

FROM RECENT REPORT

TRAFFIC ACCIDENTS IN THAILAND*

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This paper presents an overview of traffic accident situations in Thailand. It highlights the transformation of road accident problems in Thailand, from the past to present, with the focus on the situation of the most accident prone mode of transport in the country, motorcycle accidents. Relating problems and contributing causes of motorcycle accidents are also detailed in this paper. Subsequently, this paper recommends several measures to curb the alarming increases in motorcycle accidents.

Key Words: Traffic accident, Bangkok, Thailand, Motorcycles

1. INTRODUCTION

“Traffic accidents are one of the greatest, perhaps the greatest, national public health problems”

John F. Kennedy

On September 11, 2001, the twin towers of the World Trade Center were destroyed and history recorded that over 3,000 people were killed. Not many people know that about the same number of people die every day on roads world wide¹. This figure does not include at least the 30,000 others injured or disabled. This accumulates to over 1 million people killed and between 20-50 million injured or crippled in road accidents each year². It is obvious that road traffic injuries are a major public health problem globally. In fact, as projected by

the WHO that road traffic disability-adjusted life years (DALYs) loss will move from being the ninth leading cause of DALYs in 1999 to the third leading cause by year 2020 as shown in Table 1³.

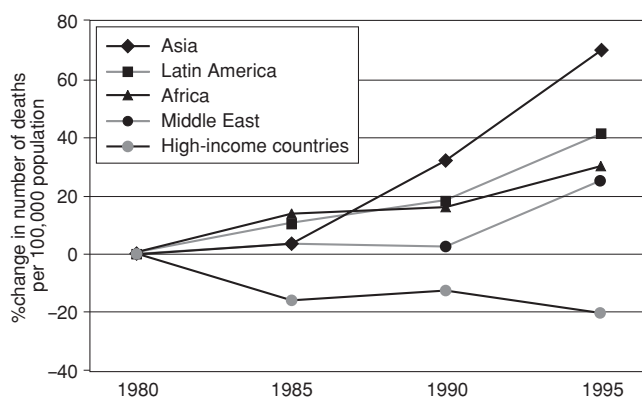
While low- and middle-income countries are facing more serious road accident problems, the trend in high-income countries is in the opposite direction. As can be clearly seen from Figure 1, trends over time show a sharp difference in fatality rates between high- and low-income countries⁴. Fatality rates in high-income countries have been declining, while in the low- and middle-income countries, they are still on an upward trend. Although the magnitude of increase varies by region, it is unfortunate that the highest rise is in Asia.

Table 1 Disease burden (DALYs lost) for 10 leading causes

1998 Disease or Injury	2020 Disease or Injury
1. Lower respiratory infections	1. Ischaemic heart disease
2. HIV/AIDS	2. Unipolar major depression
3. Perinatal conditions	3. Road traffic injuries
4. Diarrhoeal diseases	4. Cerebrovascular disease
5. Unipolar major depression	5. Chronic obstructive pulmonary disease
6. Ischaemic heart disease	6. Lower respiratory infections
7. Cerebrovascular disease	7. Tuberculosis
8. Malaria	8. War
9. Road traffic injuries	9. Diarrhoeal diseases
10. Chronic obstructive pulmonary disease	10. HIV/AIDS

Source: WHO, Evidence, Information and Policy, 2001

* The Japanese version of this paper was included in IATSS Review, the official publication of IATSS issued in Japanese on a quarterly basis.



Source: Jacobs G., et al.

Fig. 1 Trends in fatalities due to road traffic injuries

In Thailand, for example, more years of potential life are lost due to road casualties than other causes⁵. Year by year, Thais are killed on the roads with an average of around 12,000 persons per year or about 2 persons per hour. In other words, every day, approximately 50 Thai people who leave home for work, school, shopping, temple/church/mosque, social gathering never return home because of road accidents. In fact, in a speech delivered by the former Minister of Transport of Thailand, Mr. Wan Muhamad Nor Matha during an opening ceremony of a Road Safety Audit Conference held in Bangkok on June 14, 2001, he stated that:

“...the number of Thais who were killed during all wars that our country has been engaged in are still far less than the number of people died because of road accidents, we can no longer let this serious matter rest..”

Worse still, road accidents have not caused only death and disability to Thai citizens but also substantial damage to the country's economy. It was estimated that the economic losses due to road accidents in Thailand are over 100,000 million Baht (approximately 2,500 million US\$ or 300,000 million Yen) per year, which means over 12 million Baht per hour or about 3.4% of the country's GNP⁶.

As road accidents in Thailand will continue to occur; more lives will be lost together with many more injured and disabled; accumulating problems and losses which cause a substantial effect to the Thai economy, it is now timely to pose a serious question: how long must we tolerate and when can we improve such chronic but predictable and preventable problems?

This paper intends to highlight the traffic accident situation in Thailand. It attempts to elaborate on the past and current development of road safety issues in the country as well as to propose some measures to address these problems.

2. TRAFFIC ACCIDENT TRENDS IN THAILAND

The pattern of traffic accidents in Thailand has varied substantially over the past 20 years. As can be seen from Figure 2 and Table 2, the total number of road accidents rose dramatically from 18,445 cases in 1984 to reach a peak of 102,610 cases in 1994, an increase of around 456%. Afterwards, the accident tolls steadily decreased to about 67,800 cases in 1999 but started to rise from 2001 onwards. The fluctuation in accident trends in Thailand can be perhaps best explained by the following time lines:

