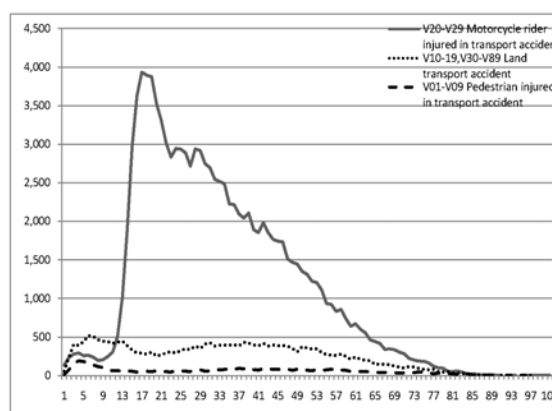


Fig. 2 Number of admissions with transport accidents by age in 2010

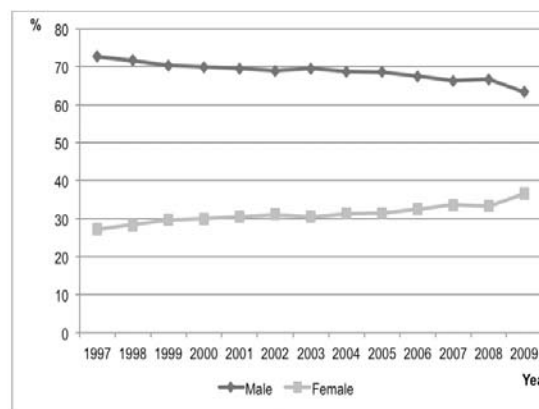
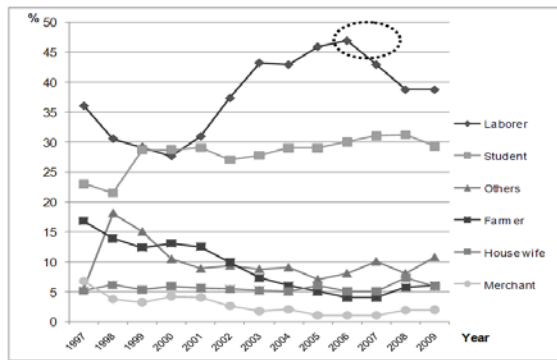


Fig. 3 Percentage of injury by sex

Type of vehicle involved in traffic injury

Motorcycles were by far the most commonly



Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

Fig. 4 Number of traffic injuries by occupation in 2009

vehicle involved in traffic injuries (81.9%), followed by pick-up trucks (5.7%), push bikes or tricycles (3.9%) and sedans (1.4%). Pedestrians were at greater risk of injury than even those on a push bikes⁽³⁾

(Table 2).

Table 6 shows that nearly 90% of victims having traffic injuries are motorcyclists, pedestrians and bicyclists⁽³⁾, who are classified as vulnerable road users and who constitute a proportionally larger group of victims than in other low and middle income countries. Seasonal distribution

Traffic injuries occur more frequently during the New Year Festival (end of December to early January) and the Thai Traditional New Year Festival (Water Festival in April 11-17 – aptly named the seven

