



## Analysis of Incidence and Prevalence of Collisions Crashes of Motorcyclists Attended the Mobile Emergency Care Service - Samu (2010) in Cruzeiro do Sul, Acre State, Brazil

JOAREIS FERNANDES DE AZEVEDO<sup>1</sup>

Federal University of Rondonia –UNIR  
Brazil

### **Abstract:**

*This study aimed to analyze and characterize the incidence and prevalence of accidents involving motorcycles serviced by Mobile Service of Urgency – SAMU. It is a descriptive, transversal research documentary and quantitative held in the period from January to December 2010. The sample was composed by accidents of various kinds: 607 collision motor-bike, motorcycle-car collision, collision motor-bike, bike-truck collision, motorcycle collision, bus-bike collision bulkhead, animal trampling-collision, overturning and falling from a bike. The data, graphics and charts have been handled through sample and descriptive statistics using Microsoft Excel Office 2003 tool. These calculations were intended to show the prevalence and the accidents index met. In respect to bike-bike collision was 115.0%, car-bike collision 124.19%, bicycle-bike crash, motorcycle collision-110.0% 166.0 truck-bike collision bulkhead, 142.85% 87.5% bike collision-animals, trampling 110.0%, and 98.91% falling from bike. We recommend investments to allow the deployment of a full database system on unity and human resources for traffic investigation.*

**Key words:** Attendance, Accident, Motorcycle, SAMU.

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<sup>1</sup> Master Degree of Health's Science, expert in Psychology. Professor and Researcher of Federal University of Rondonia - UNITE (Brazil). joareis@unir.br.

## Introduction

The transit is a form of expression system of socio - economic of a city. This is the transit people (drivers, pedestrians, passengers, police, etc. ), they manifest their behavior, their ability of social adjustment and emotional, in forms or ways to perceive situations, a whole or in parts, with larger or smaller details. Express their forms of ownership or occupation of space. All of this will contribute to a transit more secure or insecure, organized or unorganized, to an increase or reduction in the number of accidents.

The transit system operates through an extensive series of rules and constructions and is composed of several subsystems, among which the three main ones are: The man, the track and the vehicle. The man here is the subsystem more complex and, therefore, the one with the highest likelihood to cause disruption to the system as a whole (ROZESTRATEN,1988).

Raising awareness about the importance of studying this population is of extreme importance, analyze this phenomenon in its most extreme the collision. In Acre, the samu came into operation on the first of September 2004, however there is not yet a study on the positive or negative impacts of the deployment of this component of care. In order to make a correct reading of the table of accidents with motorcycles in Cruzeiro do Sul we need analyze concrete data and represent a scientific work with these data tabulated for knowledge of the general population, in order to increase awareness among it to take care of protecting and preserving the lives of their own and of others.

The lack of studies in the area of transit in the state of Acre especially in Cruzeiro do Sul imposes the need to deepen the analysis on the nature of the traffic accidents in the city, especially those of motorcycles. It is vital to know what are the types of accidents. The lack of scientific studies on this type of accident makes the preventive action of bodies for the

promotion of health and life. By common sense and through the media, we are aware of the high incidence of accidents involving motorcycles in Cruzeiro do Sul, however, there is still a theoretical framework of free access to the population to which the same realize the scale of the problem study on traffic accidents with motorcycles.

In this context, and as a professional from the areas of health and education in transit, there emerged the idea of broadening the horizons with the objective to analyze and characterize the incidence and prevalence of accidents with motorcycles attended the Mobile Emergency Care Service - SAMU, seeking to warn the population of serious problem faced currently in transit, emphasizing the use of the equipment required, the use of range of pedestrian, or should be, to teach young adults about the respect that we have in relation to traffic rules and signs of our streets.

This monograph is structured in chapters, where we sought to address the issues related to transit, in order to broaden and deepen the discussion on this topic. The main focus was directed to the prevalence of accidents with motorcycles, in the period January to December 2010.

In the first chapter is described the theoretical framework used to subsidise research and perform the analysis of the data. The aspects related to transit, the motorcycle, the use of helmets for bikers, mobile emergency care service and trauma crânioencefálico, were discussed.

In the second chapter, you are introduced to the materials and methods used in research as a way to achieve their goals. Were considered the ethical aspects essential to the research process, the methodological framework that guided the study, the strategies used to define the area of collection, the characteristics of the state of Acre, and the statistical data base for approximation of the results obtained in this research.

In the third section, the search results are displayed and made the discussion on them. Aspects related to the amount

of accidents handled by the MECS in the month, as well as the types of accidents have been widely discussed.

Finally, in conclusion, the focus is directed to a general assessment of the situation and are indicated possible interventions directed to preventive actions and health promotion. We report on the basis of the results, the contribution and the possibility of new studies on motorcycle accidents.

## **Objectives**

### **2.1 General Objective**

- Analyze and characterize the incidence and prevalence of accidents with motorcycles attended the Mobile Emergency Care Service - SAMU.

### **2.2 Specific Objectives**

- Raise the information contained in the database identifying the month of occurrence of the accident.
- Check the intensity and prevalence of types of accidents;
- Identify possible factors that influence directly and indirectly to the occurrence of accidents.

## **Theoretical Framework**

Traffic accidents are a major public health problem in the country, being extremely high rates of violent deaths in Brazil despite the constant work of awareness and prevention performed by competent bodies on this matter. However, the high rate of accidents with motorcycles requires greater rigor in the applicability of the policies of prevention and health promotion.