2.1 The economic recession period, 1984 to 1986

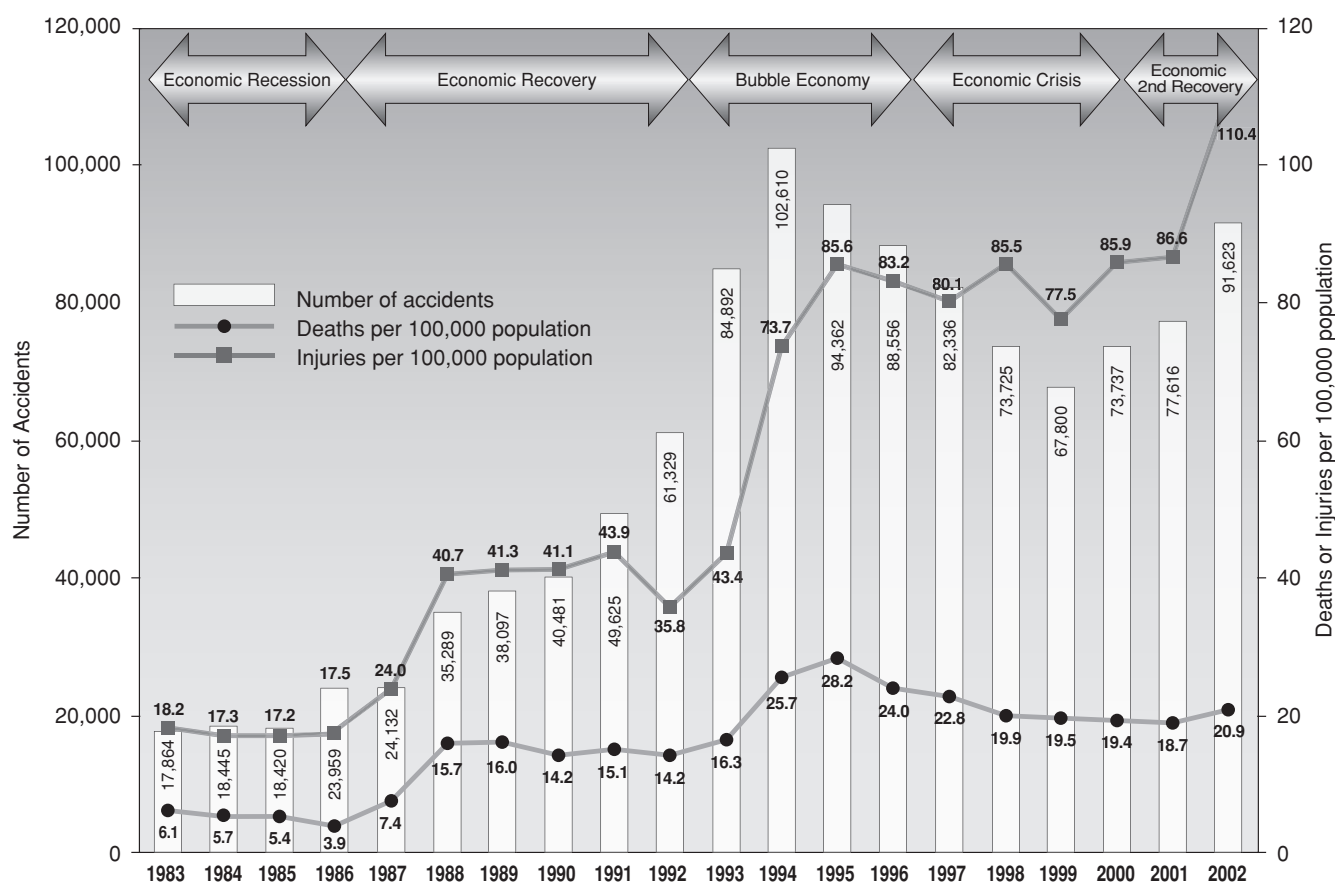
During this economic recession period, the number of accidents was rather stable and in fact was the lowest when compared with more recent figures. The average accident cases occurred throughout the country was around 19,000 per year, with 5 fatalities and 17 injuries for every 100,000 population.

2.2 The economic recovery period, 1987 to 1992

Nearly triple the number of accidents was noticed during this period compared with the previous period. Not only the number of accidents increased, but the severity was also more alarming as the fatality and injury rates jumped to about 15 persons and 41 persons per 100,000 people, respectively.

2.3 The bubble economy period, 1993 to 1996

This period experienced one of the worst traffic safety situations in the Kingdom. A main contributing factor was the skyrocketing increase in the number of vehicles registered throughout the country, particularly Bangkok with around 1,000 new vehicles registered daily. While new cars and pick-ups, as well as motorcycles, were pouring onto the streets, traffic accidents, at the same time, surged to about two to three fold from the previous period and resulted in nearly 100,000 accident cases on the average per year during this period. Moreover, the fatality rate also increased to about twice higher than that of the previous period, approximately 25 killed and an other 80 or so injured per 100,000 population.



Sources: The Royal Thai Police, Department of Local Administration

Fig. 2 Road traffic accidents in Thailand, 1983–2002

Table 2 Accident statistics in Thailand, 1983–2002

Year	Number of			Casualty rate per 100,000 population	
	Accidents	Fatalities	Injuries	Death rate	Injury rate
1983–1986 Economic Recession					
1983	17,864	3,005	9,026	6.1	18.2
1984	18,445	2,908	8,812	5.7	17.3
1985	18,420	2,700	8,289	5.4	17.2
1986	23,959	1,908	8,706	3.9	17.5
1987–1992 Economic Recovery					
1987	24,132	2,104	8,589	7.4	24.0
1988	35,289	2,015	13,504	15.7	40.7
1989	38,097	5,368	13,081	16.0	41.3
1990	40,481	5,765	18,252	14.2	41.1
1991	49,625	8,608	24,995	15.1	43.9
1992	61,329	8,184	20,702	14.2	35.8

Continue

1993–1996 Bubble Economy					
1993	84,892	9,496	25,330	16.3	43.4
1994	102,610	15,176	43,541	25.7	73.7
1995	94,362	16,727	50,718	28.2	85.6
1996	88,556	14,405	50,044	24.0	83.2
1997–2000 Economic Crisis					
1997	82,336	13,836	48,711	22.8	80.1
1998	73,725	12,234	52,538	19.9	85.5
1999	67,800	12,040	47,770	19.5	77.5
2000	73,737	11,988	53,111	19.4	85.9
2001–2002 Economic Re-Recovery					
2001	77,616	11,652	53,960	18.7	86.6
2002	91,623	13,116	69,313	20.9	110.4

Sources: The Royal Thai Police, Department of Local Administration

2.4 The economic crisis period, 1997 to 2000

The widely known “Tom-Yum Kung Disease” starting in Thailand in 1997 caused severe effects to the country’s and its neighboring countries’ economies. On the other hand, the economic crisis brought about a positive sign for the traffic accident situation in Thailand. Accidents were remarkably reduced to about 70,000 cases per year on average with a downward trend on the fatality rate throughout the entire period.

