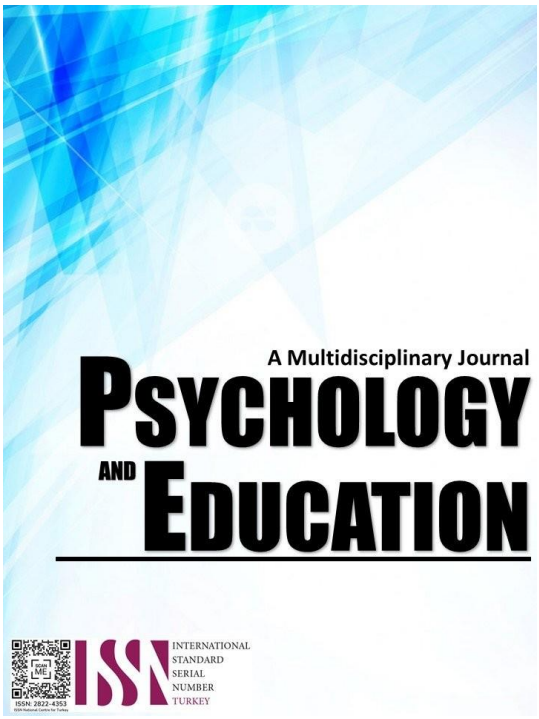
CRAFTING A TRAFFIC MANAGEMENT MASTER PLAN PURSUANT TO BINDOY ORDINANCES' IMPLEMENTATION EFFECTIVENESS



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Research Article

Crafting a Traffic Management Master Plan Pursuant to Bindoy Ordinances' Implementation Effectiveness

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Abstract

This study focused on the effectiveness of the traffic ordinances implemented in the municipality of Bindoy, Negros Oriental. This study utilized the descriptive-correlational research design. 118 respondents participated in the study through simple random sampling. The researcher used two (2) sets of validated instruments. The data showed that illegal parking is significant in ensuring the safety of pedestrians (0.02. Illegal Stopping is significant for minimizing traffic accidents (0.00), ensuring the safety of pedestrians (0.03), and decreasing noise pollution brought by modified mufflers (0.03). Mufflers are significant to increasing numbers of documented vehicles (0.03). The Prohibited Zone is significant in increasing the number of documented vehicles (0.03). Obstruction is significant in decreasing noise pollution brought by modified mufflers (0.04). Hitching is significant for ensuring the safety of pedestrians (0.01), increasing the number of licensed drivers (0.01), and promoting discipline to motorists (0.03). Defective Headlights are significant in decreasing noise pollution brought by modified mufflers (0.01). It has been highly recommended to craft a Traffic Management Master Plan to sustain the good perception of the people and to make enhancements on some parts that need to be taken into consideration for the improvement of the Traffic Management Unit and the people that they are serving.

Keywords: *traffic management master plan, ordinance, implementation effectiveness, motorists, pedestrians*

Introduction

In our modern society, speedy mobility is among the most important necessities in life (De Souza, 2017). It is among the most essential characteristics of human daily events as it contains the primary necessity of traveling from a certain location to another, a necessity shared by people who travel and cargo for whatever purposes (Rodrigue, 2020). However, economic progress becomes a source of many problems for human activities going from one place to another since people who are residing in urbanized areas tend to intensify the flow of traffic. As our streets get congested more and more every year caused of the high number of people using these streets, the hazard of accidents heightens (Guidoni et. al, 2020).

Regions with better mobility are usually those with higher chances of progress than places with poor mobility. Bad condition mobility obstructs progress, while better mobility is a catalytic agent for progress (Rodrigue, 2020). All over the Philippines, those who manage traffic situations in the local government units have a great impact on the result of mobility. The traffic management units are those who manage how people and vehicles pass on the local roads. They are the ones who develop and implement traffic rules and regulations. Their inputs are very significant in how the roads are utilized (Publico, 2022).

In the Municipality of Bindoy, Province of Negros Oriental, numerous traffic accidents are reported every week, either self-accident or collision of two or more parties which usually resulted in damage to properties, physical injuries, and even deaths. Traffic laws (RA4136), which should be extensively implemented to minimize these accidents, cannot be easily put into effect for no deputized LTO agent is employed in the municipality, and the nearest Land Transportation Office is more or less 44 kilometers away as well. According to section 4(d)(5) of Republic Act 4136, only the commissioner of LTO and the deputies are authorized to make arrests of violators. As a remedy, the Sangguniang Bayan of the municipality of Bindoy, Negros Oriental, crafted ordinances to be implemented by the traffic management unit of the municipality.

With this, this study aims to get an in-depth assessment of the effectiveness of the current traffic ordinances governing traffic management in the municipality.

