



# Effects of Environmental Regulations among Tricycle Operators and Drivers Association (TODA) in Cabanatuan City: Its Implication to the New Normal

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## Abstract

Environmental legislation must be considered, especially in various industries such as transit, particularly here in the tricycle capital of the Philippines, Cabanatuan City. This study intends to assess TODAs member with regard to environmental laws and city environmental ordinances and also to determine if there is a significant relationship between profile of the tricycle drivers and the problems they encounter. This study utilized both quantitative and descriptive analysis to assess the respondents in terms of their operations. Findings revealed that overall proportion of participants were males in aged 30s to early 40s; the majority of them seem to be married and had operated a tricycle for 11 - 15 years. Respondents are involved in self-evaluation in terms of environmental protection as the assessment of environmental interactions occurs; and trike drivers decide to accept action on appropriate waste disposal within the community in just a few circumstances. Alongside on city environmental ordinances, responders follow proper driving procedures, and tricycle drivers are regularly reminded that trash inside their tricycles is unlawful. Tricycle drivers confronted the following problems: hampered by high fuel prices; experienced fewer passengers due to more private vehicles; and impolite passengers. The findings and conclusions of this study may help reinforce processes, build successful techniques, and consequences for drivers in the mentioned industry.

## Subject Areas

Law, Sociology

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## Keywords

Environmental Regulations, City Environmental Ordinances, Tricycle Operators and Drivers' Associations (TODAs), New Normal

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## 1. Introduction and Related Literature

Regulations are established to delimit people's actions, while some of them are imposed as a result of changes. Considering environmental laws are necessary, especially nowadays in different industries like the transport industry, which has led to the improvement of our environment. In various provinces, the tricycle is regarded as the essential mode of transportation and a key access point to public transport, notably in rural barangays or barrios. Riding on a tricycle is considered as part of our lives, specifically those people within the Tricycle Capital of the Philippines, Cabanatuan City. There are also neighboring cities and municipalities where tricycle drivers are abundant and consider driving a tricycle a source of income, particularly here in the City of Cabanatuan.

Tricycle, sometimes known as a "trike", is a three-wheeled public utility vehicle that consists of a motorbike and an attached passenger's side car. The motorbike is on the left, while a side automobile is on the right. Except on big or main routes, these trikes may be seen all around the country [1].

In the midst the pandemic transportation industry was also affected including our trike drivers. Tricycles may still be used with a one-passenger limit, and identity cards issued by the COVID-19 task force will be honored by authorities throughout the two-week enhanced community quarantine (ECQ) [2].

This vocation was chosen due to a lack of work possibilities and a strong educational background by numerous Cabanatuēños. Owning a unit needs very little capitalization and the investment may be recouped in a relatively short period of time. Typically, tricycle units were financed. The tricycle sidecar was small and dangerous for passengers. Passenger prices were being overcharged at an alarming rate. Had a four-stroke engine, which was more environmentally friendly than a two-stroke [3].

The researchers aimed to assess the tricycle drivers in Cabanatuan City regarding to environmental laws and city environmental ordinance. The researchers also wanted to identify if there is a significance with regard the profile towards the problems being encountered and propose an implication to be used by the tricycle drivers during the new normal.

### 1.1. Awareness on Environmental Laws

Environmental education does not promote a certain opinion or course of action [4]. Environmental education, on the other hand, educates people how to analyze several sides of an issue through critical thinking and improves their dilemma and decision-making capabilities.

Legal adoption is more likely to be effective when environmental law matches

moral goals for betterment, which typically occurs in well-developed regions. Environmental legislation differs greatly from moral norms in less-developed countries; hence adjustments in moral values are required for successful legal application [5].

Majority of elderly tricycle drivers and those with more experience have a better understanding of environmental regulations and local legislation than younger tricycle drivers and those with less experience [6].

Gender, age, and educational achievement were not substantially connected to their degree of awareness and compliance with environmental regulations while unfavorable attitude of students, non-teaching workers, and faculty participating in law enforcement was considered as a problem to comply on environmental laws [7].

