

## **School Vehicles Safety Assessment for Develop a Safety Practical Guideline, Chiang Rai Province**

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### **Summary**

Road accidents were mostly reported as a cause of death and disability especially among young children. There are many risk factors that affect the road accident due to travel to the school. Chiang Rai Province has a unique landscape in which is mostly mountainous. According from the preliminary survey of research team was found 85% of school vehicles, that is mostly a van and pick-up truck with bench seat in the back, used for school traveling in Chiang Rai province are not in a good and safe condition. Also, the behaviors of students and drivers are not proper which these factors may lead to accidents higher than other groups of the population. The aims of this research were to study risk factors that affect the accident of school vehicles as follow 1) human factors by examine vision screening test, knowledge, attitude and practice of school vehicles drivers. We also examine the children practical when they get in the school vehicles and safety attitude of their parent. The questionnaires were use as a tool for collect research data for drivers who are a member of school vehicle network partners in Chiang Rai province, children and parent which obtain a personal information, knowledge, behavior, attitude and practice 2) school vehicle condition factor; the condition of school vehicle was examined follow by safety standard of school vehicle from Department of Land Transport. This research is a cross-sectional study by studying in 4 districts of Chiang Rai province, consisting of Mueang district that represent a city are mostly flat areas, short time travel, high rate of traffic and dense population. Mae Chan district that represent a sub-urban area, uncertain rate of traffic, medium-time travel and mix area types both flat and mountain. Wiang Chiang Rung and Doi Luang district represent a rural area, light rate of traffic, long-time travel and area mostly mountain. 79 drivers (66 Male, 13 female) was participated 'Vision Screen Test' using a Titmus v4 vision screener compare a test result with 'Record Form of Vision Screening Test in Occupational Health Setting; Driver' results showed 91% of participants are not recommend/ abnormal result for driver occupation criteria, which is found the abnormal of binocular test, near and far vision and stereo depth also. 124 drivers (105 Male, 19 female) were participated knowledge and behavior test by questionnaire that consist of general information, safety knowledge and safety behavior. The results showed safety knowledge of drivers mostly in a high level (85.5%) but their safety behavior of driver mostly in moderate level 91.1%. We also examine 363 families who has the children travel to school by school vehicle, the results showed the same trend; safety knowledge of student mostly in a high level (69.7%) but their safety behavior mostly in moderate level 46.6%. About 15% of students has an experience from school vehicles such as bumped on the vehicle on the vehicle wall (79%), felt out from the vehicle (14%), and was trapped in the vehicle (7%). The result also found the attitude on safety of parent (51%). The condition of school vehicle was assessed, 38% of school vehicles in network partner, Chiang rai achieved safety standard of school vehicle and get a safety sticker to ensure that vehicle is in a good and safety condition.

## Aim of Research

1. To assess vision screening test, safety knowledge and behavior for school vehicles drivers
2. To assess safety knowledge and behavior for school children and their parents
3. To study risk factors to school vehicles accident
4. To develop a safety practical guideline for Chiang Rai Province

## Method of Research & Progression

### 1. Scope of study

School vehicle drives population were included from school vehicle drives who are a member of network partner in Chiang Rai province. 4 districts of Chiang Rai province were focused; consisting of Mueang district that represent a city are mostly flat areas, short time travel, high rate of traffic and dense population. Mae Chan district that represent a sub-urban area, uncertain rate of traffic, medium-time travel and mix area types both flat and mountain. Wiang Chiang Rung and Doi Luang district represent a rural area, light rate of traffic, long-time travel and area mostly mountain.

Children and parent were included from the family who has the children travel to school by school vehicle.

### 2. Vision Screening Test

Using a Titmus v4 vision screener, that can measure visual acuity (near, far), depth perception, color vision, phoria and peripheral vision, then compare a test result with 'Record Form of Vision Screening Test in Occupational Health Setting; Driver'



**Figure 1** Vision screening test in school vehicle drives

### 3. Knowledge, Behavior and Attitude Questionnaire

The questioner was developed and was certified by the Human Research Ethics Committee, Mae Fah Luang University (REH-61102) to examine knowledge and behavior about safety for school vehicle drives and children and safety knowledge and attitude for parent. The

questionnaire consists of 3 parts as follow 1. general information 2. safety knowledge and 3. safety behavior/attitude.

#### 4. School vehicle condition

Safety standard of school vehicle from Department of Land Transport was listed to examine condition of school vehicle that a member of network partner in Chiang Rai province.