Research Questions

This research determined the effectiveness of the Implementation of Traffic Ordinances in the Municipality of Bindoy, Negros Oriental during the calendar year 2023 as a basis for traffic safety masterplan. Specifically, it answered the following questions:

1. What is the respondent's profile in terms of the following:
    1.1. age;
    1.2. gender;
    1.3. employment status; and
    1.4. highest educational attainment?
2. What is the level of effectiveness of the implementation of traffic ordinances as perceived by motorists and pedestrians in terms of the following:
    2.1. Minimizing traffic accidents

2.2. promoting discipline to motorists;
2.3. ensuring the safety of pedestrians;
2.4. increasing numbers of licensed drivers;
2.5. increasing numbers of documented vehicles; and
2.6. decreasing noise pollution brought by modified mufflers?

3. What is the percentage of the accomplishment of traffic ordinances' enforcement in terms apprehended:
   3.1. drivers for illegal parking;
   3.2. drivers for illegal stopping;
   3.3. owners of vehicles with modified mufflers;
   3.4. drivers for entering a prohibited zone;
   3.5. drivers for obstruction;
   3.6. drivers for permitting hitching;
   3.7. drivers for no/defective headlights; and
   3.8. drivers for driving under the influence of liquor/drug?
4. Is there a significant relationship between the respondents' profile and their perception of the level of effectiveness of the traffic ordinances?
5. Is there a significant relationship between the number of accomplishments of traffic ordinances' enforcement and the perceived level of effectiveness of traffic ordinances?
6. Based on the findings, what Traffic Management Master Plan can be crafted?

Literature Review

This study is anchored in systems theory by Kenneth E. Boulding in 1956, Dynamic Traffic Management Theory (DTMT) – a combined Behavioral Adaptation by Daniel Kahneman and Richard Thaler, and Sustainable Traffic Management by Donald Shoup and Anthony Downs. For the legal bases, this study is anchored on Republic Act No. 4136 (Land Transportation and Traffic Code, and BINDOY MUNICIPAL TRAFFIC ORDINANCES No.2003-12 (An Ordinance Providing Additional Regulations on Vehicular Traffic and Pedestrian Traffic, Use of Streets and Highways in the Municipality of Bindoy and Providing Penalties for its Violators).

Systems Theory. According to the systems theory, vehicular accidents happen when the elements interact with one another, and the interactions violate the restrictions (Leveson, 2002). Road Safety is constructed by two axioms: the physical conditions and psychological conditions. The human limitations and the obligation for road safety must be at all times collectively shared between those who use the road and the engineers and expert operators of the system who created the vehicles (Larsson, 2007). These two have responsibilities and roles to play to sustain the benefits one can get from having a vehicle. The systems approach captured almost everything in terms of the conditions one can feel and experience when road safety is followed.

The Dynamic Traffic Management Theory (DTMT) is a combined approach of behavioral adaptation and sustainable traffic management. In effectively implementing the different rules in traffic flow. This theory focuses more on the various strategies and adaptive techniques for congestion reduction wherein safety is ensured and a smooth sailing travel experience. This theory encourages drivers to use available technologies, such as mobile apps, to stay informed about traffic conditions. It implements feedback systems to gather driver experiences and adjust strategies accordingly. By optimizing traffic flow and minimizing bottlenecks, DTM can significantly reduce travel times. Real-time incident management and information dissemination can help prevent accidents and improve overall road safety. Better management of traffic leads to a more reliable transportation network, benefiting commuters and businesses alike (Underwood & Waterson, 2013).

Traffic-Related Accidents. Infractions in the laws of traffic are frequent in greatly populated countries such as the Philippines. The situation is more horrible in the urban areas. The accidents linked with these deviances create a huge loss of property and lives. Sometimes, traffic policies are more bothersome than helpful in the Philippines. Some laws are confusing when they differ from one city to another cities, to think that they are supposed to solve traffic problems and enhance the safety of the roads (Verzosa, 2019). Philippine traffic policies are intended to guarantee not only a methodical movement of traffic and educate motorists but also the well-being of the people who are using our streets. Some policies head gears and car safety belts and ban drivers from making use of their phones and driving under the influence of liquor (Publico, 2022)., The Philippines has attained advancement in making policies for road safety over the years but the high occurrence of road traffic injuries and deaths is still a major development and public health concern (WHO, 2019).