### **3.1 Transit**

The participation in traffic starts much earlier than you can imagine, since the uterus of the mother when she makes a crossing the street, when you're in the car or bus. All transit assumes movement of people and vehicles, and all travel is accomplished through behaviors. The transit is a set of behaviors-displacements, a system of rules (ROZESTRATEN, 1988).

According to the history and development of the car in Brazil, perceive a high growth in vehicles and a reduction in the use of vehicles of another type of traction, even the cheapest ones such as trains. The deployment of the automobile industry in the country, during the 1950s, consolidated the road model, based on the use of vehicles with traction motor (KLEIN, 2001).

With the increase in technology and the evolution, also increased the duties of man, and this trusting in machines super powerful leaves to go out of the house with little time for his work he didn't realize that there are other machines vying for the same space on the road. The dispute over space and time is a characteristic of the human being from the beginning and everyone has a right to this space, as two bodies cannot occupy the same place in the physical space, this requires a continuous negotiation and snarled in traffic (VASCONCELOS, 1985).

This dispute can lead sometimes tracks of facts as accidents with injuries traumatic brain injury (TBI). These data are not disclosed because of the poor record of the same databases in DATASUS. There are few studies involving traumatic brain injury as well as their methods and comparative instruments (KOIZUMI, 2000).

### **3.2 The motorcycle**

Second Holz, Lindau and Nodari, (2010) the facilities such as low prices, maintenance, consumption, travel and parking has been increasing the fleet of motorcycles in large and small

cities. The northern region there is a large number of motorcycles on the streets due to the difficulties of locomotion of the region such as unpaved roads, tropical climate and lack of monitoring of components of transit.

For Sado, Moraes and Viana (2009), the most vulnerable victims of traffic accidents in Brazil are pedestrians, cyclists and motorcyclists, they represent more than 50% of the dead in transit. The motorcycle is a two-wheeled vehicle different from four-wheeled vehicles, the driver needs to balance on the same, it does not provide any protection in the event of an accident. To reduce its exposure to the user on track is recommended the use of clothing and equipment. In accidents involving motorcycles the victims in their majority are young males and with productive age.

In the history of the motorcycle, you will notice that the same was invented simultaneously by an American and a Frenchman. They did not know each other and researched each one in their country of origin. Sylvester Roper, in the United States, and Louis Perreux, on the other side of the Atlantic, manufactured a bicycle type equipped with steam engine, in 1869 (HISTORY, 2012).

Second Willemann (2003) in Brazil the history of motorcycle starts at the beginning of the last century, with the importation of many motorbikes communities and some of American manufacturing, together with similar vehicles, as sidecars and tricycles with engines. Due to imports of these motorcycles several foreign factories settled in Brazil and with this appeared several types of motorbikes. Some only for urban roads, other trails and mixed, also with two, three and even four wheels, the quadricúculos.

### **3.3 The use of helmets by motorcyclists**

The Brazilian Traffic Code establishes standards and rules, and one of them is with respect to the use of the helmet. The use of the helmet is mandatory by Law no. 9,503 \97, is considered by

couriers as the main protective equipment the motorcyclist (VÉRONESE; OLIVEIRA, 2006).

With respect to the use of helmets for bikers, the incidence of non-use by the same shows even more serious (QUEIROZ; OLIVEIRA, 2003).

Over the past 10 years more than a million people were invalid due to mechanical trauma in Brazil, and the accidents of transits the main responsible for these rates (MELO and SILVA, 2004).

The accident with motorcycles has increased in recent years, and this is due to imprudence, lack of attention and the use of licit and illicit drugs. Attention is given to major accident, difficult even are the sequels post-accident. The physical deficiencies resulting from accidents of transits bring serious damage to the individual (financial, family, locomotion, professionals etc.) and for society (hospital expenses, decrease of production, social welfare costs etc) (MARIN; QUEIROZ, 2000).

For Liberatti et al (2003), although the accident prevention should be the primary goal of the campaigns of transit, the use of helmet among motorcyclists should be especially encouraged, as this equipment is effective in the prevention of brain lesions and in the reduction of sequels, hospital costs and deaths resulting from these accidents. The use of mandatory equipment for motorcyclists especially the helmet is established by Brazilian traffic Code - CTB, but not all states meet the laws. Some municipalities have laws freeing riders wear a helmet, arguing the increase of theft to establishments with the bandit using helmets with visors dark to not being recognized and commit up to murder.

Are very few studies about the use of helmet, mainly related to its effectiveness, types of helmets, comfort and difficulties encountered by users of the same. Few studies are found on the lesions without the use of the helmet. For Koizumi (1992) the study of the pattern of injuries in victims of traffic

accidents of motor vehicle in general, particularly those of motorcycle accidents, cannot be restricted to the data originated from the table of their mortality. AND yet according to the author, however, studies that describe the different types, locations and degrees of intensity of the lesions in the victims of traffic accidents, which have died or not, in addition to few are difficult to be achieved.

As has been discussed previously, the motorcyclist has no protection and no collision more usual, the motorcyclist absorbs into your body surface area all the energy generated in impact, is going to meet with the public road, is with the objects of the same or other motor vehicles (KOIZUMI, 1992).

The impact suffered by the body of the biker the result always are the injuries that canm be provided scoring up to serious injury and death. Sharing this idea Oliveira and Souza (2003) affirm that the lesions resulting from traumatic events result, often, disability and disability temporary or permanent, that interfere with the ability of the surviving victims fulfill tasks which are expected, as well as the quality of their lives.