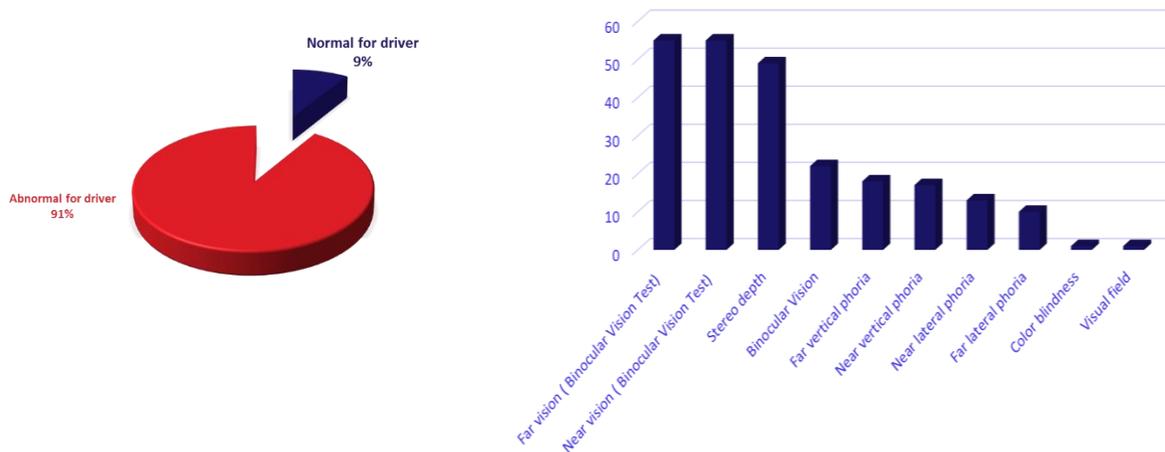


**Figure 2** School vehicle condition assessment

### Results of Research

#### 1. Vision Screening Test

79 drivers (66 Male, 13 female) was participated 'Vision Screen Test' using a Titmus v4 vision screener compare a test result with 'Record Form of Vision Screening Test in Occupational Health Setting; Driver' results showed 91% of participants (72 driver) are not recommend/ abnormal result for driver occupation criteria, which is found the abnormal of binocular test, near and far vision, and stereo depth.



**Figure 3** Number of Vision Screen Test disorders

## 2. Knowledge, Behavior and Attitude

124 drivers (105 Male, 19 female), mostly age about 51-60 years (37.1%), 25.8% has a chronic health conditions especially hypertension, sleeping time 6-8 hours per day, 21% drinking alcohol mostly their drink after finishing their work. Number of students in the vehicle mostly about 11-20 students, travel distance about 26-50 kilometer (one-way), speed average 61-90 km/hr. Their mostly driving school vehicle more than 10 years. Only 4 drivers had an experience with road accidents which the causes are following fatigue, interaction with people using the same road, break the rules. The results showed safety knowledge of drivers mostly in a high level (85.5%) but their safety behavior of driver mostly in moderate level 91.1%.

We also examine 363 families who has the children travel to school by school vehicle, the results showed the same trend; safety knowledge of student mostly in a high level (69.7%) but their safety behavior mostly in moderate level 46.6%. About 15% of students has an experience from school vehicles such as bumped on the vehicle on the vehicle wall (79%), felt out from the vehicle (14%), and was trapped in the vehicle (7%). The result also found the attitude on safety of parent (51%). The condition of school vehicle was assessed, 38% of school vehicles in network partner, Chiang rai achieved safety standard of school vehicle and get a safety sticker to ensure that vehicle is in a good and safety condition.

### **Future Areas to Take Note of, and Going Forward**

1. Gathering data and analyze the factors the related to the accident.
2. Analyze road condition by selected the previous case occurred.
3. Provide training programs related to safety behavior to drivers, students and their parents.
4. Create practical guideline and health check-up program for the driver
5. Apply to another area of Chiang Rai Province
6. Promote, training, and workshop on the road safety topic to student parents, school administrator.

### **Means of Official Announcement of Research Results**

There are many risk factors that affect the road accident due to travel to the school. 79 drivers (66 Male, 13 female), which is mostly age about 51-60 years was examined 'Vision Screen Test'. Results showed 91% of participants are not recommend for driver occupation criteria, which is mostly found the abnormal of binocular test, near and far vision and stereo depth. 124 drivers and 363 families who has the children travel to school by school vehicle was examined knowledge, behavior or attitude. The results showed the same trend; safety knowledge mostly in a high level but their safety behavior mostly in moderate level. About 15% of students has an experience from school vehicles such as bumped on the vehicle on the vehicle wall (79%), felt out from the vehicle (14%), and was trapped in the vehicle (7%). Mostly of school vehicle condition are under developing period to achieve and comply with safety standard of school vehicle from Department of Land Transport. Regarding from the results of research, safety knowledge and behavior of driver and children, the safety practical guideline for Chiang Rai Province is developed and is driven through network partnership of school vehicle in Ching Rai.