In a study of road safety in the Philippines by Sigua in 2002, although safe automobiles and decent roads are extremely significant for safety, the key component in preventing accidents is still the very person who is driving the vehicle. Experts on road safety express that drivers' mistakes give rise to several accidents for about 85%. Highway or vehicle defects may likewise show a significant portion in some of these accidents, the primary reason is commonly human negligence. According to the Philippine National Police, various factors play a part in the increasing number of accidents on the road. Human error is said to be the common cause of road accidents, such as driving under the influence of liquor, driving recklessly, and overtaking without proper clearance. With those facts previously stated, it is just right to presume that vehicular accidents could be avoided.

Evidence of the poor character of our road users is rudeness in traffic, which can be seen every day on the streets- utilizing opposite lanes just to be the first one in the line at junctions, intentionally congesting with other drivers out of the line, irritably blowing their vehicle's horn, causing the pedestrians to jump to save their lives or frightening their passengers by speeding up their vehicles. The unruliness of drivers has become relatively widespread. This may be because of their intentional disrespect of traffic regulations rather than unawareness of the same. As far as value systems are concerned, this attitude may stem either from a lack of patience or a lack of respect for the rights of others (Sigua, 2022).

From the data of Bindoy Municipal Police Station, there were 142 traffic-related incidents reported from January 1, 2021, to June 30, 2023. These include 64 offenses of RIR to damage to property, 77 offenses of RIR to physical injury, and 1 offense of RIR to homicide.

Economic Impact of Traffic Hazards. The foremost feature of transport planning and development is traffic safety. The economic part of traffic safety measures is significant since road vehicular accidents negatively affect the national economy. Beneath those circumstances, it is imperative to give economic explanations for selecting measures for the improvement of safety in traffic. It is likewise significant to keep in mind that such measures require huge financial spending but even though there are a lot of measures in place to minimize and control this problem, road vehicular accidents are increasing every day (Sakhapov & Nikolaeva, 2018).

Human society is burdened with casualties from traffic accidents on our roads as well as the cost that individuals and society have to pay. Some countries were able to manage to improve in alleviating the figure and extremity of accidents on the roads. However, the condition in most of the countries is upsetting and even aggravating (Varhelyi, 2016). Deaths and injuries from vehicular accidents cannot be predicted. We learned from our observation during the last few decades that comprehensive and effective road safety measures can greatly lessen the number of people injured or killed on the streets despite increasing levels of traffic (ROSPA, 2022).

Urgent responsibilities of the national government for social and economic growth consist of tasks for road users' well-being and people's lives preservation. They can be attained by way of having a synchronized approach with definite objectives and accountabilities since the interdisciplinary character of traffic safety and the involvement of a great number of stakeholders, it is imperative to establish a communal approach that can be improved with the task of a prime agency. They can also be attained by increasing consciousness on traffic safety matters among the people in the community, from the law-makers shaping traffic safety system operation down to the children who must know and understand what traffic safety is. According to Varhelyi (2016), there were attempts to solve traffic conditions in several states, but it turned out that most of their undertakings were non-systematic, disintegrated, and not based on facts. Therefore, sharing information and strengthening the capability, which results in a database of vital information for various parties involved in the aspect of traffic safety, is very important. And lastly, the ability to understand clearly traffic safety and the meanings of its signs is vital and tantamount to attaining a less stressful travel experience. This is indicated in the various studies done in the field of traffic safety (Sakhapov & Nikolaeva, 2018).

In establishing capability-building programs for the country's localities on planning transportation and managing traffic, it is important to evaluate the localities' present levels of ability and knowledge of planning our transport system and managing traffic. Also, it is very important to evaluate our understanding of the origins and indicators of our traffic and transportation problems. It is similarly very important to evaluate the knowledge of the personnel responsible on their technical knowledge in planning our transport system and managing traffic. All the aforementioned concerns are remarkably correct if we are looking for new technological advances in the planning of our transport system and in managing traffic (Lidasan et. al, 2010).

As cited in the study of Eusofe, & Evdorides (2017), road safety is a shared obligation that we need the participation of the people in the society, our government leaders, from industries either in the private or public division. It involves a well-organized approach and a strategy that makes them work hand in hand. Road Safety Management is defined as the work done in formulating and executing road safety guidelines. A lot of studies have been arranged in an attempt to detect success elements and references of best technique examples, but the subject's complication and the struggle of quantitative data gathering makes difficulty in gaining an intelligible and inclusive understanding. A certain research states that the weakest elements of the safety management systems in the roads of Europe are implementation of the laws and funding and the deficiency of road safety policy- making that is backed up with proper knowledge (Alfonsi et. al, 2016).

