

Awareness on Road Signs and Markings of Drivers and Passengers along Maharlika Highway in Nueva Ecija

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Abstract— Road signs and markings are an integral part of the transportation systems which are logically designed and employed to provide essential road information for commuters' safety and protection. The study is an evaluation of drivers and passengers' awareness regarding road signs and markings along Maharlika Highway in the Province of Nueva Ecija particularly between the cities of San Jose and Cabanatuan. While drivers understanding and perception of road signs and markings were very substantial in the study, the perceptions of common passengers were added, because they are generally the victims of road accidents. A total of 100 drivers and passengers from the locality were surveyed based on a 4-point Likert scale ranging from strongly disagree (1) to strongly agree (4). The findings showed that drivers were aware and knowledgeable about road signs and markings but did not strictly abide by it. Passengers, on the other hand, were not very much aware of road safety features like road signs and markings and relied heavily on the capability of drivers since they believe that drivers were following rules and regulations on road signs and markings.

Keywords— Awareness, Road signs, Road marking and Road Safety.

I. INTRODUCTION

Road accidents can be attributed to several reasons such as distracted driving, over speeding, drunk driving, reckless driving, poor road conditions, driving un-roadworthy vehicles and other contributing factors that often result in the injury or death of people involved. Data from the World Health Organization (WHO) reveals that there were 1.25 million road traffic deaths globally in 2013, with millions more sustaining serious injuries and living with long-term adverse health consequences [1]. In the Philippines, WHO published in 2017 that road traffic accidents death reached 10,767 or 1.74% of total deaths [2]. Deliberating on the circumstances that lead to road accidents, it can be summed up that there are three major factors that must be considered: the driving environment (infrastructures), the vehicle (roadworthiness), and the driver (behavior) [3]. This study focused on the driving environment, particularly

on the awareness of road signs and markings and its significance to drivers, as well as passengers or commuters.

Road signs are those that are usually erected at the sides of the road that provide direction, warning and other significant information to lead drivers and commuters safely toward their destination. Likewise, road or pavement markings are safety features or control measures that are usually painted in luminescent color on the surface of the roads to guide vehicles, commuters and pedestrians. Road signs and markings play a vital role in driver's proficiency, especially during night time. Drivers are always dependent on road signs and markings for safe driving. The American Association of State Highway and Transportation Officials (AASHTO) reports that every 21 minutes, a highway death occurs as a result of a lane departure, that is over 25,000 fatalities per year or almost 60 percent of the nation's highway

fatalities [4]. A study on the performance of road signs and markings [5] explains that because of important information provided to road users through road signs and markings, there is a need for appropriate signs and markings planning, designing and implementation programs such as regular maintenance and replacements of traffic signs and markings.

The Land Transportation Office (LTO) is the lead agency that is mandated to issue a driver's license to qualified drivers. A driver's license isn't granted lightly to anyone without passing a set of tests and examinations to ensure that individuals will uphold road safety and follow traffic rules [6]. Part of the examination to get a driver's license is the applicant's knowledge of traffic rules, particularly on road signs and markings. In India [7], a similar study was conducted regarding awareness of road rules and road signs among drivers and it was concluded that better training of drivers and testing techniques for issuing license would reduce the number of accidents in Delhi.

There are also studies conducted to evaluate the benefits of pavement road markings and how it affects their driving capabilities. One of these studies is conducted by Tsyganov on rural two-lane highways where edge line markings were added [8]. The highways had lane widths of 9, 10, and 11 feet. The activity is to test the driver work load before and after the edge lines were installed. The researchers also monitored the heart rate of the drivers for the workload. The researchers found out that the installation of edge lines on the highways decreased workload during night time for both free driving conditions (were no oncoming vehicles) and meetings with oncoming traffic. During daylight, similar effects were observed as well, but at the same time, some drivers experienced emotional tension that may be caused by higher speed.

Similar studies about the importance of road signs and markings and its contributory effect to road mishaps were conducted in the past. These studies, however, focused mainly on the drivers understanding and perception of road signs and markings. The perception

of common passengers about the driving environment was added in the study because they are generally the victims of road accidents and that their knowledge in road signs and markings may have an influence on the driver's behavior. This is one of the knowledge gaps that this research study would like to fill in. Moreover, with all these past studies and reports linking the influence of road markings in drivers' capabilities, this study looked at the influence of road signs and markings in the overall safety of the commuters.