Although the riders know that the wearing of helmets is compulsory, that prevent traumatic brain injuries many still resist to use. Many use with fear of fines and loss of points in National Driver's license - CNH, example a study developed by Ledesma and Peltzer (2008) in the city of Mar Del Plata, Argentina where observed that the use of the helmet although it is mandatory, there is no policing and the use is low.

### **3.4 Mobile emergency care Service**

The Fire Department, in addition to meet their duties of fire fighting and redemptions, services handles with ambulances to traffic accidents and other urgencies and emergencies in small towns. The rapid urbanization and the concomitant engine in developing countries have contributed to the growth of road traffic accidents (CABRAL; SOUZA, 2008).

In light of the magnitude of the problem, the performance of the sector has been incipient and little effective and with the increase in distress calls in large cities saw the need to create a national Policy of Emergency Care to meet the popu

According to Cabral and Souza (2008), the SAMU-192 is intended for emergency treatment in homes, workplaces, and public roads. The relief is done after free call to the tele (BRAZIL, 2006).

As well as in other areas of health care, the work in Mobile Emergency Care Service requires skilled professionals to work emergency situation, whether by evil sudden, accidents or violence. The pre-hospital care (APH) and removing inter-hospital is already developed in other countries in the training of health professionals. In Brazil, the specialization courses in emergency or in APH are still recent. Unlike the American nurses and French, the nurse Brazilian comes if qualifying in this area, through specialization courses (*sensu lato*) in emergency or APH (KIND; BRANCHES; Whitaker, 2008).

In Acre, the SAMU came into operation on the first of September 2004. With a fleet of 11 ambulances donated by the Ministry of Health, the service meets the capital and surrounding towns. In the first month of operation, the service was 2.5 thousand visits in cases of urgency and emergency health care. In addition to the ambulances, the Ministry of Health invests monthly R\$ 196.5 thousand to keep samu/192 in the state. This value corresponds to the half of the cost of the service (BRAZIL, 2005).

### **3.5 Brain Damage**

TBI is any blow to the head that causes a contusion or wound in the scalp can cause a fracture to the skull (DORLING; HENRIETTA, 1993).

As Freire (2001) characterizes the traumatic brain injuries as any aggression that entail anatomical lesion or functional impairment of the scalp, skull, meninges or brain.

The clash between the skull and any bulkhead can cause multiple brain lesions, classified as primary and secondary. The primary is present at the time of the accident is the result of the impact, the secondary is progressive as ischemia, edema and hypoxia, found in individuals who died (GUSMAO; PITTELLA, 2002).

The motorcycle is different from car not to provide any security for the driver at the time of the accident. According to the Brazilian Traffic Code - CTB is mandatory the use of safety equipment such as helmet, adequate clothing and footwear. Among these equipment helmet that is required by law. It is the Nervous System that controls the entire body, and the command is sent by brain. Several traumatic injuries were associated with Brain contusion - CC recent and easily noticeable to pathological examination, brain contusion was considered as the fundamental lesion of the traumatic brain injury (PITTELLA; GUZMAN, 1999).

The nervous system is divided into: the central nervous system and peripheral nervous system. The central nervous system is composed of the brain and spinal cord, the brain is housed within a skeletal structure called skull and the spinal cord is located inside the vertebral column. Inside the skull is only allowed the brain and its meninges. The volumetric increase in brain trauma is determined by the increase in the volume of water (edema) or blood (tumefaction or hemorrhage) (GUSMAO; PITTELLA, 1999).

The peripheral nervous system is composed of 12 pairs of cranial nerves and 33 pairs of spinal nerves and nerve endings. The peripheral nervous system receives the stimulus through sensory or afferent and sends it to the central nervous system where the message is processed and decoded and sends the response back through the motor or efferent to the effector

organ. Therefore there cannot be any kind of injury or diseases in the central nervous system, because it would damage the system leaving the individual with irreversible consequences, since the nerve cells are not regenerating.

The bones of the skull are resistant and the leading causes of TBI are traffic accidents, falls and the violence. Many people who suffer from brain injuries, especially those that suffer from TBI, are in the economically active age range and the need for treatment for an adequate rehabilitation can last for months or years (FRAGA-MAIA, 2010).

The cities of the northern region in general appeared in small settlements of rubber tappers, then became villages, small towns and finally a city of medium-size as is the case of Cruzeiro do Sul. Also increased the fleet of vehicles including motorcycles and with traffic accidents, being extremely high rates of accidents involving motorcycles as we will see in the next chapter of methodology.

## Materials and Methods

### 4.1 Type of research

To achieve the proposed objectives, it was decided to develop a research with descriptive approach documepeperspective and cross-sectional quantitative by the MECS. We tried to analyze, interpret and understand the documents found in your database, especially in the care of accidents with motorcycles.

The documentary research is '**material' which does not** also received an analytical treatment, or that can still be remade in accordance with the objectives of the research (GIL, 1999).

The research is descriptive by that exposes characteristics of a given population or particular phenomenon (VERGARA 2003).

Second Rouquayrol and Son (2003) the cross-sectional studies are investigations that produce "photographs" of instant

health situation of the population or community, producing indicators of global health for the investigated group.

The quantitative study and objective, focused on the verification, and also hypothetical-deductive; assumes a static reality; being oriented to results (SERAPIONI, 2000).