Traffic-Related Laws in the Philippines. Policies on traffic in the Philippines are intended to guarantee not just a well-ordered movement of traffic and regulation between motorists but also the public's well-being on the road (Publico, 2022). He further added that we have the Land Transportation and Traffic Code or the Republic Act 4136 that has placed all the guidance in managing traffic in the country. This law imposed that all motor vehicles shall be registered in the national registration system and set the payments on the said registration for all owners of motor vehicles. Together with that, RA 4136 also mandated motorists to request a license to drive either non-professional or professional. This law also in placed the charging fees for the failure to conform with the government's process and prerequisites to be a licensed driver or to have a licensed vehicle. Another is the Republic Act 10913 or the Anti-Distracted Driving Act of 2016 forbids motorists from using cellphones and other electronic and communication gadgets while an automobile is moving or even during a stop at a red light. And, the Anti-Drunk and Drugged Driving Act of 2013 or Republic Act 10586 has been significantly important among driving laws in the country. Apart from the imposition of fines, driving while in the influence of liquor or dangerous drugs could result in injuries and fatalities for all individuals concerned. It could be the driver of the vehicle, the driver's passengers, the pedestrians in the street, or all of them.

Traffic guidelines and policies have an impact on society significantly, transportation is an important component of civilization, therefore, having better traffic policies leans towards the improvement of daily traffic situations and enhances the daily lives of the people. In another way, poor traffic guidelines and implementation can be associated with a catastrophe or tragedy that no one would like to come across (Bionat, 2018). In the Local Government Code, local government units have the authority to make laws for the general welfare of the people. Local Sanggunians are equal to the Congress of the Philippines which endorse and pass laws (Ignacio, 2017).

According to the study of Fernandez et al. (2020), the utilization of traffic signs can establish control in terms of sustaining the safe and orderly movement of traffic. When this is sustained, drivers will be able to experience travel with less to no hassle at all. Traffic signs are pivotal in providing routes and directions, especially to those who are new in the place, to avoid accidents (Obinguar & Iryo-Asano, 2021). The traffic signs should be posted to give information to the drivers (Maghani et al., 2022). No matter how clear and bold the traffic signs are, when the drivers and motorists are not well informed of the traffic signs, these will become useless, and accidents will proliferate in a particular place (Saha, 2020; Vecino-Ortiz et al., 2022). Commonly in the Philippines, drivers and motorists are not oriented well and, thus, have a poor level of understanding of traffic signs and their meanings (Perez et al., 2022). Drivers and motorists must go through rigorous assessment and training in terms of driving and understanding traffic signs and road safety rules (Sidel, 2022; Hyder et al., 2022).

Bindoy Traffic Ordinances. On October 27, 2003, the Sangguniang Bayan of the Municipality of Bindoy passed Municipal Ordinance 2003-12 "An Ordinance Providing Additional Regulations on Vehicular Traffic and Pedestrian Traffic, Use of Streets and Highways in the Municipality of Bindoy and Providing Penalties for its Violators". Another ordinance was passed on August 15, 2005 known as the" Traffic Violation Citation Ticket Ordinance". And, the Municipal Ordinance No. 2017-02, known as the Anti-Muffler Ordinance of the Municipality of Bindoy was passed on June 15, 2017. In the attached Resolution No. 2017- 55, it stated, "to make people act responsibly over the use of the motor vehicle so as not to cause disturbance and annoyance to the public".

Methodology

Research Design

This study utilized the descriptive-correlational research design. Descriptive correlational is a quantitative design wherein it presents the central tendency and variability of the data in which the independent variables are correlated with the dependent variable, such that the demographic profile of the respondents and the level of perception and effectiveness in enforcing the traffic rules and safety are tested in terms of its significant relationship. This research design is appropriate for this study as it describes traffic management in terms of its level of implementation and identifies what necessary programs or recommendations can be made to aggrandize road safety enforcement.

Respondents

Table 1. *Respondents of the Study*

Respondent	*Frequency*	*Percentage*
Motorists	50	42.4%
Pedestrians	50	42.4%
Traffic Officers	18	15.2%
Total	118	100%

As can be seen from Table 1, there are 50 motorists, which comprise 42.4% of the respondents, and 50 pedestrians, which also comprise 42.4% of the respondents, to be selected randomly. There are 18 traffic officers, which comprise 15.2% of the respondents.

Instrument

This study utilized 2-sets of researcher-made questionnaires. The first questionnaire is intended for motorists and pedestrians. It has two parts. The first part is to get the profile of the respondents (pedestrians) in terms of age, gender, employment status, and highest educational attainment. The second part is their perception of the effectiveness of the enforcement of the traffic ordinances. The second questionnaire is intended for traffic officers. The first part of the questionnaire is for them to provide the number of apprehended drivers and pedestrians from January 1 to April 2023. The second part is their perception of the effectiveness of the enforcement of the traffic ordinances. Copies of the tool were distributed to the identified respondents after getting the necessary permission from the Local Chief Executive Officer of the municipality. This study secured the validation and reliability of the instrument. Following the steps in designing and evaluating an instrument, as indicated in Colton and Covert (2007), this instrument went through a rigorous process, such as face validity, wherein the researchers decided if the instrument could gauge the respondents. Content validity is conducted by experts coming from the fields of criminology, psychology, and public administration. Criterion and Construct validation were performed through pilot testing in which Cronbach's alpha was also generated at 0.84, making the study valid and reliable.

