

RESEARCH ARTICLE

Social and Gender Issues Related to the Implementation of the Traffic Discipline Zone (TDZ) in Malate, Manila

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Abstract: The worsening state of local traffic conditions in many cities has motivated local government units to implement new mechanisms that can improve the welfare of various stakeholders. The introduction of a traffic discipline zone (TDZ) is one of the recent innovations in managing road traffic. This study identifies the social and gender issues arising from the implementation of a TDZ through the conduct of focus group discussions. A diverse group of participants, including informal public utility drivers, ambulant vendors, barangay executives, and school officials, identified traffic and safety concerns in the vicinity of De La Salle University, Malate District in Manila, Philippines. A questionnaire survey was also conducted to supplement the results of the focus group discussions. These issues include the unavailability of parking spaces due to the increasing volume of vehicles; traffic violations of informal drivers such as tricycles and rickshaws, commonly known as pedicabs; and the proliferation of street vendors occupying the sidewalks. Furthermore, this study provides details regarding social issues, including the issue of gender in relation to pedicab drivers and vendors, such as pedicab drivers being male-dominated and female vendors being older and with more years of experience selling in the streets but earning less compared to male vendors. Recommendations on how to address these issues from the perspectives of the stakeholders are also discussed.

Keywords: social issues, traffic discipline zone, stakeholders, traffic congestion, ambulant vendors, rickshaw drivers, gender issues

One of the most pressing issues that many cities in developing countries face is the worsening traffic conditions, which result in significant economic losses. In addition, this also seriously impacts human health and well-being due to stress and unpleasant experiences brought about by daily traffic congestion. Factors contributing to traffic congestion include the increasing number of vehicles, population growth (Song et al., 2019), lack of road capacity, disruptions and road incidents, and interruptions to the flow of traffic (Wijayaratna & Lam, 2016). Although the

repercussions of traffic congestion can spill over across geographic borders, most of these problems can be managed locally.

Many cities in developing countries have explored various approaches to improve traffic conditions. These approaches include traffic calming zones where a reduced speed limit is imposed (Sołowczuk, 2021); road diet where four-lane two-way streets are converted to three-lane or two-lane two-way streets in order to provide parking for residents and guests and protect vulnerable road users (Aljamal et al., 2021); and traffic

discipline zones (TDZs) wherein all stakeholders namely pedestrians, drivers, and other users of the roads and sidewalks are enjoined to always observe traffic rules and regulations and violators of the rules are penalized. In the Philippines, several agencies and local government units have implemented TDZs. De Leon et al. (2016) reported that a TDZ can be defined as a zero-tolerance zone. In other cities in the Philippines, TDZ implementation is highlighted by a 24/7 implementation of rules and regulations to promote discipline among all stakeholders involved.

The Metro Manila Development Authority (MMDA) declared the Epifanio de los Santos Avenue (EDSA), a 23.8-kilometer-long highway that traverses through six major cities of the National Capital Region, as a TDZ back in December 2018 (Rey, 2018). The City Government of Iloilo has launched the TDZ covering the 14-kilometer stretch of its major highway, the Senator Benigno Aquino Avenue, in January 2020. It envisions it to become the model of how the city will manage road traffic, where all ordinances and national laws on traffic will be implemented 24 hours a day, seven days a week. Within the first month of implementation, 2,483 traffic violations were apprehended, and PhP 683,900 in fines were collected from motorists and pedestrians (Latoza, 2019). Although TDZs seek to reduce traffic congestion, implementing TDZs also results in a loss of livelihood for operators of informal modes of transportation and street vendors.

With the growing adaptation of TDZs in the Philippines, this study aims to assess the existing traffic and land-use conditions as well as the social and gender issues related to TDZ implementation. Most of the literature focuses on significant differences in the transportation needs of men and women. The study also aims to propose a set of holistic traffic management measures for the study area. The research was conducted in Malate, an urban district within Manila City with a total population of 99,257 people, according to the 2020 Census of the Philippine Statistics Authority (PSA, 2020). With Malate's estimated area of 2.6 square kilometers, its population density is about 38,175 people per square kilometer. More specifically, this study considered a 0.6-square-kilometer area in Malate, which is about 25% of the entire Malate area. Based on a household information survey (Fillone et al., 2020) conducted in 2019 in the Malate District, 27.06% of the households

are below the poverty threshold, whereas 72.22% have a household income of less than \$500. However, the daytime population of the area expands to include more affluent households through the students enrolled in the educational institutions within the Malate District TDZ. According to the Metro Manila Accident Reporting and Analysis System (MMARAS, 2019), Manila recorded the second highest incidents of road crashes in 2019, which may be attributed to high social and economic activities. In 2019, Manila remained the "world's worst city for drivers," as reported by Waze, an application software for traffic navigation (Ong et al., 2019).

The study focuses on a framework that investigates the problems and needs surrounding mobility and access. The Moser framework developed by Carol Moser in the early 1980s is about gender and development approaches. This approach emphasizes that the gender issue is not only about women but both men and women with varied needs, language, and requirements. The study dwells on the Moser framework, which is a gender needs assessment tool. In the context of transport and mobility, there are three elements of this tool that can be emphasized. First, the need to identify gender-specific needs of vendors and pedicab drivers. Second, there is a need to consider the interactions between the stakeholders. Third, for strategic gender needs to emerge, there is a need for active and meaningful participation of the stakeholders through consultation for transport planning. A useful extension to the Moser framework is to focus on both men and women in their gendered context. Men too are gendered beings, invested with gendered roles, beliefs, identities, and powers.

More specifically, this study aims to determine the socio-economic conditions of the ambulant vendors and pedicab drivers and recommend potential alternative sources of livelihood for those to be displaced; determine and compare the gender effects among vendors and pedicab drivers; the land-use distribution, as well as the relevant information and location of ambulant vendors and pedicab posts; and to provide policy recommendations, especially for vendors and pedicab drivers that may be affected by proposed traffic management measures in the TDZ in order for them to have a better area to ply their trade without affecting their daily earnings.

The remainder of the study is organized as follows: Section 2 provides a review of related literature to

support the need for TDZs; Section 3 presents a brief description of the methodology; Section 4 provides a discussion of the results and analysis; Section 5 discusses the conclusions and recommendations for future research.