#### **4.2 Universe**

The present research was to study population all motorcycle accidents handled by Mobile Emergency Care Service - SAMU in Cruzeiro do Sul Acre in the period 01 January to 31 December 2010. The municipality of Cruzeiro do Sul, Acre, which is located to the west of the country. It is currently the second largest city in the state and the most developed region of the Juruá Valley. Thus, stemming from the expansion of neighborhoods increasingly distant from the center. The city has no infrastructure to meet the needs of the population and no paved roads, and in the months from October to May the city is isolated, being its access only by air.

According to the IBGE, in 2010 census, the population of Cruzeiro do Sul corresponds to 78,507 people, being 49.9% of men and 50.1% of women. It has a land area of 8,779.19 sq. km, it is limited in the north with the Amazonas state, to the south with the municipality by marrying of Porto Walter, to the east with the municipality by marrying of Tarauacá and the west with the municipalities acreanos: Mâncio Lima, Rodrigues Alves and the country of Peru. Due to the proximity of the city of Pucallpa in Peru, distant 250 km by air, there is an active exchange of tourists between the two cities, influenced by local trade (GOVERNMENT OF THE STATE OF ACRE, 2010).

#### **4.3 Sample**

The inclusion criteria for participation in the survey were: accident with motorcycles of all types handled by the MECS in the period stipulated in the search. The exclusion criteria are related to the following aspects: accidents with motorcycles of

all kinds that have not been answered by the MECS in the period stipulated by the search.

#### **4.4 Instruments**

The study was carried out on the basis of the information obtained from the database of visits recorded in Mobile Emergency Care Service - SAMU of Cruzeiro do Sul Acre, between the period 01 January to 31 December 2010. The documents were analyzed in each month accidents involving motorcycles as: collision moto-moto, collision motorcycle-car, collision moto-bike collision, motorcycle-truck, collision moto-bus, motorcycle collision-bulkhead, collision moto-animal, trampling, rollover and fall in motorcycle.

#### **4.5 Procedures**

This project has not been submitted to the Committee on Ethics and Research - CEP for documentary analysis, it was not necessary to use the Free and Informed Consent - informed consent.

The collections were made by the researcher during the month of November 2011 and analyzed the data and information contained in the spreadsheet of care delivered in each month harvested in the database of the institution for the incidence and prevalence of the visits to motorcycle accidents.

The release for data collection has been granted by the direction of the Mobile Emergency Care Service - SAMU, through official request of the Catholic University of Brasilia - PUC/DF, (ANNEX) and formal conversation between the researcher and the institution's management object of research for clarification about the same, its goals, as well as pointing the possible positive results that can be achieved.

#### **4.6 Data Analysis**

The sample received statistical treatment computerized, intentional sample, that best represents the research universe.

For the treatment of information collected in the documents, were used the following steps:

- Thematic Analysis: was the separation and identification of types of accidents for each month, in order to group them according to the similarity of the same.

- For the analysis and tabulation of data was produced a database in Microsoft Excel. The data, the tables and charts were treated through the simple statistical descriptive, using the Excel tool of Microsoft Software, Office suite 2003.

- Results and interpretation: The analysis of the collected data was presented and followed in a descriptive way. As well as new possibilities for improvement in the work of raising awareness about traffic accident.

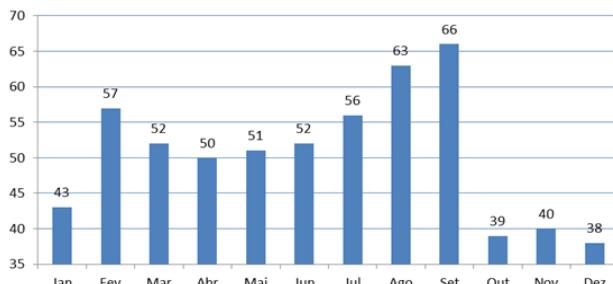
## Results

### General Aspects of the Population

They were part of this study, all motorcycle accidents, which occurred during the year of 2010 and that were treated by Emergency Mobile Service - SAMU.

**Figure 1. Quantity of accidents of motorcycles answered by the MECS in the month during the year 2010.**

Quantity of Accidents (Crashes)



With respect to quantity of accidents handled by Mobile emergency Care Service - MECS during the year of 2010 it was observed that in general the index is high. In the month of January were attended 43 accidents, rising in the month of February to 57 accidents, down to 52 in March, 50 in April and rising again to 51 in May, 52 in June, 56 and July, 63 in August and arriving to the apex of 66 accidents in September. Dropping the index in October 39, November 40 and December 38 accidents.

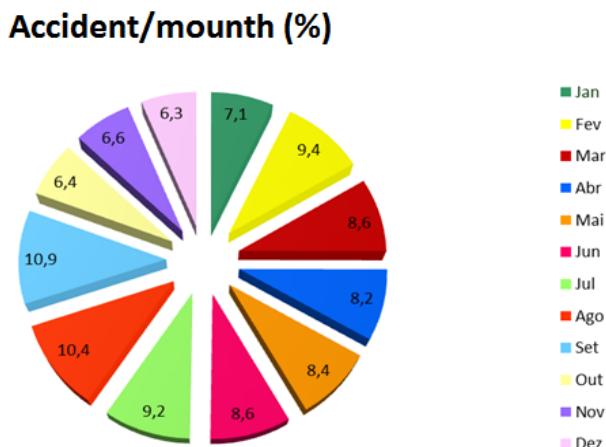
Cruzeiro do Sul as well as all the cities of the northern region has a climate differentiated from the rest of the country. Here are the four seasons of the year (autumn, winter, spring and summer), only winter and summer. The month of October up to the month of May is considered winter due to torrential rain that extends over some of the region's cities. At that time the roads without paving are all bumpy and muddy making the car traffic being the means of locomotion more used motorcycles, bicycles and animals.