Procedure

The researcher sent a letter asking for permission from the Local Chief Executive Officer of the municipality before distributing copies

of the research tool to the identified respondents. Before the researcher deployed the instrument, a clear discussion with a reiteration of the research ethics was done, such as answering the instrument is purely voluntary and, at any time, they can leave or stop the process of answering it. After informing the respondents about the research ethics, the researcher administered the instrument during the mandatory road inspections or regular checkpoints. The places where the respondents gathered the data are the Payabon Market and Country Mall, situated in Barangay Población, and Demetrio L. Aviola National High School, located in Barangay Tinaogan, Bindoy. These places are where most of the motorists and drivers are passing. During the administration of the instrument or gathering of the data, the researcher made sure that it followed their schedule and protocol. However, there was an unscheduled checkpoint to see how many possible motorists and drivers were following the rules in traveling. The schedules of checkpoints are during 7:30-9:00 in the morning and 4:30 to 6:00 in the afternoon. This is done on any day of the month but usually the last week of the month. After the gathering of the data, the researcher made an Excel file where all the information was recorded. The tabulation, analysis, and interpretation of data served as bases for drawing conclusions and recommendations for the study.

Data Analysis

The data collected was presented, organized, and interpreted using the appropriate statistical tools. The respondents' profiles and the percentage of the accomplishment of the traffic ordinances enforcement were tallied using frequency and percentage. The level of effectiveness of the implementation of the traffic ordinances as perceived by the motorists and pedestrians was treated through the measure of central tendency and variability such that mean and standard deviation (SD) were utilized. To establish the significant relationship between the respondents' profile, the level of effectiveness of the traffic ordinances, and the number of accomplishments of the traffic ordinances, the Pearson Correlation Coefficient (r) was used.

Results and Discussion

Table 2. *Respondent's Age*

Age	*Frequency*	*Percentage*
18 and below	0	0%
19 – 29	27	23%
30 – 40	50	42%
41 – 51	32	27%
52 and above	9	8%
Total	118	100%

Table 2 presents the age of the respondents. It can be gleaned that all of the respondents are above 18 years old. This means that all of them are of the legal age. Of a total of 118 respondents, 50 of them, or 42%, are in the age group of 30-40, which is the majority of the total respondents. There were only 9 of them or 8% who belong to the age group from 52 and above which is the least among the numbers of the different age groups. This means that the study can elicit varying information and perceptions from the different age groups in terms of following the rules and regulations in the traffic ordinances and even the perceived risk that these respondents may encounter on the street.

The age of the motorist, the pedestrians, or even the traffic officers may have different views and levels of understanding depending on the age group. Different age groups would mean different perspectives on how they live their lives, especially in obeying traffic rules such that untoward accidents will be avoided. The profile of the respondents mostly is under the mid-ranged group wherein Richert-Kaźmierska & Stankiewicz (2016) exemplified that age bracket is a determining factor in how individuals live their lives. Wood et al. (2018) mentioned the importance of age to establish how one is making decisions and perceiving something. Age can be a basis for seeing how other constructs of this study are correlated in terms of traffic rules.

Table 3. *Respondent's Gender*

Gender	*Frequency*	*Percentage*
Male	96	81%
Female	22	19%
Total	118	100%

Table 3 shows the gender of the respondents. It can be gleaned that the majority of the respondents are male with 96 counts or capturing 81% of the total respondents. While the female respondents consist of 22 counts or 19%. This means that most of the drivers and pedestrians are male. It can be implied that male respondents are usually the ones who are driving not just with public behavior but with private cars as well.

Gender serves as based factor in determining the nature of the constructs of the study (Feeney & Stritch, 2019). Accordingly, gender can be a determinant of mind setting and how it affects making sound decisions (Bucsuhazy et al., 2020). As observed in the community, motorists and pedestrians have differences in terms of their driving behaviors and walking routes. The level of risk tendencies would matter if the motorist were a male or female. Although this is not true for everyone, most of the time, male respondents are risky in terms of driving and following the traffic ordinances. Most female drivers are very concerned about their vehicles and the way how they drive. Female drivers are usually defensive drivers compared to male drivers. This observation may not necessarily be generalized to all male and female drivers.

