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Cambodia
Road Traffic Accident and Victim Information System

RTAVIS
ROAD TRAFFIC ACCIDENT & VICTIM INFORMATION SYSTEM

Annual Report 2004

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Foreword

Note from the Ministry of Public Works and Transport

A recent UNESCAP[1] report revealed that the numbers of traffic accidents increases every year in the world and that these accidents kill around one million people and injures 23 million others. 85% of the fatalities occur in the developing countries. The Asia–Pacific region alone accounts for up to 44% of global road deaths, although it is currently home to only around 16% of the world's motorized vehicle fleet.

In the Kingdom of Cambodia, the growing number of vehicles together with the efforts made by the Royal Government of Cambodia to develop and improve the traffic infrastructures (in order to facilitate transportation and to develop the national economy thus alleviating poverty), leads to a dramatic increase of road traffic accidents of 15% every year.

Traffic accidents can now be considered as the second largest catastrophe in the country after AIDS, killing 3 people and injuring many others per day, not considering damages and loss of public or private properties and the moral distress to society .

I do believe that, with the combined efforts of various institutions, NGOs, private companies as well as the people themselves, traffic accidents can be reduced in a near future.

On the occasion of the release of the First Annual RTAVIS report, I would like to express my sincere thanks to Handicap International Belgium who has consistently collaborated with the Ministry of Public Works and Transport to find out means and measures to refrain and reduce the traffic accidents to the lowest possible levels to the same extent as in the developed countries in the world or the other countries of the ASEAN region.

H.E. Sun Chann Thol
Minister of Public Works and Transport

[1] Editor's note: United Nations Economic and Social Commission for Asia and the Pacific.

Note from the Ministry of Health

Road traffic accidents are a major issue in the Kingdom of Cambodia. Every day, 3 people are killed and 100 are injured on Cambodian roads and those figures are increasing rapidly. This has an enormous negative impact on the development of the country. A recent study performed by the Asian Development Bank estimated the annual cost of road traffic accidents at 116 million US$, representing more than 3% of the country GDP.

Road traffic accidents also have a strong impact on the health system of our country. In some hospitals, more than 50% of the patients are road traffic casualties. There is therefore an urgent need to tackle this issue seriously and to effectively implement the Road Safety Action Plan prepared by the Government of Cambodia.

One of the objectives of this action plan is to set up a road traffic accident data collection system. This system will allow to better understand the current situation and to evaluate the meaningfulness and effectiveness of the actions we take. As part of a comprehensive Injury Surveillance System, it is predictable that such a system may eventually be linked to other public health related data collection systems such a domestic accidents, small arms accidents or mine and UXO accidents.

Today, the Ministry of Health is delighted to collaborate with the Ministry of Public Works and Transport and the Ministry of Interior, as well as with non governmental organizations such as Handicap International Belgium and the Cambodian Red Cross to create a unique and standardized data collection system on road traffic accidents. This is useful for our country.

I would like also to emphasize again the commitment of the Ministry of Health to continue to collaborate to reduce the burden of road traffic accidents and to improve the quality of the emergency and rehabilitation services in hospitals.

HE Dr. Nuth Sokhom
Minister of Health

Note from the Ministry of Interior

Road traffic accidents increase every year in Cambodia and can be considered as a new humanitarian tragedy for the country. In 2004, 3 people were killed every day due to road traffic accidents, causing inestimable human and economic damages, refraining the poverty reduction process, the economic growth and people's happiness.

Police services have noticed that two main factors are responsible of traffic accidents: human error and vehicle defect. Today, a series of actions within transparent mechanisms are required to manage those issues:

1. Setting up the locomotive to lead the road safety actions with the creation of a National Road Safety Committee and related local committees (provinces and towns). These committees will make it possible for all competent institutions to issue a common policy and important guidelines and assign each competent officer for the implementation and the monitoring of the identified actions.
2. Improving and strengthening the quality of road safety education at all levels of the population, focusing especially on people learning to drive, the vulnerable road users such as motorbike or bike drivers and the pedestrians.
3. Having an effective and complete traffic law and strict enforcement mechanisms allowing to control the two factors that cause accidents: human error and vehicle defect.
4. Studying and organizing the engineering of the road to improve safety.
5. Studying and researching new modern technologies to control the traffic. If possible, we should absorb the good experiences from developed countries for the standard base to develop the traffic safety.

On top of the actions mentioned here below, there are many other tasks that need to be filled in to make the traffic accident demons disappear from the road and reduce the tragedy of people.

"Traffic accident is not an incurable disease"
"It is sure that the traffic accidents can be reduced and full safety be reached"

National Police Directorate General
Ministry of Interior

Note from the Cambodian Red Cross

Over the last decade, while the number of mine/UXO victims tended to gradually decrease, the number of road traffic accidents has increased dramatically for several reasons, such as a lack of education, poor law and regulations and massive import of second hand cars with right-hand drive from Thailand.

The Cambodian Red Cross is very happy to collaborate to the development of the Cambodia Road Traffic Accident and Victim Information System. We are indeed convinced this system is the basis for a better understanding of the growing issue of road traffic accidents.

In the future, the Cambodian Red Cross wishes to collaborate with Handicap International Belgium and other stakeholders to develop education material for secondary schools as well as first aid strategies and toolkits aimed at improving first response to traffic accidents.

Mr. Hum Sophon
Director
Program Department
Cambodian Red Cross

Note from Handicap International Belgium

In Cambodia, more than 3 people die and 100 are injured every day as a result of road traffic accidents, and the casualty figures are increasing dramatically.
To effectively tackle this complex issue, actions in multiple sectors must be taken involving numerous stakeholders.

In its "Road Safety Guidelines for the Asian and Pacific Region", published in 1996. which aimed to help countries bring about road safety improvements, the Asian Development Bank identified specific actions and interventions to be undertaken in 14 major sectors.
One of these priority sector relates to the setting up of a road accident data system, needed for accurate assessment of the road safety situation. Such a database can help stakeholders to identify appropriate measures to combat the consequences of road accidents. It is laudable that the Royal Government of Cambodia has decided to follow the same pattern, prioritising the creation of a road accident data system in its 2004 Road Safety Action Plan.

Handicap International (Belgium) is proud to have contributed to the achievement of this first report, following a year of collection and analysis of data recorded in Phnom Penh.

This report could not have been possible without the cooperation of numerous people and institutions who have an active interest in the subject of road safety in Cambodia. Our particular thanks go to the Ministry of Public Works and Transport, Ministry of Health and Ministry of Interior, to our long-time partner, the Cambodian Red Cross, as well as to the World Health Organisation, whose representatives in Cambodia have been very supportive.

Sincere thanks are also due to the numerous doctors and policemen who devoted time to collect information, as well as to the RTAVIS team who analysed the data.

Special thanks are due to the Handicap International (Belgium) road safety team, and in particular to its manager, Mr. Jean Van Wetter, whose commitment and impetus made the publication of this report possible, as well as to our injury surveillance technical advisor, Mr. Kao Vannarin and to our mine action & injury prevention coordinator, Mr. Christian Provoost, who greatly contributed to the quality of this report.
Last, I am pleased to mention our generous donors, the Belgian and French Cooperation, for their interest and support in this crucial issue.

This report includes a collection of data as well as relevant recommendations. We hope they will be of use to the road safety and public health stakeholders in Cambodia, helping them to develop measures, plans and programmes aiming at preventing accidents, disabilities and deaths.

Bruno Leclercq
Country Director
Handicap International Belgium

I. Introduction

The **objective** of the Road Traffic Accident and Victim Information System (RTAVIS) is to provide government and development stakeholders in Cambodia with accurate, continuous and comprehensive information on **road traffic accidents and victims**.
It should allow them to better understand the current road safety situation, plan appropriate responses and evaluate impact of current and future initiatives.

Three **different ministries** are involved in road traffic accident data collection in Cambodia:
- The Ministry of Public Works and Transport;
- The Ministry of Interior;
- The Ministry of Health.

Although the databases developed by these ministries have been providing relevant indications on the road safety situation of the country, a **need for improvement** has been observed:
- The databases are not compatible between each other and there are important discrepancies between them[2];
- They under-report the real situation[3];
- They are limited in their scope[4].

For those reasons, in early 2004, Handicap International Belgium (HIB), in collaboration with the Cambodian Red Cross (CRC), has proposed to the three ministries to assist them to **develop a new system, based on a standardized and more detailed data collection form[5].**

The new system has been progressively developed since the **1st of March 2004,** in accordance with the requirements of the ASEAN and the United Nations and in the framework of Action 2 (Road Accident Data Systems) of the **National Road Safety Action Plan** of the Royal Government of Cambodia.

Today, RTAVIS collects, centralizes, analyses and disseminates information provided by three different sources:
- Public hospitals;
- Private clinics;
- Traffic police.

By the end of 2004, information was being collected at 11 hospitals and private clinics[6] in Phnom Penh and at the Phnom Penh traffic police.

In 2005, the system will be progressively extended to cover the whole country, in collaboration with the mentioned ministries and several partners such as the Belgian Technical Cooperation.

The present report analyses the information collected by RTAVIS for the year **2004**. It is a synthesis of all the monthly reports that were published throughout the year.

[2] e.g. Accident data reported by traffic police is 50% lower than data reported by Ministry of Heath.
[3] e.g. in 2004, the Ministry of Public Works and Transport report 7,967 casualties and fatalities while the Demographic and Health Survey performed in 2000 estimates the number of casualties at around 40,000.
[4] For example, they do not provide **sufficient information on the circumstances of the accidents nor on the injuries** and the **socio-economic situation** of the casualties.
[5] See appendix
[6] See list page 21

II. Executive Summary

Situation in Cambodia

- **3 persons die every day** from road traffic accidents in Cambodia.
- Road traffic **fatalities have doubled** over the last three years.
- Road traffic accidents **increase proportionally more** than road traffic and population.
- Traffic increases by more than 10% every year.
- Cambodia has the **second highest road traffic fatality rate** (number of fatalities/10,000 vehicles) in the region. This rate is **ten times higher** than in developed countries and twice as high than the ASEAN average[7].
- 18% of road traffic casualties reported in Cambodia occur in Phnom Penh.

Recommendation 1: Create a National Road Safety Council to implement the National Road Safety Action Plan of the Government[8].

Cambodia is at the bottom of its vehicle-ownership curve and **exponential growth** of road traffic casualties can be expected in the coming years if no action is taken. A first draft of a **National Road Safety Action Plan** has already been developed by the Ministry of Public Works and Transport and its partners. This plan needs to be further refined and detailed.
Moreover, a **multidisciplinary National Road Safety Council** must be created to implement activities and manage interactions between ministries and partners involved.

Recommendation 2: Adopt the new traffic law as soon as possible[9].

The current traffic law dates from 1991 and is obsolete. A new Traffic Law, which meets international standards, is now under preparation and contains new articles that are not included in the current law, including:
- Every motorcyclist using a motorbike from 49 cc must have a driving license[10];
- Helmet wearing is compulsory for all motorbike users;
- Fastening seatbelts is compulsory for all car drivers and passengers;
- Blood alcohol concentration limit is provided;
- Fines and penalties are increased.

The introduction of this new law is urgent, seeing the figures of this report and especially given that more than 90% of road traffic accidents are the direct consequences of human errors.

Recommendation 3: Improve law enforcement by training and motivating traffic police[11].

Law enforcement is currently very weak. Experience in other countries shows that even if traffic laws are very stringent, they are useless without adequate enforcement.
Traffic police officers should be trained on the new traffic law and receive incentives to enforce it correctly.
Traffic police officers also currently lack of respect by the population. A campaign to improve their legitimacy and their image should be developed, simultaneously with clear changes in the way they operate.

[7] Notice: When calculated in comparison with the population (number of fatalities/100,000 persons), **the fatality rate is however in the ASEAN average**. Also, the actual number of vehicles in use in the country may be higher than the official figure due to illegal imports of vehicles which are not registered at the Ministry of Public Works and Transport.
[8] The Road Safety Action Plan of the Royal Government of Cambodia has been first drafted in 2004, based on the Road Safety Guidelines of the Asian Development Bank. **Some of the recommendations provided in this executive summary correspond to actions identified in the action plan**. The present recommendation of creating a road safety council corresponds to **action 1 of the action plan: Establishing a National Road Safety Council for Coordination and Management of Road Safety**.
Moreover, based on the National action plan, **several health partners**, including the World Health Organization, Handicap International, Unicef and the Ministry of Health, have taken a series of actions. Some of them are mentioned in this report.
[9] Cf. **Action 7 of the Road Safety Action Plan: Traffic law and regulation**.
[10] Driving licenses are currently not compulsory for motorbikes below 100 cc even though most motorbikes in use in the country are below 100 cc. Therefore, most motorcyclists in the country do not have to pass a theoretical and practical examination before driving a motorcycle and most likely do not know the traffic rules.
The new traffic law, which is currently under preparation, will oblige every motorbike driver to have a license to drive motorbike from 49 cc up.
[11] Cf. **Action 8 of the Road Safety Action Plan: Law Enforcement**.

Situation in Phnom Penh

4,508 casualties were registered in 2004 by the reporting hospitals, private clinics and the traffic police, resulting from **2,136 accidents.**
Calmette hospital reported 35% of casualties, followed by Kossamak hospital (20%) and by the traffic police (15%).

Recommendation 4: Further develop a standardized road traffic accident data collection system at the national level, combining data coming from various sources[12].

Road traffic accidents and casualties data cannot be collected at a single source of information. Traffic police are not present at all accident sites and many road traffic casualties do not go to the hospital to receive medical treatment.
To obtain a complete and accurate analysis of the situation, data collection must be standardized and include several sources and partners. This is the objective of RTAVIS.

- Age of casualties

  - People aged between **15 and 24 years old account for 48% of casualties although they represent only 24% of the population**.
  - This proportion of young adults casualties is much higher than the worldwide average.

Recommendation 5: Develop a specific strategy to address road safety issues among young drivers.

The age pyramid of Cambodian population shows that **30% of the population is aged between 0 and 14 years**. It means that in the coming years, a growing number of young people will start to drive on Cambodian roads. Knowing that young people are currently associated with almost 50% road traffic casualties, there is a risk that this percentage will increase further in the future.

- Gender of casualties

  - **Males** account for **71% of casualties**, although they account for only 48% of the population.
  - This over-representation of males is in line with what is observed in other cities in the region and the world.

- Type of transport

  - **Motorcyclists** account for the large majority of casualties (**76%**), followed by **pedestrians (9%)** and car users (7%).
  - Those figures are similar to those from cities such as Ho Chi Minh City and Vientiane but are far different from the situation observed in developed countries where the proportion of cars is much higher.

Recommendation 6: Develop a road design that allows a better separation of 4-wheelers and 2/3-wheelers[13].

Cambodian roads are characterized by a wide variety of types of traffic (motorbikes, cars, tricycles, tuk-tuks, minivans, trucks, oxcarts, etc).
Separation between four-wheelers and two-wheelers on national roads and on main town streets would reduce the number of accidents, and at the same time it would improve traffic flows.

[12] Cf. Action 2 of the Road Safety Action Plan: Road Accident Data Systems. This action is supported by the World Health Organization, the French cooperation and Handicap International.
[13] Cf. Action 5 of the Road Safety Action Plan: Road Environment and Road Design.

Recommendation 7: Educate children to adopt a safe pedestrian behaviour[14].

Providing road safety education from the first grade of primary school is considered one of the best ways to improve the road safety situation on the long term.
Most child casualties are pedestrians. Teaching them the basic rules and risks of the road can allow them to travel safer from home to school and elsewhere.

- Occupation of casualties

  - **Students**[15] represent the **largest group of casualties** (22.5% of casualties), followed by workers (22%) and vendors/small businesses (18%).
  - Motorbike taxi drivers constitute only 3% of the total number of casualties.

- Residence of casualties

  - 15% of casualties injured in Phnom Penh come from the provinces.

- Severity of injuries

  - **In total, more than 4% of casualties die either at the scene of the accident or of their injuries later** (an average of 17 fatalities per month).
  - Around **30% of casualties have severe injuries** requiring surgery or admission to intensive care.
  - **Car users and pedestrians** suffer more fatalities than other types of road users.

- Nature of injuries

  - In total, **65% of casualties suffer from head injuries**, much higher than the world average of 28%.
  - 9% of them are considered as severe[16].
  - 80% of casualties suffering from head injuries are **motorbike users**. Among them, only **4.39% are wearing a helmet** at the time of the accident.
  - **Only 30% of those wearing a helmet suffer from head injuries** while 70% of those not wearing a helmet suffer from head injuries. This confirms the importance of helmet wearing.

Recommendation 8: Further develop awareness and enforcement campaigns to increase helmet wearing[17].

65% of casualties suffer from head injury. A large number of casualties could therefore be avoided if people were wearing helmets correctly.

  - In addition, 24% of casualties suffer from **fractures** and 33% suffer from **serious cuts/wounds**.

[14] Cf. Action 6 of the Road Safety Action Plan: Road Safety Education for Children. This action is supported by a program of Handicap International aiming at introducing a new road safety curriculum in the formal primary school curriculum.
[15] Students are defined as follows: from first grade of primary school to last grade of university/higher education.
[16] Classification of severe head injury is based on the **Glasgow Scale**, which defines neurological impairment in terms of eye opening, speech, and motor function. The maximum score is 15, and **severe head injury is determined by a score of 8 or less** persisting for 6 hours or more.
[17] Cf. Action 12 of the Road Safety Action Plan: Road Safety Public Campaigns.
This recommendation is strongly supported by the World Health Organization and Handicap International, which launched several campaigns to promote the use of helmets.
The philosophy of those campaigns is to increase the helmet wearing rate via mass media awareness campaigns before to introduce the new law making helmet use compulsory. There is indeed a risk of non-acceptance by the population if the new law is introduced directly, with no progressive awareness campaigns.

- Driving license

  - **Less than 50%** of car/truck/bus drivers' casualties have a valid driving license at the time of the accident.

- Day of accident

  - An average of 15 casualties are reported every day in Phnom Penh. Several peaks (**up to 50 casualties a day**) are noticed, corresponding mainly to Khmer national holidays.
  - Weekend (Friday 6 pm until Sunday midnight) accidents are responsible for 36.5% of casualties.
  - A higher number of casualties occur on **Saturdays and Sundays**[18], especially during night time.

- Time of accident

  - **Nighttime accidents** are responsible for 39% of casualties.
  - Two **peaks** of casualties are observed: at noon and at 9 pm.
  - Most weekday casualties are reported during the day while weekend casualties are equally spread during day and night.

- Causes of accident

  - **High speed and non-respect of give way rules** are responsible for more than **60% of casualties**.
  - **Alcohol/drug abuse** is responsible for 15% of casualties.

Recommendation 9: Develop awareness and enforcement campaigns targeting drunk drivers.

Alcohol/drug abuse is a major problem, especially during the night. It is believed that the figures provided here underestimate the real situation because traffic police and hospital staff do not have the material or the time to assess alcohol/drug consumption. The figures are therefore just based on assumptions.
Traffic police should have breathalysers to measure alcohol consumption correctly and enforce the law.

  - In total **, human error** is responsible for more than 90% of casualties.

Recommendation 10: **Develop awareness and enforcement campaigns on driving rules and improve the driver training system[19].**

Current road users behavior in Cambodia is generally erratic, undisciplined and inconsistent.
A large percentage of four-wheelers' drivers do not have a valid driving license and most motorcyclists do not have a driving license. The introduction and the enforcement of the new law should partly remedy this situation.
A **better control of the driving schools** and the driving examination should also be ensured.