The accident rate at this time is high due to the amount of rain that hinder the traffic even for pedestrians. The streets do not have vents and holes increase in size causing accidents on motorcycles to deviate from them, this ranges from falls, collisions with other vehicles, animals, shields and even pedestrians. The months of heavy rains that cause the greatest floods and accidents are the months of February and March decreasing in the months following the holes caused by the rains.

The month of June until September is considered summer due to strong sun of minimum 32° and maximum 42°. With this also increases traffic accidents due to the presence of other vehicles and roads stowed with holes plugged drivers abuse the speed and lack of monitoring. In the summer the rivers generally decreases the volume of water leaving enormous sand banks called "fresh water beaches".

In the months of August and September the prevalence of traffic accidents fold due for this season of beaches, including the month of September which is the last month of summer is considered the month of beaches. The events in beiras rivers increase during these months together with other accidents such as drowning and fights with the presence of alcoholic beverages. Traffic accidents with motorcycles are in many ways since collisions, falls, overturning and trampling. accidents begin to decrease in the months of October, November and December, the latter because of the festivals at the end of the year. Cruzeiro do Sul is a city that does not have an economy, 40% of the city are public officials from different sectors coming from all regions of Brazil and in December return to their cities and states.

**Figure 2. Number of percentage of motorcycle accidents handled by the MECS in the month during the year 2010.**



As the number of percentage of accidents handled by Mobile emergency Care Service - MECS during the year of 2010 there was a significant variation based on the total number of accidents in that year was 607 accidents. In the month of

January was 7.1 %, in February were 9.4 %, March 8.6% April 8.2 %, May was 8.4 %, June 8.6 %, equaling the month of March, in July was 9.2 %, rising to 10.4% in August, in September was 10.9% in October to 6.4 %, in November was 6.6% and December 6.3 %.

The prevalence of accidents during the year is very high, 607 accidents handled by SAMU, with a margin of 1.66% per day during the year of the survey, without counting the accidents rescued by population, by the fire department and the military police. The months also oscillated about the percentage.

**Table 1. Types of motorcycle accidents handled by the MECS in the month during the first half of 2010.**

Types of accidents	Jan	Feb	Mar	Apr	Mai	Jun
Col. Moto-moto	3	18	12	5	18	14
Col. Moto-car	15	14	9	11	4	9
Col. Moto-bike	2	5	3	5	0	5
Col. Moto-truck	1	0	0	1	0	1
Col. Moto-bus	0	0	0	0	0	1
Col. Moto-bulkhead	0	3	0	2	2	0
Col. Moto-animal	0	0	5	0	1	2
Trampling	7	4	7	13	5	4
Tipping	0	0	0	0	2	0
Fall in motorcycle	15	13	16	13	19	16

Regarding the type of accidents handled by Mobile emergency Care Service - SAMU in the first half of 2010 there was a variation between the types of collisions. Collision moto-moto 70, collision motorcycle-car 62, collision moto-bike 20, collision motorcycle-truck 03, collision bike-bus 01, collision moto-bulkhead 07, collision moto-animal 08, trampling 40, overturning 02 and fall in motorcycle 92.

It was observed that the number of accidents occurring in the months of January to June 2010 was 305 accidents. This work is in line with the work presented by Cabral and Souza (2008) carried out between the months of February and June of 2006 which was 280 accidents. The collision moto-moto is

frequent at this time of year due to the rains , deviation of holes on the roads, lack of attention, imprudence, high speed, dual queue on the track, overtaking by right, crack, bikes with headlights burned and disrespect of signalling. Many drivers do not have CNH, appropriate age that is 18 years and ability to conduct motorcycle. In Brazil the minimum legal age for obtaining of the portfolio of motorcyclist is 18 years (KOIZUMI, 1992).

The collision motorcycle-car occurs more due the overtaking on the right and inappropriate places, the deviations of holes by not expecting the car pass first, fog during the night, cars with headlights burned, broken without the correct signaling and the disrespect for signaling.

The collision motorcycle rental occurs due to the lack of signage on bikes, lack of bike lanes, and also of the rider. Cyclists often travels in the middle of the track even the street having shoulder.

The collision motorcycle-truck collision and bike-bus are rare due to the fleet of these vehicles in Cruzeiro do Sul is small due to the highway BR 364 which is closed at that time of the year, the goods arrive by ferry by Juruá River from Manaus. Collisions occur with the trucks and buses in most times parked, by lack of attention of drivers of motorcycles or parked in inappropriate places.

The collision moto-bulkhead occurs in collisions with middle wire, pole, with trees, bucket of debris in the streets , debris, walls, fences and walls of houses. The high speed prevents the drivers of motorcycle braking in time, the lack of attention especially at night and the lack of signs of buckets of debris for example.

The collision moto-animals, refers to collisions with large animals such as horses and cattle that at this time of the year is common on the streets of the city's neighborhoods and even wild animals. With the rains the fences that secure these animals fall and they are free, mainly during the night. Some

jump fences and passing through the streets, some frowned upon in the midst of the streets and the drivers don't stop in time and other animals still scared with the noise of the motorcycle and attack the same.