Table 1. Thailand Road Traffic Injuries Statistics 1984, 1994 – 2008

Year	Accidents	Number of		Number of population	No. of vehicles	Death rate		Injury rate	
		Fatalities	Injuries			per 100,000 population	per 100,000 vehicles	per 100,000 population	per 100,000 vehicles
1984	18,445	2,908	8,812	50,583,105	N.A.	5.75	N.A.	17.42	N.A.
1994	102,610	15,146	43,541	59,095,419	12,579,903	25.63	12.04	73.68	34.61
1995	94,362	16,727	50,718	59,460,382	14,097,719	28.13	11.87	85.30	35.98
1996	88,556	14,405	50,044	60,116,182	16,093,896	23.96	8.95	83.25	31.10
1997	82,336	13,836	48,761	60,816,227	17,666,240	22.75	7.83	80.18	27.60
1998	73,725	12,234	52,538	61,466,178	18,860,512	19.90	6.49	85.47	27.86
1999	67,800	12,040	47,770	61,661,701	20,096,536	19.53	5.99	77.47	23.77
2000	73,737	11,988	53,111	61,878,746	20,835,684	19.37	5.75	85.83	25.49
2001	77,616	11,652	53,960	62,308,887	22,589,185	18.70	5.16	86.60	23.89
2002	91,623	13,116	69,313	62,799,872	24,517,250	20.89	5.35	110.37	28.27
2003	107,565	14,446	81,070	63,079,765	26,378,862	22.90	5.48	128.52	30.73
2004	124,530	13,766	94,164	61,973,621	20,624,719	22.21	6.68	151.94	45.66
2005	122,122	12,871	94,445	62,418,054	22,571,062	20.62	5.70	151.31	41.84
2006	110,686	12,693	83,290	62,828,706	24,807,297	20.20	5.12	132.57	33.57
2007	101,752	12,492	79,029	63,038,247	25,618,447	19.82	4.88	125.37	30.85
2008	88,689	11,561	71,059	63,389,730	26,417,353	18.24	4.38	112.10	26.90
2009	84,806	10,717	61,996	63,525,062	27,184,577	16.87	3.94	97.59	22.81

Source: Office of Transport and Traffic Policy and Planning, Royal Thai Police, Department of Land Transport, Department of Provincial Administration, April 2010

Table 2. Percentage of vehicle involved in traffic injury (1997-2009)

% vehicle used	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
motorcycle	80.0	76.0	77.0	75.9	76.9	78.7	81.0	79.6	79.9	76.7	79.1	81.6	81.9
pedestrian	5.3	6.1	6.6	6.0	5.9	5.1	4.4	4.7	4.4	4.6	5.1	5.0	4.1
Sedan	0.8	1.6	1.2	1.4	1.2	1.2	1.1	1.4	1.0	1.3	1.2	1.6	1.4
bicycle/tricycle	2.2	3.4	4.0	4.4	4.1	3.8	3.8	4.4	4.5	4.4	4.4	4.4	3.9
pick up	7.0	7.6	6.2	6.4	6.4	6.4	5.0	6.1	6.3	5.4	6.1	4.4	5.7
other	4.7	5.3	5.0	5.9	5.5	4.8	4.7	3.8	3.9	5.6	4.1	3.0	3.0

Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

most dangerous days of the year)⁽³⁾ (Fig. 5).

Diurnal distribution

Most traffic injuries occur between 20:00–21:00, 02:00–03:00 and 11:00–12:00⁽³⁾ (Fig. 6).

Cost of traffic injuries

A 2006 study on Traffic Accident Costs in Thailand by the Faculty of Engineering, Prince of Songkla University, reported that economic losses from traffic injuries in Thailand in 2002 totaled 168,455.31 million Baht. This is the sum of (1) cost of death (2) cost of disabilities (3) cost of severe injuries (4) cost of minor injuries and (5) property losses⁽⁴⁾ (Table 3).

A detailed analysis of individual losses revealed that each death cost 3.4 million Baht while each disability cost 3.6 million Baht, each severe injury cost 122,591 Baht, each minor injury cost 40,161 Baht and property loss in each crash cost 40,161 Baht⁽⁴⁾ (Table 4).

Over 90% of the world's fatalities on the roads occur in low income and middle income countries, which have only 48% of the world's registered vehicles (Global status report on road safety, WHO 2009)⁽⁵⁾. In Thailand, however, the mortality rate per 100,000 population is very high compared with other UN member nations⁽⁵⁾ (Table 5).

Part 2: Risk behaviours

Several policies and policing measures can effectively reduce traffic injuries, such as: enforcement of speed limits, spot checks for drunk drivers and revoking driving privileges, enforcement of motorcycle helmet use, seatbelt use and child seats. It appears, however, that enforcement of traffic laws and use of safety devices is not consistent and therefore ineffective⁽⁵⁾ (Table 6).

Helmet use by motorcycle riders injured in road accidents

Motorcycle drivers injured in traffic accidents had a higher proportion of helmet use than did their passengers. Between 2000 and 2004, helmet use decreased significantly, but in recent years it has trended to increase; however, the percentage of motorcycle riders injured in traffic accidents using helmets is still low⁽³⁾ (Fig. 7).