Awareness of environmental issues is fundamental to the movement's success. By fostering in our friends and family the importance of the physical environment, we can begin to address the issues that threaten it [8].

## **1.2. Tricycle Operations and Advantages of Riding Tricycle**

Motorists were aware of traffic laws and regulations, although they are not always cooperative [9].

Tricycle Regulation Units are the most efficient in terms of franchise license issuing, database maintenance, and complaint and grievance resolution. However, because the TRU office is very understaffed, the staff's urgency in completing all of their jobs causes them to be less compassionately delicate in dealing with violators [10].

Actual roadside and onboard surveys were done on passengers and drivers traveling from the designated terminal to their destination. There are also a number of risks associated with the existing motorized tricycle that must be addressed for the safety of the passengers and drivers. It was proposed that an electric tricycle be used as an alternate means of public transportation in the city, as a highly sustainable choice that allows the local population to improve their quality of life through mobility and economic activity [11].

Riding a tricycle is far more practical than driving a vehicle because it is a hassle-free way to get to your desired location, the charge is low-cost, and what you save on parking could be spent on "gas money" or coffee, it really doesn't affect you mostly during rush hours, and yet it isn't glam, and everybody will admire you [12].

Among every barangay in the Philippines, tricycles are the primary means of transportation, not jeepneys. Tricycles are the Filipinos' true "final mile" transport beast of burden—cheap, efficient, and essential. It is the go-to vehicle during any occasion. Filipinos utilize it to get to work, the market, school, and even for weddings and funerals in the barangays [13].

## **1.3. Objectives of the Study**

It particularly intended to consider the following:

- 1) How may the profile of the respondents be described in terms of:
  - a) Age;
  - b) Gender;
  - c) Marital status; and
  - d) Number of years in the job?
- 2) How many the respondents can be assessed with regard of environmental regulations:
  - a) Environmental laws; and
  - b) City environmental ordinance?
- 3) What are the problems met by the TODA's in Cabanatuan City amidst the pandemic?
- 4) Is there a significant relationship between the profile and problems encountered by tricycle driver in the midst of pandemic?

## 2. Materials and Methods

### 2.1. Research Design

The study utilized a mix method upon which researchers used frequencies, percentages, weighted mean, or other statistical tools to estimate its effect, as well as content analysis through personal interviews while doing some recordings for the specific node that researchers wanted to obtain.

Mixed methods studies are difficult to do since they need more labor and financial resources, as well as more time. The time required to implement the quantitative and qualitative components of the study results in increased time demands. Furthermore, mixed methods research necessitates the development of a larger set of abilities that span both quantitative and qualitative domains [14].

Content analysis is used to examine recorded information in the form of texts, media, or even direct observation. When to employ this strategy is determined by the study questions. Content analysis is commonly used to examine interviewee replies [15].

### 2.2. Study Locale

This study was conducted in the City of Cabanatuan, Province of Nueva Ecija. The respondents are from the different barangays of Cabanatuan city where the tricycle drivers live.

### 2.3. Participant Selection

Random sampling was utilized in this research, which is one of the most prevalent probability sampling approaches. A random sample of individuals is chosen to deduce conclusions and assumptions about a whole group. It enables unbiased data collecting, allowing studies to reach unbiased findings [16].

The entire sample size of the study's respondents is 374 out of a total population of 13,966. In this study, the Raosoft tool is used to compute sample size with a 95% confidence level and a 5% margin of error.

## 2.4. Research Instrument

The results of this research were obtained via a limited face to face survey, interview and other online flat forms like messenger, which used a database to gather and store data, as well as statistical tools to analyse the results. The most important resource for all quantitative outcome research methods and studies is survey research.

Survey questionnaires are a series of questions designed to achieve the study's objectives. The survey questionnaires were made up of three parts:

**Part I** includes the profile of the Tricycle driver. The researchers have created this checklist form of the questionnaire.