Literature Review

On-Street Illegal Parking

In many countries, although there is an increase in vehicle ownership, households are unable to meet actual parking requirements (Dawra & Kulshreshtha, 2017). A resulting behavior, among others, is resorting to on-street parking. On-street parking contributes to traffic congestion, as vehicles occupy more land space and create bottlenecks. On-street illegal parking, and its traffic-related consequences, are experienced in many countries across the globe. This is also true in the study area.

This problem exists in western countries and cities. In Barcelona and New York City, illegal on-street parking exists and, consequently, results in negative economic impacts on the cities (Morillo & Campos, 2014). According to Tsakalidis and Tsoleridis (2015), their study revealed that illegal parking of different types is prevalent in communities in Greece, leading to reduced road capacity, among others. In Toronto, persistent on-street illegal parking results to delay and extended travel time and worsening traffic conditions (Ramadan & Roorda, 2016).

A comparable situation is apparent in Asia. Based on the studies of Chowdhury (2016) and Das and Ahmed (2017), the supply of available parking spaces is disproportionate to parking demand in Kolkata, India. This trend occurs in many districts of the city, resulting in parking in a scattered manner and occupying road space. In general, growing car ownership with limited parking space is a major traffic problem in India. High parking demand is also apparent in Jeddah City, Saudi Arabia (Aljoufie, 2016).

Dawra and Kulshreshtha (2017) explained the relationship between demographic variables and illegal parking behavior. The study showed that good parking behavior was more likely exhibited by elderly drivers than young drivers. Male drivers were also found to be “negligent of the parking regulations. Compared to females, male drivers have a higher probability of exhibiting bad driving behavior. Attitude and

culture have a major influence on parking and driving behaviors.

In the Philippines, according to Metro Manila Urban Transportation Integration Study (MMUTIS) reports, the serious congestion in Vito Cruz, Taft Avenue is caused by illegally parked vehicles obstructing the roads in the area (Japan International Cooperation Agency, 1999). Drivers of these vehicles are composed of both males and females. Most of these privately-owned vehicles are generated by the universities and colleges in the study area. Based on a household survey conducted for the Malate area, only 2.6% of the households own a vehicle. Bulactial et al. (2013) observed that city ordinances and regulations exist for on-street parking. However, the lack of signs and enforcers to implement such rules have led to constant negligence of the law, and traffic violators are not apprehended.

Street Vending

Most street vendors belong to the low-income bracket and low educational attainment groups. A study showed that most respondents were from poor, illiterate families who worked extensive hours daily (Saha, 2011). Street vending or hawking is caused by lack of employment, absence of earning members in the family, death of parents, needs less skill, needs less investment, and other reasons (Bhat & Nengroo, 2013). In Zimbabwe, the street vendor respondents lived on the poverty threshold, earning less than \$2 a day. These individuals cannot finance decent homes, resorting to street vending to meet financial needs (Madziba, 2017). In Mumbai, money lending to street vendors is rampant; borrowing money is a way to meet financial and social security. However, it leads to a debt-trap situation (Bhowmik & Saha, 2012). Street vending for long hours was also found to be gradually increasing over the year.

Street vending is a major part of a country's informal sector. Street vendors make up the majority of and are the most visible in the informal economic sector (Sen & Gupta, 2017). Informal economy, as well as unregulated land use and informal housing, are problems that need to be addressed by the government, decision-makers, and, particularly, modernist town planners (Bhatt & Jariwala, 2018). Street vendors utilize public spaces, such as roadsides and sidewalks, which raises concerns in the government's interests about order and norms (Handoyo & Setiawan, 2018).

In many Asian cities, public spaces are considered to be clean, tidy, and clear of homeless, beggars, and street vendors who are considered to erode the 'modern' aesthetics of the city (Bhowmik, 2005). Street vendors are also perceived as contributors to traffic problems, as causing "pedestrian and traffic obstruction, and making the city dirty." Karthikeyan and Mangaleswaran (2017) described street vending as a source of traffic blocking and a contributor to unpleasant urban vista. Among the results of the study, both vendors and government officials in Caloocan City reported that slowing down vehicular and pedestrian flow is resultant of unorganized street vending or hawking. This notion compelled decision-makers to take action that the "streets need to be cleaned up" (Recio & Gomez, 2013).

Metropolitan Manila Development Authority's (MMDA) Legal Services Division utilizes MMDA Resolution No. 02-28, MMDA Resolution No. 02-40, as well as Republic Act 7924 or MMDA Charter, as their basis to clear the streets of street vendors. Resolution No. 02-28 permits the MMDA to remove illegal obstructions in the public spaces of Manila, and the latter provides guidelines for the disposal of confiscated items (Recio, 2018).

In other Asian countries—Thailand, Cambodia, and Mongolia—street vending is considered illegal or needs to be regulated; hence, the creation of laws prohibiting and regulating street vendors as well as imposing taxes, fees, and registration of vendors (Kusakabe, 2006).

Although the treatment of the government of the informal sector is debatable by many scholars and practitioners, in the Philippines, policies have been created for the protection and regulation of street vendors since 2001. Metro Manila Council (MMC) Ordinance No. 79-2 (Dacanay v. Asistio, 1992), among others, gives orders to a division that is tasked to process the applications of street vending and regulate street trade by having inspectors oversee street vending and collectors of fees from licensed vendors.

Because of the inherent benefits of street vending, despite its common problems, studies suggest that the government should recognize the role of street vendors in an economic generation. For example, Anetor (2015) suggested that government should provide support, such as providing means of delivery infrastructure (e.g., street lighting, running water, public toilets, etc.),

promoting cleanliness campaigns, and allowing to sell in permitted zones.