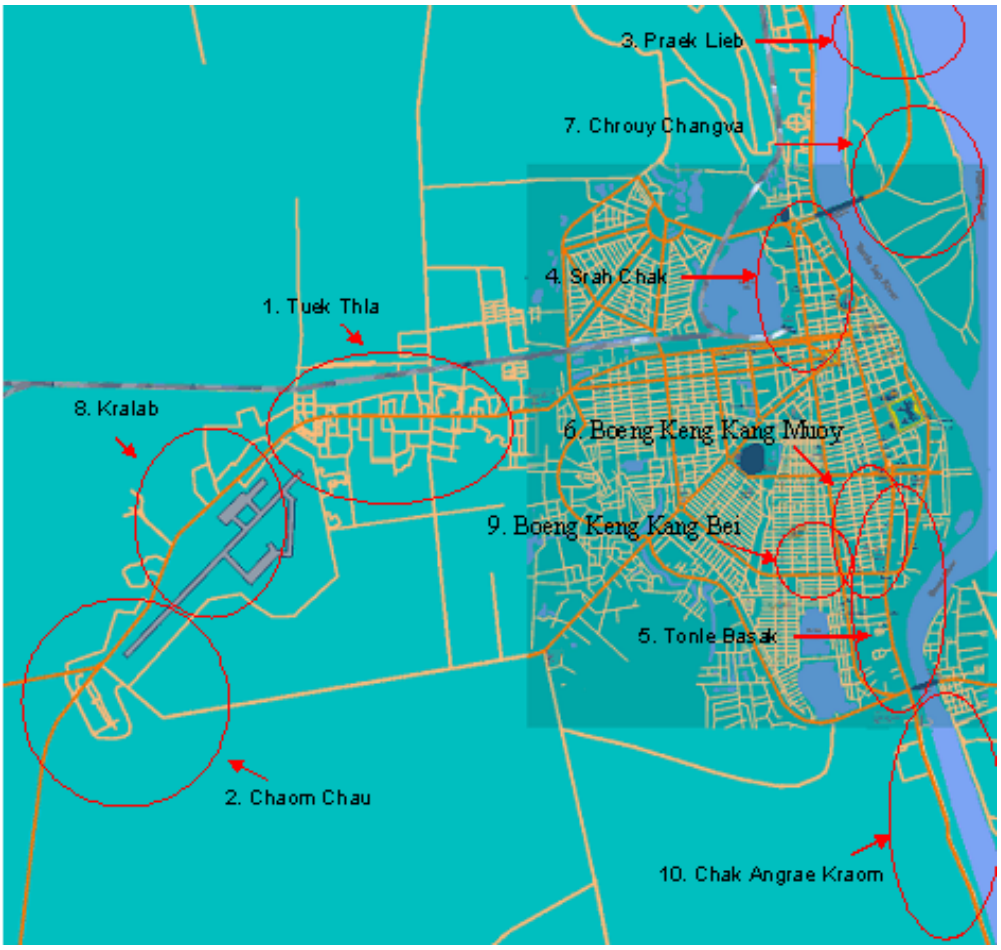
- Type of collision

  - **Motorbike-motorbike collisions** are responsible for 36% of the casualties, followed by motorbike-car collisions (25%) and motorbike-pedestrian collisions (6%).
  - 6% of motorbike casualties fell alone.
  - An average of 3.6 persons are involved and 2.1 are injured in each accident.

[18] An increase of 40% of the number of casualties is noticed on weekends compared to the average number of casualties on weekdays.
[19] Cf. Action 10 of the Road Safety Action Plan: Drivers Training.

- Location of accident

  - **28% of casualties** receiving medical treatment in Phnom Penh are injured in accidents occurring in the **province**.
  - **The districts and communes crossed by national roads suffer larger numbers of road traffic casualties** than other districts and communes:
    - **Ruessei Kaev** district represents 28% of Phnom Penh casualties while it represents only 22% of Phnom Penh population. This district is crossed by major national roads 4, 5 and 6.
    - **Tuek Thla** commune in Russei Kaev district represent more than 7% of Phnom Penh casualties while it represents less than 4% of the population. The commune is crossed by national road 4.
    - **Preaek Lieb commune** in Russei Kaev district reports almost than 5% of Phnom Penh casualties while it represents only 1.5% of the population. The commune is crossed by national road 6.



- Type of road

  - More than **42% of casualties** are injured in accidents occurring on **national/provincial roads.**

- Road characteristics

  - More than 80% of casualties are injured in accidents occurring on **straight roads**.
  - More than 90% of casualties are injured in accidents occurring on **paved roads**.

Recommendation 11: Develop specific road safety action plans targeting national roads[20].

There is a direct link between rehabilitated roads and the number of accidents.
National roads have recently been rehabilitated and traffic on those roads is increasing rapidly. The number of accidents on those roads is therefore expected to increase even more rapidly.
Injuries on national roads are in general more serious than on smaller roads in urban areas because of the higher speed of the vehicles.
The percentage of pedestrian casualties may also be higher because the roads cross villages, schools and markets.
Therefore road safety action plans are urgently needed to accompany road rehabilitation and construction to ensure that:

- Hazardous locations and black spots are clearly identified and marked;
- Schools and markets are clearly identified and protected with speed breakers;
- Villagers are properly informed on the additional risks that the road brings;
- Speed limits are clearly indicated and respected.

- Transfer to hospital

  - Almost **50% of casualties** are transferred to the hospital/private clinic by **ambulance**. Around 10% arrive alone.
  - 45% of casualties arrive at the hospital/private clinic less then 30 minutes after the accident while almost 30% of casualties took more than 2 hours to arrive at the hospital.
  - Casualties taking more than 2 hours to arrive at the hospital are mainly injured in province accidents.

Recommendation 12: **Improve emergency assistance to traffic victims[21].**

This is one of the most urgent recommendations. The current Cambodian healthcare system is currently not capable of absorbing the current and expected number of road traffic casualties. The problem is especially serious in remote areas along national roads where casualties sometimes have to wait several hours before being brought to hospital. The equipment and competence of the district hospitals are generally not sufficient and casualties often travel from one district hospital to a referral hospital before being sent to Phnom Penh or to Vietnam.
Ambulance services should be improved.
People should also be better informed of what to do in case they are victims or witnesses of accidents (who to call, what first aid they can provide, etc).

- Police attendance

  - Police are present on the accident site in more than **60% of the cases**.

[20] This recommendation is supported by a program of Handicap International which is supporting local NGOs and village committees to initiate road safety actions in village located along national roads.
[21] Cf. Action 11 of the Road Safety Action Plan: Emergency Assistance to Traffic Victims.

III. Situation in Cambodia

Notice:

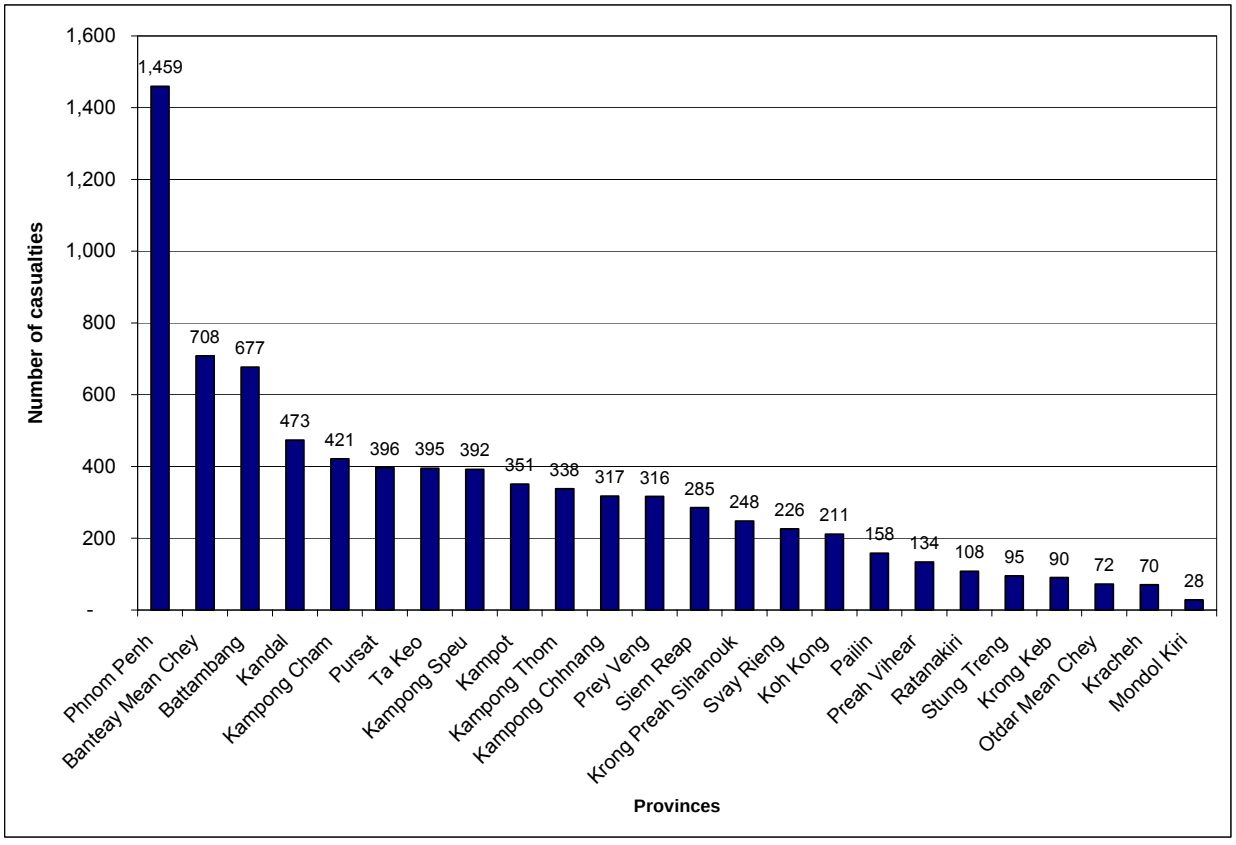
RTAVIS does not record yet information for the whole country. **Most of the figures shown below are extracted from the traffic police database only**.
We believe those figures **under-estimate the real situation** for the following reasons:

- The Demographic and Health Survey 2000 estimated the **number of road traffic casualties at around 40,000 while traffic police figures report around 8,000**;
- In Phnom Penh only, traffic police reports 1,459 casualties while RTAVIS reports 4,508 casualties for the year 2004.

We however decided to publish those figures to show the distribution of casualties between the Cambodian provinces and to highlight the evolution of the number of casualties.

In 2004, 4,255 road traffic accidents have been reported by the traffic police in Cambodia, resulting in 1,042 fatalities and 6,925 casualties.
18% of them were recorded in Phnom Penh, as shown on figure 1.

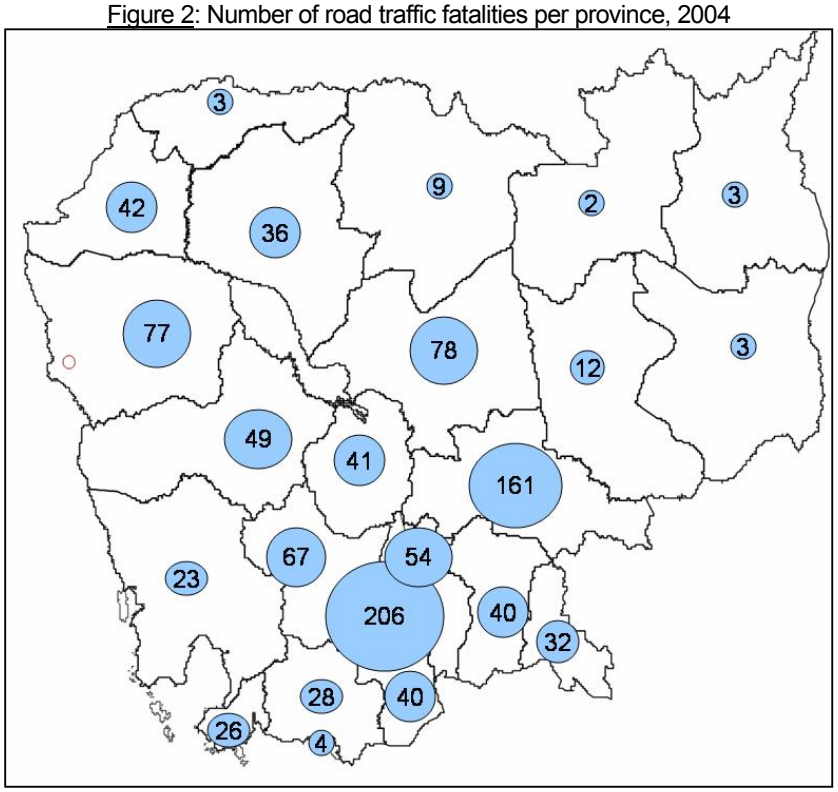
Figure 1: Number of road traffic casualties per province, 2004[22]



[22] Source: Ministry of Public Works and Transport based on traffic police figures- 2004.

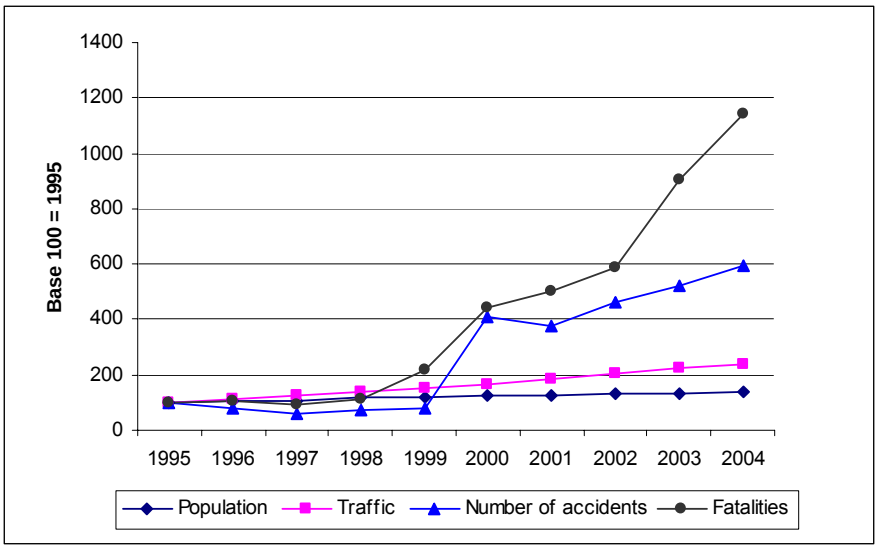
The provinces most affected by road traffic fatalities are Phnom Penh and Kompomg Cham.

Figure 2: Number of road traffic fatalities per province, 2004



Road traffic accidents increase more proportionally than road traffic and population. Over the last three years, the number of accidents increased by 30% and **the number of fatalities has doubled**. In the meantime, population has increased by 7% and road traffic by 16%.

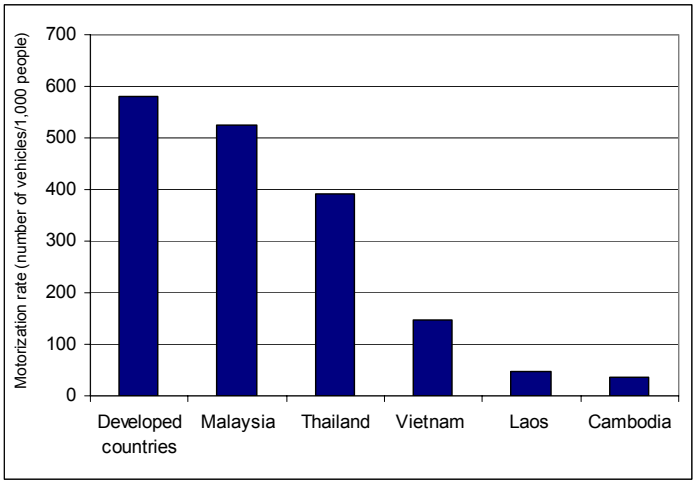
Figure 3: Evolution of road traffic accidents and casualties[23], 1995 – 2004 (base 100 = 1995)



[23] Sources:
- Population: First Revision of Population Projections for Cambodia 1998 -2020, National Institute of Statistics, Ministry of Planning, June 2004;
- Traffic and accident figures: Ministry of Public Works and Transport.

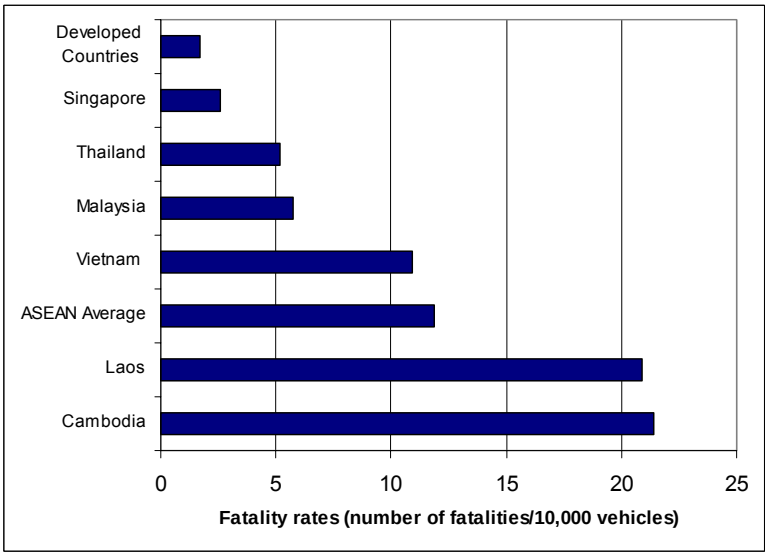
Rapid rise in vehicle-ownership and improvement of the road network (allowing speed increases) make traffic become more and more complex.
Cambodia is at the bottom of its vehicle-ownership curve and **exponential growth** can be expected for the forthcoming years.

Figure 4: Comparison of vehicle-ownership rates (motorized vehicles per 1,000 persons) in several countries – most recent year available between 2003 and 2004[24]



Cambodia today has the **second highest road traffic fatality rate** (number of fatalities/10,000 vehicles) in the region. This rate is **ten times higher** than in developed countries and twice as high than the ASEAN average[25].

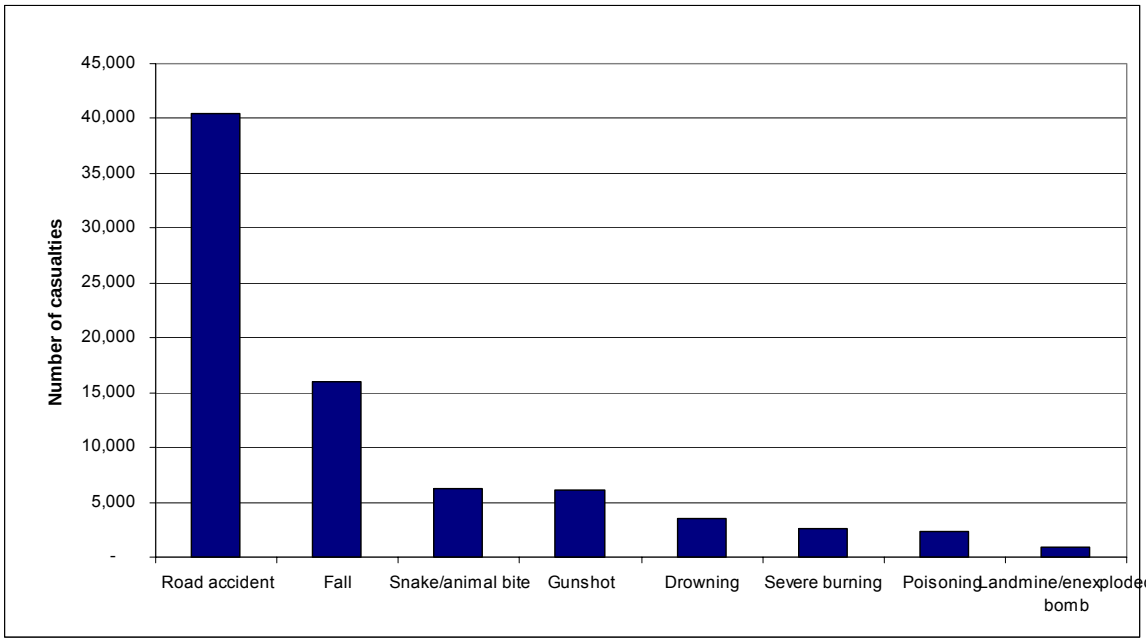
Figure 5: Traffic fatality rates (number of fatalities/10,000 vehicles) in SEA region[26] - most recent year available between 2003 and 2004



[24] Source: *Scale, Characteristics and Costs of the Road Safety Problem in ASEAN*, presentation by Dr. Alan Ross, ADB – Fourth ADB/ASEAN Regional Road Safety Workshop, May 2004, Malaysia.
Notice: the actual number of vehicles in use in Cambodia may be higher than the official figure due to illegal imports of vehicles which are not registered at the Ministry of Public Works and Transport.
[25] Notice: When calculated in comparison with the population (number of fatalities/100,000 persons), **the fatality rate is however in the ASEAN average**. Also, the actual number of vehicles in use in the country may be higher than the official figure due to illegal imports of vehicles which are not registered at the Ministry of Public Works and Transport.
[26] Source: *Scale, Characteristics and Costs of the Road Safety Problem in ASEAN*, presentation by Dr. Alan Ross, ADB – Fourth ADB/ASEAN Regional Road Safety Workshop, May 2004, Malaysia

Also, road traffic injuries account for **more than 30% of the injuries by accident in Cambodia**.