**Part II** a series of questions that assess the TODA's operation in terms of Environmental Regulations. It consists of two parts: first is Environmental Laws, formulated in the modified 4-point Likert-scale: 4) Always; 3) Sometimes; 2) Often; 1) Never and the Second part is City Environmental Ordinance with the same 4-point Likert-scale: 4) Always; 3) Sometimes; 2) Often; 1) Never. Participants were asked to evaluate the claims and respond to the questions. Everything was entirely based and adapted from the questionnaire of CRM Uriarte *et al.* (2021) entitled "Environmental Regulation Awareness among Tricycle Drivers in Digos City Philippines".

**Part III** composed of open-ended question regarding to problems being encountered and possible solutions that the respondents can recommend based on the mentioned problems. The respondents were asked to state their honest opinions regarding the questions being asked.

The research instrument was validated; corrections and suggestions were incorporated in the final draft; interviews were done with the other consumers to check the reliability and validity of the instrument.

## 2.5. Data Collection

To establish the authenticity of the study topic, "Effects of Environmental Regulations among Tricycle Operators and Drivers Association in Cabanatuan City: Its Implication to the New Normal", the researchers gather different important data and material from the Internet. The questionnaire was created in response to relevant research and is being verified by qualified experts. The researchers do a dry run to test the questionnaire's reliability to 20 participants and 5 experts to check the validity. To guarantee internal consistency, the instrument's reliability coefficient was assessed and quantified. The instrument's reliability coefficient was examined and measured with a score of 0.853, indicating that the instrument has high internal consistency. The validity of the research instrument was established by submitting it for expert judgments, who gave it a weighted mean of 4.27 and a verbal interpretation of "very excellent".

## 2.6. Data Analysis

All data collected from the area was encoded, tabulated, and evaluated. The

quantitative data was analyzed using statistical techniques such as percentage, frequency distribution, weighted mean, and Pearson-r, while the qualitative data was reviewed using content analysis.

### 3. Results and Discussion

#### 3.1. Profile of the Respondents

##### 3.1.1. Profile of the Respondents in Terms of Age

**Table 1** illustrates that (173) or 46% of those polled, were between the ages of 39 and 48 years old. This result indicates that tricycle drivers are individuals in their mid-30s who are more flexible, which affects their capacity to maintain and drive the tricycle safely.

Older tricycle drivers and people with better experience have a superior understanding of environmental regulations and local legislation than younger tricycle drivers as well as those with less competence [6].

Driving is an important part of retaining our freedom as we age. You may be able to drive safely far into your senior years if you reduce risk factors and incorporate safe driving habits [17].

##### 3.1.2. Profile of the Respondents in Terms of Gender

The majority of the respondents (365) or 97% of the tricycle drivers were male (**Table 2**). This implies that male is assertive than female drivers. The respondents added that as male driver they are riskier to handle the steering wheel of a tricycle.

Driving is still dominated by male drivers, as evidenced by previous study that reveals transportation is still controlled by men [18].

Several men have a natural proclivity for driving motorized vehicles. Some might argue that this is a typical case of “nature against nurture” and gender

**Table 1.** Profile of the respondents in terms of age.

Age	Frequency	Percentage
18 - 28 yrs. old	41	11%
29 - 38 yrs. old	64	17%
39 - 48 yrs. old	173	46%
49 yrs. old & above	96	26%
Total	374	100%

**Table 2.** Profile of the respondents in terms of gender.

Gender	Frequency	Percentage
Male	365	97%
Female	9	3%
Total	374	100%

stereotyping—that is, boys’ parents are more likely to encourage their sons to appreciate vehicles than their female counterparts. That said, there’s no doubting that men, on average, have a great innate skill and knowledge when it comes to vehicles [19].

### 3.1.3. Profile of the Respondents in Terms of Marital Status

**Table 3** presents that majority of the respondents (256) or 68% respond that they are married. Therefore, as a result, married people are more motivated to work for a profit, regardless of their employment. The respondents also mentioned that as a married person, you are more driven since you have a partner in life, and that this work helps them meet their daily needs.