However, the injury rate showed a reverse trend with an unusual by high rate of 85.5 persons per 100,000 in 1998. This indicates that road safety still remains one of the serious health problems for the nation.

2.5 The re-recovery era, 2001 onwards

With the new Thaksin Government coming to power since 2001, several sets of economic stimulus measures have been implemented. The national economy has shown a positive sign of recovery, but, unfortunately, road accident tolls have started to rise again as can be clearly seen from Figure 2.

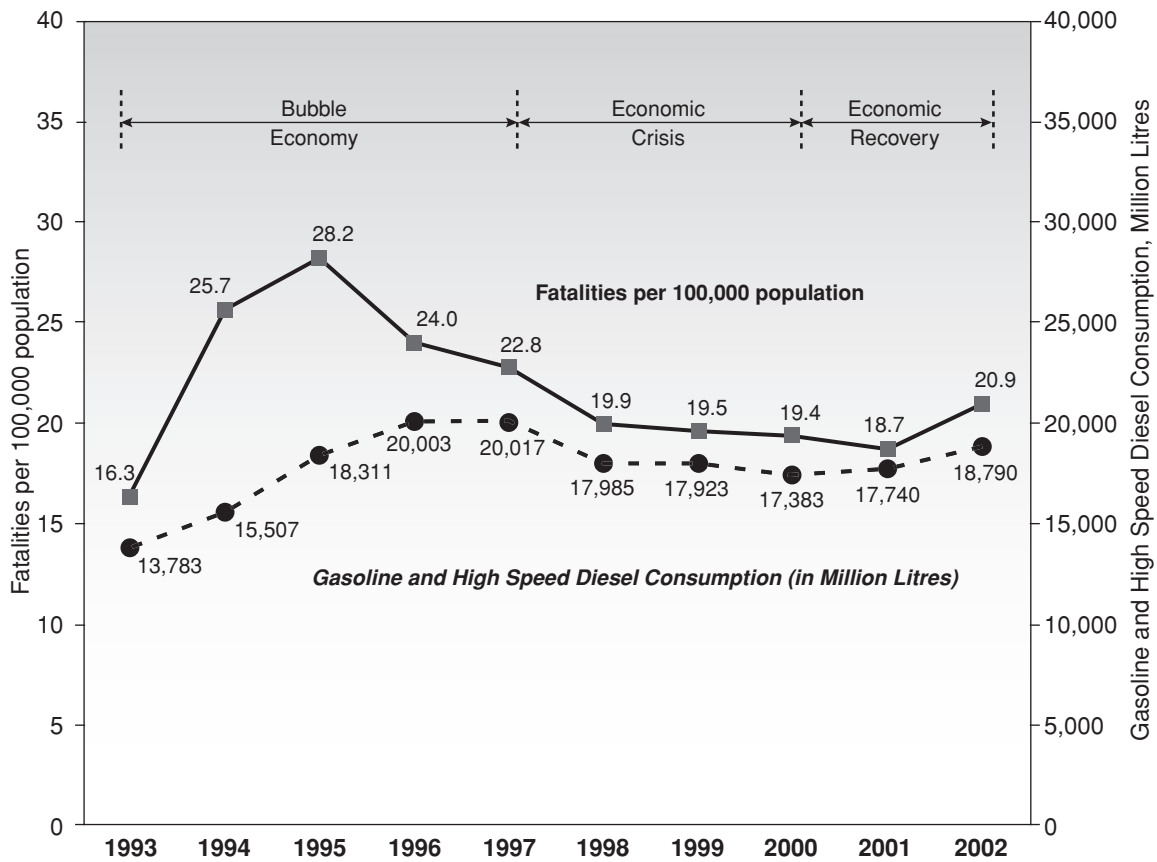
To further elaborate on the impact of the country’s economy on traffic accidents, the past 10 years statistics (1993-2002) demonstrating the relationship between fuel consumption and fatality rates are presented in Figure 3. Obviously, fuel consumption rates as well as the number of accident fatalities per 100,000 population during the bubble economy period were rather high, while these rates declined during the economic crisis period. However, as previously mentioned, when the re-recovery period started leading to higher fuel consumption, the rate of accident casualties has also risen. It is, unfortunately, very likely that this upward trend will continue to surge unless some drastic and effective measures are imple-

mented immediately to address this serious health problem.

3. CURRENT TRAFFIC SAFETY MEASURES IN THAILAND

It is an unfortunate fact that traffic accidents in Thailand are most evident during festive and holiday seasons. Some of the most popular ones are the traditional Thai New Year holidays (locally known as Songkran holidays falling between the period of 12-15 April every year) and the year end and New Year celebrations, both of which usually have extremely high casualties and several thousand injured accident victims throughout the country. For the past New Year holidays, a total of 606 accident fatalities together with an other 35,286 injuries were recorded during a short span of only one week (27 December 2002 to 2 January 2003). In fact, the accident situation of this past New Year worsened compared with the previous years shown in Table 3. It can be clearly seen that the death tolls have risen every year from 454 persons in 2001 to 606 persons in 2003. The number of injured victims due to road accidents has also increased from 23,786 in 2001 to 34,303 and 35,286 in 2002 and 2003, respectively. If the accident trend continues in this direction, the holiday seasons will no longer be merry for the Thais to celebrate.