The broad definition of a street vendor is anyone who offers goods or services for sale to the public without having a fixed built-up structure (Sinha & Rover, 2011). There are varying types of street vendors in many studies. Primarily, street vendors can be stationary, peripatetic, and mobile. Stationary vendors go to specific locations on a regular basis; peripatetic vendors go on foot; and mobile vendors move to different locations using mobile units of wheels (Sinha & Rover, 2011). Street vending is a global phenomenon dated from 1970. Street vending exists in countries including Bangladesh, Sri Lanka, Bangkok (Thailand), Singapore, Kuala Lumpur, Manila (Philippines), Hanoi (Vietnam), Cambodia, Seoul (South Korea), and India (Bhowmik, 2005; Indira, 2014). Since the financial crisis of 1998, the number of street vendors spiked in Thailand, Singapore, and the Philippines; the number also grew larger in India and Cambodia due to economic changes. The number of street vendors is abundant, particularly in Bangladesh, Manila, and India (Bhowmik, 2005; Indira, 2014) and in Sub-Saharan Africa (Resnick, 2019). Although many consider street vendors as road obstruction and cause of traffic, consumers continue to patronize street vendors as purchasing from street vendors saves the consumers time and effort (Bhowmik & Saha, 2012). Food quality, value for money, and familiarity also contribute to the continued patronage of street vendors (Ezeh & Nkamnebe, 2022).

Enhancing Public Transportation System

Public transport use is highly regarded, mainly because of the benefits it presents to the environment and economy. It is important that individuals utilize public transport. There are several factors that may affect their choice of this mode. Carrel and Walker (2017) conducted a survey assessing the satisfaction of commuters based on their experiences. The results revealed that in-vehicle delays, transfer times, waiting time at stops, and experiences, particularly the negative ones, significantly affect their willingness to use public transportation. Nur et al. (2016) conducted a survey in Makassar that analyzed the characteristics and behavior of private transport users. The findings included that the respondents' willingness to shift to public transportation is affected by travel time, waiting time, and total rate. Choi et al. (2014), using a national

household travel survey in the United States, reported that socioeconomic factors and the quality provided by the transportation systems affect the transit choices of commuters. Olsson and Tanangsnakool (2017) used the survey data from two Bangkok districts and studied how the built environment and urban form affect travel behavior. The results showed that people who lived in the inner district—influenced by the built environment and land use, transport infrastructures, and the like—relied heavily on public and nonmotorized means of transport more than those who lived in the outer areas of the district. It also revealed that speed, costs, and convenience are factors in selecting transport modes. In addition, the travel purposes made by individuals inside the district are ranked as follows: shopping, work, education, leisure, and social/visit purposes (Olsson & Tanangsnakool, 2017). Basaric et al. (2016) analyzed the behavior patterns of individuals in Novi Sad. Among the results, they reported that the major purposes of travel are for commuting to work or school and returning home.

Gender Dimension of Transportation

Across many studies, gender has been considered an important factor in affecting transport behavior. Gender is often found to be a stronger determinant than age or income (Ng & Acker, 2018). Gender differences are apparent in transportation processes. Gender preferences and purposes vary between men and women.

Travel purposes usually differ between men and women. Men primarily travel for employment-related purposes, and women travel for multiple purposes, including work and household responsibilities such as childcare, shopping, and health (World Bank, 2010). Men make more trips related to work than women, and women make more trips for household activities than men (Taylor & Mauch, 2000; Moser, 1993). Based on the 2001 U.S. National Household Travel Survey, it was revealed that women travel more for their children (NHTS, 2001; Ng & Acker, 2018); and having children in the household influences the travel behavior of women more than men (Ng & Acker, 2018). Because of various travel purposes, women tend to experience different and more complex travel patterns than men (Ng & Acker, 2018).

Access to different modes of transportation also differs between men and women. Reportedly, women

tend to have difficulty accessing private motorized and public transport. Although car ownership among women may vary among developed and developing countries, women generally have inferior access to private cars than men. In many developed countries, women are less likely to have car ownership and more trips than men. The U.K. national travel survey indicated that women tend to be car passengers more than men. Priority for usage is given to men than women. This shows that women still have limited control over private vehicles despite having access to it (Peters, 2013). In Germany, male automobile users drive more distances than women. However, in developing countries, including China, India, and Brazil, the number of female drivers is going up. Middle-class women started to own and drive cars for the first time (Peters, 2013).

Although men tend to have more access to and usage of cars, women tend to use and prefer public and nonmotorized transport. In Hanoi, Jakarta, and Kuala Lumpur, studies provide evidence of women using public transport more than men (Bray & Holyoak, 2015; Tjeendra et al., 2010; Nurdden et al., 2007; Ng & Acker, 2018). In Ashgabat, Turkmenistan, a finding showed that women who have less income than men depend more on poor quality public transport, whereas men have more access to public transport with better quality (Peters, 2013). Due to difficulties in accessing transportation, women have to spend longer time and refer to inconvenient and exhausting modes of transport (Fernando & Porter 2002; Venter et al., 2007). In some countries in Southeast Asia and Europe, reports showed that women prefer public and nonmotorized transport (Ng & Acker, 2018).

Based on such studies, it is apparent that women are more likely to use public and nonmotorized modes of transportation. Despite this fact, public transportation still lacks security provided for women. Sexual harassment is a common problem for women when they travel using public transport like buses and trains and nonmotorized, like walking and cycling (Herrera, 2007). In a survey by Tokyo Metropolitan Policy and East Japan Railway Company, a large percentage of female passengers reported that they have been groped in trains, and such incidents have been increasing (Shibata, 2020). Sexual harassment in Manila and Jakarta due to overcrowding has been prevalent among women (Herrera, 2007).

Methodology

This study was borne out of the need to determine and assess government transport policies and interventions being implemented and enforced at the local level. Information and data gathering from various stakeholders was conducted through a series of focus group discussions and a questionnaire survey to assess the social and gender impacts of implementing a TDZ—TDZ being the method of putting government transport policies in action. The data-gathering phase was conducted in July 2018.

Study Area

The Malate District TDZ is bounded in the north by President Quirino Avenue and San Andres Street, in the east by Angel Linao and Singalong Streets, in the South by Pablo Ocampo Sr. Avenue, and in the west by Adriatico Street, as shown in Figure 1. It covers a 0.6 square kilometer area wherein three major school institutions (De La Salle University, DLS- College of St Benilde, and St. Scholastica's College) are situated. Taft Avenue, where the major public transportation passes through, including Metro Manila Light Rail Transit Line 1 and where most commercial and institutional buildings are situated, traverses the area from north to south.