Figure 6: Number of people injured or killed by accident in Cambodia[27]



[27] Source: Cambodia Demographic and Health Survey 2000, National Institute of Statistics, Ministry of Planning, June 2001.

IV. Situation in Phnom Penh[28]

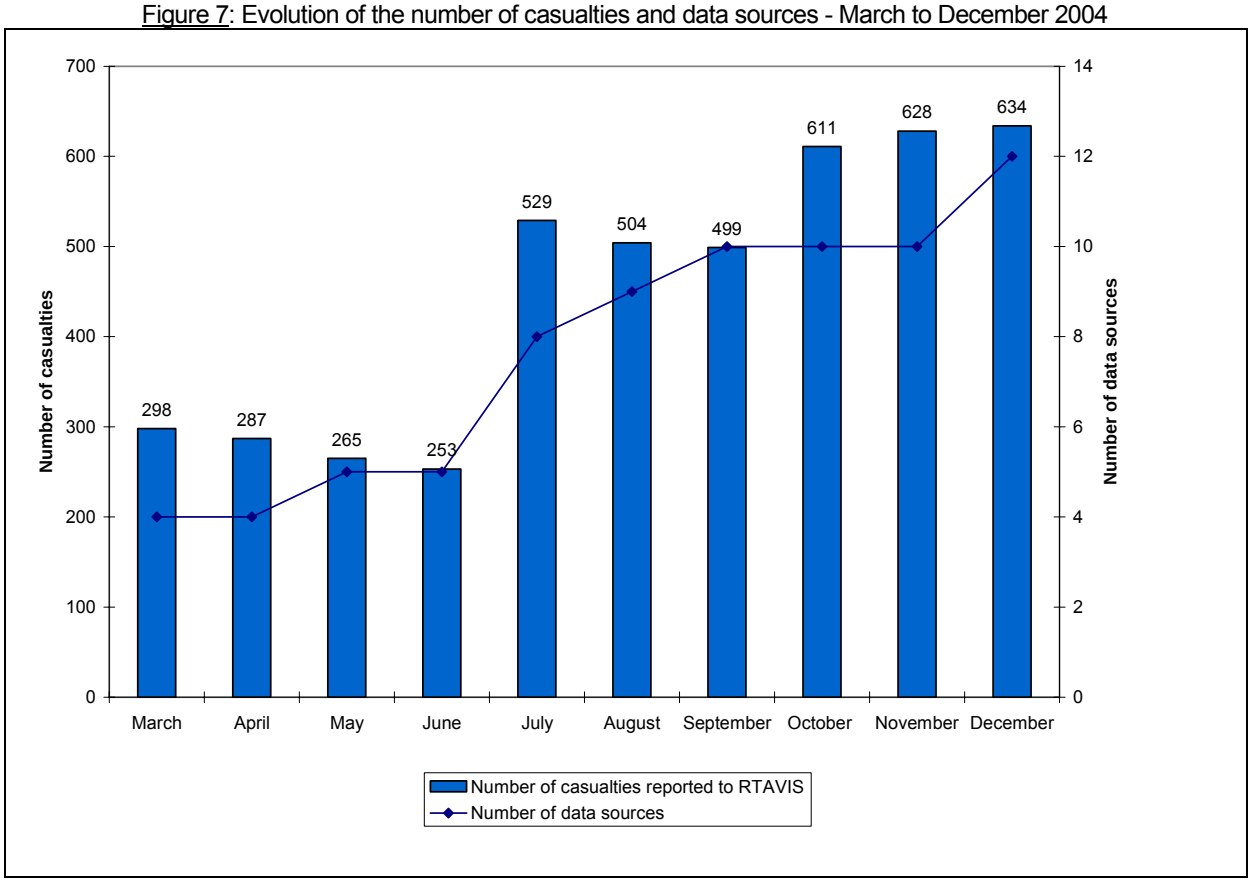
Notice:

The figures shown below are extracted from RTAVIS and are therefore more detailed than the data shown in the previous chapter.
We believe those data provide a complete and accurate analysis of the situation in Phnom Penh.

In 2004, 4,508 casualties were registered in Phnom Penh by the hospitals, private clinics and traffic police districts participating to RTAVIS.

The system started in March 2004 with 4 participating hospitals and has progressively developed to also include private clinics. At the end of 2004, 11 hospitals and private clinics as well as the traffic police participated to RTAVIS.

Figure 7: Evolution of the number of casualties and data sources - March to December 2004

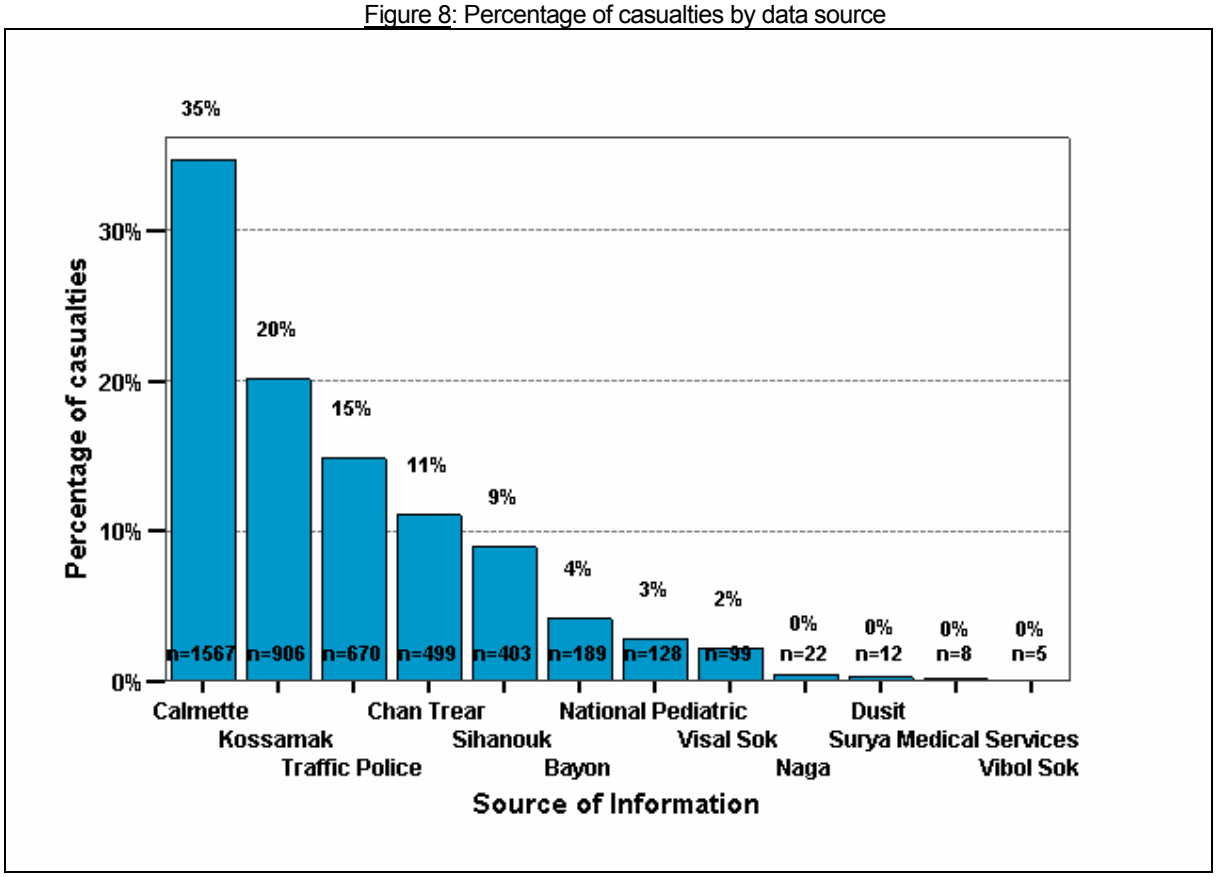


[28] All data provided in this section come from RTAVIS, unless stated differently.

Calmette hospital reported 35% of casualties, followed by Kossamak hospital (20%) and by the traffic police (15%).

Private clinics play a growing role in the medical care of road traffic casualties. Over the last five months, they have treated more than 25% of the casualties[29].

Figure 8: Percentage of casualties by data source



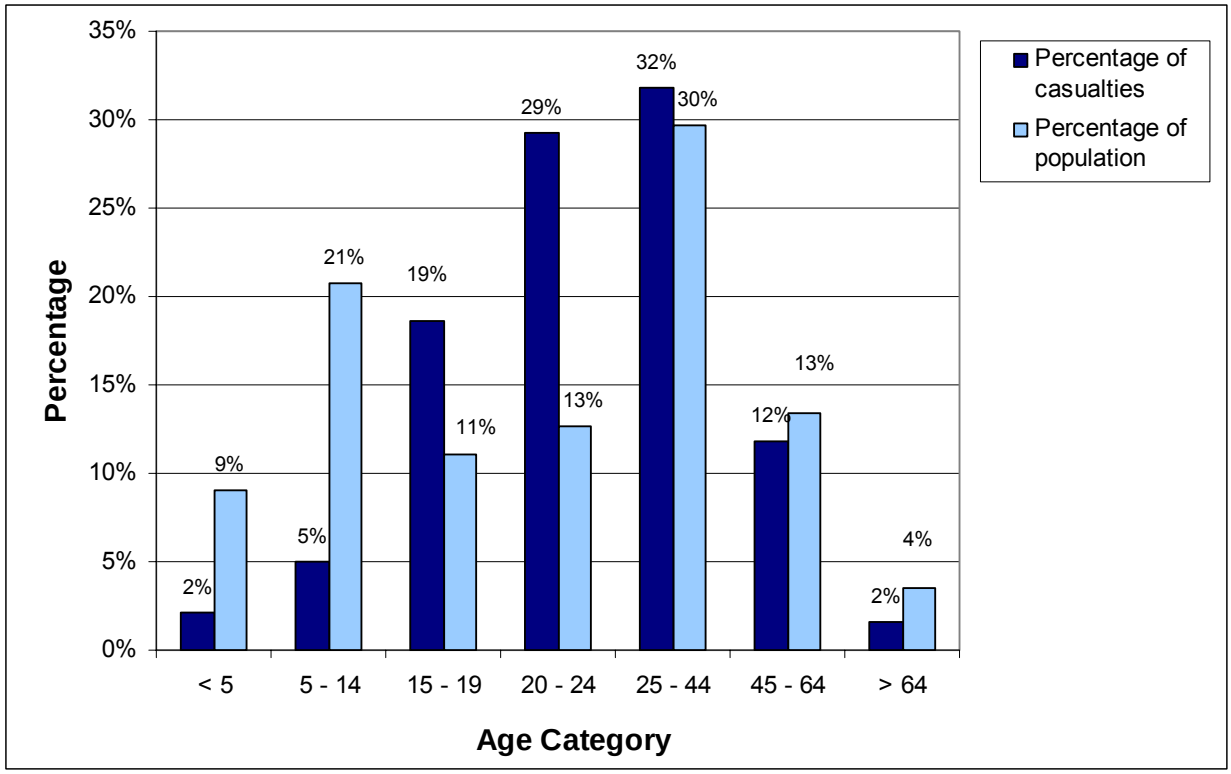
[29] On the graph below, they represent a lower percentage due to the fact that private clinics were involved in the data collection as from July 2004 and not from March 2004.

Victim Information

Age

- The average age of casualties is 29[30].
- People aged between **15 and 24 years old account for 48% of casualties although they represent only 24% of the population**[31].
- Conversely, **children (0-14) account for only 7% of casualties although they represent 30% of the population**.

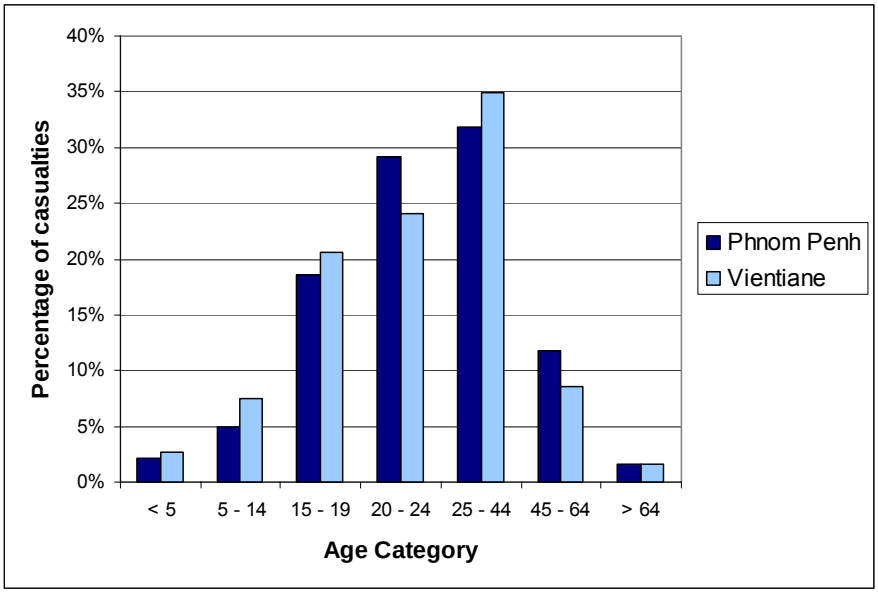
Figure 9: Percentage of casualties and of population according to age categories[32] - 2004



[30] Average age of males casualties: 28.96 years;
Average age of females casualties: 29.28 years old
[31] Notice: The proportion of young people is much more higher in Phnom Penh than in provinces.
[32] Sources: RTAVIS and First Revision of Population Projections for Cambodia 1998 -2020, National Institute of Statistics, Ministry of Planning, June 2004.

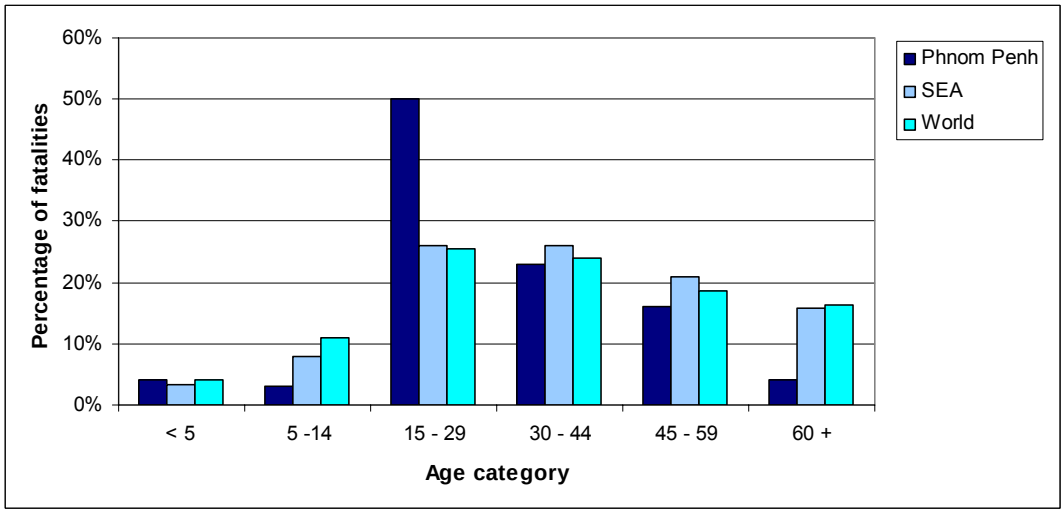
The proportion of young casualties is similar to the one from neighboring capitals such as **Vientiane** (around 50% of casualties are aged between 15 and 24 years old).

Figure 10: Percentage of casualties by age category in two different cities[33] - 2004



This proportion is however much **higher than the South East Asia or the world average.** People aged between 15 and 29 years old account for indeed **50% of the fatalities in Phnom Penh** while they represent around **25% of the fatalities in the rest of the world**.

Figure 11: Percentage of fatalities by age category in different regions of the world[34] - 2002 for the world and SEA figures, 2004 for Phnom Penh



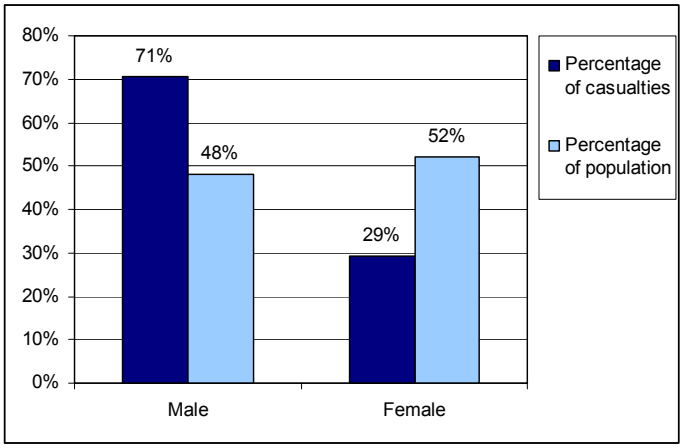
This is due to **important differences in the age pyramids of the casualties between the cities and the provinces**. A larger proportion of young adults casualties are indeed reported in cities than in the countryside.

[33] Sources: RTAVIS and similar systems developed by Handicap International in Vientiane and Ho Chi Minh City.
[34] Sources: RTAVIS and World Report on Road Traffic Injury Prevention, WHO , Geneva, 2004.
Notice: The age categories used in the present graph are not exactly the same as in the previous graph. The age categories used in the previous graph are indeed more adequate to explain the situation in Phnom Penh while the one used in this chart are more adequate to describe the situation worldwide.
Please also note that the present graph shows the percentage of fatalities while the previous graph shows casualties.

Gender

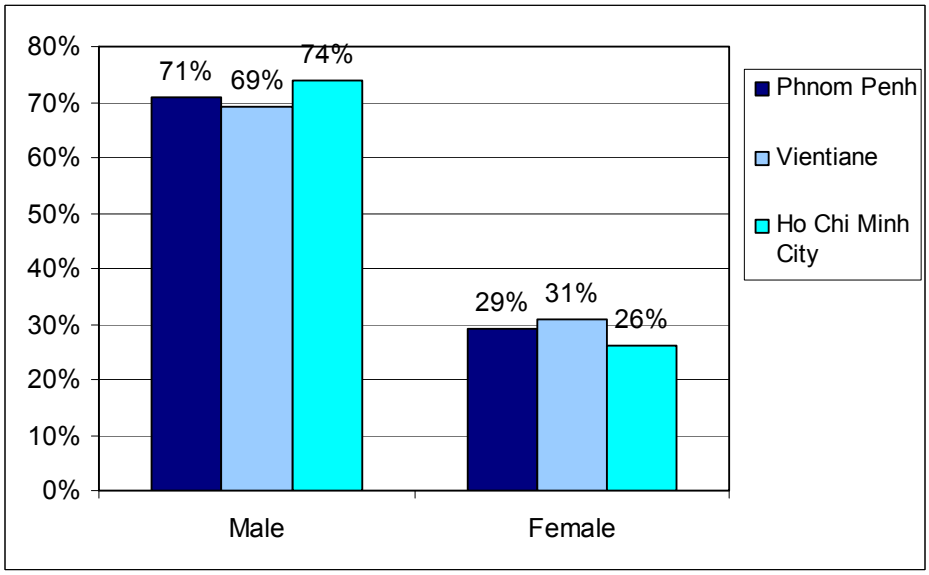
Males account for 71% of casualties, although they account for only 48% of the population[35].

Figure 12: Percentage of casualties and of population by gender - 2004



This over-representation of males is in line with what is observed in other cities in the region.