Fortunately, the current Government has placed high emphasis on its agenda safety issues and has begun to address road accident problems seriously. A new committee was recently set up to be directly responsible for tackling this problem. Like many other committees in



Sources: The Royal Thai Police, Department of Local Administration, and Department of Alternative Energy Development and Efficiency

Fig. 3 Fuel consumption and fatality rates in Thailand, 1993–2002

Thailand, this committee was initially supposed to be an ad-hoc committee, established mainly to curb the expected accident problems during the Songkran Holiday in 2003. Unfortunately, the 2003 Songkran 6-day holiday still claimed 559 lives and left an other 37,718 persons in hospital beds or crippled or suffered from wounds resulting from traffic accidents. Similarly to the New Year holidays’ trend, Songkran Holiday accident casualties and injuries are moving upward (as can be seen from Table 4), leaving many to wonder whether or not the Thais should deserve to celebrate this long but accident-prone holiday. Meanwhile, the unceasing problem prolongs the existence of this committee and the Government finally decided not only to maintain this committee but also to expand its membership. Eventually, this committee, which is known as the National Road Safety Management Center, is composed of high-ranking government officials representing various concerned agencies as well as respected academics. More importantly, the committee is chaired by a Deputy Prime Minister who can report directly to the Cabinet together with four Deputy Minis-

ters of four different ministries who serve as vice-chairpersons.

Table 3 Road accident casualties in Thailand during New Year holidays

Number of casualties	Year		
	2001	2002	2003
Fatalities	454	585	606
Injuries	23,786	34,303	35,286

Source: Injury and Alcohol Related Problems Prevention and Control Section

Table 4 Road accident casualties in Thailand during Songkran holiday

Number of casualties	Year		
	2001	2002	2003
Fatalities	530	567	559
Injuries	32,014	38,098	37,718

Source: Injury and Alcohol Related Problems Prevention and Control Section

The main task of this committee or Center is to tackle all road accident issues through an integrated approach incorporating the collaboration of various agencies concerned irrespective of their Ministry. The 5-E strategy was proposed as a mandate for all concerned agencies to practice and implement. The 5-E stands for Engineering, Education, Enforcement, EMS (Emergency Medical Services) and Evaluation.

Several measures have been recommended under the 5-E strategy, some of which are the development of a national accident database system using GIS application, the setting up of the Thailand Accident Research Center for R&D activities on road safety, the enforcing of "motorcycle's headlight on at all time"⁵, the implementing of exclusive motorcycle lane, the "No More Black-Spots" Program, the "Zero Pot-Holes" Program, the application of proactive measures using the concept of Road Safety Audit, and the most controversial measure of banning alcoholic drink advertisements on TV and radio⁷. All these measures have been approved by the current Cabinet and become a Cabinet resolution. However, like many other Cabinet resolutions, there is no guarantee that all these measures will be implemented as they are still subject to the availability of funds budget which can be an important obstacle to successful implementation. In fact, budget constraint is another typical hindrance in solving the country's road safety problems. To date, only a few measures are being considered seriously for implementation with the efforts of concerned agencies. They are road safety audit measures, the setting up of an accident research center, the banning of alcoholic drink advertisements on TV and radio, and the enforcing of motorcycle's headlight on at all times.

Speaking of one of the measures which is now being implemented, road safety audit, it is a new approach with proactive principles to help minimize road safety problems. Its philosophy lies on the principle of "prevention is better than cure". As defined by AUSTROADS⁸, road safety audit is,

"A formal examination of a future road or traffic project or an existing road, in which an independent, qualified team reports on the project's crash potential and safety performance."

As the concept of a road safety audit has just been recently introduced to Thailand, its role and application is yet to be accepted formally and legally in the country. Despite this fact, a group of experts consisting mainly of academics led by Prince of Songkhla University and the

Asian Institute of Technology through its academic center known as the Asian Center for Transportation Studies (ACTS) attempt vainly to disseminate the knowledge on the road safety audit in Thailand. Their attempts are aimed to generate awareness among concerned safety personnel. Towards this end, several training courses and workshops have been organized, not only to disseminate the knowledge but also to prepare qualified personnel to become road safety auditors⁹. With these strenuous efforts, concerned agencies are now beginning to be aware of the significant role of the road safety audit as an alternative tool in helping alleviate road safety problems in the country. Efforts are now being made to set up the national road safety audit committee to oversee the institutionalization of the road safety audit organization, guidelines for implementation, criteria for accreditation of auditors as well as all related legal issues. Meanwhile, budgets are being requested to conduct widespread training courses/workshops for all related safety personnel throughout the country. It is greatly hoped that the road safety audit will be seriously implemented and become a useful measure to help alleviate road safety problems in Thailand.

Apart from the road safety audit scheme, another promising initiative is the establishment of the Thailand Accident Research Center (TARC). TARC is the offspring of the Ministry of Transport's Road Safety Master Plan which was developed in 1998. The Master Plan acknowledges the lack of complete information and actual knowledge on road accidents as one of the major constraints for safety improvement in Thailand and identifies the need for establishing an accident research center as a priority. Thus, in early 2003, an agreement was reached among different partners to set up TARC. The establishment of TARC is a unique experience as it resulted from the collaboration between the private and public sectors as well as a civil society organization. An initial fund totaling US\$ 1,000,000 has been allocated for TARC operations. The fund was jointly donated by the Department of Highways (US\$350,000), the Volvo Car Corporation (US\$420,000), and the Thailand Global Road Safety Partnerships, Thailand GRSP (US\$230,000) for the initial 3-year operations of TARC. The Asian Institute of Technology (AIT) has been selected to house TARC because of its widely known academic achievement in both teaching and research in transportation and traffic related areas. The main tasks of TARC entail the building up of a network of accident investigators and researchers, the conducting of crash analysis, and the development of an accident database system. Although it is still at the be-

gining stage, it is greatly hoped that TARC will become a key to the success in road safety improvement in Thailand, particularly in identifying actual causes of accidents as well as in solving the lacking accident database system problem.