Focus Group Discussion

The study utilized several focus group discussions (FGDs) for the different stakeholders. This study was conducted in close coordination with the Manila Traffic and Parking Bureau (MTPB) and the Safe School

Network. The Safe School Network is an organization put up by universities and colleges in Malate, Manila district, to provide safety to students and school employees, especially outside the campuses, in coordination with barangay officials. The FGDs were conducted at the De La Salle University campus. The participants of the FGDs include personnel of the traffic management authority, pedicab drivers, street vendors, and local government officials of selected barangays in Manila. *Punong Barangays* (e.g., heads of the lowest form of government) were informed of the criteria in the selection of the participants in the FGD. Discretion to select the participants was left to the *punong barangay*. The quality of collected data was not affected. The participants from the barangays were recommended by the barangay captain.

As shown in Table 1, 32 participants attended the FGD, 38% of whom were female and 62% male. There is more female representation for the group of barangay officials, whereas there is more male representation for the safe school network group. The pedicab/tricycle/vendors group has less participation, which may be due to conflict with their working schedules and being out there in the streets plying their trade.

Questionnaire Survey

Questionnaire surveys were conducted for both the informal vendors and informal transport operators in the study area. The questionnaire survey solicited information about the socioeconomic, vendors selling behavior, and tricycle/pedicab service characteristics. There are specific locations in the study area where pedicab/tricycle drivers and vendors congregate.

Table 1

Respondent Group, Schedule, and Number of Participants for the FGDs

Respondent Group	Date and Time	Number of Participants		
		Invited	Attended	
			Male	Female
Safe School Network Group	July 6, 2018 1300 - 1600	13	11	2
Pedicab/Tricycle/Vendors Group	July 30, 2018 0900 - 1200	14	4	2
Barangay Officials (Local Political Leaders)	July 30, 2018 1300 - 1600	10	5	8
	TOTAL	37	20	12

There are several plausible reasons why there is demand for pedicab services in the area, including the service convenience it provides passengers bringing them right in front of their doorsteps, the poor pedestrian facilities and walkway obstructions one encounters when walking, the immediate availability in the area (Gumasing et al., 2022) and can bring passengers to any destination by negotiated fare, and traffic enforcers are so oblivious to their presence that they get away with any traffic violations.

Figure 1 shows a map of the barangays (Brgy. 720, 725, 726, 727, and 729) where FGD respondents came from as well as major institutions in the study area. Figure 2 shows the points where

the pedicab/tricycle drivers and street vendors are located. It can be observed that most pedicab/tricycle drivers queue or wait for passengers near intersections where passengers would disembark from the LRT stations, buses, and jeepneys. Vendors are located anywhere along sidewalks that are usually frequented by pedestrians. A face-to-face questionnaire survey was conducted in these areas, and respondents were approached and requested if they were willing to answer the survey. If they agree, we then proceed with the interview. If they do not agree, we then move to the next nearest respondent and do that same process again. We then proceed if they agree to be interviewed.

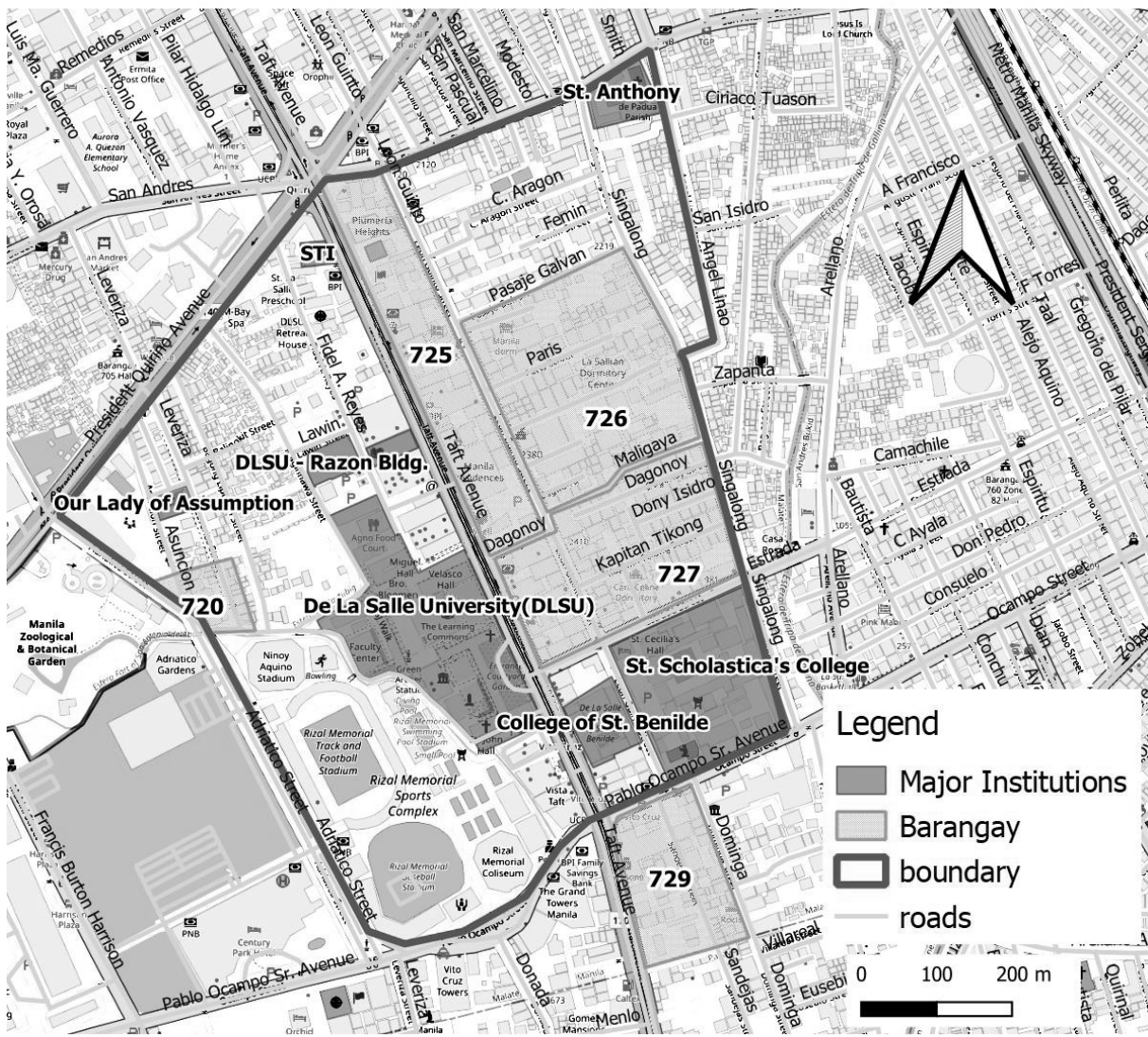


Figure 1. Map of the Study Area Showing the Location of the Major Institutions and the Selected Barangays in the FGD