Unlike the work of Koizumi (1992) that were only two pedestrians, trampling is often that the population did not realize that the town has grown and also expanded the fleet of vehicles including motorcycles and still pass through in the midst of the streets. Do not cross the tracks and still don't look to the sides when crossing the streets, do not walk on the sidewalks and not in Indian queues. The pedestrians are more frequent in rural areas, especially the Indians are the most affected. The lack of attention of pedestrians and the imprudence of conductors are the causes of accidents. They are in many ways the accidents, since a slight beat until more serious causing the death of the pedestrian.

The rollover happens more due to mechanical problems such as chain break, spending brakes, the driver braking the motorcycle with the front brake by inexperience among others. Believe They are inexperienced all motorcyclists beginners to Koizumi (1992). The fleet of motorcycles is high, because some people in the city prefers to have a bike to their own house, but then cannot keep spending the motorcycle as periodic review, changing oil and parts even the licensing cannot pay. What also does not cease to be a rash.

The fall of moto is the highest of accidents and happen in various ways, since drunkenness, deviation of holes and small animals such as dogs and other animals including wild, broken springs not flagged, muddy streets, holes on the track, bad lighting and rain. For the motorcycle has only two wheels, requires a lot of skill of the driver and as the bike slips often lead to imbalance in the same which cannot keep control of the same and just dropping. The prevalence of falls from moto is due to puppies that are on the streets. The center of zoonosis of the city was turned off and with this there are many dogs loose,

they are lying in the streets or crossing at the time that the motorcycle is passing and even leave running behind the motorcycle.

**Table 2. Types of motorcycle accidents handled by the MECS in the month during the second half of 2010.**

Types of accidents	Jul	Aug	Set	Out	Nov	10
Col. Moto-moto	2	14	13	8	5	4
Col. Moto-car	17	4	19	11	16	10
Col. Moto-bike	2	8	3	1	4	4
Col. Moto-truck	0	1	2	0	2	0
Col. Moto-bus	0	0	0	0	0	0
Col. Moto-bulkhead	3	2	3	0	0	2
Col. Moto-animal	3	1	0	0	2	1
Trampling	5	6	13	9	3	8
Tipping	0	0	0	0	0	0
Fall in motorcycle	24	27	13	10	8	9

Regarding the type of accidents handled by Mobile emergency Care Service - SAMU in the second half of 2010 there was a variation between the types of collisions. Collision moto-moto 46, collision motorcycle-car 77, collision moto-bike 22, collision motorcycle-truck 05, collision moto-bulkhead 10, collision moto-animal 07, trampling 44, fell from a motorcycle 91.

In the second half of the year, it is clear that the rate of accidents is still high, there is little difference in the first half. Some types of accidents decreased, other increased and two there was no record , the collision bike-bus and overturning. The collision motorcycle rental there was an increase of 110,0% (02), bike-truck 166,0% (02), moto-bulkhead 142,85% (03) and moto-animal decreased by 87.5% (01). The collision moto-moto there was an increase of 115.0% (06), the reasons that have led to accidents are the same as in the first half of the year, but with the summer population that not budge of motorcycle because of roads without paving now feels free to parade around with them.

The collision motorcycle-car had a significant increase of 124,19% (15), the opening of BR 364, which communicates

Cruzeiro do Sul with Rio Branco is open during the summer, the same is closed during the winter rainy season because of muddy stretches that are impassable. The opening of the highway is received with a party by cruzeirense population because the cost of living is high during the winter and decreases with the arrival of summer. With this increases the economy of the city receives many visitors, and the fleet of cars and motorbikes are increasing.

The trampling had an increase of 110,0% (04) and fall in motorcycle decreased 98,91% (01). With the hot summer that is here in Cruzeiro do Sul, the people looking for the rivers and creeks called fresh water beaches for bathing. In beaches happens ingestion of alcoholic beverages and how many are the beaches, the supervision of transit is poor with little effective on the streets. The drunken louts are walking in the middle of highways and are being breached, the accidents are mild abrasions until the death of the victim.

The fall in motorcycle happens for the same reasons as the first half. Among the causes the most aggravating factor is by reason of drunkenness. The falls ranging from mild, moderate and severe arriving in the death of the victim. In some cases happen trampling then fell from a motorcycle other than the work of Oliveira and Souza (2003) that could not say that the majority of victims of motorcyclists was affected by mild traumas.

The human behavior in transit is a theme that has long been studied. The psychology of transit is the discipline responsible for this study, and since the 20th century it taken from the humanities developing its work in selections, training and in transit second Alchieri, Silva and Gomes (2006). It is a multidisciplinary work involving the medicine of traffic, engineering and education in transit. The psychology of transit operates in several areas of human mobility, education in transit requires very the presence of this discipline in raising

the awareness of drivers to avoid accidents and have a good conduct on track (MONTIEL ET AL, 2006).

The psychological evaluation from the outset is a measurement instrument of the psychological processes that assists in the evaluation of human phenomena. One of its purposes is to promote the safety of drivers in traffic thus avoiding accidents. But the same struggles with a difficulty which is the relationship between psychological processes and accidents of transits by being difficult to obtain valid information about the accident and the behavior that precede it. The police records are superficial reporting only the mechanical factors that prove the accident (HOFFMANN, 2005).