Figure 13: Comparison of percentages of casualties by gender in three cities[36] - 2004

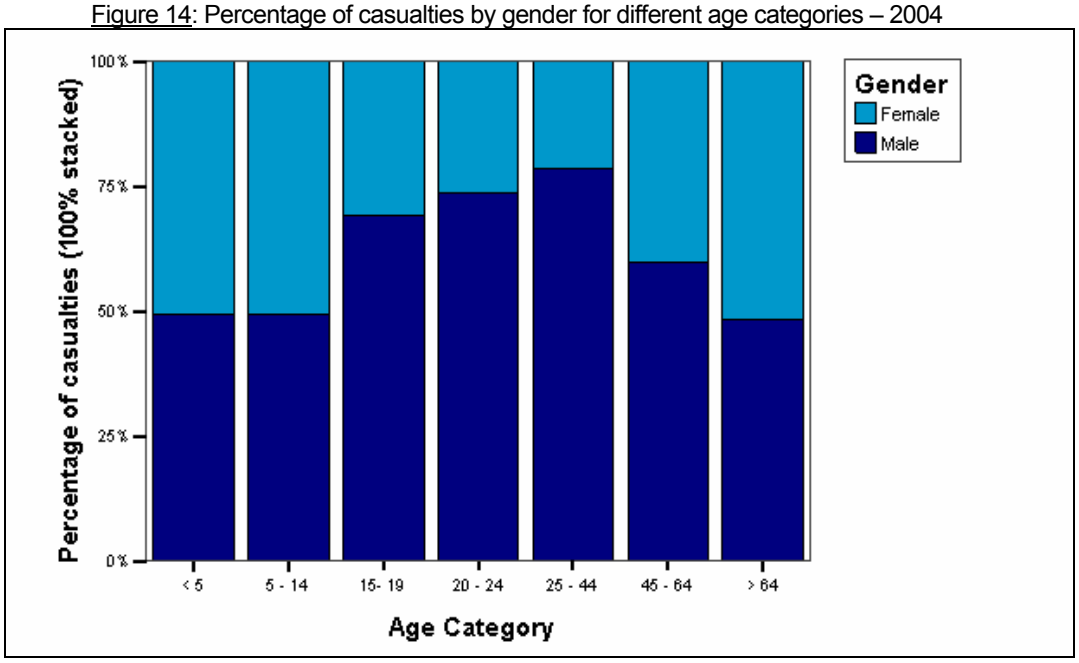


This is also in line with the worldwide statistics: in 2002, males accounted for 73% of all road traffic deaths in the world[37].

[35] Sources: RTAVIS and First Revision of Population Projections for Cambodia 1998 -2020, National Institute of Statistics, Ministry of Planning, June 2004.
[36] Source: RTAVIS and similar systems developed by Handicap International in Vientiane and Ho Chi Minh City.
[37] Source: World Report on Road Traffic Injury Prevention, WHO , Geneva, 2004.

This over-representation of males in the casualties is especially important in the **working–age proportion** of the population (25-44 years old).

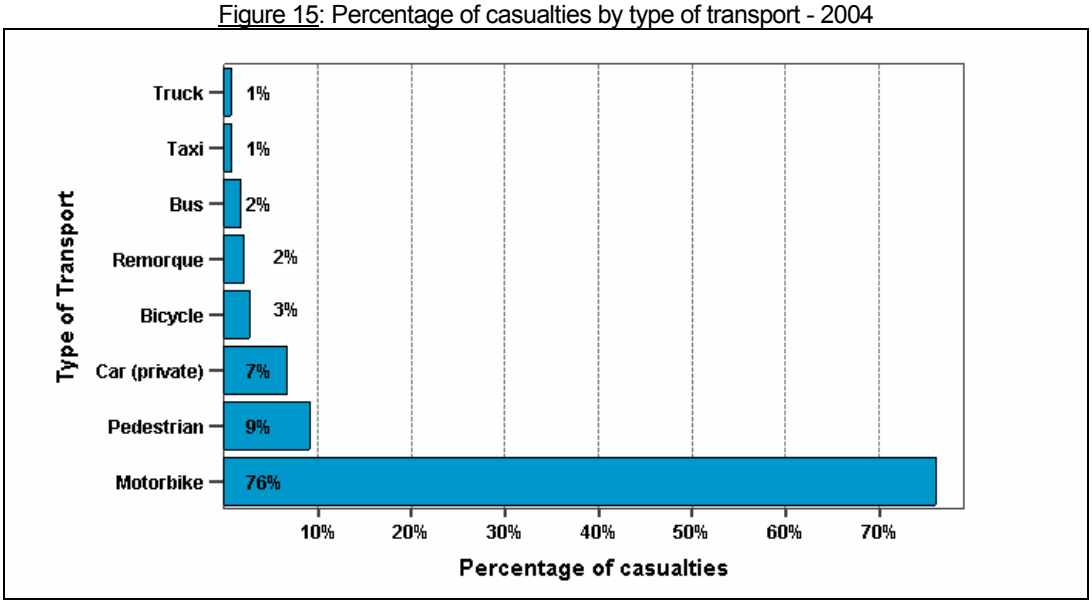
Figure 14: Percentage of casualties by gender for different age categories – 2004



Type of road user

Motorbikes' users account for the large majority of casualties (76%), followed by pedestrians (9%) and cars (7%).

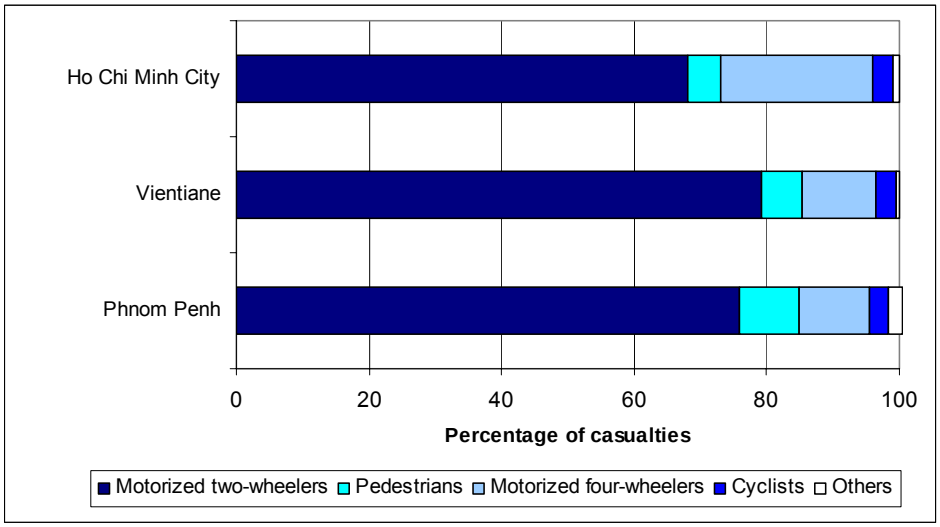
Figure 15: Percentage of casualties by type of transport - 2004



This is partly explained by the fact that **motorcycles represent 75% of the number of vehicles in use in Phnom Penh** and that they are more **vulnerable road users**. Indeed, cars although they represent 14% of the number of vehicles in use in Phnom Penh are responsible for only 7% of the casualties.

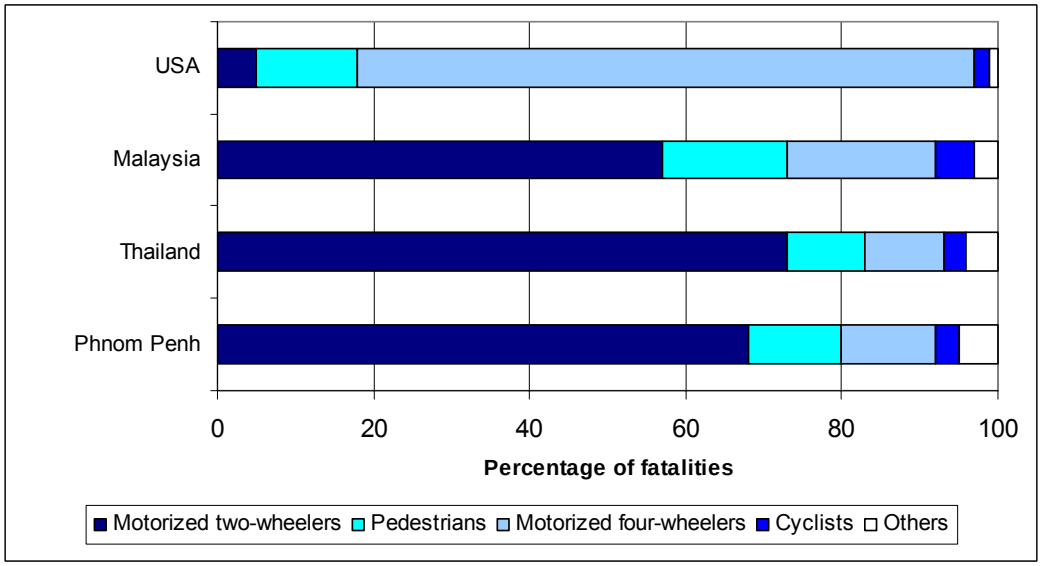
Those figures are similar to the ones from neighboring capitals such as **Ho Chi Minh City or Vientiane.**

Figure 16: Comparison of percentages of casualties by type of transport in three cities[38]



They are however **far different from the situation observed in developed countries where the proportion of cars is much higher.**

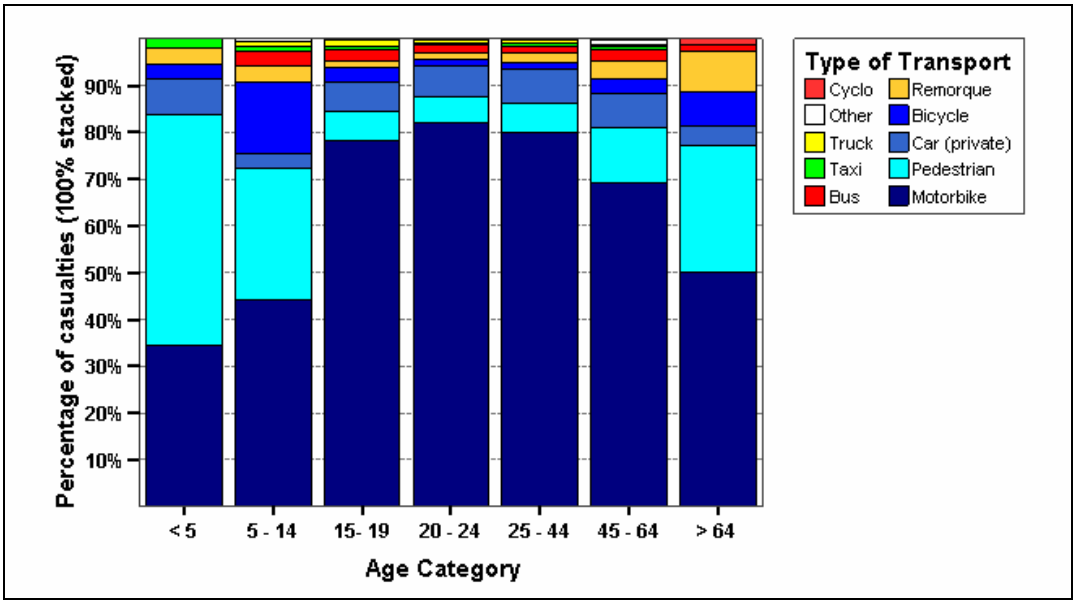
Figure 17: Comparison of percentages of fatalities by type of transport - most recent year available between 2003 and 2004[39]



[38] Source: RTAVIS and similar systems developed by Handicap International in Vientiane and Ho Chi Minh City
[39] Source: RTAVIS and World Report on road traffic injury prevention, WHO , Geneva, 2004

The percentage of pedestrian and bicycle casualties is much more higher among children and old people:
- More than 50% of casualties below 5 years old are pedestrians.
- 25% of casualties between 5 and 14 years old are pedestrians and 15% are bicycles riders[40].

Figure 18: Percentage of casualties by type of transport for different age categories – 2004

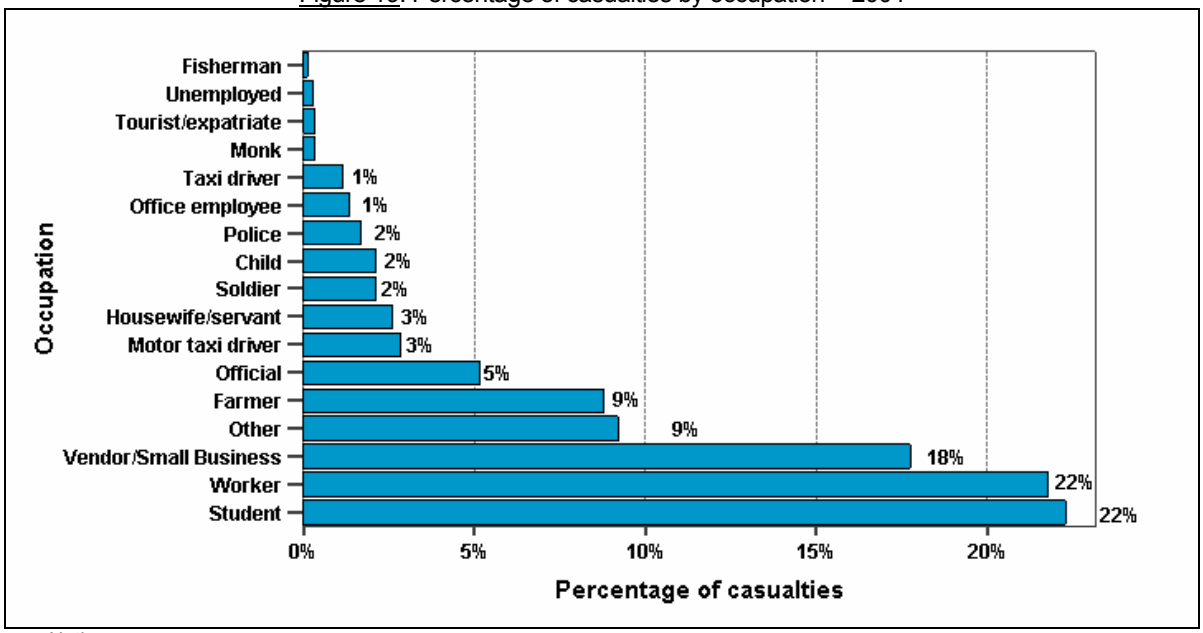


[40] It is also interesting to note that 45% of casualties between 5 and 14 years old are motorbikes riders and that 25% of them were driving the motorbike by themselves at the time of accident.

Occupation

Students[41] constitute the largest group of casualties (22.5% of casualties), followed by workers (22%) and vendors/small businesses (18%). Motorbike taxi drivers constitute only 3% of the total number of casualties.

Figure 19: Percentage of casualties by occupation - 2004



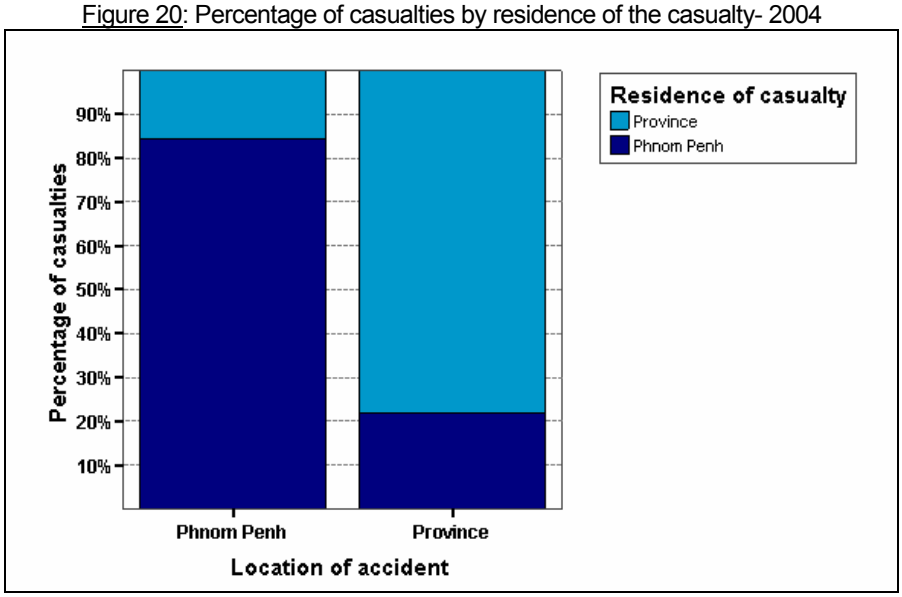
Notices:

- Data recorded by the traffic police is not taken into account in this graph as the data collection sheets used by the traffic police did not record occupation of the casualties in 2004.
- "Other" category contains mainly old/retired people.

Residence of casualty

15% of casualties injured in Phnom Penh come from the provinces.

Figure 20: Percentage of casualties by residence of the casualty- 2004

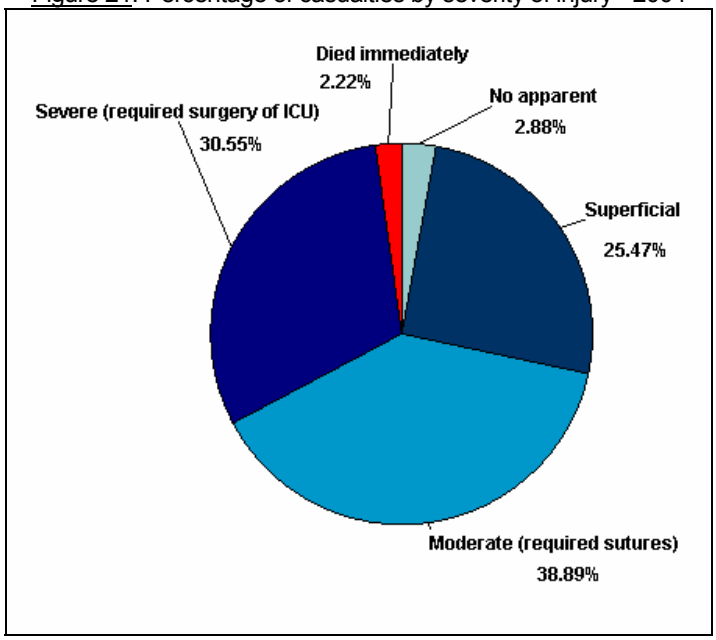


[41] Students are defined as follows: from first grade of primary school to last grade of university/higher education.

Severity of injuries and hospital discharge

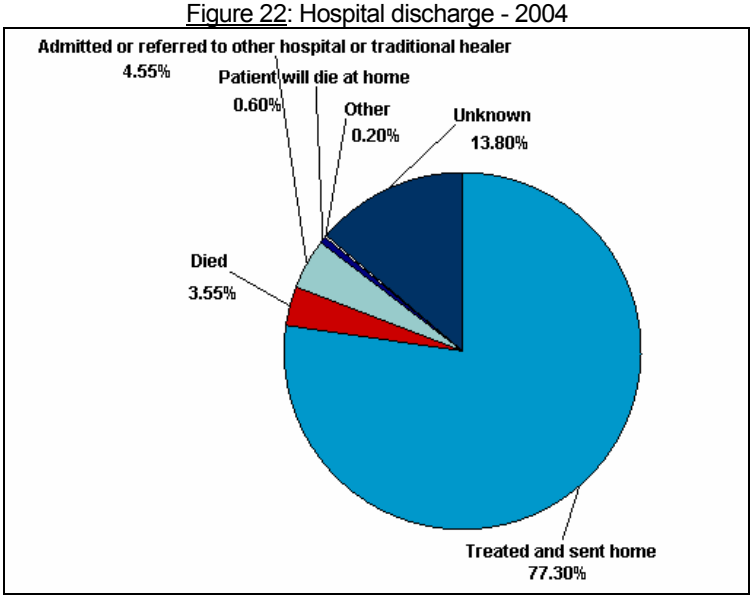
More than 2% of casualties die immediately and 30.5% are severely injured.

Figure 21: Percentage of casualties by severity of injury - 2004



In total, more than 4% of casualties die either at the scene of the accident or of their injuries later (an average of 17 fatalities per month).
A larger proportion of car users and pedestrians is noticed among fatalities, in comparison with their proportion among all casualties.

Figure 22: Hospital discharge - 2004

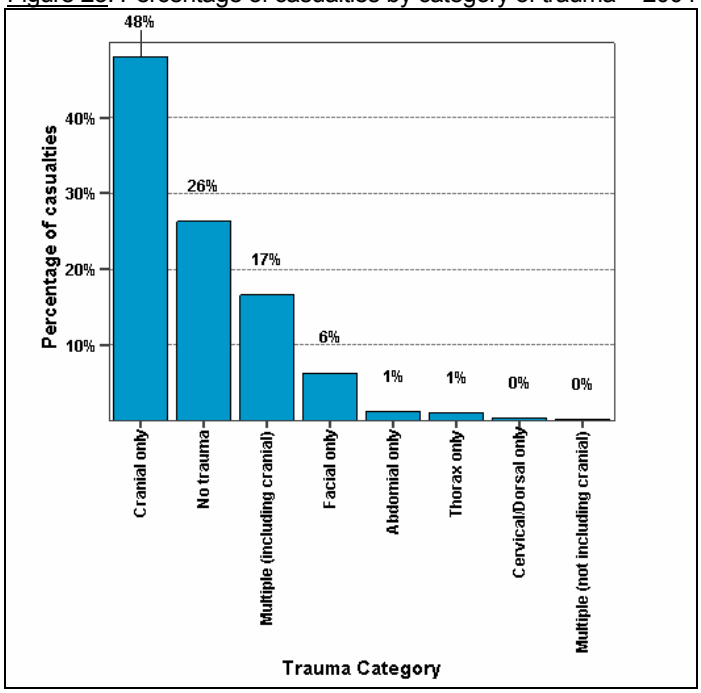


Notices the large proportion on "unknown" is due to the fact that the traffic police can not always follow up the cases they treat.
Patient will die at home" refers to the cases where the victim is so injured that death is unavoidable (as diagnosed by the doctor), but the victim prefers to quit the hospital.