II. METHODOLOGY

The study was conducted in the province of Nueva Ecija particularly along the main thoroughfare (Maharlika Highway locally known as DaangMaharlika) connecting San Jose City and Cabanatuan City that spans about 50 kilometers. The Pan-Philippine Highway, also known as the Maharlika ("Nobility/freeman") Highway is a 3,517 km (2,185 mi) network of roads, bridges, and ferry services that connect the islands of Luzon, Samar, Leyte, and Mindanao in the Philippines, serving as the country's principal transport backbone [9].

The data were collected with the use of two approaches. One is the use of questionnaires and the other one is through direct observation. The main advantage of using questionnaires is that a large number of people can be reached easily and economically and it provides quantifiable answers for a research topic that are relatively easy to analyze [10]. Questionnaires were distributed to drivers of public transport who often pass through the said highway. Buses from the Baliwag Bus Company are the usual buses that ply San Jose City and Cabanatuan City. There are also Jeepneys/ XLTs that transport passengers every day from San Jose City up to Cabanatuan City and vice versa. Tricycles, on the other hand, are the most common public transport in both cities within the city limits.

The researchers were able to observe and record various road signs and markings while driving along Maharlika Highway from San Jose City to Cabanatuan City and back. It was done in both

directions and was done in the morning and the evening. The existence of road signs and markings, as well as deficiencies, were recorded. Dilapidated or obscured roads signs and markings were also observed and noted.

Researchers also observed and took note of peculiar behaviors of buses, jeepneys/XLTs and tricycles while plying the said thoroughfare bearing in mind the influence of road signs and markings in their journey. Unlike other methods like an interview, questionnaire, etc., where the researcher has to depend on the information provided by the respondents, direct observation method can directly check the accuracy from the observed and the data collected through observation is more reliable [11].

A total of 100 questionnaires were given to public drivers and passengers selected purposively based on the following criteria [12]: they normally travel the route from San Jose City to Cabanatuan City or vice versa and bus and jeepney drivers as well as their customary passengers who have routine experiences and mastery of the route. Questions

were centered on the understanding and awareness of drivers and passengers on the road signs and markings and its usefulness, particularly on its safety features. Survey questionnaires were designed conformably to the four-point Likert scale format (1-strongly disagree, 2-disagree, 3-agree, 4-strongly agree) where the respondents checked the numbers corresponding to their perceptions. The researchers analyzed the given data using frequency count, percentage, mean, and weighted mean.

III. RESULT AND DISCUSSION

1. Profile of Respondents

The data in Table 1 showed that all of the respondent drivers are males accounting to 50 or 100% of the sample population (N=50). This is very logical since drivers of public transport are a male-dominated job. Meanwhile, data also showed that 25 or 50% of the respondent drivers are driving buses while another 25 or 50% are jeepney or XLT drivers. The average years of driving experience is 15 years, while the average monthly income is 20,500 pesos.

Table.1: Demographic Profile of Respondent Drivers

Type of Vehicle	N	Gender Male/Female	Average Age	Average Years of Driving Experience	Average Monthly Income (Php)
Bus Drivers	25	25/0	45	18	24,000
Jeepney/XLT Drivers	25	25/0	41	12	17,000
Overall	50	50/0	43	15	20,500

The data in Table 2, on the other hand, indicated that majority of the respondent passengers are male with a ratio of 27:23 to that of female comprising 100% of the sample population (N=50).

Table.2: Demographic Profile of Respondent Passengers

Type of Vehicle Usually Ridden	N	Gender Male/Female	Average Age
Passengers	50	27/23	32

2. Level of awareness of Drivers and Passengers

The summary of responses of respondent drivers and passengers on the questionnaires

administered to them by the researchers about their level of awareness regarding road signs and markings were shown below:

Question D1: *May maaayos at kumpletong mga road signs at markings sa Daang Maharlika (The road signs and markings in Maharlika Highway are well and complete).* An overall weighted mean of 2.76 or Agree was obtained.

Question D2: *Ang mga drayber ay nauunawaan ang mga kahulugan ng mga palatandaan at marka ng daan road signs & markings (The drivers understand the meanings of road signs and markings).* An overall weighted mean of 2.60 or Agree was obtained.

Question D3: *Ang Mga drivers ng pampublikong transportasyon ay mahigpit na sumusunod sa mga road signs & markings (The drivers strictly follow the road signs and markings).* An overall weighted mean of 2.44 or Disagree was obtained.

Question D4: *Ang Mga Ordinaryong Pasahero ay may sapat nakaalaman patungkol sa mga road signs & markings (The passengers are well versed about the road signs and markings).* An overall weighted mean of 1.98 or Disagree was obtained.