## Conclusion

It was concluded that this study confirms findings exist in other regions of the country and the major types of accidents handled by Mobile Emergency Care Service - SAMU were collisions moto-moto, moto-car, trampling and fall in motorcycle. The prevalence of these types of accidents is present in several studies. It was observed that, in addition to having only two wheels that provide lack of balance, several factors influence the falls of moto as the ingestion of alcoholic beverages.

Although this study has been developed in a unit of reference in answering emergency room and for a period of one year, new studies with representative samples must be carried out in the areas of psychology, for example, that the psychological evaluation is not the only instrument of work psychologist, that the same should be extended to the education in transit. The traffic engineering is another area that also needs studies, especially with regard to the geography of the region, signaling, roads and paving in order to generate data that has not yet been produced in the northern region.

For both, it is recommended that investment to make implantação system of complete database with information

about the quantity and quality of information on accidents and on each accident. It is further recommended investment in human resources to act as an agent of transit and in education in transit to optimize service and ensure the effectiveness of emergency care in transit in Cruzeiro do Sul.

## REFERENCES

- ALCHIERI, J. C.; DA SILVA, F. H. V. C. ; GOMES, J. M. N. C. curricular Training as development and update of traffic psychology in Brazil. **Psychology Research and transit.** v. 2 n. 1 Belo Horizonte jun. 2006. Available in <http://www.bvsalud.org>. Access Jul 24. 2012.
- BRAZIL. Ministry of Health. **In Acre.** Ed II. Brasilia, DF, Brazil, 2005. Available at: <http://www.materias especiais.com.br/saude/boletins/acre.pdf>. Access Feb 28. 2011.
- BRAZIL. Ministry of Health. SAMU-192: **what is the MECS?** Available in <http://www.saude.gov.br/samu-programa-nacional.htm>. Accessed at Feb 20. of 2012.
- BRAZIL. Decree no. 1,863 /GM of 29 September 2003. **Official Gazette of the Federal Republic of Brazil, Brasilia, DF,** Oct 6. 2003. Available in [http://www.cremesp.org.br/library/modulos/legislacao/versao\\_impressao.php?id=3232](http://www.cremesp.org.br/library/modulos/legislacao/versao_impressao.php?id=3232). Access Feb 20. of 2012.
- BRAZIL. Decree no. 1,864 /GM, of 29 September 2003. **Official Gazette of the Federal Republic of Brazil, Brasilia, DF,** Oct 6. 2003. Available at: [http://www.cremesp.org.br/library/modulos/legislacao/versao\\_impressao.php?id=3232](http://www.cremesp.org.br/library/modulos/legislacao/versao_impressao.php?id=3232). Access Feb 20. of 2012.
- CABRAL, A. P. S. ; DE SOUZA, W. V. Mobile Emergency Care Service (SAMU): analysis of the demand and its spatial distribution in a city in the Northeast of Brazil. **Brazilian Journal of Epidemiology.** 2008; 11

- (4): 530-40. Available in Collection <http://www.scielo.br>. Access Feb 20. 2012.
- DORLING, K. L. ; HENRIETTA, S. L. **English Company of the Red Cross, 1993.** Translated to Portuguese. SP: Circle the Book Ltda. 1996.
- FRAGA-MAIA, H. Life after trauma: the event to feature the survivor of traumatic brain injury. Thesis (PhD Programs in Public Health) - Federal University of Bahia, Brazil, 2010. Available in <http://www.ufba.br>. Access Feb 20. 2012.
- FREIRE, E. Trauma: The disease of centuries, volume 1. 2001. Atheneu. Sao Paulo - SP, Rio de Janeiro - RJ, Belo Horizonte - MG. Available in <http://www.bireme.br>. Access Feb 28. 2011.
- GENTLE, R. C. ; RAMOS, L. H. and Whitaker, I. Y. Training of nurses in the pre-hospital care. **Journal Latin American Nursing** 2008 March-April; 16 (2). Available in <http://www.usp.br>. Access Feb 20. 2012.
- GIL, A. C. How To prepare research projects. Sao Paulo: Atlas, 1996.
- GOVERNMENT OF THE STATE OF ACRE. **Portal of the Government of the State of Acre.** 2010 Available at: <<HTTP://WWW.AC.GOV.BR> /wps/portal/acre/Acre/estado -acre/municipalities/ .> Access: Nov 17. 2011.
- GUSMAO, S. S. ; PITTELLA, J. E. tumefaction congestive brain in victims of fatal traffic accident: frequency and association with other injuries road. **Arquivos de Neuro-Psiquiatria**, Sao Paulo, v. 57,n. 4.1999. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- GUSMAO, S. S. ; PITTELLA, J. E. H. hypoxic brain damage in fatal victims of traffic accidents: prevalence, distribution and association with survival time and other injuries road and extracranial. **Arquivos de Neuro-**