Nature of injuries

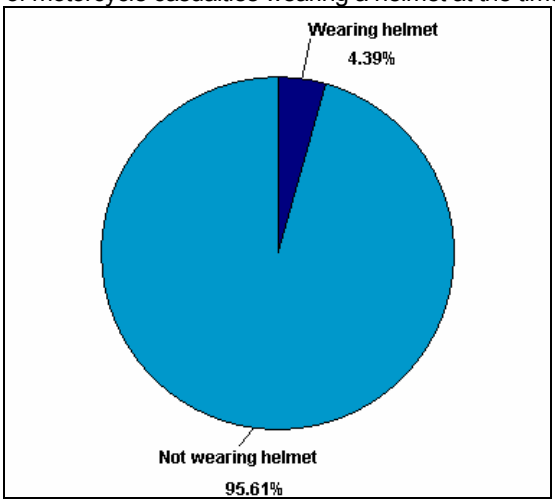
In total, **65% of casualties suffer from head injuries**, much higher than the world average of 28%.
9% of them were considered as severe[42].
26% of casualties do not suffer from any trauma[43].

Figure 23: Percentage of casualties by category of trauma - 2004



Almost **80% of casualties suffering from a cranial trauma are motorbike users**. Among them, **only 4.39% are wearing a helmet[44].**

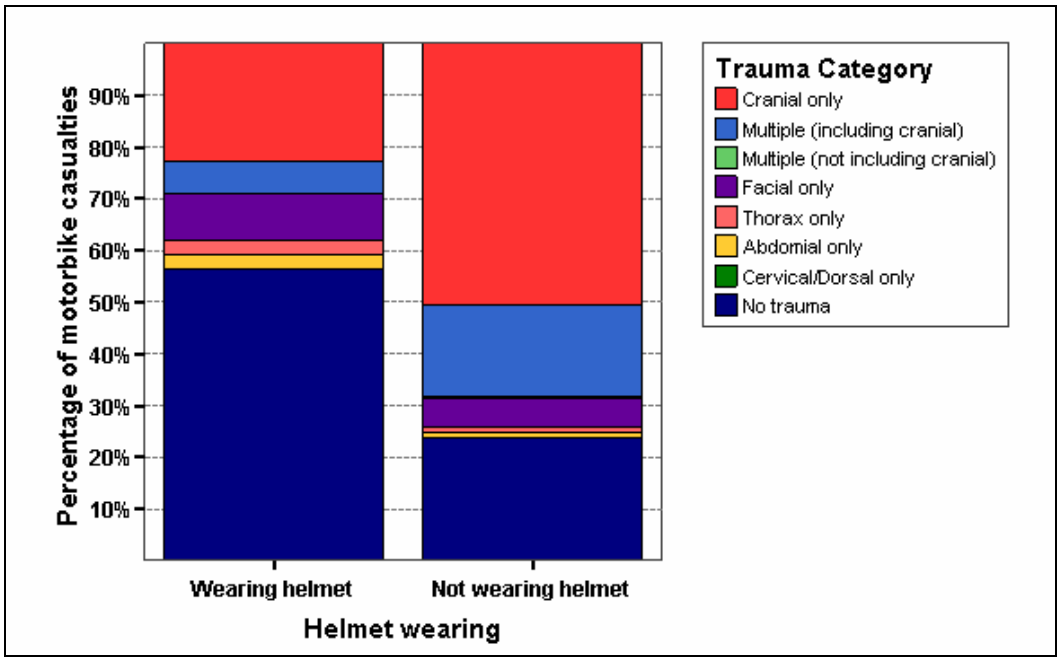
Figure 24: Percentage of motorcycle casualties wearing a helmet at the time of the accident- 2004



[42] Classification of severe head injury is based on the **Glasgow Scale**, which defines neurological impairment in terms of eye opening, speech, and motor function. The total score that can be obtained is 15, and **severe head injury is determined by a score of 8 or less** persisting for 6 hours or more.
[43] They however still went to the hospital to cure light wounds/burns or to check their head.
[44] In comparison, in 2004, an average of 9% of all motorbike users wear a helmet in Phnom Penh – cf. helmet counting surveys performed by Ministry of Health and HIB in March, July and November 2004.

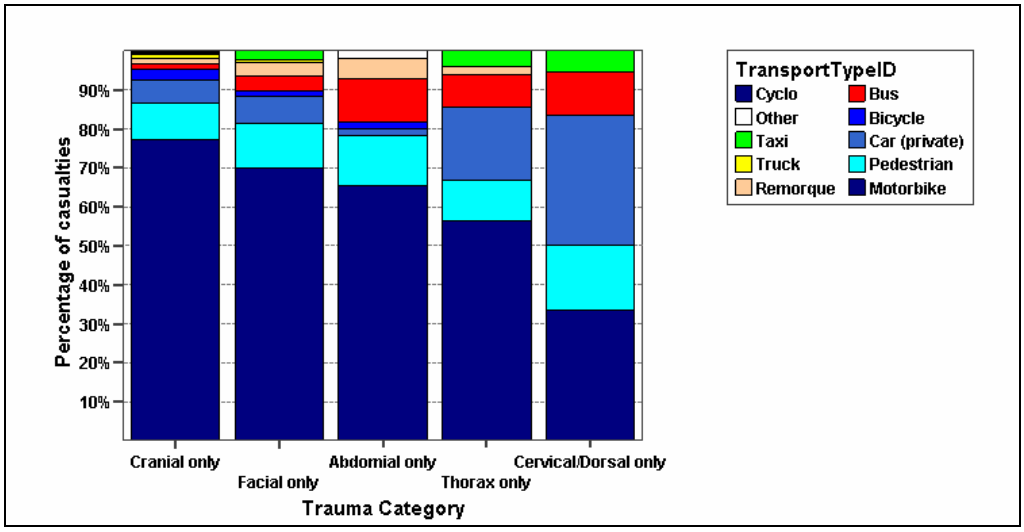
Only 30% of those wearing a helmet suffer from head injuries while 70% of those not wearing a helmet suffer from head injury, which confirms the importance of helmet wearing.

Figure 25: Percentage of motorcycle casualties by category of trauma – 2004



Most of cervical/dorsal trauma concern 4-wheeled vehicles users and pedestrians.

Figure 26: Percentage of casualties by type of transport and by category of trauma – 2004

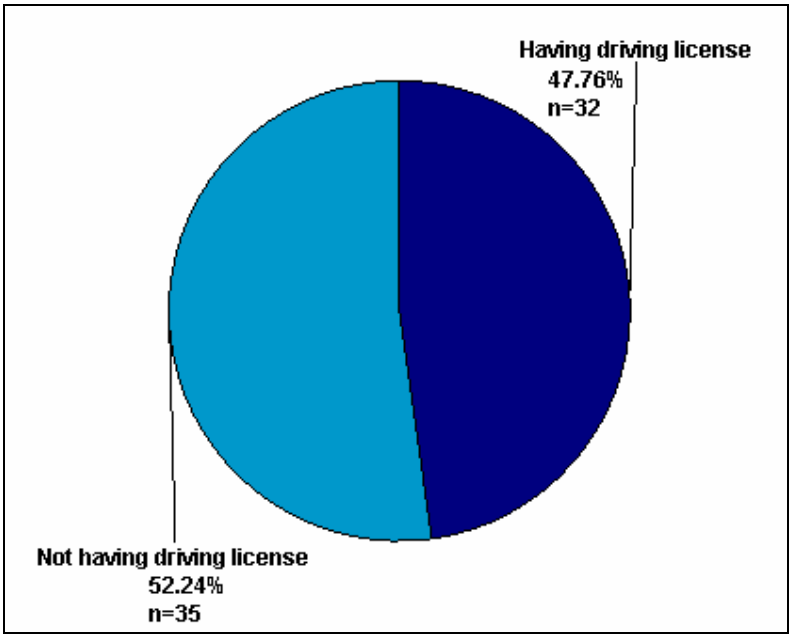


In addition, **24% of casualties suffer from fractures and 33% suffer from serious cuts/wounds**.

Driving license

Less than 50% of car/truck/bus drivers' casualties have a valid driving license at the time of the accident[45].

Figure 27: Percentage of car/truck/bus drivers casualties having a driving license – 2004



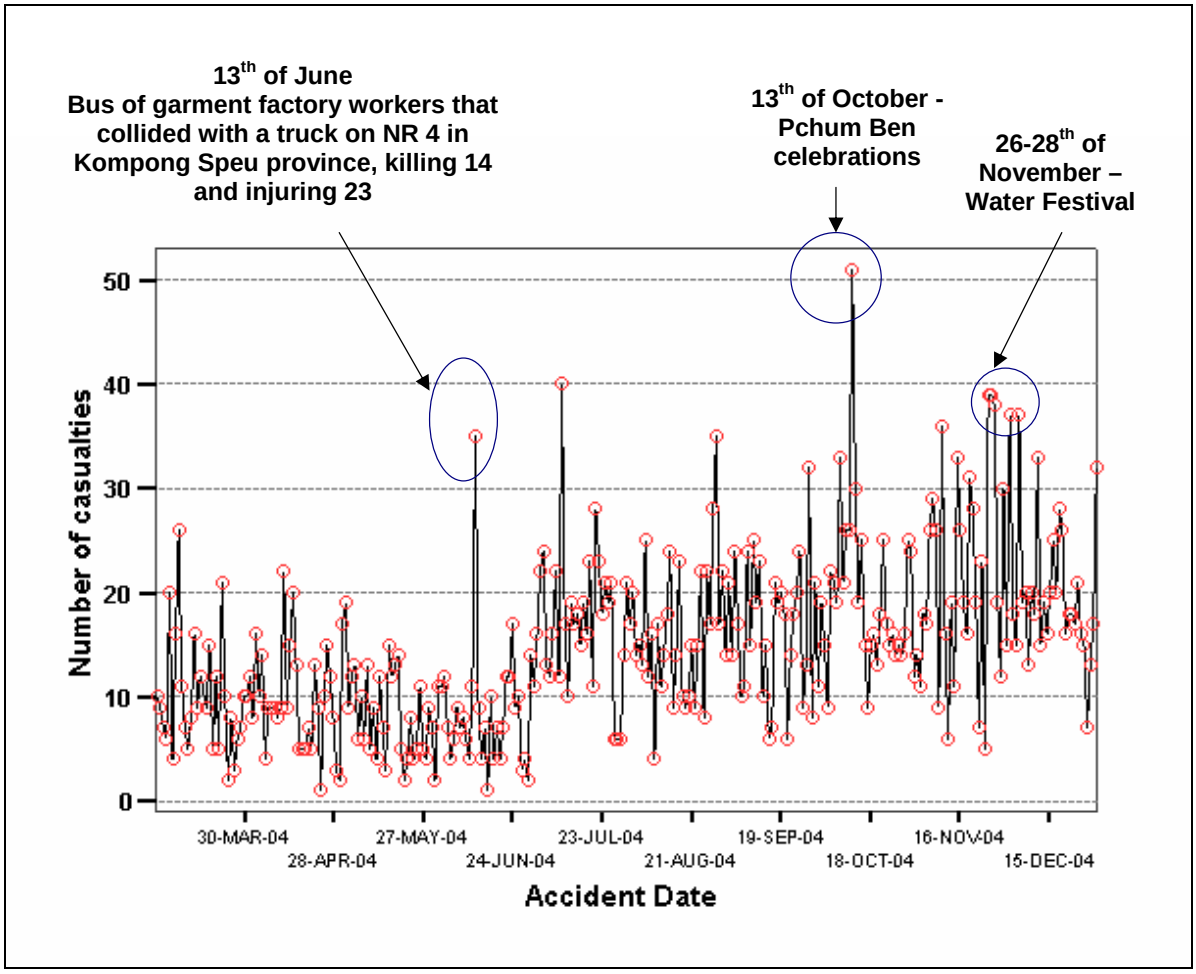
[45] Notice: this figure has to be analyzed carefully due to the fact that a the number of data recorded is limited.
This figure is amazingly high, knowing that there are only 25,298 driving licenses holders in Cambodia, while the number of four-wheelers for which a driving license is compulsory is 126,446.

Accident Information

Day of Accident

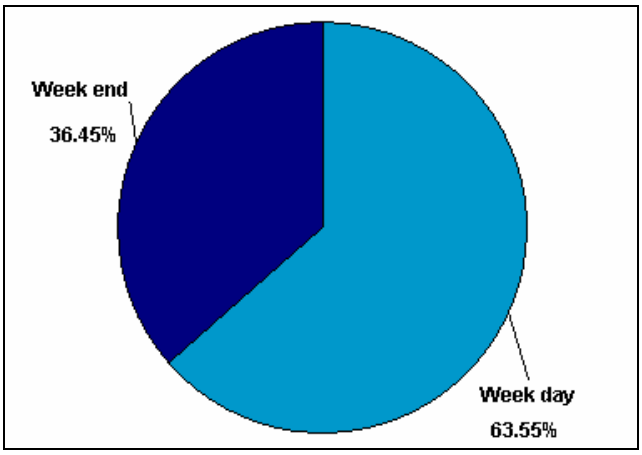
On average, 15 road traffic casualties are reported every day in Phnom Penh. **Several peaks (up to 50 casualties a day) are noticed**, corresponding mainly to Khmer national holidays.

Figure 28: Number of casualties per day – 2004



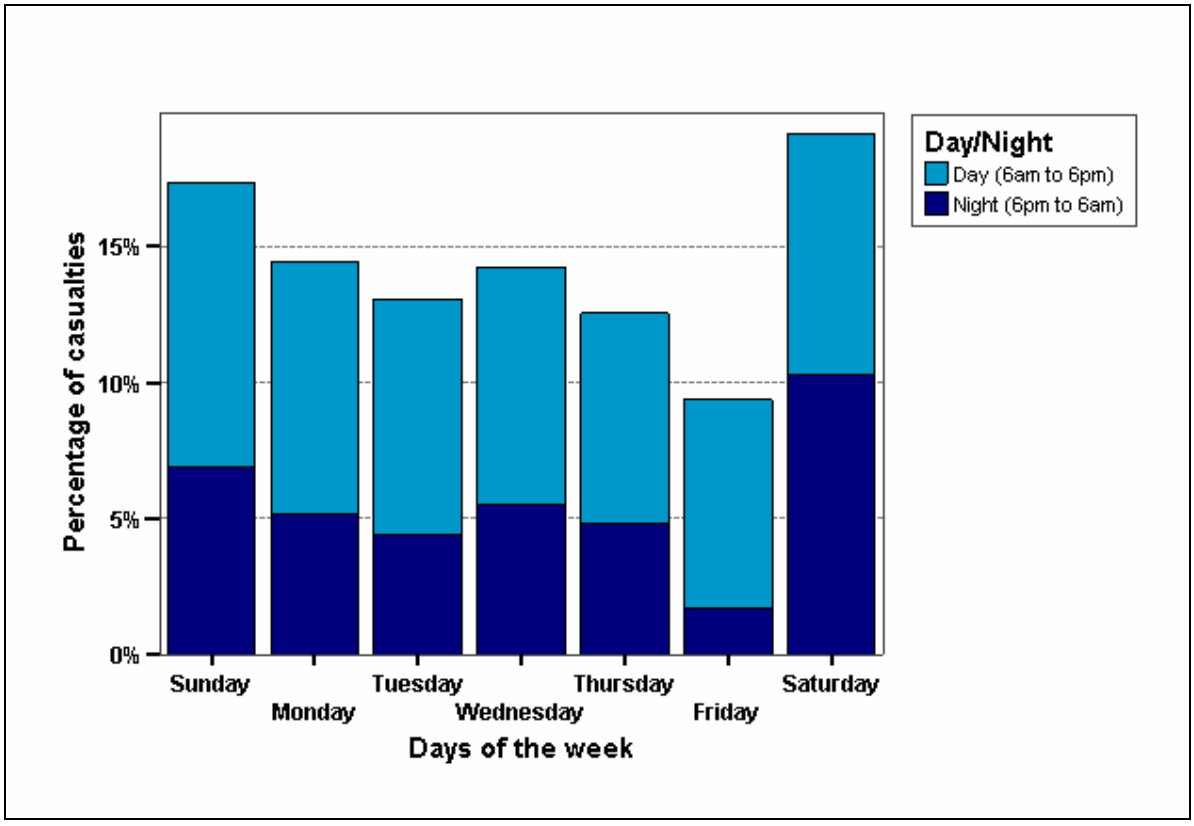
Weekend (Friday 6 pm until Sunday midnight) accidents are responsible for 36.5% of casualties.

Figure 29: Percentage of casualties – differences between weekday and weekend –2004



A higher percentage of casualties is noticed on **Saturdays and Sundays, especially during the night**.

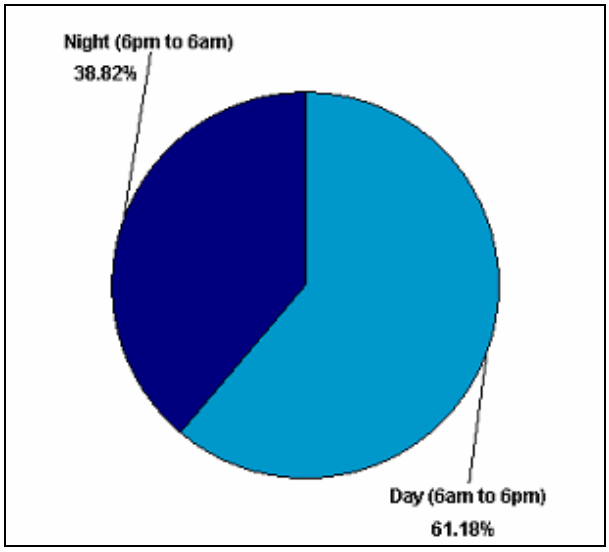
Figure 30: Number of casualties per day of the week –2004



Time of accident

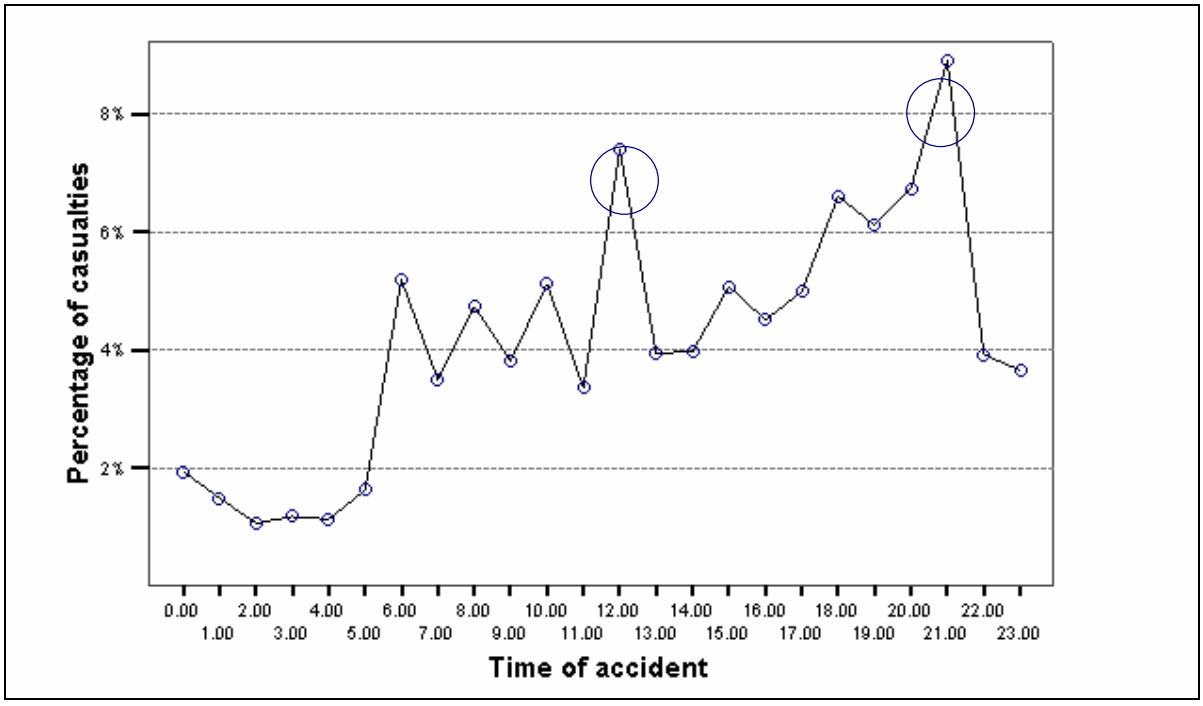
Nighttime accidents are responsible for 39% of casualties.