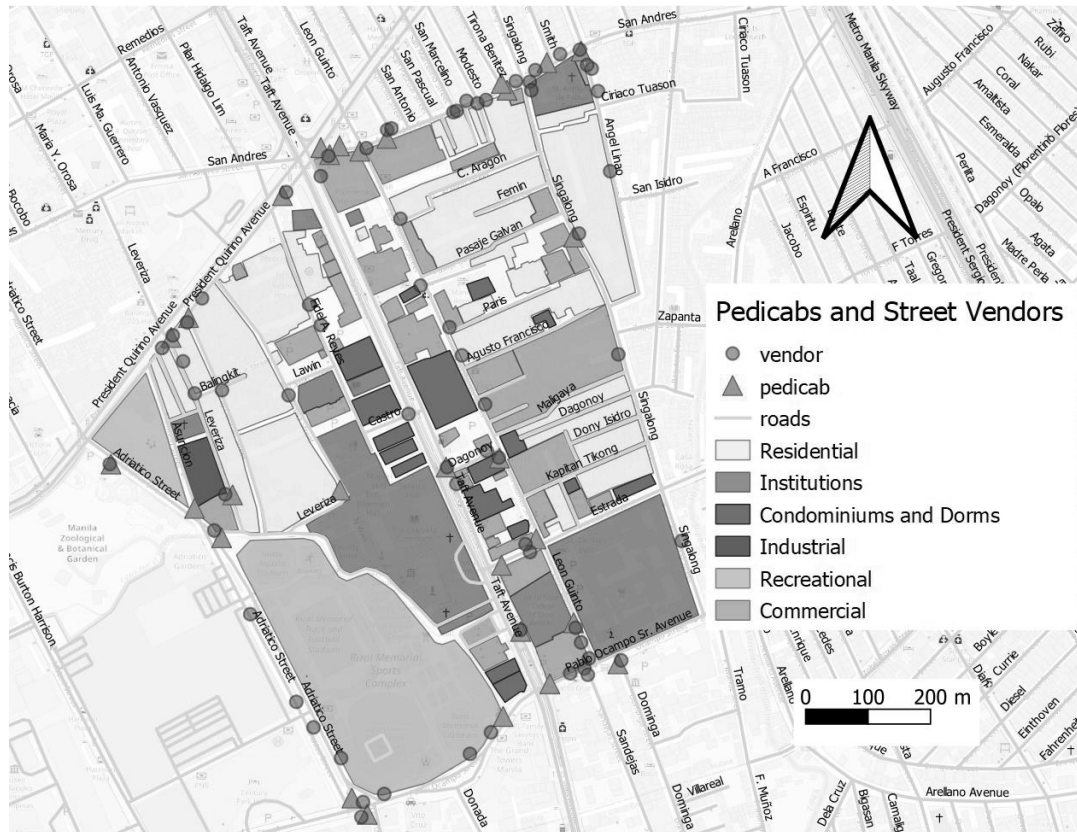


Figure 2. Map of the Study Area Showing the Location of the Pedicab/Tricycle Drivers and Informal Vendors

Mapping Using GIS

Quantum GIS, an open-source Geographic Information System (GIS) software, was used to map relevant spatial information. Measurements of lengths and areas were performed using the software. From the Google Earth Street View app, the location of pedicab terminals and street vendors were identified and then plotted in GIS. Actual land use maps were also digitized. All thematic maps (See Figures 1, 2, and 3), with the integration of street information from OpenStreetMap, were created to enhance visual presentation and analysis.

Results and Discussions

Social and Gender Issues in Transportation in the Study Area

The study covered P. Ocampo Street, Quirino Avenue, Taft Avenue, and Singalong Street (See Figure 1), where many of the transport issues are

present that need to be resolved. The traffic problems in the study area that were raised during the FGDs include: first, obstructions on the road, such as (a) illegally parked vehicles on-street, (b) presence of street vendors along pedestrian walkways and curbs, and (c) pedicab service waiting for passengers along the road; second, the high volume of vehicles that traverses the streets results to serious traffic congestion, including traffic violators like beating the red light of signalized intersections and right turning on a red signal. Finally, another issue that emerged from the FGDs is that a huge percentage of pedicab drivers are not residents of the study area. Non-resident pedicab drivers who come from nearby provinces were hired by a local pedicab operator because of the high demand for pedicab service in the area.

The gender issue using the Moser framework on gender role identification relates to unpacking differences in gender roles. This is one of the cornerstones of gender analysis for development, including transportation. The study revealed that

almost all the pedicab drivers are males in the study area. In assessing gender roles, it determines the question “who does what?” and identifies the role of urban women doing the second shift. This means that women are doing productive work, either paid or not, and reproductive work, such as household maintenance tasks. In this case, men in the study area largely focus on productive work (driving pedicab), whereas low-income women undertake both productive and reproductive roles. In the case of sidewalk vending, both men and women residents are engaged in the productive work of selling products, but urban men earn more than their women counterparts.

The second tool of the Moser framework aims at looking into the processes and relationships in the use of resources. It goes beyond the typical transport planning approaches that largely focus on travel and transport use patterns alone by unpacking the power of relationships that inform who has access and control over resources and mobility patterns. The study shows that women are the owners of these pedicabs or the ones managing them, whereas men are the ones driving. Looking at whose controlling the resources has implications for the decision-

making powers that can help predict the benefits or burdens resulting from transport and mobility. There were studies highlighting that transport interventions contribute to improving women’s transportation burden—either maintaining the status quo or worsening the situation by not bothering the question of power over resources (Venter & Mashiri, 2007). The case of the ownership of resources (pedicabs) by women in the study area determines who makes the decision.