Table 4. *Respondent's Employment Status*

Type of Occupation	*Frequency*	*Percentage*
Unemployed	32	27%
Employed	65	55%
Self-Employed	21	18%
Total	118	100%

Table 4 presents the type of occupation of the respondents. It can be gleaned that the majority of them are employed with 65 counts or 55%. While there are also unemployed respondents with 32 counts or 27%, the least of the numbers of respondents fall under self-employed with 21 counts or 18%. This means that the number of respondents is well distributed. It can be implied that motorists and pedestrians are experiencing different levels of challenges in terms of their stress levels from their work or their business.

The type of occupation of the respondents provides additional knowledge on how the government tailors effective safety and educational programs among motorists and pedestrians to decrease or reduce the number of road accidents. The pedestrian and motorist behaviors are influenced by their working environment, if they are employed or have their own business. If the respondent is working, one is exposed to different safety training, which can be very helpful in avoiding untoward road accidents. However, if the motorist or pedestrian is unemployed, one is not as exposed as those who are employed regarding the traffic ordinances that should be observed and followed.

Table 5 shows the highest educational attainment of the respondents. From the elementary level up until the college graduate, the number of respondents is widely spread. Most of the respondents are high school level with 37 counts or 31%. Only 12 respondents are college graduates, or 10% of the total sample. This means that respondents can at least have a formal education. Safety road measures and signs were discussed in the elementary years. With this, the respondents are aware of the basic knowledge regarding traffic ordinances.

Table 5. *Respondent's Highest Educational Attainment*

Highest Educational Attainment	*Frequency*	*Percentage*
Elementary Level	18	15%
Elementary Graduate	20	17%
High School Level	37	31%
High School Graduate	17	14%
College Level	14	12%
College Graduate	12	10%
Total	118	100%

Attaining formal education is tantamount to acquiring cognitive abilities that are essential in avoiding vehicular accidents. Being aware of the importance of road signs and traffic ordinances can lead to more careful and responsible decision-making and behavior. Motorists and pedestrians should consider the awareness of walking and driving defensively or proactively. Understanding these traffic signs and signals, the use of seat belts, avoiding testing while driving and so many bad practices on the road will not just avoid accidents but also save lives.

Table 6. *Level of the Effectiveness of the Implementation of Traffic Ordinances as Perceived by Motorists and Pedestrians*

Indicators		*Mean*	*SD*	*Interpretation*
Minimizing Traffic Accidents				
1. Securing the vehicle's condition before leaving the house		4.76	0.43	Very Effective
2. Making sure to have good eyesight or having eyeglasses so one can see clearly		4.78	0.42	Very Effective
3. Seeing that wipers and defrosters are working, tires are properly inflated, and windows and mirrors are clean		4.72	0.50	Very Effective
	Mean	4.75	0.45	Very Effective
Promoting discipline to motorists				
4. Having the driver's license renewed and secured		4.56	0.64	Very Effective
5. Checking the brakes are working		4.48	0.61	Very Effective
6. Wearing proper gear should be observed		4.48	0.61	Very Effective
	Mean	4.51	0.62	Very Effective
Ensuring the safety of pedestrians				
7. Controlling the speed of the vehicle		4.74	0.44	Very Effective
8. Strictly no alcohol intake		4.74	0.44	Very Effective
9. Presence of mind when one is on the street		4.74	0.44	Very Effective
	Mean	4.74	0.44	Very Effective
Increasing numbers of licensed drivers				
10. Campaign to disseminate the importance of having a license when driving		4.70	0.46	Very Effective
11. Having regular and random check point		4.66	0.48	Very Effective
12. Driving schools should be accredited and monitored		4.78	0.42	Very Effective
	Mean	4.71	0.45	Very Effective

Increasing numbers of documented vehicles				
13. Closed monitoring of the vehicle's registration		4.80	0.40	Very Effective
14. Drivers should have a complete legal document necessary to drive a vehicle		4.70	0.46	Very Effective
15. The facilities and personnel in the driving school should be with quality		4.50	0.51	Very Effective
	Mean	4.67	0.46	Very Effective
Decreasing noise pollution brought by modified mufflers				
16. Installing and modifying the mufflers should monitored		4.78	0.42	Very Effective
17. campaign on educating the impact of explosions of the motorbike that can be ear-shattering		4.68	0.47	Very Effective
18. Increasing the penalty on motor bike drivers who removed or modified the mufflers.		4.46	0.50	Very Effective
	Mean	4.64	0.46	Very Effective
	AWM	4.67	0.48	Very Effective

Table 6 presents the level of effectiveness of the implementation of traffic ordinances as perceived by motorists and pedestrians. The overall weighted mean is 4.67 (SD = 0.48), which is interpreted as very effective. Among the different indicators, it is under increasing numbers of documented vehicles that one statement marked the highest mean of 4.80, "Closed monitoring of the vehicle's registration," with the interpretation of Very Effective. The lowest mean score of 4.46 is from the indicator - under the decreasing noise pollution brought by modified mufflers - which is the "Increasing the penalty on motorbike drivers who removed or modified the mufflers." Which is interpreted as Very Effective. This means that when the documents of the vehicles are constantly verified and checked, the implementation of the traffic ordinance is effective, and thus, it lessens the number of road accidents (Martinelli et al., 2020).