Alcohol consumption and injuries

Alcohol use among injured drivers has only slightly decreased, so the frequency of injuries among

Table 3. Economic loss due to traffic injuries⁽⁴⁾

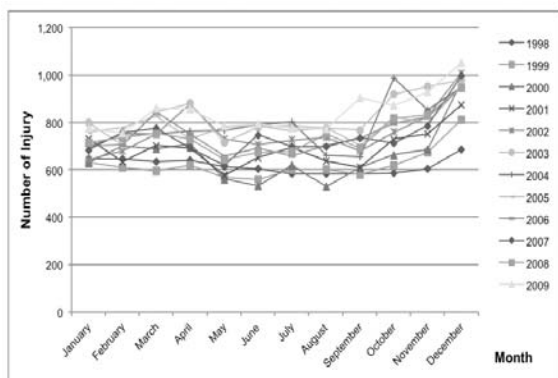
Area	Death		Disabled		Severe injury		Minor injury		Property loss		Total	
	* mB	%	mB	%	mB	%	mB	%	mB	%	mB	%
Bangkok	4,618.73	17.6	1,428.95	5.44	2,660.94	10.13	6,608.69	25.2	10,958.34	41.71	26,275.66	100.0
North	3,464.03	26.1	2,669.52	20.1	2,543.42	19.18	1,797.07	13.6	2,788.00	21.02	13,262.04	100.0
Central	24,260.44	34.5	16,650.12	23.7	10,596.40	15.06	7,436.33	10.6	11,431.79	16.24	70,375.08	100.0
North east	9,173.06	26	6,994.82	19.8	6,840.80	19.36	4,825.40	13.7	7,501.83	21.23	35,335.90	100.0
South	6,883.92	29.7	5,299.25	22.8	3,960.74	17.07	2,780.61	12	4,282.12	18.45	23,206.64	100.0
Total	48,400.19	28.7	33,042.66	19.6	26,602.29	15.79	23,448.09	13.9	36,962.08	21.94	168,455.31	100.0

* Million Baht The study of Traffic Accident Costs in Thailand: Faculty of Engineering, Prince of Songkla University with support from the Department of Highways, Ministry of Transportation: 2006

drunk drivers remains unacceptably high (Fig. 8). Relatedly, injuries of pedestrians caused by drunk drivers remains high despite an anti-drunk driving campaign⁽³⁾.

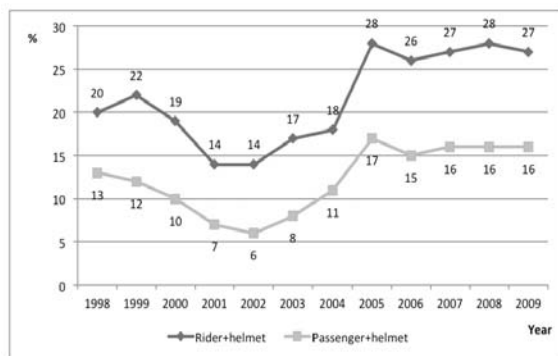
Discussion

In the developed world, successful strategies to reduce traffic fatalities and injuries have been



Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

Fig. 5 Seasonal distribution of traffic injuries



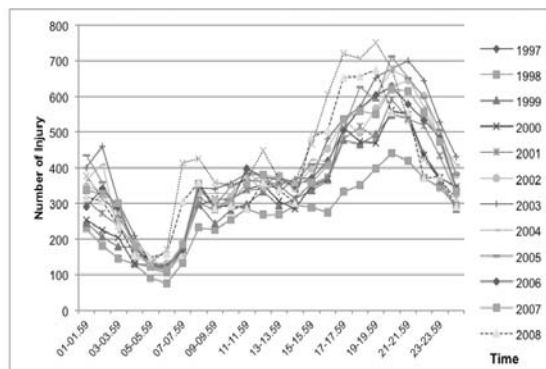
Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

