



Chapter 4

RESEARCH METHODOLOGY

4.1 Research Design

A prospective cohort study is designed to collecting for data relate to the characteristics of road victim, accident and hospital and the data relate to source of paying the medical treatment expenses.

(1) Data Collection

Interviewing road accident victims collected the data of characteristics of the road accident victims and accident. Searching patients' record in public hospitals collected data of the hospital characteristics and sources of paying medical treatment expenses of road victim. (see appendix for questionnaires)

(2) Population

Road accident victims admitted to public hospitals, Trang province during 5 – 19 April 1999.

(3) Sample Size

All road accident victims admitted to emergency room and inpatient department of one regional hospital (Trang hospital), 8-district hospitals during 5 – 19 April 1999 of Trang province.

4.2 Conceptual Framework.

4.2.1 The Characteristics of Factors Determining an Initial Payment Claim

The main objective of this study is to determine the characteristics of the factors effecting the initial payment claim of the road accident victim. The factors involve three characteristics; personal, accident and hospital. The characteristics of factors design as independent variable, which will effect an initial payment claim. This study will focus on the characteristics that would determine the claim.

a. Personal Characteristics.

There are 7 kinds of personal characteristics that this study emphasizes, namely, age, sex, education, occupation, income, privilege for health care services and awareness.

(1) Sex

Males and Females have many different aspects such as: anatomy, idea and behavior. Males have more challenges than females. Females have more concern for expenditure than males. Females are more careful than males. Males have more accidents than females.

The driver is usually male, and the passenger is female. When the car has an accident, the driver must be responsible according to the law. If the driver does not have a driver license, and the driver claims initial payment from insurance company or Compensation fund. The insurance company will get the money back from the driver, but the passenger (usually female) can claim an initial payment in all kinds of accidents.

This study anticipates that male would have a negative effect on the probability of claim because male usually driver has complication to make the claim more than female.

(2) Age

Age is one factor that can show the responsibilities of the person. For example, the majority of age will determine a person's maturity to make appropriate decision. Age is an important determinant of claim as different age groups have different ideas and different behavior. For example, the teenagers are likely to be more challenging, thrilling, and have less responsible than the majority.

Many assumed those who have reached the maturity would more likely claim an initial payment than younger ones. The insurance company demand that road accident victim must show driver license when he or she makes a claim. But the insurance company makes an exception that the road victim who has not reached the majority does not have to show a driver license.

This study anticipates that age would have a negative effect of the probability of claim because many of the road accident victims are younger ones and the law make a exception for claiming.

(3) Education

At the present time, the education is the main factor in developing people in this society. Education dictates what kinds of occupation and income the people can have. Those who have higher education can have a good occupation and higher income than those who have less education. Education provides good understanding on how to claim. It is most likely that those with high education can claim an initial payment for medical treatment more than those with less education.

This study classifies education to 5 level; primary school, high school, diploma degree, bachelor degree and above bachelor.

This study anticipates that education would have a positive effect of the probability of claim because education would provide good understanding on how to claim.

(4) Occupation

The occupation dictates a privilege for healthcare services. A different occupation could have different benefits of healthcare services. The government official can get free health care services from hospital. A persons who work in a factory or a company that provide health insurance according to social security insurance can get a better services than the other person who does not have a privilege for health insurance. Therefore the occupation clearly can dictate the privilege for healthcare services to be an alternative choice in deciding for a claim.

This study focused on five different occupation, namely, farmer, laborer, merchant, government official and student.

This study anticipates being "farmer" would have a positive effect of the probability of claim because they usually do not have privilege for healthcare services. Therefore the farmer would more likely to makes an initial payment claim for medical treatment to support their cost of living.

Being "laborer" would have a negative effect of the probability of claim because in Trang province, the laborer normally work in the rubber industrial factory that provides health insurance by the social security insurance fund. The social security insurance fund provides a broad benefit for healthcare service to its member. So the road victims who are the laborer would be less likely to make an initial payment claim for medical treatment from the insurance company.

Being "merchant and businessman" would have a negative effect of the probability of claim because the merchant and businessman normally have a better

financial status. The merchant and businessman would be more capable to pay for healthcare services and they may be able to have life insurance. Therefore, the merchant and businessman would be less likely to make an initial payment claim for medical treatment.

Being "the government official" would have the negative effect of the probability of claim because the government official has a privilege for healthcare services. They can get free healthcare services. Therefore, the government official would be less likely to make an initial payment claim for medical treatment.