Men who married work much harder and more deliberately, and make more money than their single counterparts from comparable origins. Marriage also changes men’s interactions with other people; they spent less time with peers and much more time with family; they also spend less time in bars and more time in church [20].

### 3.1.4. Profile of the Respondents in Terms of Number of Years in the Job

The majority of respondents (211) or 56%, were tricycle drivers within 11 to 15 yrs (**Table 4**), showing that being a trike driver at that aforementioned period of time provided them with financial stability equivalent to normal Filipinos, particularly for their daily basic demands. Respondents also mentioned that as tri-cycle drivers, they avoid a difficult job search as contrasted to office employment.

The reasons why people stay in their professions are equally as essential as the reasons why they give it up. Through a payment structure that emphasizes

**Table 3.** Profile of the respondents in terms of marital status.

Marital Status	Frequency	Percentage
Single	92	25%
Married	256	68%
Separated	26	7%
Total	374	100%

**Table 4.** Profile of the respondents in terms of number of years in the job.

Years in the Job	Frequency	Percentage
1 - 5 yrs.	34	10%
6 - 10 yrs.	102	27%
11 - 15 yrs.	211	56%
16 yrs. and above	27	7%
Total	374	100%

deferred advantages; one person will stay in a job under conditions that would force another to start pounding the pavements [21].

### 3.2. Environmental Regulations (Assessment)

#### 3.2.1. Environmental Regulations as to Environmental Laws

**Table 5** presents that the tricycle drivers were engaged in various self-assessment towards the protection of the environment that relies their awareness on environmental laws, with a weighted mean of 3.86 and verbal interpretation of strongly agree. However, tricycle drivers agree that taking action on proper waste disposal problem in the community were necessary and gained the lowest weighted mean of 2.62.

Based on the findings, engagement in various self-assessments with regards to protection of the environment will reflect according to their own learning performance and progress in a critical manner. As members of TODAs in their neighborhood, the respondents say they become more responsible and able to think about their actions through self-assessment programs which indicate that tricycle drivers have favorable traits in terms of current environmental laws.

Self-assessment skills provide an extra component to be considered in the application of environmental regulations and participation in other self-assessment initiatives [22].

**Table 5.** Environmental laws.

Indicators	WM	VI	RANK	VD
I have knowledge on Ecological Solid Waste Management Act of 2000 or RA 9003.	2.75	Agree	7	Practiced in few instances
I am concerned whether the final disposal is environmentally safe and acceptable.	2.83	Agree	6	Practiced in few instances
I receive information about waste collection and disposal services provided for me including how it is done and where my waste eventually goes.	3.46	Strongly Agree	3	Practiced all the time
I am aware that Anti-Smoke Belching seminar is necessary	2.68	Agree	9	Practiced in few instances
I participate in any government or local programs on segregation and recycling.	2.75	Agree	7	Practiced in few instances
I act on keeping air healthy by evaluating my fossil fuel consumption.	3.37	Agree	4	Practiced in few instances
I am aware of fines and penalties for improperly disposing waste.	3.20	Agree	5	Practiced in few instances
I take action in correcting waste disposal problem in the community	2.62	Agree	10	Practiced in few instances
I know some waste segregation or recycling program	3.59	Strongly agree	2	Practiced all the time
I engage in self-assessment on the protection of the environment.	3.86	Strongly agree	1	Practiced all the time
Environmental Laws-WM	3.11	Agree		Practiced in few instances



There are several factors that influence the link between self-assessment and external indicators. One such element is the test-ability. Taker's competent test-takers are more likely than less competent test-takers to produce a realistic self-assessment [23].

Regulation is one of several methods for improving environmental quality, and it should be used in conjunction with other measures such as incentives [24].

### 3.2.2. Environmental Regulations as to Environmental Ordinances

As seen on **Table 6**, the respondents know that incineration of garbage is prohibited within the City of Cabanatuan and they also observe the proper driving habits as tricycle drivers, which both ranked as number one with a weighted mean of 3.88 and strongly agree as verbally interpreted. Tricycle drivers did not understand that littering inside their tricycles was punishable by law. On the contrary, they had the lowest weighted mean of 2.45 and a verbal interpretation of disagree.