Moreover, understanding the factors that affect travel behavior and characteristics of people may help enhance the knowledge about transport-related instruments and policies. The social aspect of transportation can be further studied by looking into the literature about transport-related information and data for obtaining socioeconomic and demographic variables, information on travel purpose and mode selection for characterizing travel patterns, and information on private vehicles and generated trips for forecasting models. The emphasis of this paper is on highlighting the different social and gender issues that are confronting the community residents in the study area.

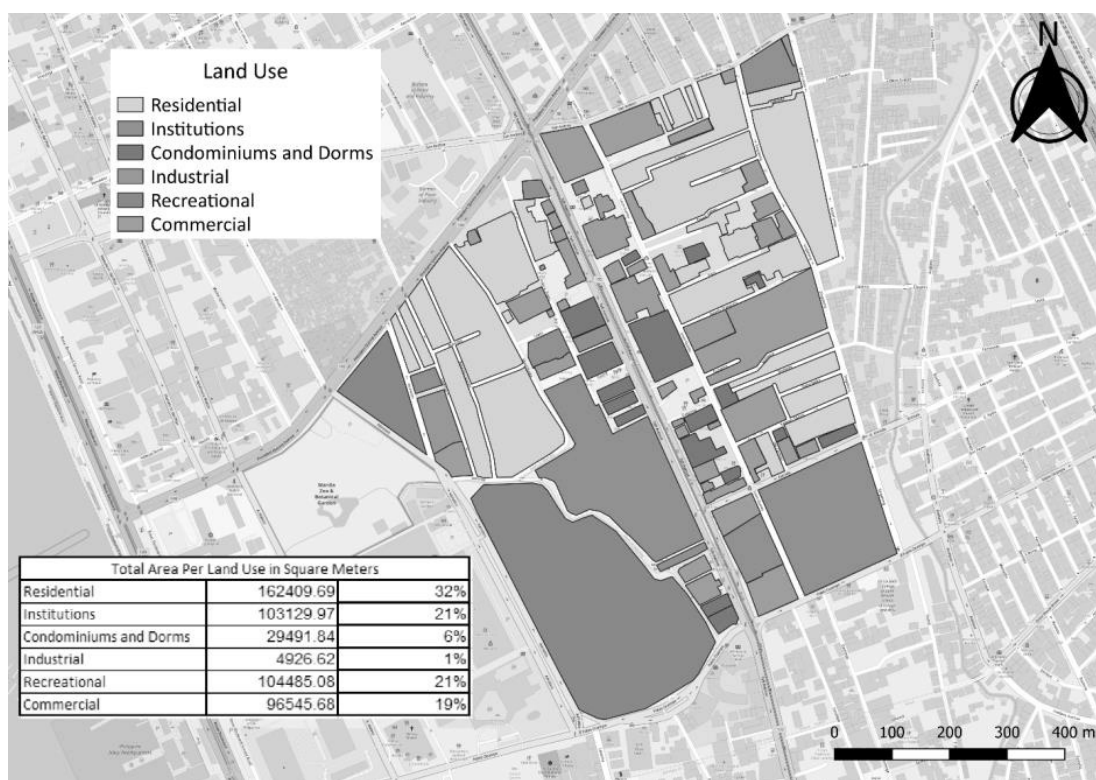


Figure 3. Land Use Map of Malate District, City of Manila

Metro Manila's urban landscape is made up of university campuses, high-rise condominiums, business structures, rail transit, and main roads—resulting in local congestion and traffic problems (Japan International Cooperation Agency, 1999), and this is truly relevant in the Malate District of Manila. Figure 3 shows the estimated dominant land uses in the Malate District of the City of Manila. More than 30% are residential, followed by both institutional and recreational at more than 20%. Commercial establishments that cater to students and employees of universities and colleges in the area follow closely at 19% of the total area. An increase in population and expansion of economic activities have occurred in a disproportionately small land area of Manila (Yves, 2013). Locals in the cities have responded to urbanization and economic progress through various means, mostly in the informal sector of the country, which includes economic activities and transportation systems that are not recognized (not legally) and do not receive government support and services.

The city also accommodates a significant number of transport vehicles outweighing the capacity of its road network (Japan International Cooperation Agency, 1999; Ragasa, n.d.). The remarkably high volume of vehicles as well as street vendors and pedicabs, among others, compete for the limited road space that congests city roads. The worsening traffic situation in the city threatens the well-being and livelihood of the people. This also contributes to safety conditions that translate to the citizens' overall quality of life (Lim et al., 2020). The problems result in worsened travel conditions, air pollution, public transport discomfort, and vehicle congestion (Japan International Cooperation Agency, 1999).

Increasing Volume of Vehicles

In 2018, there were approximately 2.8 million registered motor vehicles in National Capital Region (NCR). Vehicle ownership increased rapidly in the past 13 years, with an average of 6.9% per year (Land Transportation Office, 2019). In the final report of Mega Manila Region Highway Network Intelligent Transport System (ITS) Integration Project (2013), national road problems and issues are caused by the large traffic volumes in Metro Manila. A large percentage of motor vehicles operate in a relatively small land area (Roth, 2001) and limited road network of Metro Manila (Yves, 2013). Studies suggest that

the high volume of vehicles will continue to grow as the economy and population increase (Roth, 2001). The Philippines continues to be a lucrative market for motor vehicles as it posted the second-largest growth in sales in ASEAN (ASEAN Automotive Federation, 2021). The COVID-19 pandemic has led to the implementation of reduced capacity for public transportation, which in turn translated to alternative modes, such as a shift to private vehicles, thereby increasing road use.