Being "student" would have ~~negative~~ a negative effect of the probability of claim because our governments' healthcare policy provides free healthcare services to the students who are under 12 years of age. The school usually has life insurance contract for accident for the students who are over 12 years of age. So the student would be less likely to make an initial payment claim for medical treatment because they have many choices to pay a medical treatment.

(5) Income

Income is the wealth indicator of people in society. The person who has a higher income usually has a better quality of life than the one who has a lower income. The higher income person is able to take care of financial responsibility. For example, for the same amount of medical treatment expense, the people with a higher income can afford better than the one with a lower income. This means that the higher income person is less likely to claim an initial payment than the one with lower income. Therefore income should be an important determinant in victim's claiming initial payment.

This study anticipates that income would have a negative effect of the probability of claim. The reason is as explained above.

(6) Privilege for Healthcare Services.

People with the privilege for healthcare services have alternative choice to use for their highest benefit, comfort and certainty. If the road victim have privileges, they may claim an initial payment from their fund.

Privilege for healthcare services has a different purposes. For example, the person who has social security insurance can claim medical treatment expenses in every kinds of accident. If they claim medical treatment from the insurance company, while they are not qualified, then they must return the money to the insurance company and they can not reimburse from the social security fund. This caused them lose a reimbursement from the social security fund. So road accident victim who has social security insurance usually claims initial payment and all medical treatment expenses from the social security fund, because it can be ensure that the road victim will be paid.

This study focused on five different privileges for healthcare service, namely social security insurance, health card, life insurance, the government official privilege and the social welfare.

This study anticipates that the road accident victims who have social security insurance would have a negative effect of the probability of claim because they can claim medical treatment expenses certainly from social security fund.

The road accident victims who have a health card would have a negative effect of the probability of claim because they can pay a medical treatment expense by the health card fund.

The road accident victims who have life insurance would have a negative effect of the probability of claim because they can claim a medical treatment expense from Life Insurance Company.

The road accident victims who are the government officials would have a negative effect of the probability of claim because they can pay a medical treatment expense by government official benefit fund.

The road accident victims who have social welfare card would have a positive effect of the probability of claim. Because the hospital provide free services for the social welfare card groups. Therefore, the hospital will encourage road accident victims to make an initial payment claim from the insurance company, in order to increase revenue for hospital.

b. Accident Characteristic

The characteristics to be considered are type of road victim, car insurance contract, driver license of driver, police notice and having a litigant.

(1) Type of Road Victim

The type of road victim shows the different responsibilities of accident and benefit that can be claimed. If passenger or pedestrian is victim, the law will provide an initial payment for healthcare in every case even though they break the law. However, if the driver is the victim and breaks the law in the accident, they may not claim an initial payment because the driver must pay back the money to the insurance company since the driver is not qualified, for example, the driver may not have a driver license etc. So, the type of road victims can take a different responsibility and the legal rights relating to different situations can encourage or prevent them to make an initial payment claim.

This study classify type of road victim into two types: driver and non-driver (passenger and pedestrian). This study anticipates that being "driver" would have a negative effect of the probability of claim because of the complexity of claim for road accident victim who is driver.

(2) Car Insurance Contract

According to the Protection for Motor Vehicle Accident Victim Act, the insurance company provides a legal right to claim to road accident victim who has accident with a car that is a member of the insurance company. But the road accident victim who has accident with the non-contract insurance car can claim only an initial payment for medical treatment from the Compensation fund.

This study anticipates that the car insurance contract of the accident car would have a positive effect of the probability of claim because the insurance require a car insurance contract as a document for claiming.

(3) Driver License

A driver must have a driver license, according to the Traffic Law. The passenger, pedestrian and road victims who are under 20 years of age are excluded from this condition. Even though The Protection for Motor Vehicle Accident Victim Act does not require showing a driver license for claiming an initial payment the driver license is a basic qualification of a driver according to the Traffic Law. The insurance company and compensation fund requires a driver license as a document for claiming.

This study anticipates that having driver license would have a positive effect of the probability of claim because of the Traffic Law and the regulation of insurance company.

(4) Police Notice

According to this Act the document requirement for claiming an initial payment is evidence that that person is a real road accident victim. The police notice will notarize road accident victim for claiming. The police notice is a requirement for the claiming medical treatment expense from the insurance company and the

Compensation fund. Now a day getting police notice is a problem for claiming because of the shortage of policeman to take care of all accidents.