Question D5: *Bukod sa mga drivers, kailangan din maging edukado ang mga ordinaryong pasahero sa mga road signs & markings para sa mas ligtas at maayos na paglalakbay (Aside from the drivers, the passengers needed to be educated in the road signs and markings for safety travel).* An overall weighted mean of 3.10 or Agree was obtained.

Question D6: *Ang mga drivers ay mag-aalinlangan lumabag sa batas trapiko o samgaisin sa adnababalang mga road signs & markings kung may kaalaman ang mga pasahero sa nasa bing paksa (The drivers will be afraid to violate the rules if the passengers are knowledgeable about the rules about road signs and markings).* An overall weighted mean of 2.70 or Agree was obtained.

Question D7: *Nakakatulong Sa Mas ligtas na paglalakbay ang mga road signs & markings (Road signs and markings are beneficial for safety travel).* An overall weighted mean of 3.62 or Strongly Agree was obtained.

Question D8: *Ang mga road signs & markings ay nakakapagbigay ng maagang babalalona sa mga lugalarnam adalasang sakuna (Road signs and markings are very helpful to drivers to prevent accidents).* An overall weighted mean of 3.50 or Strongly Agree was obtained.

Question D9: *Sagabi at madilim, nakakatulong sama ayos na paglalakbay lalona sa pag-aninag ng kalsada ang mga road signs & markings (Road signs and markings are very beneficial to drivers to travel*

safely even at night). An overall weighted mean of 3.62 or Strongly Agree was obtained.

Question D10: *Naniniwala ang mga sasamagadahilang mga aksidentesa sa Daang Maharlika ay bunsod ng hindi pag sunodsamgaroad signs & markings (The violations of the drivers regarding road signs and markings are the reasons why there are accidents in Maharlika Highway).* An overall weighted mean of 3.38 or Strongly Agree was obtained.

3. Direct Observation

The researchers observed while travelling Maharlika Highway from Cabanatuan City to San Jose City that some portion of the road were missing road markings which is an important part of road that identify appropriate lane while driving. Also some of the road signs were hidden by tree branches. The reflectors of the signage were not visible and some were destroyed. Some of the additional observation of the researchers, were most of the drivers were not mindful of the use of the overtaking lane and non-overtaking lane.

IV. CONCLUSIONS AND RECOMMENDATIONS

In view of the above findings, the following conclusions are drawn:

1. Drivers were aware and knowledgeable about road signs and markings along Maharlika Highway as well as the safety features that it provides. On the contrary however, drivers thought that rules and regulations regarding road signs and markings were not strictly followed;
2. Passengers on the other hand were not very much aware of road safety features like road signs and markings. They rely much on the capability of drivers since they think that drivers strictly followed rules and regulations regarding road signs and markings;
3. Drivers perceived that passengers were not mindful of road signs and markings as well as the safety and protection that it provides. The drivers and passengers agree in unison that passengers' knowledge on road signs and markings will induce drivers to drive properly and strictly follow regulations knowing that

their passengers were knowledgeable about road safety;

4. Drivers and passengers also believe that most of the accidents along Maharlika Highway were caused by non-adherence to road signs and markings; and

5. Road signs and markings along Maharlika Highway particularly between San Jose City and Cabanatuan City were incomplete and needs constant maintenance.

Based on the above findings and observations, it is recommended that lead government agencies like Department of Transportation (DOT), Department of Public Works and Highways (DPWH), Department of Education (DepEd) and other concerned government units conduct information campaign regarding road signs and markings targeting not only drivers but passengers as well to be able to make accurate decisions given available information [13] to have safer roads and minimize road accidents. The DepEd can also include in its curriculum or program of instruction a sort of road safety education so that students at their early age can be informed about road signs and markings, thus institutionalizing the learning about the said subject.

Likewise, it is also recommended by the researchers to study and explore the performance [14] in driving of drivers and have a thorough inspection of their capabilities to understand road signs and markings for safety travel along Maharlika Highway.

Additionally, a thorough inspection of road signs and markings along Maharlika Highway particularly between the cities of San Jose and Cabanatuan be conducted. It is also a must for the national agency like Department of Public Works and Highways (DPWH) to monitor and maintain areas along Maharlika Highway on maintenance and improvement of road markings and signages that shielded by tree branches. Also the Land Transportation Office (LTO) being the one responsible on releasing every driver's license must be strict enough on educating every driver on the significance of road markings/signages on their everyday driving.

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