Among all the proposed measures, the most controversial one is the banning of alcoholic drink (beer, wine, whisky, etc) advertisements on TV and radio which has been implemented since October 1, 2003. This measure has generated dissatisfaction among various parties, and surprisingly, including sport related organizations as they received enormous financial support from alcoholic drink manufacturers. Nevertheless, the impact of this measure on road accident alleviation is yet to be examined as this is a long term effect. Besides, the lack of a proper accident database system, as already mentioned, will be a major hindrance in determining its impact, even if published material produced by one safety agency called the Knowledge Management Unit for Road Safety¹⁰ states that:

“A study conducted by WHO revealed that among the OECD member countries, the fatality rates of those countries which prohibited the advertisement of alcoholic drink were 23% lower than those permitting countries. Moreover, among those prohibiting countries, alcoholic drink consumption rates were 16% less than their counterpart.”

It still remains a challenge for the concerned agencies to prove a similar impact in Thailand especially to the opposition. Perhaps a more simplified measure as compared with the ban on advertisement which should be considered is to promote a wide spread public awareness on the effect of alcohol on road accidents.

Another set of measures which is worth mentioning is the measures to control motorcycle accidents since it is an undeniable fact that motorcycles have been a substantial part of the overall road crashes in Thailand. This has been a serious threat to Thai communities as the motorcycle is a dominant mode of transport especially in the provincial and municipality areas. Taking the accident statistics in 2000 as an example, among the 11,988 victims who were killed in road accidents, about 73% or 8,756 persons were motorcyclists¹¹. Therefore, several measures have been considered and put forward by concerned agencies. The foremost one is to enforce the compulsory wearing of a safety helmet. Although this measure has become law and enacted nationwide since January 1, 1996, it is unfortunate that many motorcyclists have cho-

sen to ignore it and the police have not seriously enforced it either. Apart from the effort to enforce the compulsory use of safety helmets, a relatively new campaign has been launched. This campaign calls on all motorcyclists to turn on their motorcycle's headlight at all times irrespective of day or night time. This is known in various countries as daytime running headlights. Although this practice has been implemented in various Western countries, an argument has been raised regarding the necessity of this measure in the Thai environment which is quite different from the Western world. The argument is that in those countries, visibility is much poorer than in Thailand especially during the winter season. However, this argument can be overruled by the fact that Thailand's neighboring countries like Malaysia and Singapore, which have similar weather and environmental conditions, have recognized the merit of this measure and have already started implement daytime running headlights. This paper will elaborate on the motorcycle accident situation in Thailand in detail in the succeeding section.

4. PROPOSED MEASURES TO ADDRESS ROAD SAFETY PROBLEMS IN THAILAND

Experiences in developed countries reveal that to improve road safety requires a comprehensive approach, involving all components of an accident: human, vehicle, and road and environment. Over time, the widely known “Haddon Matrix” invented by Dr. Haddon¹² continues to offer an excellent framework for assessing the three contributing components at the three stages of accident occurrence, which are the pre, during and post occurrence of road accidents. This paper also recognizes and applies the Haddon Matrix in proposing alternative measures for Thailand as can be seen in the matrix proposed by Tanaboriboon¹³ in Table 5.

It can be seen from Table 5 that the pre-crash or pre-occurrence, crash and post-crash measures are composed of enforcement, education and campaign, and engineering and emergency medical service approaches in dealing with the three contributing components of accidents: road users, vehicles, and road and environment. Although it is not possible to elaborate on all these measures in detail in this paper, certain measures like the daytime running headlights, road safety audit, development of an accident database system through the development of the accident research center, etc. have already been dis-

**Table 5 Proposed road safety countermeasures for Thailand
(Safety planning countermeasures matrix)**

	Road Users	Vehicles	Road & Environment
Pre-Crash	Enforcement & Education & Campaign <ul style="list-style-type: none"> • Over Speeding • Alcohol/Drugs use • Physical Impairment • Young Drivers • Driver License 	Vehicle Inspecting Program <ul style="list-style-type: none"> • Breaking System, Lighting, Tire • Inspecting Agency Vehicle Standards and Modifications <ul style="list-style-type: none"> • Public buses • Trucks Vehicle Visibility <ul style="list-style-type: none"> • Reflective material • Daytime running Headlights 	Road Engineering Program <ul style="list-style-type: none"> • Road Safety Audits • Black Spots Treatment • Traffic Management System (Ex. traffic calming) • Traffic Control Devices • Motorcycle lanes • Zero pothole • Accident Database System Community Based Approach <ul style="list-style-type: none"> • Public Participation • Bottom Up Approach
Crash	Compliance of Safety Devices <ul style="list-style-type: none"> • Use of Restraints (Helmet, Seat belt) • Child Restraints (Proper child seat) 	Vehicle and Occupants Safety Features <ul style="list-style-type: none"> • Restraint System • Interior (Airbags) • Exterior (Crash Protection) Crash Compatibility <ul style="list-style-type: none"> • Under run bars (Truck) • Bull Bar (Pick up truck) 	Roadside Hazard Treatment <ul style="list-style-type: none"> • Forgiving Road Furniture • Collapsible Facilities • Crash Barrier • Crash Cushion
Post-Crash	Skill of Paramedics <ul style="list-style-type: none"> • First Aid, Initial proper medical treatment • Rescue Skills • ERP (Emergency Response Plan) 	Ease of Evacuation <ul style="list-style-type: none"> • Vehicle related eg. door opening, fuel leakage • Rescue Tools 	Trauma Management <ul style="list-style-type: none"> • Rescue work • Accessibility of rescue team • EMS • Rehabilitation Program

Source: Tanaboriboon, 2003

cussed in the previous sections. Thus, this section will touch upon certain additional key measures like the drink-don't drive campaign and public participation program.