The very high number of vehicles using the Metro Manila roads results in traffic congestion. Consequently, economic loss is estimated at US\$25.55 billion, which is about 7.77% of the country's GDP in 2018, which could increase up to US\$39.42 billion in 2035 if the situation remains unresolved (Japan International Cooperation Agency, 2018). The high volume of vehicles in Metro Manila is evident in the study area. During the FGDs, participants shared that the high volume of vehicles is comprised of jeepneys, pedicabs, private motorized vehicles, and motorcycles. These motorized and nonmotorized vehicles traverse daily, doing their usual activities along the highways of the district.

Road Obstructions

The problem of road obstruction was mainly due to illegal parking of both motorized and nonmotorized vehicles along major road corridors in the study area.

Motorized Vehicles

The participants in the FGDs agreed that the vehicles obstructing the roads of the study areas are mostly comprised of privately owned cars, buses, and jeepneys. Many of these illegally parked cars are owned by residents who live in nearby condominiums as well as those who are waiting for students to be picked up during class dismissal, usually near the gates of the universities. The private motorized vehicles are reportedly majority-owned by the students' households enrolled in the universities and colleges in the study area. Based on a household information survey conducted in the study area with 1,266 respondents, only 2.6% of the households own a vehicle (Fillone et al., 2020). The participants said that privately owned vehicles park illegally on streets due to a lack of available parking spaces. On the other hand, public transport vehicles such as buses and jeepneys obstruct roads because of their unpredictable behavior

of picking up and dropping off passengers anywhere along the road, disrupting traffic flow.

Nonmotorized Vehicles

According to the participants of the FGDs, pedicabs in the study area that are parked other than in their temporarily assigned locations add up to the entirety of illegally parked vehicles, which further aggravates the obstructions on the roads. They also reported that the demand for pedicab services that jostle among themselves to get to passengers consequently resulted in obstructed lanes, which hinder the flow of moving vehicles.

On-Street Illegal Parking

Presence of Street Vendors

In Manila, Philippines, since the early 2000s, there have been about 15,000 street vendors in Metro Manila, but only 5,000 are legal (Bhowmik, 2005). In Metro Manila, street vendors worsen the existing problems caused by the scant spaces allotted for sidewalks. Several areas of Metro Manila, such as Baclaran, Monumento, Blumentritt, and Divisoria, are congested with street vendors. The narrow streets located in those areas are packed with street vendors. In Barangay Baclaran alone, there are about 5,000 vendors (fixed and ambulant vendors) along the streets (Light Rail Transit Authority, 2008). Recio (2020) reported that there are still different estimates of the

current numbers of Baclaran vendors. It is observed that local government units find it difficult to know the exact number of street vendors and thus, also resulting in the absence of sex-disaggregated data. This may be addressed through the Magna Carta of Women (Republic Act No. 9710), which includes a Gender and Development Program (GAD) that aims to include women's as well as men's concerns and experiences as "an integral dimension of the design, implementation, monitoring, and evaluation of policies, programs and projects in all social, political, civil, and economic spheres so that women and men benefit equally" (GSIS, n.d.).

In the report of the Preparatory Survey on Promotion of Transit-Oriented Development (TOD) for Urban Railway in the Republic of the Philippines, 64% of vendors had business permits issued by the Manila City Government (Japan International Cooperation Agency, 2015). From a convenient sampling survey of vendors in Malate District, Table 2 provides the personal characteristics of these vendors. The gender of these vendors is almost even between male and female, whereas all age groups are represented even beyond 60 years old. More than 50% of them are single. It is also interesting to note that other important behavior such as selling hours (mean of 11.53 hours), years of doing the trade (mean of almost 9 years), average gross income (mean of around PhP1,435), "rent" of space (around PhP41), and whether they "pay" or provide grease money to the police or local enforcers (mean

Table 2

Personal Characteristics of Vendors in Malate District, City of Manila

Personal Characteristics (N = 50)		No. of Respondents	%
Gender	Male	27	54
	Female	23	46
Age Group	Below 20	6	12
	20 to 29	14	28
	30 to 39	5	10
	40 to 49	13	26
	50 to 59	5	10
	60 and above	7	14
Civil Status	Single	26	52
	Married	14	28
	Others	10	20

of around PhP114) when they conduct their trade are shown in Table 3. Only 14 out of 50 respondents pay the “rent” of space, and 11 out of 50 provide grease money to the police or local enforcers. These results show that, in general, roadside vendors are already entrenched or part and parcel of the streets in Malate District and, to some degree, being tolerated by people in authority (i.e., police, local traffic enforcers) where the latter are also benefiting from the formers’ trade.

The vendors in the study area are further disaggregated by gender, as shown in Table 4, to make a better comparison between their characteristics. As shown, female vendors are older by nearly eight years, and it follows that they have more than three years of experience in selling on the streets. Female vendors also have slightly longer hours of selling daily. In spite of these, on average, female vendors earn around PhP300 less than their male counterparts.

Equally, seven of both genders pay rent, but females pay less than PhP10 on average. Also, only four of the females, compared to seven of the males, “pay” grease money to local authorities, and the former pay lower by more than PhP40 than the latter. From these results, we may get the idea that local authorities are more compassionate to female vendors.

In summary, street vending is not a female-dominated livelihood. However, results showed that female vendors are older and have more experience selling on the streets. They also have slightly longer hours of selling on a daily basis. Despite these, on average, female vendors earn less than their male counterparts. However, all is not lost on women vendors. Results showed that local authorities are more compassionate to them given the lower “rent” they pay on the sidewalk space they occupy, including the grease money they give, whether illegally or informally.