Figure 31: Percentage of casualties – differences between day and night –2004



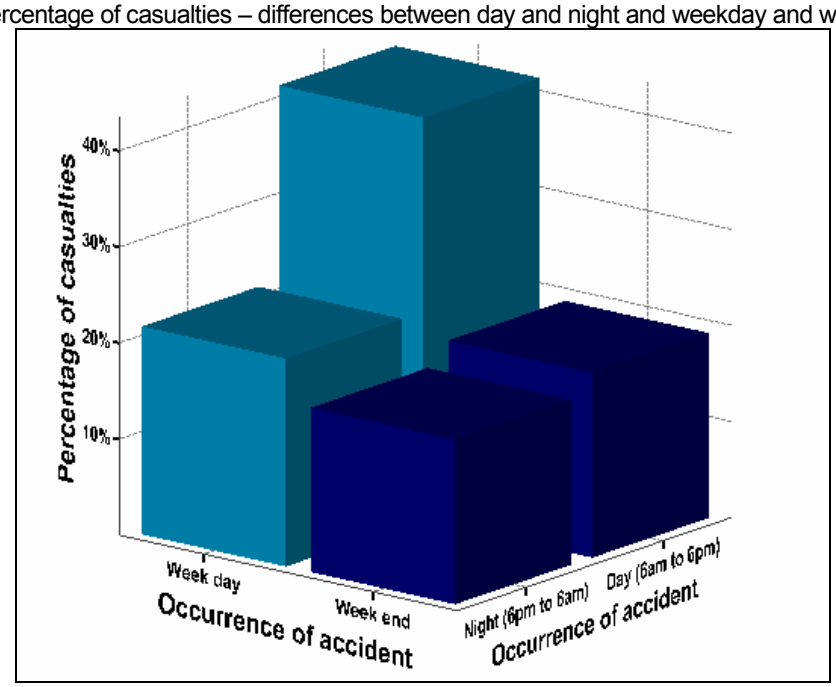
Two peaks of casualties are observed:
- The first one at 9 pm, which corresponds to “end of party” time;
- The second one at 12 am, which corresponds to lunch time.

Figure 32: Percentage of casualties per hour of the day –2004



Most of week casualties are reported during the day while weekend casualties are equally spread during day and night.

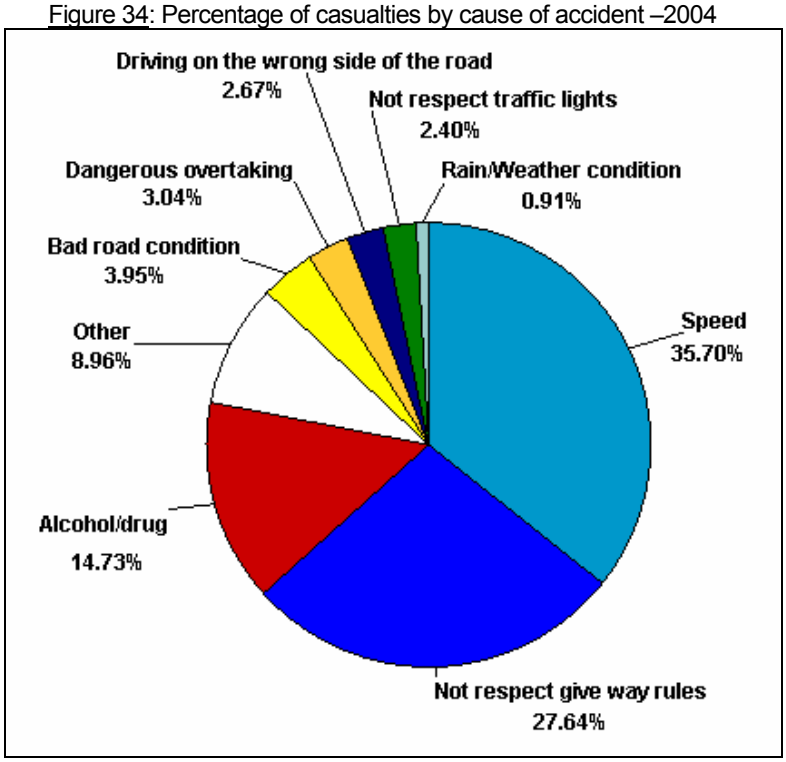
Figure 33: Percentage of casualties – differences between day and night and weekday and weekend –2004



Causes of accidents

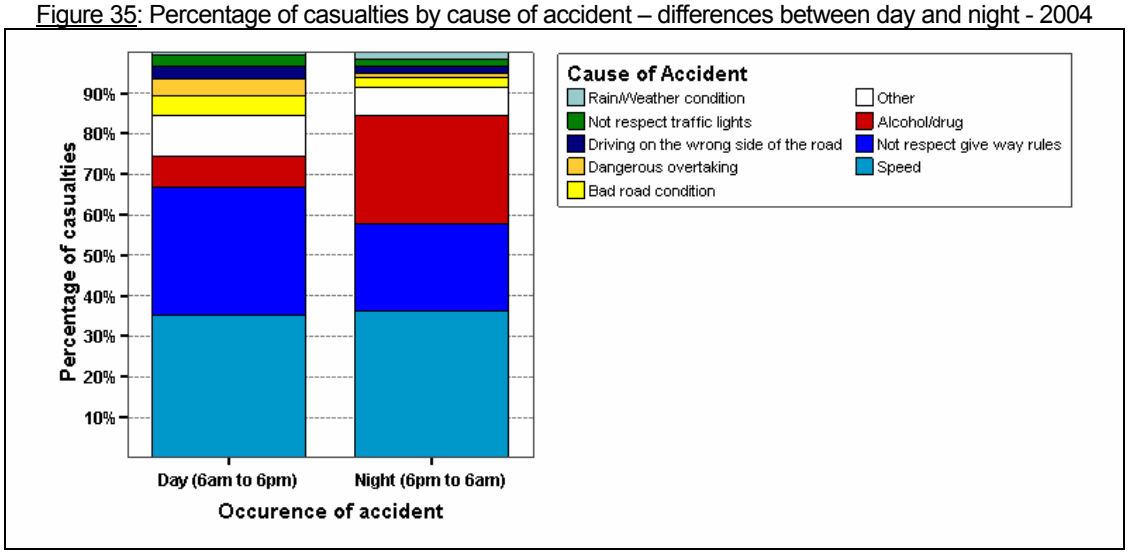
- **High speed and non-respect of give way rules** are responsible for more than 60% of casualties.
- Alcohol/drug abuse is responsible for around 15% of casualties.
- **In total , human error is responsible for more than 90% of casualties.**

Figure 34: Percentage of casualties by cause of accident –2004



Alcohol/drug abuse is more a problem during the night than during the day, although almost 8% of accidents occurring during the day are due to alcohol.

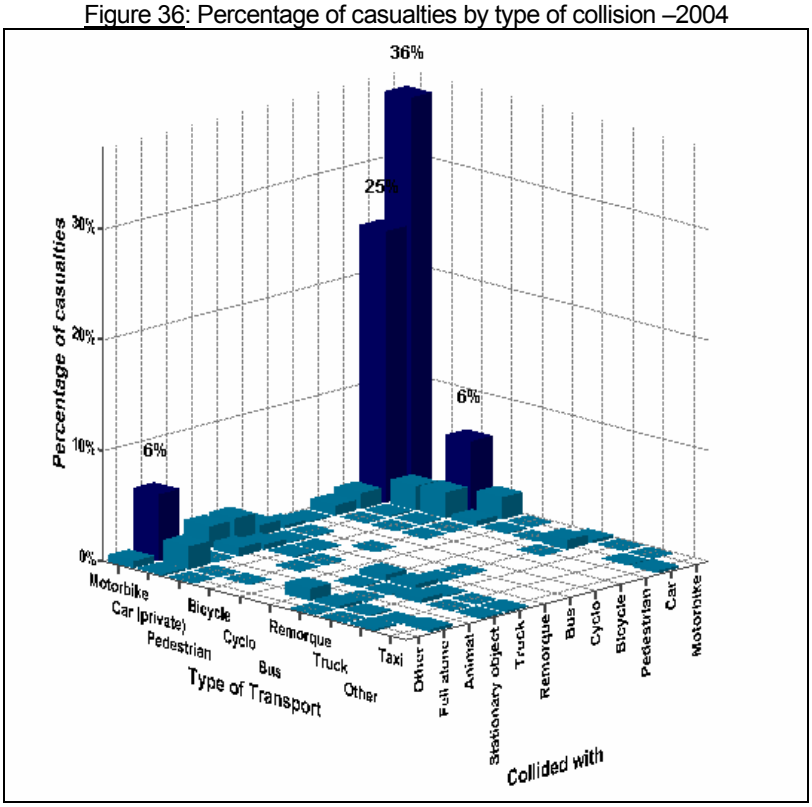
Figure 35: Percentage of casualties by cause of accident – differences between day and night - 2004



Type of collision

Motorbike-motorbike collisions are responsible for 36% of the casualties, followed by **motorbike-car collisions** (25%) and motorbike-pedestrian collisions (6%).
6% of motorbike casualties fell alone.

Figure 36: Percentage of casualties by type of collision –2004



In average, 3.61 persons are involved and 2.11 are injured per accident.

Location of accident

28% of casualties receiving medical treatment in Phnom Penh are injured in accidents occurring in the province.

Figure 37: Percentage of casualties by province of accident –2004

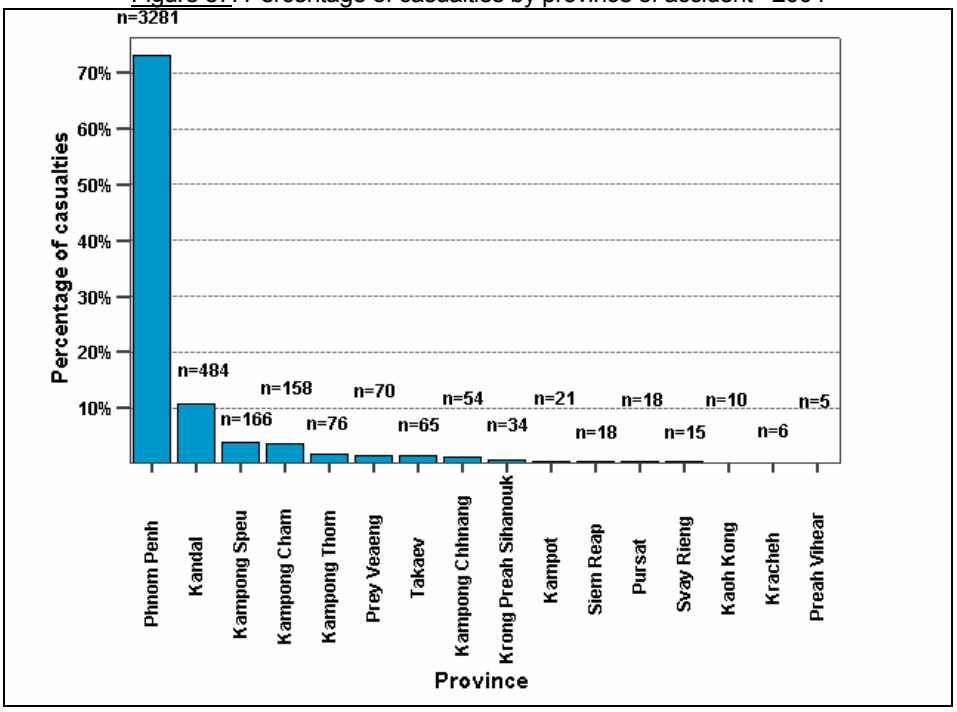


Figure 38: Map of Cambodia – provinces and national roads[46]

[46] Source: Ministry of Public Works and Transport

Ruessei Kaev district represent 28% of Phnom Penh casualties while it represents only 22% of Phnom Penh population. The district is crossed by major national roads 4, 5 and 6.
Conversely, Prampir Meakkakra district represents only 4% of casualties while it represents 9% of the Phnom Penh population.

Figure 39: Percentage of casualties and of population by Phnom Penh district –2004

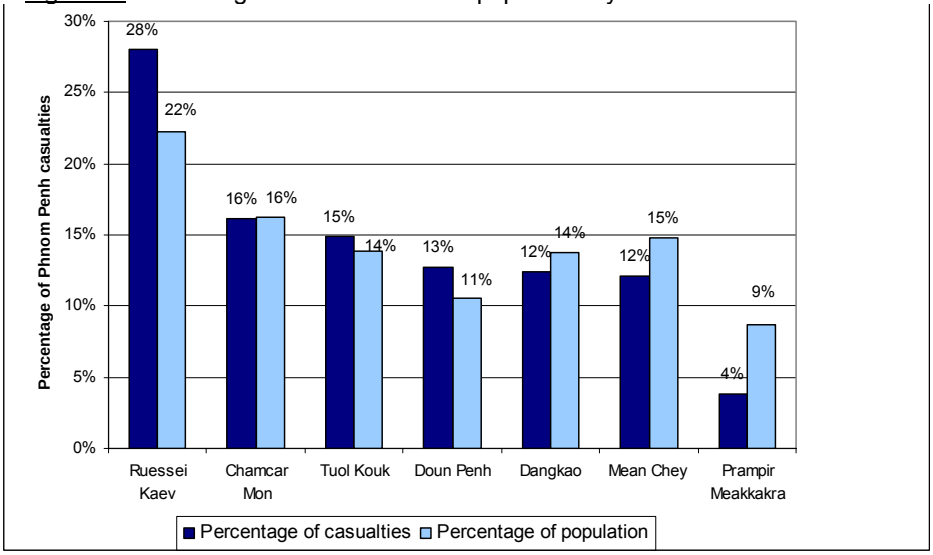
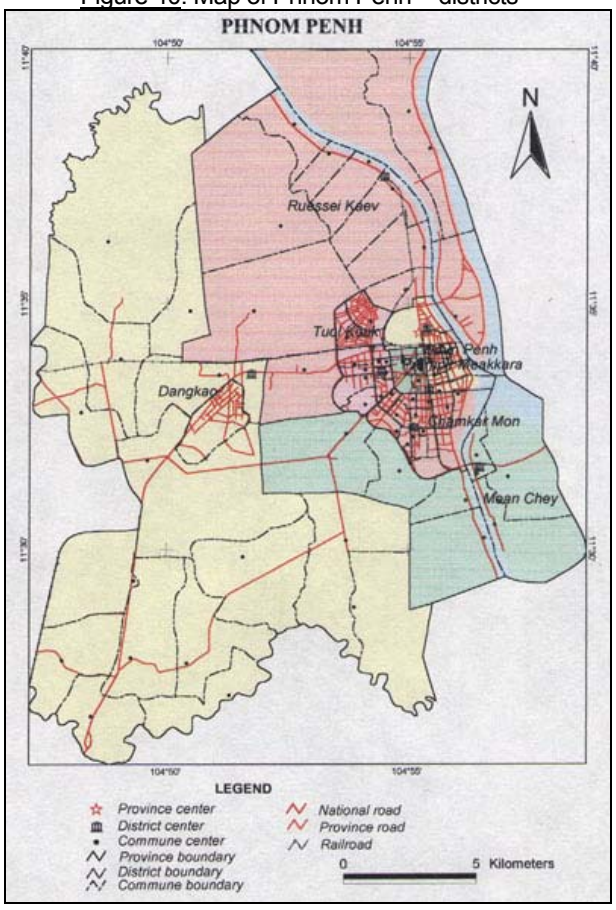


Figure 40: Map of Phnom Penh - districts[47]



[47] Source: Municipality of Phnom Penh

Tuek Thla commune in Russei Kaev district represents more than 7% of Phnom Penh casualties while it represents less than 4% of the population. **Preaek Lieb commune** in Russei Kaev district reports almost than 5% of Phnom Penh casualties while it represents only 1.5% of the population.

Figure 41: Top ten communes affected by road traffic casualties –2004

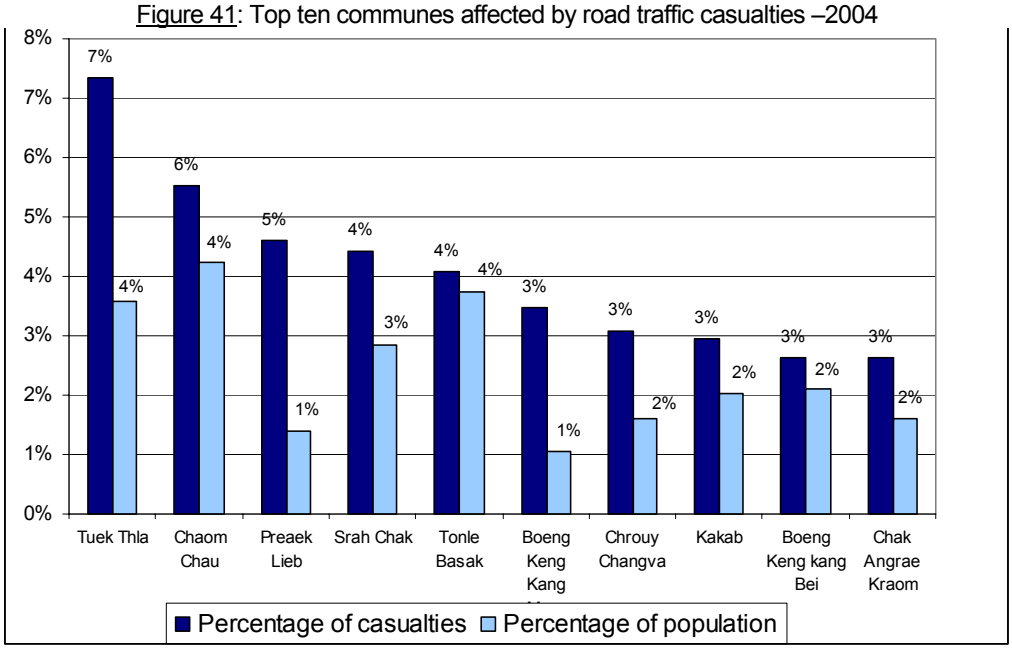
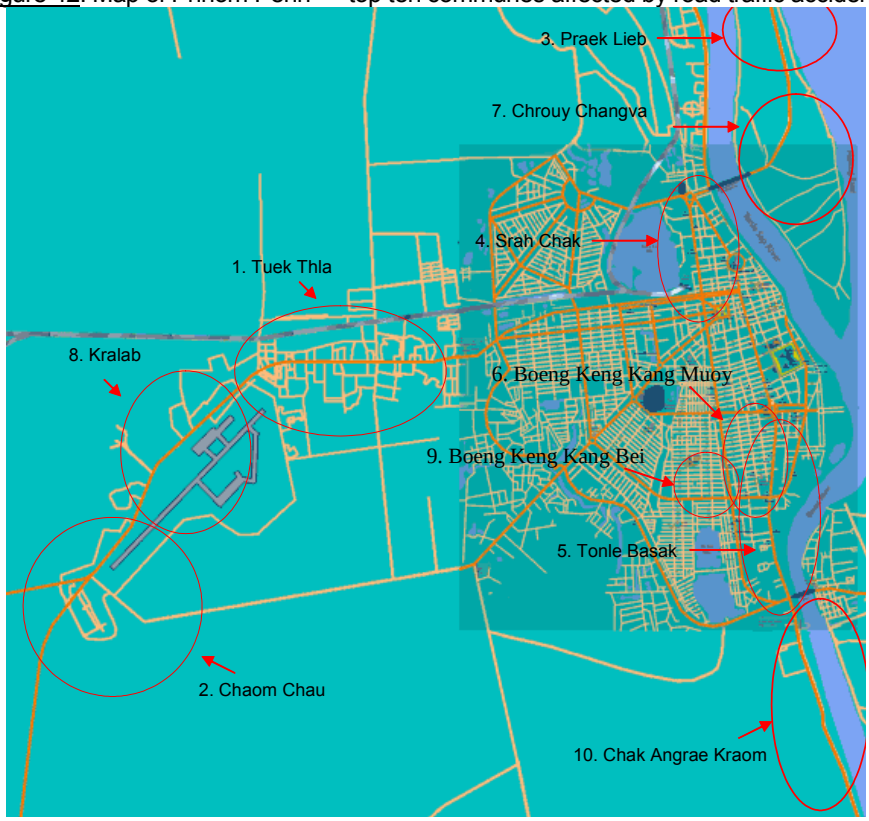


Figure 42: Map of Phnom Penh[48] –top ten communes affected by road traffic accidents

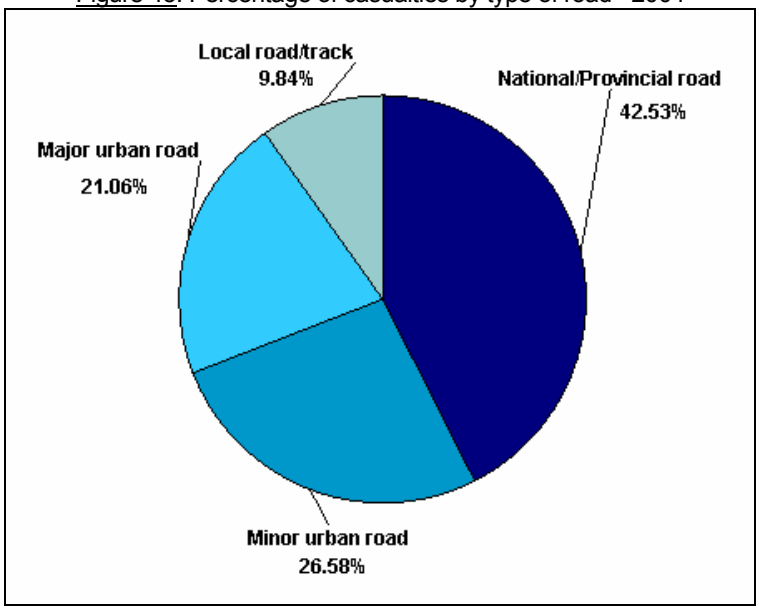


[48] Source: BongThon.com

Type of road

More than **42% of casualties** are injured in accidents occurring on **national/provincial roads**.