Among all the measures being implemented, the most widely known is, perhaps, the drunk-don't drive campaign which has been launched and promoted for several years. Its success, however, is still questionable as the statistics of road accidents caused by drunk drivers, which usually followed by severe casualties, are still evident. The most recent statistics during the past Songkran Festival (April 11-16, 2003) reveals that among the 559 fatalities, 330 victims or 59% were found to have blood alcohol level higher than the legal limit of 50mg%¹⁴. The high death toll rate resulting from alcohol consumption indicates another unsuccessful attempt to cope with this problem in spite of various campaigns that have been launched by several concerned agencies.

Often time, fingers are pointed at the law enforcers for this unsuccessful attempt. However, one must be fair before blaming it all to the police. A recent study reveals that what caused a major setback in enforcing the drunk-don't drive measure is the lack of sufficient breath

alcohol analyzer devices to legally detect blood alcohol levels of the drivers. According to the interviews with police officers from 374 police stations in 26 provinces in 2002, it was found out that most of these police stations did not have neither breath alcohol analyzer devices nor did they have sufficient financial support for this kind of measure. In fact, out of the 374 surveyed police stations, 303 stations or about 81% did not receive any funding support for this device¹⁵. Worst still, under the Thai laws, the drunk drivers can be prosecuted only if there is sufficient hard evidence indicating the alcohol level over the legal limit. However, an ordinary breath alcohol analyzer device that can only detect the blood alcohol level but does not give an immediate print-out result cannot be used to prosecute the drunk drivers according to the Thai law. Another potential technique, the Standard Field Sobriety Test (SFST)¹⁶, which does not require any device and is being used to detect those driving under the influence of alcohol and drugs in some countries, cannot also be used in Thailand to detain drunk drivers due to the mentioned legal condition. Perhaps, the concerned agencies must attempt to persuade the Government to allocate

more budgets to acquire breath alcohol analyzer devices which are specifically suitable for the Thai conditions as illustrated above. Subsequently, the Government should also be encouraged to consider to practice the Standard Field Sobriety Test, even if the test cannot be used as evidence against drunk drivers for legal action, but at the least it can help prevent drunk drivers from causing any further tragedy and loss by prohibiting them from being on the wheel until they become more sober.

Another common scheme to mitigate road accidents especially at an unusually high accident site is to apply the black spots treatment concept. Although black spots treatment program can be used to tackle accident occurrence effectively, the implementation of this program at the national scale still faces many obstacles. Firstly, the method to identify black spot locations is yet to be objectively determined in Thailand. In fact, not even the clear definition of “black spots” is settled which has made it more difficult to identify any particular location for further improvement. Secondly, the data availability and quality issues, as previously mentioned, have hindered and limited the success of the black spots treatment program. Considering the data lacking constraint and the need to treat black spot locations, public participation can be considered as an alternative mean to assist in identifying black spot locations. It is logical that the local communities are most qualified to identify their own needs. The people living in the areas will be able to provide useful insights since they are familiar with the places and the roads they drive every day and under various conditions, rain, sunshine, day or night, etc. In other words, regular users are familiar with the parts of roads that present problems to them¹⁷. Their subjective feeling can be useful information particularly if the accident data is unavailable or limited. Thus, ordinary citizens can be an excellent source to identify potential black spot locations¹⁸. However, to involve the public and gather their views requires an effective channel to access them. One possible and economical channel is through the WWW as the proliferation of today’s information technology can create massive opportunities for the public involvement¹⁹. Apart from employing the high technology, a more simple technique, but a little bit more costly, to obtain public inputs is through telephone calls. A special number like 4-digit number can be set up especially for this purpose to encourage commuters to call in and report on any potential black spot locations. Although this proposed method may sound simple, it is easier said than done as the information obtained from the public still need to be validated. Nonetheless, public participation in road safety is worth to be pondered fur-

ther particularly for Thailand where most of the planning is still done rather “top-down” than “bottom-up”.

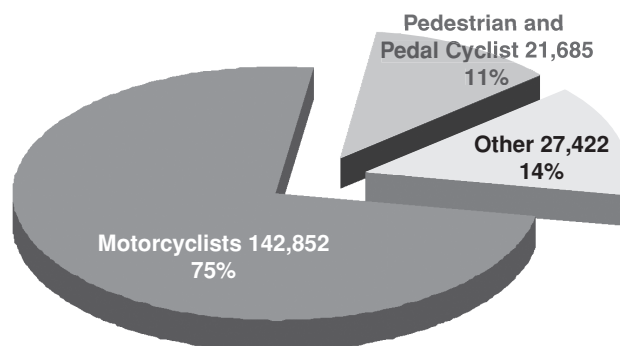
5. MOTORCYCLE ACCIDENTS IN THAILAND

Considering the accident statistics and related documents from all available sources in the country, all have pointed out one very obvious fact that motorcycle is the most vulnerable mode of transport in Thailand. To illustrate, according to the statistics compiled by the Royal Thai Police²⁰, among all the vehicles involved in road accidents recorded during the period of from 2000 to 2002, motorcycle represents the highest toll when compared with other modes of transport as shown in Table 6. This is underlined by the statistics on in-patients who

Table 6 Mode of transport involved in road accidents in Thailand

Modes of Transport	Years		
	2000	2001	2002
Pedestrian	4,469	4,135	4,592
Motorcycle	37,498	41,215	53,732
Motor tricycle	1,838	1,852	1,825
Passenger Car	37,440	38,437	44,019
Pick Up	21,372	22,785	26,116
Van	2,477	2,975	3,291
Heavy Bus	3,533	3,618	3,823
Medium Truck	2,624	2,696	3,220
Heavy Truck and Semi Trailer	3,780	3,668	4,523
Other	3,926	4,051	1,912
Total	118,957	125,432	147,053

Source: Royal Thai Police, 2003. “Road Accident Statistic”.