- Psiquiatría**, Sao Paulo, v. 60, no. 3B, 2002. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- HOFFMANN M. H. driver behavior and psychological phenomena. **Psychology Research and Transit**. V. 1 n. 1 Belo Horizonte 10. 2005. Available in <http://www.bvsalud.org>. Access Jul 24. 2012.
- HOLZ, R. ; LINDAU A. L. ; NODARI, C. Challenges imposed by motorcyclists in urban areas: the Brazilian case. **XVI Panamericano**, July 15-18, 2010 - Lisbon, Portugal. Available at: [http://www.panam2010.info/PANAM\\_CONFERENC\\_E\\_PROCEEDINGS/documents/01290.pdf](http://www.panam2010.info/PANAM_CONFERENC_E_PROCEEDINGS/documents/01290.pdf). Access at: Feb 28. 2011.
- KLEIN, C. H. the traffic fatalities in Rio de Janeiro, Brazil. **Books of Public Health**. Rio de Janeiro 2001. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- KOIZUMI, M. S. Morbidity by cranioencephalic traumatism in the municipality of Sao Paulo, 1997. **File de Neuro-Psiquiatría**, Sao Paulo, v. 58,n. 1.2000. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- KOIZUMI. M. S. Pattern of injuries in victims of motorcycle accidents. **Journal of Public Health**, S. Paulo, 26 (5): 306-15, 1992. Available in <http://www.scielosp.org>. Access Feb 20. 2012.
- LEDESMA, R. D.; PELTZER. R. I. Helmet use amongmotorcyclists: observationalstudy in thecityof Sea delPlata, Argentina. **Journal of Public Health** 2008 ; 42 (1) :143-5. Available in <http://www.scielosp.org>. Access Feb 20. 2012.
- LIBERATTI, C. L. B. ; ANDRADE, S. M. ; SOARES, D. S. and MATSUO, T. Use of helmet by victims of motorcycle accidents in Londrina, southern Brazil. **Pan American Journal of Public Health/Pan Am J Public Health** 13

- (1), 2003. Available in <http://www.scielosp.org>. Access Feb 20. 2012.
- LIMA, A. The history on two wheels. Available in <http://www.viagemdemoto.com.br>. Access Aug 23. 2012.
- MARIN, L. ; QUEIROZ, M. The relevance of traffic accidents in the age of speed: an overview. **Specifications of Public Health**, Rio de Janeiro, v. 16, no. 1.2000. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- MELO, J. R. T. ; SILVA, R. A. ; MOREIRA JR, E. D. Characteristics of patients with traumatic brain injury in the city of Salvador, Bahia, Brazil. **File de Neuro-Psiquiatria**, Sao Paulo, v. 62, no. 3a, 2004. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- MONTIEL, J. M. ; FIGUEIREDO, E. R. M. ; LUSTOSA, D. B. S. ; DAYS, N. M. Evidence of validity for the Test of Sustained Attention Toulouse-Pieron in the context of transit. **Psychology Research and transit** v. 2 n. 1 Belo Horizonte jun. 2006. Available in <http://www.bvsalud.org>. Access Jul 24. 2012.
- OLIVEIRA, N. L. B. ; SOUSA, R. M. C. Lesions Diagnosis and quality of life of motorcyclists, victims of traffic accidents. **Journal Latin American Nursing** 2003 November-December; 11 (6) :749-56. Available in <http://www.usp.br>. Access Feb 20. 2012.
- PIOVESAN, A. ; TEMPORINI, E. R. Exploratory research: a methodological procedure applied to the study of human factors in the field of public health. **Revised Public Health**, Sao Paulo, v. 29, n. 4, 1995. Available at <http://www.scielo.br> Access Feb 28. 2011.
- PITTELLA, J. E. H. ; GUSMAO, S. cerebral contusion in victims of fatal traffic accident: frequency and association with other injuries road. **File de Neuro-Psiquiatria**, Sao Paulo, v. 57, no. 3B, 1999. Available in <http://www.scielo.br>. Access Feb 28. 2011.

- QUEIROZ, M. S. ; OLIVEIRA, P. C. P. traffic accidents: an analysis from the perspective of the victims in Campinas. **Psychology and Society**, Porto Alegre, v. 15, n. 2, 2003. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- ROUQUAYROL, M. Z; BARRETO, M. Descriptive Epidemiology. In: ROUQUAYROL, M. Z; SON, N. A. **Epidemiology and Health**. 6 Ed Rio de Janeiro: MEDSI, 2003.
- ROZENSTRATEN, R. J. Psychology of Transit: Concepts and Basic processes. SLE, 1988.
- I GREET, M. J. ; MORAES, F. D. ; VIANA, P. F. Characterization of the victims of motorcycle accidents admitted to hospital emergency departments in Goiania. **Magazine Moves**; Vol2, No 2 (2009). Available in <http://www.ueg.br>. Access Feb 20. 2012.
- SERAPIONI, M. qualitative and quantitative methods in social research in health: some strategies for integration. **Science and Public Health** (online). vol. 5, No 1, pp. 187-192, 2000. Available at: <http://redalyc.uaemex.mx/redalyc/pdf/630/63050116.pdf>. access Oct 10. 2011.
- VASCONCELOS, E. what is transit. SP: Brasiliense, 1985.
- VERGARA, S. C. Projects and Reports of Research in Administration. 4TH ed. Sao Paulo: Atlas, 2003.
- VERONESE, A. M. ; OLIVEIRA, D. L. L. C. The risk of traffic accidents in the perspective of motorcycle couriers: subsidies for the promotion of health. **Specifications of Public Health**, Rio de Janeiro, v. 22, No 12, 2006. Available in <http://www.scielo.br>. Access Feb 28. 2011.
- WILLEMAN, E. R. Facial Trauma in victims of motorcycle accidents related to equipment use personal protection (PPE). Dissertation (Master's Degree in Production Engineering) - Universidade Federal de Santa Catarina, 2003. Available at [maxipas.com.br](http://maxipas.com.br). Access Feb 20. 2012.