This study anticipates that the police notice would have a positive effect of the probability of claim because of the document requirement of insurance company and Compensation fund.

(6) Litigant

According to The Protection for Motor Vehicle Accident Victim Act, litigant is one factor that influences the road accident patients' claim for medical treatment from any funds because the law regulates that the litigant who breaks the law should pay. So the road accident victim can ask for medical treatment expense from the litigant.

This study anticipates that having litigant would have a negative effect of the probability of claim because the road victim can ask a medical treatment from litigant.

(7) Awareness

Awareness of the rights of road accident victim is the one of the factors that will affect the likelihood to claim for the medical treatment expenses from insurance company or Compensation fund. The awareness of the procedure and the right according to The Protection for Motor Vehicle Accident Victim Act implies the knowledge of how to claim for the best benefit. The awareness of the road victim may not be the same. Those who is aware of the law can get a better method to make a claim than the other one who is not aware of the law.

This study anticipates that awareness would have a positive effect of the probability of claim because the awareness of the law would induce the road victims to make more claims.

c. Hospital Characteristic

The number of beds in a hospital, patients' department, and the amount of charge are hospital characteristics to be considered.

(1) Hospital Size

The number of beds in a hospital determines the size of the hospital which indicates the ability of services. A bigger hospital would have a higher ability, experience and skills than a smaller hospital for claiming an initial payment because there are many cases of road accidents to deal with. A bigger hospital could have more power to influence the insurance company. That means hospitals provide a claim in a better way for road victim. For example, road victim can authorize hospital for claiming. There are nine public hospitals in Trang province, 1 hospital with 370 beds, 1 hospital with 60 beds, 5 hospital with 30 beds, and 2 hospital with 10 beds. This study anticipates that hospital size would have a positive effect of the probability of claim.

(2) Patients' Department

This study classifies the patients series into two departments: outpatient department and inpatient department. In the outpatient department is an emergency room where accident patients are admitted and discharged within a day. The inpatient department is accident wards that admit patients to stay over night. The road victim who are admitted in the inpatient department can authorize the hospital to make a claim. Outpatients usually take a short time in servicing. It has a complication to authorize the hospital to make a claim. For example, the road victim does not have complete documents in the short time to provide adequate supporting documents for claim. Also the expenses of medical services of outpatients are not too high. So the department to which the patient is admitted is an important condition for claiming of the road accident victim.

This study anticipates that being “inpatient” would have a positive effect of the probability of claim.

(3) Charge

The amount of medical treatment expenses that the hospital charge patients out-of-pocket or from any funds according to the privilege for healthcare service of the road victim is an important factor that will affect an initial payment claim for medical treatment. The amount of charge will burden the road accident victim differently, depending on victims' financial status. This study expects that the claim will increase when the charge is higher.