Source: Ministry of Public Health

Fig. 4 The percentage of in-patients due to road crashes in Thailand, 2002

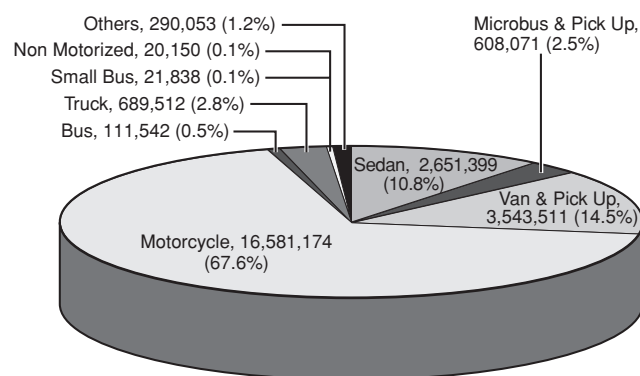
Table 7 Road accident statistic in Khon Kaen Province, 2000-2002

Types of vehicles involved in road accident	Year		2000		2001		2002		2000		2002	
	Fatalities		Injuries		Fatalities		Injuries		Fatalities		Injuries	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Passenger Car	32	7.1	301	1.4	8	2.5	499	2.4	8	2.6	493	2.2
Pick-up	51	11.3	1,492	7.2	45	14.0	1,108	5.3	28	9.0	1,141	5.2
Truck	22	4.9	335	1.6	5	1.6	229	1.1	9	2.9	280	1.3
Bus	12	2.7	368	1.8	8	2.5	372	1.8	7	2.2	363	1.6
Motorcycle	301	66.9	16,718	80.4	210	65.2	16,135	76.6	256	82.1	17,945	81.2
Others	32	7.1	1,576	7.6	46	14.3	2,715	12.9	4	1.3	1,873	8.5
Total	450	100	20,790	100	322	100	21,058	100	312	100	22,095	100

Source: Annual Report 2002 submitted to Ministry of Public Health by Khon Kaen Provincial Public Health Office

were road accident victims compiled by the Ministry of Public Health²¹. As shown in Figure 4, out of the total 194,206 patients admitted to all public hospitals throughout the country because of road accidents in 2002, 142,852 victims were motorcyclists, representing around 75% of the total road accident victims. In fact, motorcyclists are the majority of road accident victims both in terms of fatalities and injuries in a number of provinces in the country. Taking one of the large provinces in northeastern Thailand, Khon Kaen Province, as an example, the annual records on road accident victims compiled by all public hospitals²² in this province during the past three years (2000-2002) indicate that motorcycle is the most accident prone vehicle causing the highest number of casualties both in term of fatalities and injuries, as shown in Table 7. In 2002, the death toll caused by motorcycle accidents was around 82% of the total deaths and likewise, the number of motorcycle accident injured victims were 17,945 cases or about 81% of the total injured victims admitted to these hospitals in Khon Kaen. This alarming rate of motorcycle casualties will perhaps continue to grow unless some drastic measures are going to be implemented soon.

One contributing factor to massive motorcycle casualties is the fact that motorcycle is the most popular mode of commuting in Thailand. Due to its relatively low cost, motorcycle tends to be the first affordable motor vehicle that can be purchased and used by low income and young drivers. This can be verified by the statistics on registered vehicles in Thailand which motorcycle has the highest number registered (67.6% in 2002). Currently, over 17 millions motorcycles are registered in Thailand. As a consequence, motorcycles have the high-

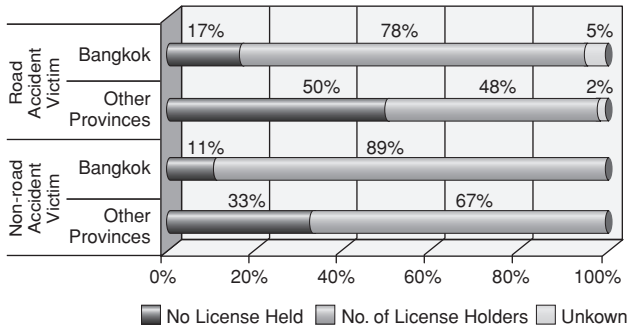


Source: Department of Land Transport

Fig. 5 Number of vehicles registered in Thailand

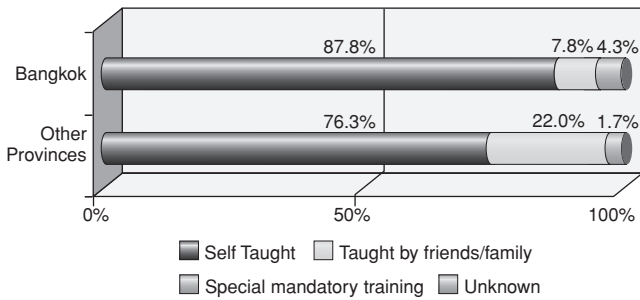
est accident rate. The number of motorcycle as compared with other modes of transport registered 2002 is presented in Figure 5²³.

Apart from the extremely high number of motorcycles present in Thailand, another contributing factor to high casualties of motorcycle accidents may be the lack of proper driver licenses and lack of proper driving skills. Figures 6 and 7 present the proportions of the motorcyclists who have driver licenses and those who actually attended the driver training school in both Bangkok and other provinces. These statistics were obtained from a research study²⁴ conducted on motorcycle accidents in Bangkok and other 5 selected provinces during 1998 to 2000. As can be seen from Figure 6 that among the motorcycle accident victims, the majority of them did not have driver licenses. Moreover, the number of license holders are much lower in the provinces apart from Bangkok which



Source: Kasantikul, V.,2001

Fig. 6 Number of license holders in Bangkok and other provinces



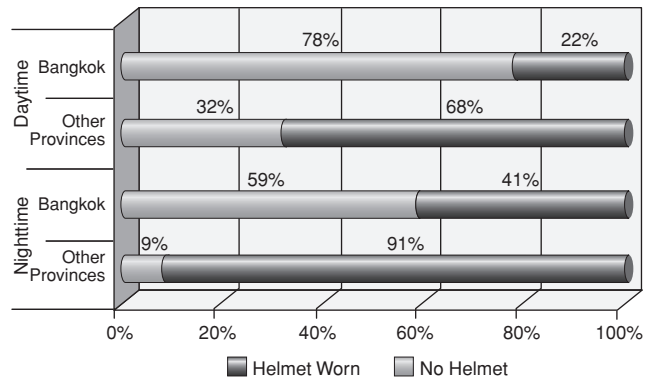
Source: Kasantikul, V.,2001

Fig. 7 Motorcyclist's riding training in Bangkok and other provinces

reflects the fact that a substantial number of motorcyclists still ride illegally and perhaps improperly. This fact is reinforced by the driving skills they had acquired through proper training as presented in Figure 7. It can be clearly seen that most of the Thai motorcyclists manage to learn to ride by themselves without proper training. Thus, they might not have adequate skills which may easily lead to accidents.