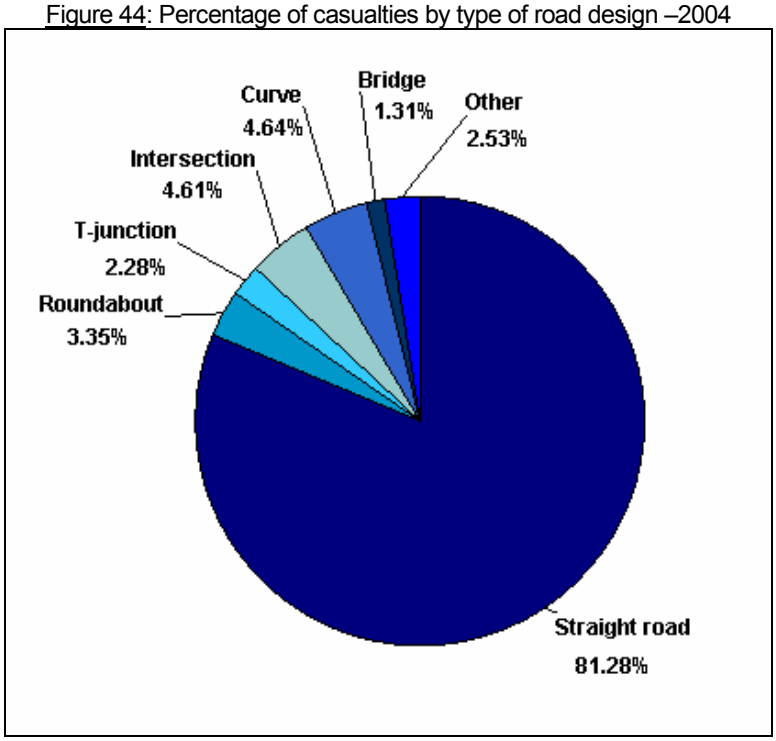
Figure 43: Percentage of casualties by type of road –2004



Road characteristics

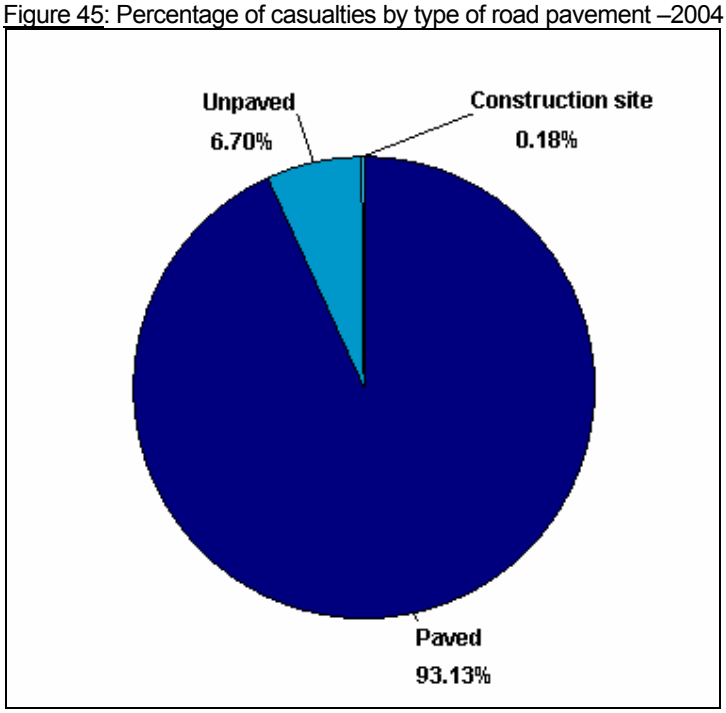
More than 80% of casualties are injured in accidents occurring on **straight roads**.

Figure 44: Percentage of casualties by type of road design –2004



More than 90% of casualties are injured in accidents occurring on **paved roads.**

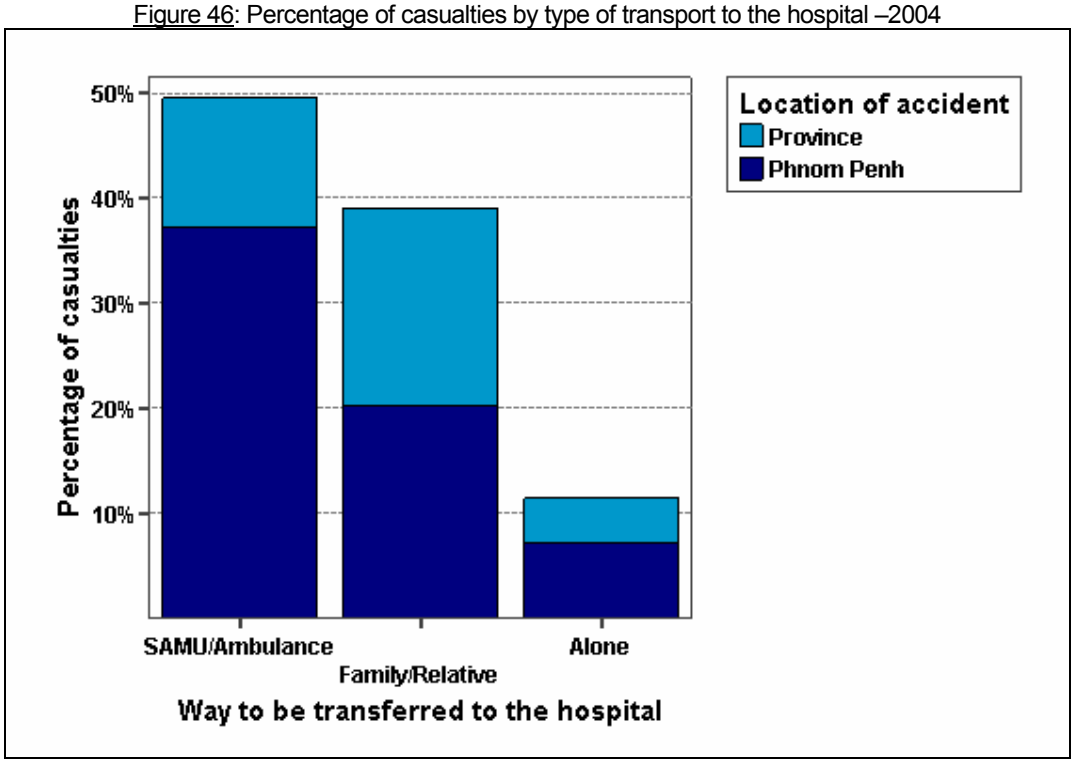
Figure 45: Percentage of casualties by type of road pavement –2004



Transfer to hospital

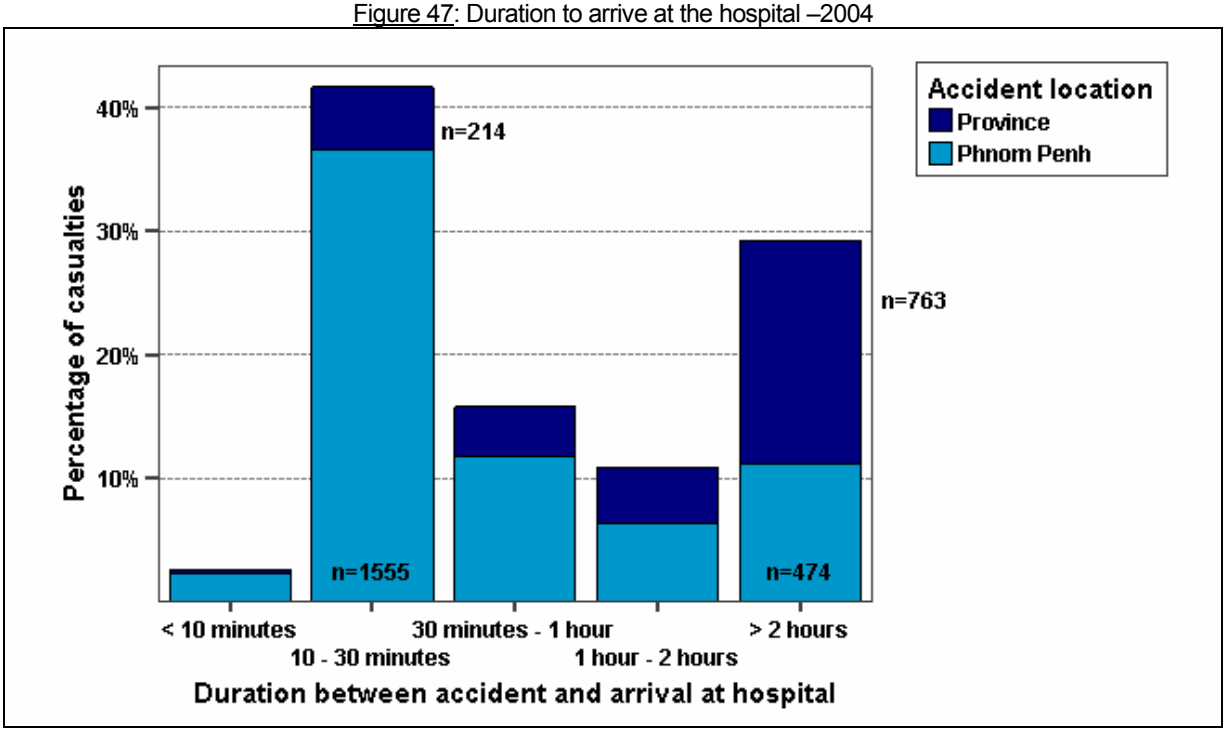
Almost 50% of casualties are transferred to the hospital or private clinic by **ambulance**. Around 10% arrive alone.

Figure 46: Percentage of casualties by type of transport to the hospital –2004



45% of casualties arrive at the hospital **less then 30 minutes** after the accident while almost 30% of casualties take **more than 2 hours to reach hospital**.
Casualties taking more than 2 hours to arrive at the hospital are mainly injured in province accidents.

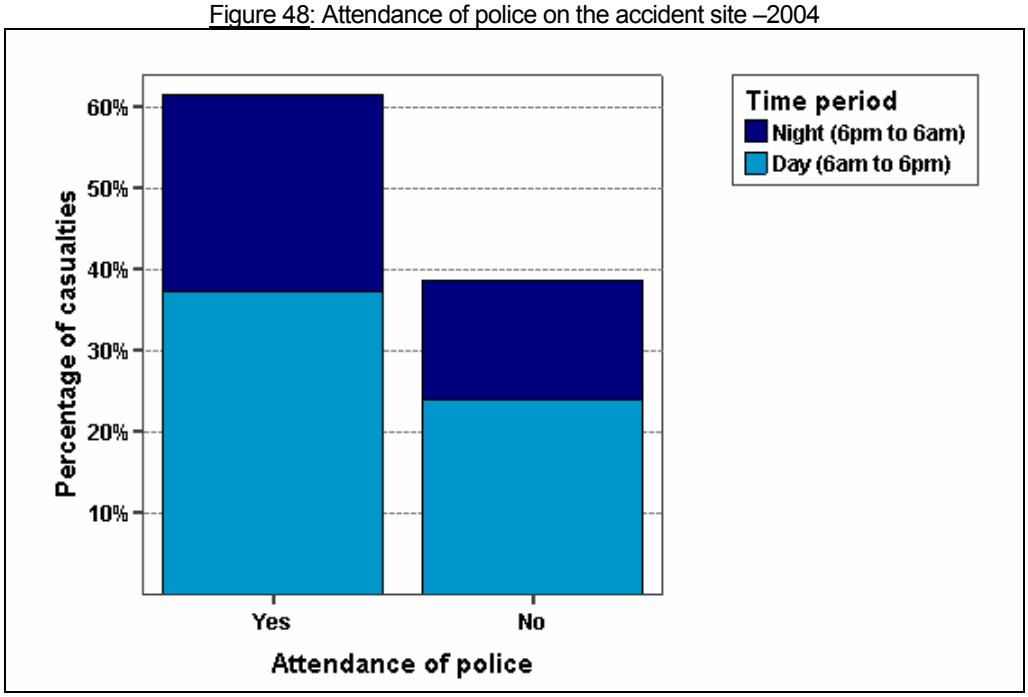
Figure 47: Duration to arrive at the hospital –2004



Attendance of police

Police are present on the accident site in more than 60% of the cases.

Figure 48: Attendance of police on the accident site –2004



Appendix

Evolution of data during the year

	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Weighted average
Number of casualties reported to RTAVIS	298	287	265	253	529	504	499	611	628	634	451
Gender											
Percentage of males casualties	71%	66%	69%	67%	69%	74%	70%	71%	73.40%	70%	71%
Age											
Percentage of casualties aged between 18 and 25 years old	50%	45%	49%	44%	46%	45%	45%	44%	46%	43%	46%
Type of road user											
Percentage of motorbike riders	76%	72%	71%	65%	77%	74%	75%	82%	78%	76%	76%
Percentage of pedestrians	10%	13%	14%	9%	9%	11%	10%	5.50%	8%	11%	9%
Percentage of car riders	7%	3%	9%	6%	7%	10%	6%	6%	6%	7%	7%
Occupation											
Percentage of students	NA	23%	20%	20%	12%	21%	23%	25%	28%	24%	22%
Percentage of workers	NA	21%	19%	22%	28%	24%	23%	17%	21%	21%	22%
Percentage of motorbike taxis	NA	1%	2%	0%	0.50%	0.40%	0%	4%	3%	2.50%	3%
Residence of the casualty:											
Percentage of casualties coming from outside Phnom Penh	NA	NA	30%	49%	36%	26%	33%	37%	41%	38%	36%
Severity of injuries:											
Percentage of severely injured casualties (requiring chirurgical intervention of ICU)	31%	34%	36%	27%	31%	26%	26%	30%	34.50%	34%	31%
Percentage of deaths	4%	0%	10%	10%	4.50%	5%	5.60%	3.25%	3.98%	3%	4%
Nature of injuries:											
Percentage of casualties suffering from cranial trauma	80%	75%	80%	80%	67%	61%	62%	63%	57%	55%	65%
Percentage of them being considered as severe (coma)	5.50%	4%	6%	9%	10%	15%	10%	7%	6%	7.50%	9%
Percentage of casualties suffering from fracture	27%	25%	28%	20%	20%	22%	24.50%	26.50%	23.50%	25%	24%
Percentage of casualties having wounds/cuts	24%	24%	20%	23%	31%	30%	35%	31.50%	36%	36%	33%
Day of accident:											
Percentage of casualties injured during the weekend (from Friday 6 pm to Sunday midnight)	31%	29%	41%	40%	40%	38%	37.50%	38%	36.30%	34.50%	37%
Time of accident:											
Percentage of casualties injured during nighttime (from 6 pm to 5.59 am)	42%	33%	35%	43%	45%	47%	36%	38%	38%	34%	39%
Peak(s) of casualties	8:00 PM	8 am and 8 pm	8:00 PM	3 am, 10 am and 8 pm	9:00 PM	8 pm and 9 pm	1 pm, 8 pm and 9 pm	6 pm and 9 pm	Noon and 9 pm	Noon, 6 pm and 9 pm	Noon and 9 pm
Circumstance of accident											
Percentage of casualties injured in accidents caused by high speed	NA	NA	NA	25%	28%	34%	29%	35%	36%	36%	36%
Percentage of casualties injured in accidents caused by non respect give way rules	NA	NA	NA	NA	NA	NA	NA	29%	26%	28.40%	28%
Percentage of casualties injured in accidents caused by alcohol or drug abuse	NA	NA	NA	11%	15%	18%	17%	15.50%	13.50%	14.70%	15%

Notice: the weighted average is not equal to the average of the monthly figures because the number of casualties differ from one month to another.

	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Weighted average
Type of collision:											
Percentage of casualties injured in motorbike-motorbike collisions	35%	42%	42%	37%	43%	34%	31%	42%	40%	37%	36%
Percentage of casualties injured in motorbike-car collisions	25%	31%	24%	20%	25%	28%	29%	27%	25%	25%	25%
Percentage of casualties injured in motorbike-pedestrian collisions	6%	10%	9%	7%	8%	11%	9%	5%	5%	8%	6%
Percentage of motorbike casualties who fell alone	NA	5%	7%	7%	9%	6%	8%	7%	5%	7%	6%
Average number of people involved per accident	NA	2.6	3.35	8	3.58	3	4	3.2	3.5	3.5	3.60
Average number of people injured per accident.	NA	1.6	2.4	5.2	2.1	1.9	2	1.9	2.4	2.2	2.10
Location of accident:											
Percentage of casualties hospitalized in Phnom Penh but injured in accidents occurring in the surrounding provinces	36%	41%	38%	41%	33%	18%	27%	24%	26%	23%	28%
Percentage of casualties injured in accidents occurring on national roads	38%	39%	37%	47%	42.50%	40%	43%	44%	43%	39.60%	42%
Percentage of casualties injured in accidents occurring on paved roads	88%	80%	84%	92%	91.70%	93.00%	NA	NA	88.50%	85.50%	90%
Substance Use:											
Percentage of casualties (drivers and passengers) suspected to be under the influence of alcohol	10%	12%	14%	11%	15%	27%	25%	25%	22%	24%	19%
Safety Measures:											
Percentage of motorbikes/bicycles' casualties wearing a helmet	4%	5%	4.70%	6.30%	3%	3.30%	4%	4%	3.50%	6.84%	4%
Time to be transferred to hospitals:											
Percentage of casualties arriving at hospitals between 10 and 30 minutes after the accident	41%	37%	30%	30%	46%	59%	33%	44%	37%	42%	40%
Percentage of casualties arriving at hospital more than 2 hours after the accident	37%	30%	28%	37%	28%	18%	29%	26%	33%	29%	30%
Way to be transferred to hospitals:											
Percentage of casualties transported by ambulance	NA	41%	40%	50%	49%	57%	47%	52%	48%	53%	50%
Percentage of casualties transported to the hospital by their family or relatives	NA	NA	45%	42%	26%	35%	42%	39%	41%	37%	38%
Percentage of casualties arriving alone at the hospital	NA	NA	10%	10%	9%	9%	11%	8%	11%	9%	11%
Hospital information:											
Percentage of casualties reported at:											
- Calmette	47%	48%	50%	45%	31%	35%	38.50%	32%	24%	25%	35%
- Kossamak	38%	30%	30%	30%	18%	18%	12%	16%	19%	15%	20%
- Traffic police	NA	NA	6%	4%	14%	20%	18.50%	20%	21%	20%	15%
- Chan Trea	NA	NA	NA	NA	23%	15%	11%	15%	11%	13%	11%
- Sihanouk	12%	17%	12%	18%	8%	6%	4%	6%	10%	8%	9%
- Bayon	NA	NA	NA	NA	3%	2%	6.50%	2%	10%	8%	4%
- National Pediatric	3%	5%	2%	3%	2%	2%	2.50%	2%	3%	4%	3%
- Visal Sok	NA	NA	NA	NA	1%	0%	5%	7%	2%	3%	2%
- Naga	NA	NA	NA	NA	NA	1.50%	0.50%	0%	1%	1%	1%
- Dusit	NA	NA	NA	NA	NA	NA	NA	NA	NA	2%	0%
- Surya Medical Center	NA	NA	NA	NA	NA	NA	NA	NA	NA	1%	0%
- Vibol Sok	NA	NA	NA	NA	NA	NA	0.50%	0.50%	0%	0%	0%
Number of data sources	4	4	5	5	8	9	10	10	10	12	NA
Attendance of police:											
Percentage of cases were police was present on the accident site	60%	44%	55%	40%	63%	67%	66%	69%	63%	60%	60%

Notice: the weighted average is not equal to the average of the monthly figures because the number of casualties differ from one month to another.