Fig. 7 Percentage of injury with helmet use

Table 4. Economic loss due to road traffic injuries

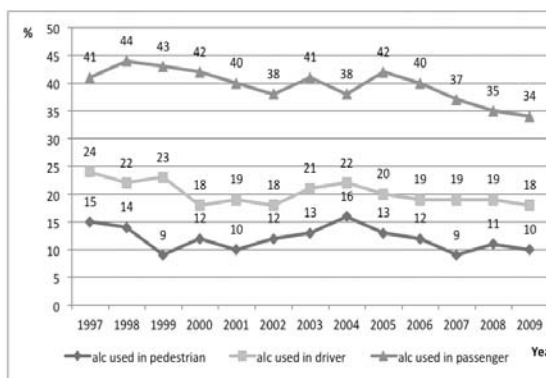
Area	Baht / case			Baht / crash	
	Death	Disable	Severe injury	Minor injury	Property loss
Average	3,395,551	3,617,150	122,591	30,247	40,161
Bangkok	6,191,330	6,322,792	253,689	135,471	128,300
Other provinces (average)	3,241,150	3,548,514	115,933	23,181	31,145
North	2,602,575	2,789,470	114,661	23,030	31,081
Central	3,710,683	4,252,905	116,760	23,294	31,164
North east	2,553,037	2,725,961	114,991	23,058	31,184
South	3,364,576	3,602,481	116,202	23,191	31,067

Source: The study of Traffic Accident Costs in Thailand: Faculty of Engineering, Prince of Songkla University with support from the Department of Highway, Ministry of Transportation : 2006



Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital: 1997-2009

Fig. 6 Number of traffic injuries over 24-hr period



Source: 13 Years Trauma Registry, Khon Kaen Regional Hospital : 1997-2009

Fig. 8 Percentage of injury with involving alcohol consumption

Table 5. Comparison of traffic injuries mortality among some SEARO-WPRO countries

Ranking	country	Death rate per 100,000
6	Singapore	4.8
9	Japan	5.0
44	Cambodia	12.1
50	Bangladesh	12.6
61	Sri Lanka	13.5
77	Nepal	15.1
87	Vietnam	16.1
88	Indonesia	16.2
89	China	16.5
92	India	16.8
100	Maldives	18.3
106	Thailand	19.6
109	Philippines	20.0
120	Myanmar	23.4
121	Malaysia	23.6

Source: Global Status Report on Road Safety: WHO 2009

Table 6. Enforcement score for five risky behaviors in Thailand compared with the global standard

Strength of risk behavior control in the nation	Rating score
Speed control	2/10
Drunk driving control	5/10
Motorcycle helmet use enforcement	4/10
Seat belt use enforcement	5/10
Child seat restraint enforcement	0/10

Source: Global Status Report on Road Safety: WHO 2009

stringently enforced. Some examples of successful measures include (a) safety belt use for both drivers and passengers (b) helmet use by motorcycle and push bike riders (c) restrained children seats (d) speed limits (e) check stops for drunk drivers and prosecution of offenders (f) high standards for mechanical safety for vehicles (g) highly engineered and quality controlled road construction and (h) penalties against pedestrians crossing roads illegally (J-walking). In addition, a policy emphasis on accessible public transportation discourages individual driving. The road accident reduction strategies of developed countries should be modified and implemented in developing countries such as Thailand; thereby shortening the process of developing and implementing wholly home-grown safety plans.

Motorcycles are a convenient, relatively

inexpensive mode of transportation. They need little space to park and, because of the insufficiency of public transportation, they play an important transportation role in developing countries. On the downside, as the number of motorcycles on the road increases, the injury and death rate also increases, disproportionately affecting young people. Unfortunately, effective advertising—emphasizing style and speed over safety—to the youth market has resulted in booming sales.

The future of any nation is its young people and tragically they are the main victims of the epidemic of road accidents in Thailand. Healthcare professionals and policymakers need to take a stand to protect these lives. Information on the local situation has been gathered so the problem is well-defined. Knowledge of effective preventative traffic accident strategies abroad is available and can be adapted for implementation in Thailand so there is a solution. The public education campaign needs to be expanded to heighten awareness of the benefits of the solutions. To protect lives and to make our roads safer, the authors need to create positive feedback (rewards) for adopting these new, accident prevention habits.

Acknowledgement

The authors wish to thank (a) the project coordinators for their confidence (b) the Ministry of Public Health, Thailand, Khon Kaen Hospital, and the Faculty of Medicine Khon Kaen University for their support and (c) Mr. Bryan Roderick Hamman and Mrs. Janice Loewen-Hamman for assistance with the English-language presentation of the manuscript.