The findings imply that many of tricycle drivers understand that incinerators can minimize the amount of garbage as well as the solid content of the original waste, although it is quite unsafe on the way we normally classify our garbage but it is significantly reduced the amount of area required. Also, typical tricycle driver commonly goes throughout Cabanatuan, not just to their TODA's main terminal, looking for passengers needing assistance in transit across the city as

**Table 6.** City environmental ordinances.

Indicators	WM	VI	RANK	VD
I segregate my waste products according to the proper waste disposal mandated by the city.	3.53	Strongly agree	4	Practiced all the time
I install at least one trash receptacle inside my tricycle.	2.78	Agree	8	Practiced in few instances
I know smoking is strictly prohibited when maneuvering my tricycle.	2.56	Disagree	9	Practiced frequently
I install a No Smoking sign inside my tricycle.	3.62	Strongly agree	3	Practiced all the time
I observe strict emission standard by going through smoke emission tests.	3.17	Agree	6	Practiced in few instances
I observe proper driving habits.	3.88	Strongly agree	1	Practiced all the time
I understand that littering inside my tricycle is punishable by law.	2.45	Disagree	10	Practiced frequently
I know incineration of garbage is prohibited	3.88	Strongly agree	1	Practiced all the time
I am aware that Solid Waste Management seminar is necessary.	3.24	Agree	5	Practiced in few instances
I recognize the importance of prohibiting the manufacturing, importing and selling leaded gasoline and of engines or components requiring leaded gasoline	3.02	Agree	7	Practiced in few instances
City Environmental Ordinances-WM	3.21	Agree		Practiced in few instances

their driving habits. The respondents also added that in some spots, tricycle drivers will reply to someone waving at them, indicating that they need a ride.

Political interference also impedes the normal operation of municipal governments. Most communities' solid waste management difficulties include inadequate maintenance of municipal solid waste (MSW) collection trucks, a deplorable state of infrastructure, and an absence of adequate resources, all of which work against optimizing MSW disposal service [25].

The issue is that people today will not always require a transport if you wait for them at their residences. The worst-case situation is that you are unable to obtain a passenger for several hours, which may be humiliating. If we connect this to the business world, it is analogous to prospecting. Business is evolving, and it also depends on your charisma, as there are several ways to obtain clients. Few are easier to complete than others, and some have a greater successfulness [26].

### 3.3. Problems Met by TODA's in Cabanatuan City amidst the Pandemic

Based on the findings, the increase in oil price was ranked 1 as a concern experienced by TODA's members, with a percentage of 72% (Table 7). It implies that if the market price of oil "gasoline" rises, it will have a substantial impact on the income production of tricycle drivers, which affects the cost of various commodities like their basic necessities, wherein it intends to increase also the fare ranges based on passengers' destination.

Oil price shocks have an impact on the economy via the supply side (increased production costs, resource reallocation), the demand side (income impacts, uncertainty), and the terms of trade. Nevertheless, it appears that rising oil prices are playing a significant influence. A price increase that happens after a protracted period of oil price stability has a greater impact than a price increase that occurs promptly after prior price reduction [27].

Moreover, small number of passengers, as well the increased number of personal/private vehicles was also considered as difficulties and issue to consider in the case of tricycle drivers. This shows that the reason behind in small number of passengers is due to health and safety restrictions amidst the pandemic and also high fare, while an increase in the number of private cars is intended to alleviate traffic congestions caused by increased demand in the transportation industry during the lockdown period.

**Table 7.** Problems encountered.

Problems	Frequency	Percentage	Rank
Increased number of personal/private vehicles	29	8%	3
Rude passengers	48	12%	2
Oil price hike	268	72%	1
Small number of passengers	29	8%	3

Social distancing and public transportation are two notions that, very simply, are just not the same. Cities throughout the world to impose strict physical distancing measures, numerous of them have been required to preserve public transportation services for important personnel [28].