Data collection form

Hospital Road Traffic Casualty Form

Serial No. _____

PART 1 - INTERVIEW INFORMATION

Hospital/OD name:..... | Interviewer name: ..... | Date: ____/____/____

PART 2 - CASUALTY INFORMATION

1. Name: .....

2. Gender: ☐ Male ☐ Female

3. Age: .....

4. Residence: ☐ Province /town of accident ☐ Foreigner ☐ Other province/Town ☐ Unknown

5. Occupation: ☐ Child ☐ Student ☐ Worker ☐ Vendor/small business ☐ Motor taxi driver ☐ Car taxi driver ☐ House keeping/ Servant ☐ Farmer ☐ Fisherman ☐ Tourist/ Expatriate ☐ Teacher ☐ Police ☐ Soldier ☐ Other government employee ☐ Unemployed ☐ Other:..... ☐ Unknown

6. Date of arrival at hospital: ____/____/____

7. Time of arrival at hospital: _____:_____

8. Type of road user: ☐ Pedestrian ☐ Driver ☐ Passenger

9. Type of transport: ☐ Motorbike ☐ Bicycle ☐ Pedestrian ☐ Motor tricycle ☐ Tricycle ☐ Remorque ☐ Car (taxi) ☐ Car (private) ☐ Pick-up ☐ Minibus ☐ Bus ☐ Light truck ☐ Heavy truck ☐ Other:.....

10. Wearing a helmet/ seatbelt? ☐ Yes ☐ No ☐ N/A ☐ Unknown

11. Having driving license? ☐ Yes ☐ No ☐ N/A ☐ Unknown

12. Substance use: **Alcohol:** ☐ Yes/Suspected ☐ No ☐ Unknown **Drugs:** ☐ Yes/Suspected ☐ No ☐ Unknown

13. Nature of injuries:

Trauma ☐ Cranial ____/15 ☐ Facial ☐ Thorax ☐ Abdominal ☐ Cervical or dorsal

Fracture ☐ UE ☐ LE ☐ Pelvis

Wounds/Cuts ☐ UE ☐ LE ☐ Pelvis

Narrative description: diagnoses - disability

14. Severity of injuries: ☐ No apparent injury ☐ Superficial injury ☐ Severe (required surgery or ICU) ☐ Moderate (required sutures)

15. Medical treatment cost estimation(In $):.....

16. Is casualty insured? ☐ Yes ☐ No ☐ Unknown

17. Hospital discharge: ☐ Fully treated and sent home ☐ Admitted or referred to other hospital ☐ Sent home but disabled for life ☐ Patient requests to leave for other clinic/traditional healer ☐ Died on the accident scene ☐ Patient will die at home ☐ Died at the hospital ☐ Unknown

18. How did the casualty travel to hospital: ☐ SAMU/Ambulance ☐ Alone ☐ Family/Relative ☐ Unknown

PART 3 - ACCIDENT INFORMATION

1. Date of accident: ____/____/____

2. Time of accident: .....:.....

3. Place of accident : Street:..... Village:..... Commune/Sangkat:..... District/Khan:..... Province/Town: .....

4. Road type: ☐ Straight road ☐ Roundabout ☐ Curve ☐ Crossroads ☐ T-junction ☐ Bridge ☐ Slope ☐ Other:.....
☐ National road No..... ☐ Provincial road ☐ Main road in city/ town ☐ Small road in city/ town ☐ Local road / track ☐ Other: .....
☐ Paved ☐ Unpaved ☐ Construction site ☐ Unknown

5. Did accident happend in an urban area? ☐ Yes ☐ No

6. Cause of accident:

6.a- Human errors:
☐ Speed
☐ Not respect traffic lights
☐ Not respect give way rule
☐ Not respect right hand drive
☐ Not respect traffic signs
☐ Dangerous overtaking
☐ Wrong use of high beam
☐ Alcohol abuse
☐ Drug abuse
☐ Careless driving
☐ Health problem / Sleepy while driving
☐ Other.....

6.b- Road condition:
☐ Potholes
☐ Dirt/Sand/Gravel
☐ Dust
☐ Other:.....

6.c- Weather condition:
☐ Rain
☐ Cloudy/mist
☐ Wet road
☐ Other:.....

6.d- Vehicle defect:
☐ Brake failure
☐ Tire blow out
☐ Steering wheel failure
☐ Headlight failure
☐ Other:.....

7. Accident circumstance: - How many vehicles were involved in the accident? ..... - How many people were involved in the accident? ..... - How many people were injured in the accident? ..... - How many people died in the accident? .....

8. Pedestrian/Casualty's vehicle collided with: ☐ Motorbike ☐ Bicycle ☐ Pedestrian ☐ Motor tricycle ☐ Tricycle ☐ Remorque ☐ Car (taxi) ☐ Car (private) ☐ Pick-up ☐ Minibus ☐ Bus ☐ Light truck ☐ Heavy truck ☐ Stationary object ☐ Fell alone ☐ Animal ☐ Other .....

30 Apr 2005

9. Attendance of police: ☐ Yes ☐ No

Guidelines for the completion of the data collection form

Part 1-Interview information

Hospital/ OD name	Name of the hospital/OD where the casualty came for treatment.
Interviewer name	Name of the person who questioned and recorded the information on the casualty.
Date	Date (2 boxes at the beginning), month (2 boxes in the middle) and year (2 boxes at the end) that the casualty or its relatives was interviewed.

Part 2-Casualty information

1. Name	Surname and name of the casualty.
2. Gender	Male or Female.
3. Age	The casualty's age at time of accident, in years, as of last birthday (e.g. somebody who is born the 15th of November 1970 is 24 years old in January 2005).
4. Residence	Casualty normal place of residence (follow the family book registration).
▪ Province/town of accident	▪ If the casualty lives in the province/town, where the accident took place.
▪ Other province/town	▪ If the casualty lives in other province/town else rather than the province/town where the accident took place.
▪ Foreigner	▪ If the casualty is a foreigner.
▪ Unknown	▪ If no information is available.
5. Occupation	Daily occupation of the casualty.
▪ Child	▪ Less than 6 years old.
▪ Student	▪ Who is attending school (from primary to university), with no extra jobs that earns money.
▪ Worker	▪ Who works in a factory.
▪ Vendor/small business	▪ Who buys and sells goods/who has his/her own small business.
▪ Motor taxi driver	▪ Who makes living mainly on driving a motodop.
▪ Car taxi driver	▪ Who makes living mainly on driving a car taxi.
▪ House keeping/ servant	▪ Who stays home to look after the family or to clean others houses.
▪ Farmer	▪ Self-explaining.
▪ Fishermam	▪ Self-explaining
▪ Tourist/Expatriate	▪ Foreigners who work or temporary stay in the country.
▪ Teacher	▪ Self-explaining.
▪ Police	▪ Self-explaining.
▪ Soldier	▪ Self-explaining.
▪ Other government employee	▪ All government employees, except police, soldier and teacher.
▪ Unemployed	▪ Who is part of the active population (15 – 60 years old) but does not currently have any job.
▪ Other	▪ If none of the mentioned occupations corresponds to the one of the casualty. Please clearly specify.
▪ Unknown	▪ If no information is available.
6. Date of arrival at hospital	Date (2 boxes at the beginning), month (2 boxes in the middle) and year (2 boxes at the end) that the casualty arrived at hospital.
7. Time of arrival at hospital	Time that the casualty arrived at the hospital e.g. 23: 00.

8. Type of road user ▪ Pedestrian ▪ Driver ▪ Passenger	 ▪ A person walking/standing on the road or footpath/sidewalk at the time of the accident. They cannot be the drivers or occupants of motor vehicles, nor the riders or drivers of bicycles or animal-drawn vehicles. ▪ A person who drives or operates any vehicle. ▪ A person who travels on a vehicle, without operating it (e.g. the persons who sits on behind a motorbike, remorque, cyclo, car… etc.).
9. Type of transport ▪ Motorbike ▪ Motor tricycle ▪ Tricycle ▪ Remorque ▪ Car (taxi) ▪ Car (private) ▪ Pick-up ▪ Minibus ▪ Bus ▪ Light truck ▪ Heavy truck ▪ Other	How was the casualty traveling at the time of the accident. ▪ All engine-powered two wheeled vehicles including either two-stroke or four stroke engines. ▪ All engine-powered three wheeled vehicles (eg. Tuk-Tuks, Autos, Motor-Rickshaws, Auto Tempos, etc.) ▪ All three wheeled vehicles, without engine (e.g. Cyclo, and other similar type). ▪ Remorque, either engine powered or not, for carrying passenger or goods. It does not refer to the extra wagon of a truck. ▪ Motorized four-wheeled passenger vehicles having a seating capacity of 4 seats or less <u>used as taxi</u>. ▪ Motorized four-wheeled passenger vehicles having a seating capacity of 4 seats or less used as <u>family car</u>. ▪ Car with a wagon on it. ▪ Motorized four-wheeled passenger vehicles having a seating capacity of 5 to 20 seats. ▪ Motorized four-wheeled passenger vehicles having a seating capacity of more than 21 seats. ▪ Motorized commercial or goods carrying vehicles (rigid or articulated), having a maximum permissible weight up to 3.5 tons. ▪ Motorized commercial or goods carrying vehicles (rigid or articulated), having a maximum permissible weight of more than 3.5 tons (such as lorries, trucks, etc.) ▪ Any other vehicles not specified above. Please clearly specify.

10. Wearing a helmet/seatbelt?
 	
▪ Yes
▪ No
▪ Unknown
▪ N/A
	<u>Wearing a helmet</u>: `
	
	If the casualty was **driving** or was a **passenger** of a **motorbike**, did he/she wear a helmet?
	
	<u>Wearing a seatbelt</u>:
	
	If the casualty was driving or was passenger of a **car/pick-up/minibus/bus/truck**, did he/she wear the safety belt:
	
	▪ If he/she did.
	▪ If he/she did not.
	▪ If no information is available.
	▪ Please tick this box if the casualty was not a:
	  ▪ A motorcyclist.
	  ▪ A car/pick-up/minibus/bus/truck driver or passenger.

11. Having driving license ▪ Yes ▪ No ▪ Unknown ▪ N/A	If the casualty was a driver of a **car/pick-up/minibus/bus/truck**, did he/she have a driving license?: ▪ If having a driving license. ▪ If not having a driving license. ▪ If no information is available. ▪ Please tick this box if the casualty was not a driver of a car/pick-up/ minibus/bus/truck.
12. Substance use	Suspicion or evidence of alcohol or drug use before the accident **by the**

▪ Yes ▪ No ▪ Unknown	**driver of the vehicle.** ▪ You have serious suspicion or evidence that the casualty is under the influence of alcohol or drug. ▪ You have serious evidence that the casualty is not under the influence of alcohol or drug. ▪ No information available.
13. Nature of injury ▪ Trauma ▪ Fracture ▪ Wound/cut/burns Narrative description	The physical nature of the injury which brought the person to the hospital. If more than one injury, focus on the most serious ones: ▪ Cranial (when you select this option, a Glasgow score should also be included), facial, thorax, abdominal or cervical/dorsal trauma. ▪ Self-explaining. ▪ Self-explaining. Please provide more information on the injuries.
14. Severity of the injuries ▪ No apparent injury ▪ Superficial ▪ Moderate (requires sutures) ▪ Serious	Assessment of the degree of injury. ▪ Self-explaining. ▪ e.g. bruises, minor cuts. ▪ e.g. fractures, sutures. ▪ Requiring surgery or intensive care unit or requiring medical treatment or hospitalization such that the person is unable to perform his ordinary pursuits for at least 7 days.
15- Medical treatment cost estimation (in $)	Estimation (in US$) of the medical treatment necessary for the casualty to completely recover form his/her injuries. This estimation also includes treatments to be provided later if the casualty will need to come back to the hospital.
16-Is casualty insured?	Did the casualty purchase any insurance coverage from any insurance company?
17- Hospital discharge	Action taken or casualty's status after arrival at hospital.
18- How did the casualty travel to hospital ▪ SAMU/Ambulance ▪ Alone ▪ Family/Relatives ▪ Unknown	Way of transportation from the accident site to the hospital. ▪ Self-explaining. ▪ The casualty came alone to the hospital by his/her own means (e.g. Motodop, taxi…). ▪ The casualty was brought to the hospital by the family or relatives. ▪ No information available.

Part 3- Accident Information

1. Date of accident	Date (2 boxes at the beginning), month (2 boxes in the middle) and year (2 boxes at the end) that the accident occurred e.g. | 1 | 5 | 0 | 3 | 0 | 4 |
2. Time of accident	Time that the casualty had the traffic accident e.g. 22: 30
3. Place of accident	Please try to specify the exact location (e.g. street 63 corner with street 282).
4. Road type ▪ Straight road ▪ Roundabout ▪ Curve ▪ Crossroads ▪ T-junction ▪ Bridge ▪ Slope ▪ National road ▪ Provincial road ▪ Main road in the city ▪ Small road in the city ▪ Local road/track ▪ Paved ▪ Unpaved ▪ Construction site ▪ Unknown	Provide information on the road type (more than one boxes can be ticked if necessary – e.g. accident occurring on curve in a slope). ▪ Self-explaining. ▪ Self-explaining. ▪ Self-explaining. ▪ Self-explaining. ▪ Self-explaining. ▪ Self-explaining. ▪ Self-explaining. ▪ Major country roads linking major populations centers and provinces in different part of the country, permitting speeds higher than urban speed limits. ▪ Major roads linking population centers within a province. ▪ Roads that are located in the city with double central lines (e.g. Monivong Boulevard), but which are not national or provincial roads. ▪ Roads that are located in the city with no double central lines. ▪ Minor roads outside urban areas ▪ Paves roads are those with a bituminous, asphalt concrete, or cement concrete pavement surface. ▪ Unpaved roads include gravel topped or earth topped roads, and all other surface types included under above standard pave types. ▪ When the accident took place in a part of the road currently being rehabilitated. ▪ If there is no information available.
5. Did accident happen in an urban area?	Urban areas are those built-up areas with, due to population concentrations, generally lower traffic speeds than overland roads and high pedestrian and non-motorized traffic.
6. Cause of accident 1. Human errors ▪ Speed ▪ Not respect traffic lights ▪ Not respect give way rules ▪ Not respect right hand drive ▪ Not respect traffic	Provide information on the causes of the accident (**N.B. the objective is not to determine if the casualty was wrong or right – but simply to explain how the accident occurred**). There are several factors that cause accidents: 1. Human errors ▪ The too high speed of one of the vehicles is the main suspected cause of the accident. ▪ The fact that one of the vehicles did not respect of the traffic lights is the main suspected cause of the accident (e.g. crossing when the traffic light is red). ▪ Not respecting give way rules is the main suspected cause of the accident (e.g. not giving the way to the one who is inside the roundabout, not giving the priority to vehicles coming from the right, etc.). ▪ Driving in the wrong side of the road (e.g. riding on the left side of the road before turning) is the main suspected cause of the accident. ▪ Not respecting the traffic signs is the main cause of accident (e.g. Turn

signs ▪ Dangerous overtaking ▪ Wrong use of high beam ▪ Alcohol abuse ▪ Drug abuse ▪ Careless driving ▪ Health problem/sleepy while driving ▪ Others (specify) <u>2. Road condition</u> <u>3. Weather conditions</u> <u>4. Vehicle defects</u>	left where there is a not-to-turn-left sign). ▪ Overtaking in a dangerous situation is the main suspected cause of the accident (e.g. overtaking while there is not appropriate space and time, etc.). ▪ Wrong use of high beam at night is the main suspected cause of the accident (e.g. high beams reduce visibility for road users coming from the opposite direction). ▪ Alcohol use by one of the **drivers** is the main suspected cause of the accident. ▪ Drug use by one of the drivers is the main suspect cause of the accident. ▪ Careless driving by one of the drivers is the main cause of accident. ▪ Health problem/sleepy while driving by one of the drivers is the main cause of accident. ▪ If the list provided here above does not include the right reply, please tick the "other" box and give more details. <u>2. Road condition</u> ▪ Road conditions such as potholes, durst, … are the main suspected cause of the accident. ▪ If the list provided here above does not include the right reply, please tick the "other" box and give more details. <u>3. Weather conditions</u> ▪ Weather conditions is the main suspected cause of the accident (e.g. heavy rain, wet road, …). ▪ If the list provided here above does not include the right reply, please tick the "other" box and give more details. <u>4. Vehicle defects</u> ▪ Vehicle defect is the main suspected cause of the accident (e.g. brake failure, tire blow out, headlight failure, …) ▪ If the list provided here above does not include the right reply. Please tick the "other" box and give more details.
7. Accident circumstance ▪ How many vehicles were involved in the accident? ▪ How many people were involved in the accident? ▪ How many people were injured in the accident ? ▪ How many people died in the accident?	Provide information on the accident circumstance. ▪ Total number of vehicles **involved** in the accident (including even if vehicles that were not damages). ▪ Total number of people involved in the accident (e.g. collision between a motorcycle and a car: number of people on the motorcycle + number of people in the car, **even if they are not injured**). ▪ Total number of injured people (including lightly injured people). ▪ Total number of people died in the accident (including people who died at the hospital after the accident).
8. Pedestrian/ Casualty's vehicle collided with	Provide information on the type of collision. If the list provided does not include the right reply, please tick the "other" box and give more details.
9. Attendance of police	Provide information on the presence of the police at the accident site.

Feedback form

Please send back this form to the following address:
- By mail: Handicap International – Road Safety Project Coordinator – Street 400, #18 – Phnom Penh
- By fax: +855 (0)23/216 270

➢ Name of organization: ……

➢ Type of organization:

□ NGO
□ International Organization
□ Ministry
□ Private company
□ Other (please specify):……..

➢ Sector(s) of activity:

□ Health
□ Education
□ Transport
□ Environment
□ Disability and Rehabilitation
□ Child welfare/rights
□ Rural & Livelihood Development
□ Press-media
□ Research Institute
□ Other (please specify):……

➢ Name of respondent: ……
Position: ……..
Email address: ……..
Postal address: ……...
Phone number: ……

➢ Quality of report:

How would you rate this monthly report? (please tick the corresponding box)

	Excellent	Good	Average	Poor	Please elaborate
Report presentation					……..
Quality of the data provided					……..
Quantity of the data provided					……..
Pertinence of the short analysis provided					……..

Would you like to receive this report by?

□ Hard copy □ Electronic mail copy □ Floppy Disk/CD copy

➢ Which additional information would you like to appear in this report? (please specify)

…….
…….

➢ Additional comment

…….
…….

Contacts

Further analysis and **additional information** is available on request. Please do not hesitate to contact one of the following persons

- **For additional analysis/customized reports:**

  Mr. Jean VAN WETTER
  Road Safety Project Coordinator
  Handicap International Belgium
  Mobile: 012 307 650
  E mail: jean.vanwetter@hib-cambodia.org

- **For information regarding the road safety situation in Cambodia:**

  Mr. UNG CHUN HOUR
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  Mobile: 012 818 835
  Email: chunhour@hotmail.com

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  General Commissariat of National Police
  Ministry of Interior
  Mobile: 012 666 450

  Mr. Jean VAN WETTER
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  E mail: jean.vanwetter@hib-cambodia.org

- **For information regarding emergency assistance in Cambodia:**

  Dr. PRAK PISETH Raingsey
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  Email: pisethsey@hotmail.com

  Mr. HUM Sophon
  Director
  Program Department
  Cambodian Red Cross
  Mobile: 012 943 977
  Email: crc.health@online.com.kh

- **For information regarding the technical aspects of the database:**

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