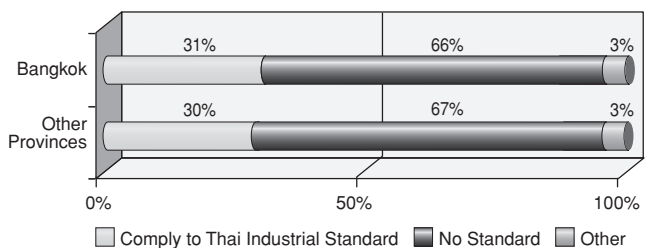
While one simple preventive measure to reduce the severity or minimize the casualty of motorcycle accidents is to wear safety helmet, it is pity that many Thai motorcyclists still choose to take risk by not wearing the helmet. Figure 8 shows the proportion between helmet wearing and non-wearing in both Bangkok and other provinces as revealed by a previously mentioned study²⁴. As can be seen, only around 78% of all motorcyclists in Bangkok wore helmet when riding and this rate dropped dramatically during night time. Similarly, motorcyclists in the provincial cities also tended to ignore helmet wearing as only 32% of them wore the helmet but this rate also dropped drastically to only 9% usage at night time

when law enforcers retreat from their duty. This ignorance of crash helmet usage is also supported by another study conducted in Khon Kaen Province which reveals that 77% of motorcyclists involved in road accidents in Khon Kaen did not wear helmet²⁵. More importantly, for the motorcycle accident victims who did not wear helmet, they could face almost 7 times higher severity as compared with those wearing helmet when accidents occur²⁵. Worst still, considering the type of helmet worn by motorcyclists as presented in Figure 9, the study²⁴ reveals one disturbing fact that the majority of Thai motorcyclists, both in Bangkok and the provinces, are not using appropriate helmets in compliance with the Thai Industrial Standard. In general, they just wear any helmet to show the police that they comply to the law and are not bothered if such helmets can help protect their head injuries if an accident occurs. It is very unfortunate that they seem to be more afraid of policemen than caring about their own safety. Obviously, there is a huge challenge lying ahead for all concerned authorities, not only in trying to enforce the law but also to cultivate safety awareness among the general public, and particularly correct attitude towards proper usage of a simple



Source: Kasantikul, V.,2001

Fig. 8 Usage of crash helmet in Thailand



Source: Kasantikul, V.,2001

Fig. 9 Quality of helmet

safety device like helmet among the motorcyclists.

Among all the contributing factors and risk factors involved with motorcycle accidents, the most significant factor is the riding under the influence of alcohol. Results obtained from various studies^{10,24,25} reveal a similar fact that drunk-riders have a higher risk of facing severe accidents as compared with sober motorcyclists. In Khon Kaen, for instance, it was found that about one third of motorcycle accident victims are drunk-riders. In addition, their severity rates are about 5 times higher than sober riders²⁵. These severe casualties are yet to include the overall economic losses especially the hospitalization costs, opportunity costs, human costs, etc. It is crystal clear that drunk-riding must be barred from being on the streets at all costs since even without alcohol influence, motorcyclists are already, by nature, at risk of accidents.

Perhaps, it may not be too pessimistic to say that motorcycle accidents will continue to increase as the volume of motorcycle sales in the country continue to grow. Although it may not be possible to control the motorcycle population nor their usage, it is possible to minimize the potential hazards that can occur to this particular group of vulnerable road users. This paper strongly recommends the following measures and actions as alternative means to minimize the losses generated by motorcycle accidents:

- Motorcycle manufacturers should provide safety helmets as an accessory part of motorcycles with no extra costs.
- Concerned authorities should encourage local, educational or research, institutions to design proper helmets suitable to Thailand's conditions which must also be in compliance with the Thai Industrial Standard at the low cost possible.
- Law enforcers should consider to provide free safety helmets to those ignore to wear one, but then penalize them with the highest possible fine so that the collected fines can be used to purchase more helmets.
- Likewise, this measure should also be applied to those wearing under-standard helmets.
- All public premises as well as educational institutions should not allow the motorcyclists who do not wear proper helmets to enter to their respective premises.
- Concerned agencies should set up riding schools/centers to properly train motorcyclists before giving them a license.
- Legal blood alcohol level limit should be re-adjusted to lower the limit for motorcyclists particularly young riders.

It is highly hoped that all these measures will be considered by all concerned agencies for future implementation, then motorcycle accidents can be minimized considerably.

6. CONCLUSION

Many indicators have suggested that the Thai economy will continue to grow at least in the next few years. Unfortunately, the subsequent adverse impact on road accidents can also be expected along with the growing economy as Thailand previously experienced. A higher number of vehicles particularly motorcycles can be anticipated throughout the country which will result in more road casualties and tremendous economic losses especially the extra health care costs for the accident victims. It, therefore, remains a challenging issue to all concerned parties to address this significant social problem and concurrently, to implement all the necessary measures promptly to fight this long and seemingly endless battle.

It is fortunate that the current Government has placed a high priority on fighting this accident battle. Even though the existing National Road Safety Management Center may continue to work on an ad hoc basis, its active role and enthusiastic attempts to solve the nation's road safety problems coupled with its ability to secure financial support from the Government can be considered the "light at the end of the tunnel". Nonetheless, the success in fighting this long accident battle depends upon the success in turning the plans into real actions. In other words, the key is being able to implement all the proposed measures successfully.

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