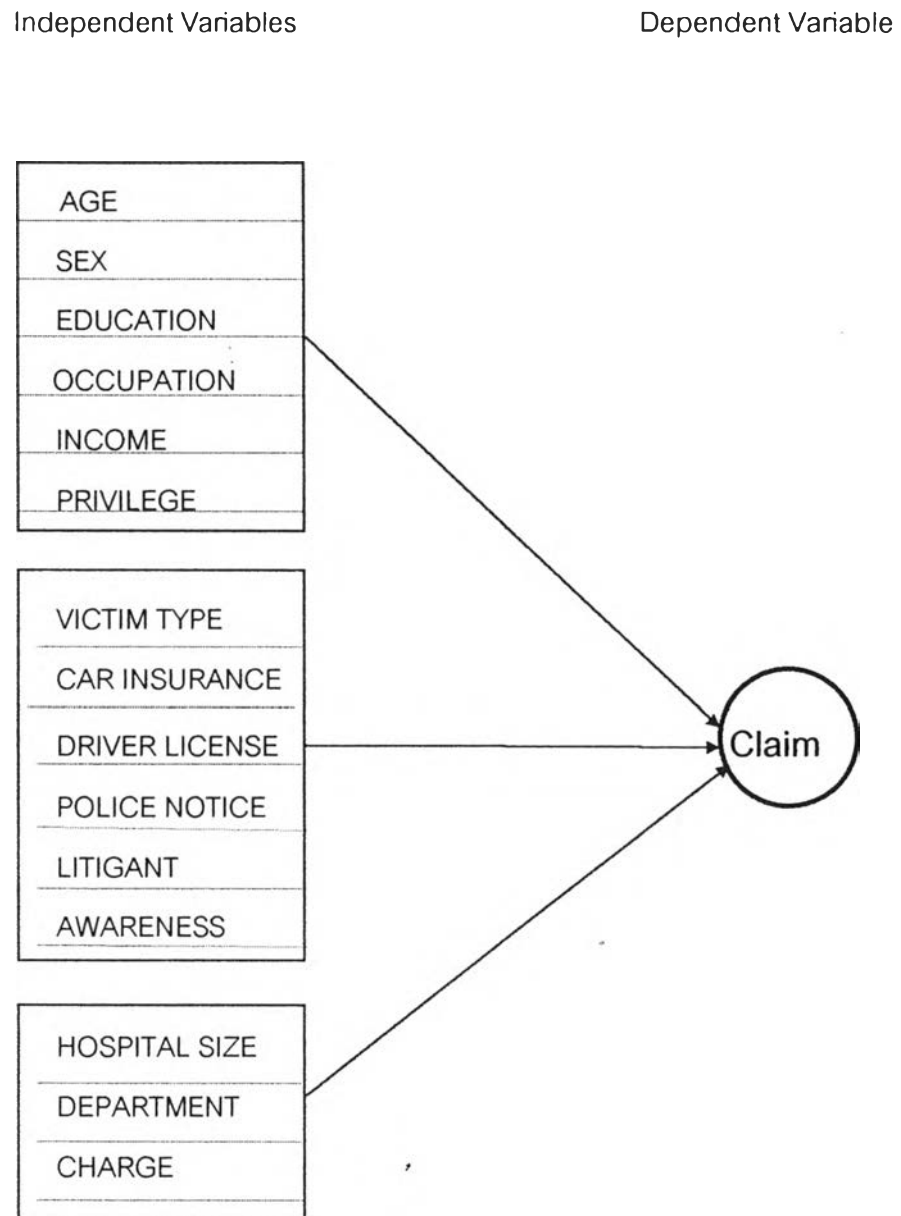
This study anticipates the charge would have a positive effect of the probability of claim because the magnitude of the amount of medical treatment cost would induce the road accident victim to make a claim.

d. Dependent Variable

(1) Claim

According to the Protection for Motor Vehicle Accident Victim Act, the initial payments for medical treatment are within 15,000 baht. The road victims can claim from the insurance company or Compensation fund. There are many factors that can influence the initial payment claim for medical treatment of the road victim from the insurance company or Compensation fund, as mentioned above.