Potential conflicts of interest

None.

References:

1. Peden M, Scurfield R, Sleet D, Mohan D, Hyder AA, Jarawan E, et al., editors. World report on road traffic injury prevention. Geneva: WHO; 2004 [cited 2012 Jun 12]. Available from: <http://whqlibdoc.who.int/publications/2004/9241562609.pdf>
2. Department of Disaster Prevention and Mitigation, Ministry of Interior. Strategic map: strategic map for decade of action 2011-2020. Bangkok: Directing Center for Road Safety, Department of Disaster Prevention and Mitigation; 2011.
3. Trauma and Critical Care Center, KhonKaen Regional Hospital. 13 Years Anniversary Trauma

- Registry, 1997-2008. KhonKaen: Trauma and Critical Care Center; 2009.
4. Faculty of Engineering, Prince of Songkla University. The study of traffic accident costs in Thailand. Supported by Department of Highways, Ministry of Transportation; 2006.
 5. World Health Organization. Global status report on road safety: time for action. Geneva: WHO; 2009 [cited 2012 Jun 12]. Available from: http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf
 6. Thai Road Foundation. Thailand road traffic injury statistics 200 . Bangkok: Thai Road Foundation; 2009.

C

การบาดเจ็บเนื่องจากอุบัติเหตุบนถนนในประเทศไทย; สถานการณ์ปัจจุบัน

วิทยา ชาติบัญชาชัย, วีระพันธ์ สุพรรณไชยมาตย์, อนุชา เศรษฐเสถียร, ธนพงศ์ จินวงษ์

ภูมิหลัง: อุบัติเหตุจากการจราจร เป็นปัญหาสาธารณสุขที่สำคัญเป็นอย่างยิ่งปัญหาหนึ่งของประเทศไทย มีผู้บาดเจ็บบาดเจ็บ เสียชีวิต และผู้พิการ จำนวนมากมายมหาศาล ก่อให้เกิดผลกระทบต่ออย่างกว้างขวางทั้งต่อบุคคล ต่อครอบครัว ต่อสังคม และต่อประเทศชาติโดยรวม

วัตถุประสงค์: เพื่อศึกษาสถานการณ์ของอุบัติเหตุจราจรในประเทศไทย

วัสดุและวิธีการ: เป็นการศึกษาย้อนหลังโดยศึกษาจากแหล่งข้อมูลระดับชาติหลายหน่วยงาน

ผลการศึกษา: เป็นเวลากว่าสิบปี แล้ว ที่คนไทยต้องสังเวยให้กับอุบัติเหตุบนท้องถนน มากกว่า หมื่นคนทุกปี สถานการณ์ของการบาดเจ็บ และเสียชีวิตยังคงความรุนแรงและวิกฤตเป็นอย่างยิ่ง เมื่อเทียบกับกลุ่มประเทศที่กำลังพัฒนาทั้งหลาย สองในสามของเหยื่อจากอุบัติเหตุบนท้องถนน เป็นผู้ชาย ร้อยละ 80 มีอายุน้อยกว่า 40 ปี ร้อยละ 80 ของผู้บาดเจ็บและเสียชีวิต เป็นผู้ขับขี่รถจักรยานยนต์ เนื่องจากผู้บาดเจ็บ ผู้พิการ และผู้เสียชีวิต มีเป็นจำนวนมากมายในแต่ละปี ก่อให้เกิดการสูญเสียทางเศรษฐกิจถึง หนึ่งแสน หกหมื่นล้านบาทในปี พ.ศ. 2545 และนับวันความสูญเสียนี้จะเพิ่มสูงขึ้นทุกปี

สรุป: การบาดเจ็บจากอุบัติเหตุจราจร เป็นปัญหาสาธารณสุขที่สำคัญ ที่ยังไม่สามารถควบคุมได้ดีเท่าที่ควร ผู้เกี่ยวข้องทุกภาคส่วน จะต้องตระหนัก ถึงความสำคัญ และเร่งแก้ไขปัญหา ที่มีผู้บาดเจ็บ เสียชีวิต ในทุกๆ ชั่วโมง ของทุกๆ วัน อย่างจริงจัง