Using publicly accessible transport data from multiple Southeast Asian transit applications (including Waze Connected Citizens Program, Google, and Apple), ridership decreased by more than 90% in March compared to pre-pandemic norms in January. Governments have enforced varying degrees of lockdown and social distancing measures, including limitations on public transportation [29].

### 3.4. Significance Relationship between Profile and the Problems Met by Tricycle Driver in the Midst of Pandemic

**Table 8** reveals that the **number of years in the job** is the only one with a verbal interpretation of **very high positive correlation** towards the problems being encountered, with a calculated  $r$ -value of **(0.9456)** and a  $p$ -value of **(0.0543)**, which is equal to the critical value of 0.05, so there is a significant relationship between the number of years as a tricycle driver and the difficulties they encounter. Although the respondents' **age**, which has a  $p$ -value of **(0.0853)**, which is larger than the requisite critical value of 0.05.

The study found that the longer someone drives a tricycle, therefore the probability they will meet the aforementioned challenges. According to the responses, they have gotten more familiar with how they would manage with the various difficulties of being a tricycle driver while adhering to environmental regulations and local ordinances over the course of more than a decade. On the contrary, age has little bearing on a driver's ability to deal with situations. It is up to them to control the situation as long as they understand what is causing the uncertainties.

Riding a motorcycle is a crazy ride by anyone's standards. It makes little difference where you bike in terms of geography. As we ride our tricycles for a long period, the climates, road conditions, and traffic density may change, but there are certain constants. It's filthy and hazardous, and you share the roads, byways,

**Table 8.** Profile and problems met.

Profile	$r$ -value	$p$ -value	VI	Decision
Age	0.9146	0.0853	Very high positive correlation	Accept the null hypothesis
Gender	0.3779	0.6220	Low positive correlation	Accept the null hypothesis
Marital status	0.3239	0.6760	Low positive correlation	Accept the null hypothesis
Number of years in the job	0.9456	0.0543	Very high positive correlation	Reject the null hypothesis

\*Critical value/significance level: ( $\alpha = 0.05$ ).

and thoroughfares with a variety of harmful items, both moving and immovable [30].

Consequently, both gender and marital status of respondents have a low positive link with issues faced, indicating that it does not matter what gender or status we have when it comes to working with the difficulties of being a tricycle driver.

Women tricycle drivers committed their lives to supporting a family meal, co-equal with their husbands. Living a poor life, “starving like a rat”, in order to make ends meet [31].

#### 4. Conclusions and Recommendations

As for data gained during the discussion, the majority of responders were males in their mid-30s to early 40s, most of them are married, and then had employed as tricycle drivers for 11 - 15 years.

Furthermore, the majority of respondents “strongly agree” that engaging in self-assessment in terms of environmental protection is vital, and trike drivers agree to take action on correct waste disposal within the community in a few cases. Concerning to city environmental ordinances, respondents maintain proper driving practices, as well as the fact that garbage incineration is restricted and there are tricycle drivers who are constantly reminded that littering inside their tricycle is illegal and punished by law.

The respondents are affected by the increase in oil prices, which is the most prevalent difficulty they face as a result of the pandemic; the small number of passengers including the higher number of private vehicles is also a serious impediment to their daily operations, as well as rude passengers are unavoidable.

Age, gender, marital status, and years on the job as a tricycle driver had no clear correlation with the challenges they encounter.

The tricycle drivers should use other clothes or its TODAs uniform to look more presentable to their possible passengers.

TODAs should hold seminars and processes based on environmental regulations and local environmental ordinances, resulting in new strategic capabilities in terms of service offered to its passengers.

It is urged that different procedures be employed to alleviate the challenges that tricycle drivers confront. For an instance, they may raise rates in their area, as well as introduce new practices and modifications in this new normal that can attract a significant number of people.

Developing more reliable routines for tricycle drivers’ profiles as well as methods of coping strategies if they correspond.

It is recommended that this study be used by the future researchers for other possible research aligned with the Tricycle Industry.

#### Conflicts of Interest

The authors declare no conflicts of interest.

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