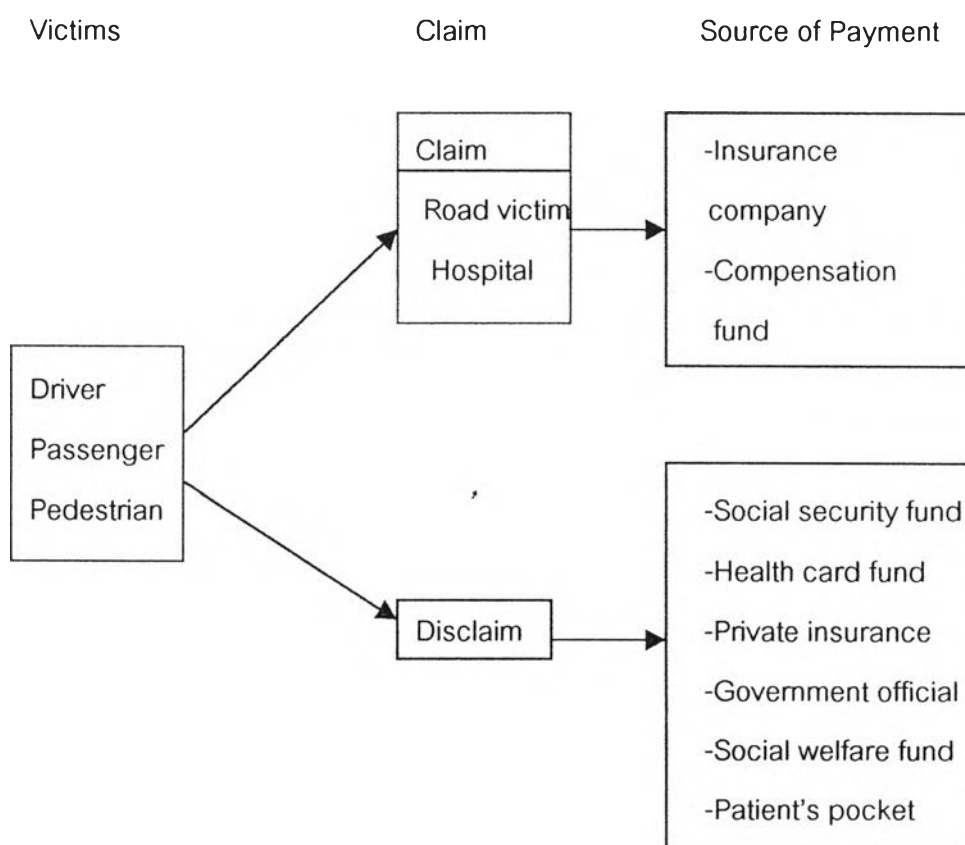
Figure 4.1 Conceptual Framework



4.2.2 Payment Mechanism

The second objective of the study is how the medical treatment expense falls to several sources of payment. Even though the road accident victims can claim the initial payment up to 15,000 baht for medical treatment from insurance company or Compensation fund, the road accident victims can have their medical treatment expense paid from any funds that they have, depending on which one can offer a higher benefit. So, the insurance company, Compensation fund, several healthcare privilege funds and patient's pocket are the alternative choices of the road accident victims to pay for the medical treatment.

Figure 4.2 Diagram of Payment Mechanism of Medical Treatment of Road Accident Victim.



4.3 Measurement

4.3.1 Measurement the Characteristic of Claim

The logit model is used to estimate the effect of magnitude of factors that determine the initial payment claim. The model explain the claim in relation to all independent variables as following

$$\Pr (CL=1) = \frac{1}{1 + e^{-z_i}}$$

$$\begin{aligned} \text{Where } Z_i = & \beta_1 + \beta_2 \text{ SEX} + \beta_3 \text{ AGE} + \beta_4 \text{ EDU} + \beta_5 \text{ OCC1} + \beta_6 \text{ OCC2} + \beta_7 \text{ PCC3} + \beta_8 \text{ OCC4} \\ & + \beta_9 \text{ OCC5} + \beta_{10} \text{ INC} + \beta_{11} \text{ PRI1} + \beta_{12} \text{ PRI2} + \beta_{13} \text{ PRI3} + \beta_{14} \text{ PRI4} + \beta_{15} \text{ PRI5} + \\ & \beta_{16} \text{ VIC} + \beta_{17} \text{ INS} + \beta_{18} \text{ LIC} + \beta_{19} \text{ PN} + \beta_{20} \text{ LIT} + \beta_{21} \text{ AW} + \beta_{22} \text{ SIZ} + \beta_{23} \text{ DEP} + \\ & \beta_{24} \text{ CHA} \end{aligned}$$

Table 4.1 shows the description of variables used in the logit model

(1) Variables and dummy

Table 4.1 Description of the Variables used in Logit Modal.

Variable	Description of variable	Expected sign
<i>Dependent variable</i> CL	The claiming an initial payment of road accident victim; dummy variable CL=1: Claim CL=0: Disclaim	

<i>Independent variable</i> SEX	Sex of road accident victim; dummy variable SEX=1: Male SEX=0: Female	-
AGE	Age of road accident victim	-
EDU	The number of year of education of road accident victim Primary school = 6 High school = 12 Diploma = 14 Bachelor = 16 Above = 18	+
OCC1	The occupation of road accident victim ; Dummy variable OCC1=1: Farmer OCC1=0: Otherwise	+
OCC2	The occupation of road accident victim ; Dummy variable OCC2=1: Labor OCC2=0: Otherwise	-
OCC3	The occupation of road accident victim ; Dummy variable OCC3=1: Merchant/business OCC3=0: Otherwise	-
OCC4	The occupation of road accident victim ; Dummy variable OCC4=1: Government official OCC4=0: Otherwise	-

OCC5	The occupation of road accident victim ; Dummy variable OCC5=1: Student OCC5=0: Otherwise	-
INC	Monthly income of road victim (baht)	-
PRI1	The privilege for healthcare of road accident victim ; dummy variable PRI1=1: Social insurance PRI1=0: Otherwise	-
PRI2	The privilege for healthcare of road accident victim ; dummy variable PRI2=1: Health card PRI2=0: Otherwise	-
PRI3	The privilege for healthcare of road accident victim ; dummy variable PRI3=1: Private life insurance PRI3=0: Otherwise	-
PRI4	The privilege for healthcare of road accident victim ; dummy variable PRI4=1: Government official PRI4=0: Otherwise	-
PRI5	The privilege for healthcare of road accident victim ; dummy variable PRI5=1: Social welfare PRI5=0: Otherwise	+
VIC	The type of road accident victim; dummy variable VIC=1: Driver VIC=0: Passenger/Pedestrian	-