Meanwhile, the mean score for the penalty being imposed on the drivers who modified or removed the muffler was taken lightly; however, it still bears significant value in sustaining a safe ride. The result from this table provides a clear implication that all the traffic ordinances are necessary and relevant as perceived by motorists and pedestrians to avoid and minimize untoward accidents and undesirable events that may happen on the road. This can lead to a better awareness among all people to take cognizant of the traffic ordinances.

Table 7. *The Percentage of the Accomplishment of Traffic Ordinances' Enforcement*

Apprehensions	*Counts*	*Percentage*
Illegal Parking	458	18.33%
Illegal Stopping	401	16.05%
Muffler	483	19.34%
Prohibited Zone	345	13.81%
Obstruction	335	13.41%
Hitching	144	5.76%
Defective Headlights	332	13.29%
Total	2498	100%

Table 7 shows the percentage of the accomplishment of traffic ordinance enforcement. It can be gleaned from the counts and percentage of mufflers ranked the highest one among all apprehensions with 483 counts or 19.34%. The lowest one among the apprehensions is the hitching, with 144 counts or 5.76%. This means that in the municipality of Bindoy most of the pedestrians and motorists are into mufflers. The law enforcers must take into account the need to regulate those vehicles that use silencers to have satisfaction with the motorists' satisfaction.

One of the common challenges of upholding traffic ordinances is when vehicles contribute to noise pollution and harmful emissions. Motorists should take into account the purpose of why vehicles are being sanctioned due to apprehensions. The traffic laws are designed to achieve an environment that is quiet and peaceful. When these apprehensions are reduced, untoward accidents may be prevented. A strong implementation and motoring plan should be instituted to lower the number of apprehensions.

Table 8 presents the significant relationship between the respondents' profile and their perception level of effectiveness of the Traffic Ordinances. It can be gleaned that it's a 3 out of 3 under age. 3 indicators established a significant relationship, and these are minimizing traffic accidents (p-value of 0.01, promoting discipline to motorists (0.03), and ensuring the safety of pedestrians (0.02). The rest of the 3 indicators established a no significant level. With gender, only 2 indicators marked a significant relationship, which is the minimizing traffic accidents (0.02) and decreasing noise pollution brought by modified mufflers (0.03) while the rest marked a non-significant. With the type of occupation or employment, only one indicator marked a significant relationship, which is the increasing number of documented vehicles (0.05), while the rest marked a non-significant which is more than 0.05.

The last variable under the demographic profile is the highest educational attainment. It can be gleaned from the results indicated that there are 3 indicators marked significant relationship such as minimizing traffic accidents (0.01), promoting discipline to motorists (0.01), and increasing numbers of documented vehicles (0.04) while the rest marked non-significant. This means that the demographic profile can affect the perception level of the effectiveness of the Traffic Ordinances (Park et al., 2021).

Table 8. *Respondents' Profile and Their Perception Level of Effectiveness of the Traffic Ordinances*

Demographic Profile	*Perception Level of Effectiveness of the Traffic Ordinances*	*P-value*	*Interpretation*	*Decision*
Age	Minimizing traffic accidents	0.01	Significant	Reject the Null Hypothesis
	Promoting discipline to motorists	0.03	Significant	Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.02	Significant	Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.13	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.06	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.07	Not Significant	Failed to Reject the Null Hypothesis
Gender	Minimizing traffic accidents	0.02	Significant	Reject the Null Hypothesis
	Promoting discipline to motorists	0.34	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.13	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.09	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.21	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.03	Significant	Reject the Null Hypothesis
Employment Status	Minimizing traffic accidents	0.07	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.28	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.15	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.09	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.05	Significant	Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.16	Not Significant	Failed to Reject the Null Hypothesis
Highest Educational Attainment	Minimizing traffic accidents	0.01	Significant	Reject the Null Hypothesis
	Promoting discipline to motorists	0.01	Significant	Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.06	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.15	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.04	Significant	Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.09	Not Significant	Failed to Reject the Null Hypothesis

Table 9 presents the significant relationship between the number of accomplishments of traffic ordinance enforcement and the perceived level of effectiveness of Traffic Ordinances. It can be gleaned that under illegal parking, one indicator on the perceived level of effectiveness in the implementation of the traffic ordinances marked as significant, which means that the p-value is equal to or less than 0.05 level of significance, and it ensures the safety of pedestrians with a p-value of 0.02 while the rest of the indicators marked are not significant. Under illegal stopping, there are three indicators marked as significant. These are minimizing traffic accidents (0.00), ensuring the safety of pedestrians (0.03), and decreasing noise pollution brought by the modified mufflers (0.02).