INS	Car insurance contracted of road accident victim ; dummy variable INS=1: Insured INS=0: no insurance	+
LIC	The driving license of road accident victim ; dummy variable LIC=1: yes LIC=0: no	+
PN	The police notice of road accident victim ; dummy variable PN=1: yes PN=0: no	+
LIT	The litigant of road accident victim ; dummy variable LIT=1: yes LIT=0: no	-
AW	The awareness of the right road accident victim; dummy variable AW=1: Awareness AW=0: Unknown	+
SIZ	The number of beds in hospital	+
DEP	The admitted department of patient ;dummy variable DEP=1: In-patient department DEP=0: Emergency room	+
CHA	The charge for medical treatment of road accident victim(Baht)	+

(2) Interpretation

To interpret the result of logit model by coefficient value as β_2 to β_{24} , the slope, measure the change in the log of odds ratio in favor of claim (the ratio of probability that road accident victim will claim an initial payment to the probability that if it will not claim) for a unit change in independent variable.

(2.1) Regression Coefficients

Each coefficient multiplies the corresponding variable in forming the best prediction of the dependent variable. The coefficient measures the contribution of its independent variable to the prediction. The coefficient of the constant or intercept in the regression is the best level of prediction when all of the other independent variable are zero. The other coefficients are interpreted as the slope of the relation between the corresponding independent variable and the dependent variable.

(2.2) Standard Errors

These measure the statistical reliability of the regression coefficients-the larger standard error, the more statistical noise infects the coefficient. According to the regression theory, there are about 2 chances in 3 that the true regression coefficient lies within one standard error of the report coefficient, and 95 chances out of 100 that it lies within two standard errors.

(2.3) t-Statistic

This is a test statistic for the hypotheses that coefficient has a particular value. The t-statistic to test if a coefficient is zero (that is, if the variable does not belong in the regression) is the ratio of the coefficient to its standard errors. If the t-statistic exceed one in magnitude it is at least two-thirds likely that the true value of the coefficient is not

zero, and if the t-statistic exceeds two in magnitude it is at least 95 percent likely that the coefficient is not zero.

(2.4) Probability Value

The probability value drawing a t-statistic of the magnitude of the one just to the left from a distribution. This information can answer at a glance if reject or accept the hypotheses that the true coefficient is zero. Normally, a probability lower than 0.5 % is taken as strong evidence of rejection of that hypothesis.

4.3.2 *Measurement the Payment Mechanism*

The outcomes of payment mechanism analysis of the medical treatment expenses of the road accident victim will present in descriptive forms, which can be descended as follows

- a. The percentage of the road accident victims in each age group and sources of medical treatment expenses.
- b. The percentage of the road accident victims in each sex and sources of medical treatment expenses.
- c. The percentage of the road accident victims in each education and sources of medical treatment expenses.
- d. The percentage of the road accident victims in each occupation and sources of medical treatment expenses.
- e. The percentage of the road accident victims in each income level and sources of medical treatment expenses.
- f. The percentage of the road accident victims in each privilege for healthcare services and sources of medical treatment expenses.
- g. The percentage of the road accident victims in each type and sources of medical treatment expenses.
- h. The percentage of having car insurance contract of the road accident victims and sources of medical treatment expenses.

i. The percentage of having driver licenses of the road accident victims and medical treatment expenses.

i. The percentage of the awareness of the road accident victims and sources of medical treatment expenses.

k. The percentage of the charge of the road accident victims and sources of medical treatment expenses.

4.3.3 Data Processing: Computer Software Required.

The Eviews program was used to processes and analyzes the data. The Eviews software can estimate which analyze the selection of a discrete choice between alternatives. The logit function will provide a way of quantifying the relationship between the characteristics of road accident victim, accident, hospital and the probability of claiming an initial payment for medical treatment expenses.

Eviews program provides coefficient estimates with standard errors, t-statistics and p-values. Also presented are the value of the maximized log likelihood and the number of observation with $y = 1$ and $y = 0$. Lastly Eviews reports the mean for all of the regressor variables for entire sample, and for the sample broken down by the value of the dependent variable.