Under Muffler, there is only one indicator that is marked as significant, and this is the increasing number of documented vehicles (0.03), while the rest are marked as not significant. With regard to prohibited zones, there is also one superseding indicator that is marked as significant, and that is the increasing number of documented vehicles (0.03), while the rest is marked as not significant. Under obstruction, there is only one indicator that is marked as significant, and this is decreasing noise pollution brought by modified mufflers (0.04), while the rest is marked as not significant. Under hitching, some indicators are marked as significant.

These are promoting discipline to motorists (0.03), ensuring the safety of pedestrians (0.01), and increasing the number of licensed drivers (0.01). The rest of the three indicators established that there is no significant relationship. Lastly, under defective headlights, there is also one superseding indicator that is marked as significant, and that is the decreasing noise pollution brought by modified mufflers with a p-value of 0.01. These results provided insight into how the different accomplishments of the implementation of Traffic Ordinances Enforcement can affect the Perceived Level of Effectiveness of Traffic Ordinances (Olagunju, 2018).

Table 9. *Significant Relationship Between the Number of Accomplishments of Traffic Ordinances' Enforcement and the Perceived Level of Effectiveness of Traffic Ordinances*

Apprehensions	*Perception Level of Effectiveness to the Traffic Ordinances*	*P value*	*Interpretation*	*Decision*
Illegal Parking	Minimizing traffic accidents	0.14	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.22	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.02	Significant	Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.16	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.25	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.12	Not Significant	Failed to Reject the Null Hypothesis
Illegal Stopping	Minimizing traffic accidents	0.00	Significant	Reject the Null Hypothesis
	Promoting discipline to motorists	0.29	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.03	Significant	Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.34	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.61	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.02	Significant	Reject the Null Hypothesis
Muffler	Minimizing traffic accidents	0.17	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.16	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.19	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.43	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.03	Significant	Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.13	Not Significant	Failed to Reject the Null Hypothesis
Prohibited Zone	Minimizing traffic accidents	0.19	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.18	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.21	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.38	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.03	Significant	Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.25	Not Significant	Failed to Reject the Null Hypothesis
Obstruction	Minimizing traffic accidents	0.25	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.58	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.14	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.39	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.25	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.04	Significant	Reject the Null Hypothesis
Hitching	Minimizing traffic accidents	0.07	Not Significant	Failed to Reject the Null Hypothesis

	Promoting discipline to motorists	0.03	Significant	Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.01	Significant	Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.01	Significant	Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.23	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.26	Not Significant	Failed to Reject the Null Hypothesis
Defective Headlights	Minimizing traffic accidents	0.06	Not Significant	Failed to Reject the Null Hypothesis
	Promoting discipline to motorists	0.16	Not Significant	Failed to Reject the Null Hypothesis
	Ensuring the safety of pedestrians	0.09	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of licensed drivers	0.14	Not Significant	Failed to Reject the Null Hypothesis
	Increasing numbers of documented vehicles	0.11	Not Significant	Failed to Reject the Null Hypothesis
	Decreasing noise pollution brought by modified mufflers	0.01	Significant	Reject the Null Hypothesis

Conclusions

Based on the above-mentioned findings, it has been that most motorists and pedestrians thought highly of the effectiveness of the implementation of the traffic ordinances as well as the perceived effectiveness of the traffic officers' accomplishments. The data showed a need to sustain the level of perception and the best practices that the Traffic Enforcers and the Policemen are practicing. Following these, the traffic ordinances will not only make people attain safe travel but also have a good travel experience.

It is highly recommended that a Traffic Management Master Plan be crafted to sustain the people's good perception and to enhance some parts that need to be considered for the improvement of the Traffic Management Unit and the people that they are serving. It is also recommended that checkpoints will not only be performed towards the end of the month, instead, two (2) times can be facilitated every month with three (3) random checkpoints in the different parts of the municipality of Bindoy. Aside from this, a qualitative study can be performed to know and understand those who were not able to follow strictly the traffic rules and hear their sides so that other factors of this study can be revealed, and the quantitative data can be triangulated.

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