Table 3

Vendors Characteristics Related to Their Trade

Vendor Characteristics	Mean	S.D.	Min.	Max.
No. of Hours Selling in the Streets (N = 50)	11.53	3.49	6	20
No. of Years as Street Vendor (N = 50)	8.96	10.24	0	47
Average Gross Income per Day (PhP ¹) (N = 49)	1434.7	1251.67	200	5000
Amount of “rent” to use space (N=14) in PhP	40.71	51.21	10	200
“Pay” or grease money to police or local enforcers (N = 11) in PhP	113.64	109.39	10	300

¹ PhP 1 = USD 0.20

Table 4

Comparison of Vendors by Gender

Vendor Characteristics	Male (N=27)	Female (N=23)
Mean Age, in years	34.96	42.83
Mean No. of Years as Street Vendor, in years	7.33	10.87
No. of Hours Selling in the Streets, in hours	11.33	11.76
Average Gross Income per Day (Php) (N = 49)	1,576.93	1,261.36
Payment/rent made for selling in the current location (Count, %)	7 (25.93%)	7 (30.43%)
Amount of “rent” to use space, in PhP	45.71	35.71
“Pay” grease money to police or local enforcers (Count, %)	7 (25.93%)	4 (17.39%)
Amount paid in grease money to police or local enforcers, in Php	128.57	87.5

Government Interventions to Address Transportation Issues

Maximizing the Use of Pedicabs

Pedicab driving is considered an informal nonmotorized transport. Pedicab operations exist in Asia, Europe, and North America, and recently in Australia and New Zealand (Rahman et al., 2010). There are different modes of transportation in the country: mass transit (in Metro Manila), bus, jeepney, UV express, tricycle, and pedicab. Tricycles and pedicabs serve for short distances routes within the inner roads of the city (Pascual, 2006).

Since 1990, jeepney, tricycle, and pedicab drivers have made up many of the millions of transport sector workers in Metro Manila and central and southern Luzon. In 1991, 5,500 pedicabs operated on the roads of Metro Manila. The rapid increase in pedicab operations in Manila began in the same year and pedicab drivers must have increased by approximately 10,000 by this present year. Since then, no survey has been conducted to gather statistics on pedicab units nationwide (Pascual, 2006). In 1999, most pedicab units were located in Divisoria, Malate, and Intramuros

(Bell & Kuranami, 1995). Fillone and Mateo-Babiano (2018) compared the use of pedicab and walking during the first and last mile of travel of individuals in Malate and Ermita, Manila where they found that women, including those who were accompanied by children, preferred to use pedicabs. The findings of the study by Guillen (2000) showed that there are more pedicabs in Metro Manila or in highly urbanized or urbanizing areas than in less urbanized ones, and this is still relevant today. The importance of last-mile services like pedicabs and tricycles in urban areas is highlighted by Gumasing et al.'s (2022) study on e-trike in the city of Manila.

From the results of the questionnaire survey shown in Table 5, all pedicab drivers interviewed were male. This livelihood is indeed male-dominated, and seldom can you see female pedicab drivers in Malate District. All age groups are represented, with the 50 to 59 years old having the highest at 32%, followed by 30 to 39 years old at 26%. More than half are also single, whereas around 30% are married. Like street vendors, pedicab drivers (Table 6) operate for long hours at 12.83 hours/day and with a mean of 12.36 years of being a pedicab driver. The daily pedicab rental ranges

Table 5

Personal Characteristics of Pedicab Drivers in Malate District, City of Manila

Personal Characteristics (N = 50)		No. of Respondents	%
Gender	Male	50	100
	Female	0	0
Age Group	Below 20	2	4
	20 to 29	7	14
	30 to 39	13	26
	40 to 49	9	18
	50 to 59	16	32
	60 and above	3	6
Civil Status	Single	27	54
	Married	15	30
	Others	8	16

Table 6*Pedicab Service Characteristics*

Pedicab Service Characteristics	Mean	S.D.	Min.	Max.
No. of working hours (N = 50)	12.83	2.42	8	20
No. of Years as Pedicab Driver (N = 50)	12.36	8.80	1	39
Daily Rental of Pedicab (N = 19)	66.32	36.24	50	200
Age of pedicab unit (N = 50)	10.64	9.61	1	39
Average Income per Day (PhP) (N = 49)	443.00	157.15	200	1000
Amount of “pay” to ply in the barangay	0.00	0.00	0	0
“Pay” or grease money to the police or local enforcers (N = 7)	32.29	31.68	10	100

from PhP50 to PhP200 for the 19 respondents who do not own a pedicab, and the life of pedicab units has a mean of 10.64 years. Pedicab drivers interviewed earn around PhP443/day. They do not pay the barangay officials when plying their route. However, seven pedicabs mentioned that they “pay” grease money to local enforcers and police with a mean of around PhP32 and ranges from PhP10 to PhP100.

There are several reasons attributed to the proliferation of pedicabs in urban areas. In an article by Bell and Kuranami (1995) and Guillen (2000), pedicab driving is a source of employment for poor families in the urban sector, and their income ranges from PhP1,000 to PhP3,000 monthly, which significantly increased in this study (the year 2018) to around PhP10,632 if we use the mean income per day of PhP443 multiplied by 24 days assuming they do not ply on Sundays. Pedicab driving income is lower compared to other public transportation. According to Irene et al. (2015), in Catbalogan City, Philippines, pedicab drivers were inhabitants from the city outskirts. About half of the respondents reached college level or finished college but resorted to pedicab driving due to difficulty finding a permanent job. The average income of the respondents was US\$3.5 (PhP150.00) per day, which is aligned with the previous estimates given that this is already in 2015. Dagmangy and Cordero (2017) conducted a study about the experiences of

pedicab drivers through their narratives. Some of the informants experienced ill-fated situations, leading to years of pedicab driving to meet the financial needs of their families; pedicab driving continues despite the obvious lack of physical health. In addition, the rapid growth of the figures for pedicab operations was due to a spike in oil prices resulting in passengers reverting to pedicab services in 1999 (Dagmangy & Cordero, 2017).

However, pedicabs are primarily informal and unable to meet the standard classification for public transport. Many also perceive it as a symbol of economic backwardness, although studies find this notion debatable (Gozun & Guillen, 2009). In general, besides privately owned vehicles, pedicabs have long been considered a factor in traffic problems in the Philippines (Dimitriou, 2013). Moreover, in the Philippines, pedicabs account for about 20% of all nonmotorized vehicle traffic. Pedicabs are perceived as traffic hazards, worsening traffic congestion (Bell & Kuranami, 1995). According to Irene et al. (2015), the majority of the pedicab drivers in the study area had committed traffic violations. From the questionnaire survey, pedicab drivers were also asked about the types of traffic violations they have committed and the most common are counterflowing, out-of-line, and traffic obstruction. Table 7 shows that 28 out of 50 committed traffic violations.

Table 7*Types of Pedicab Traffic Violations*

Types of Traffic Violations	Frequency	%
No Violation	22	44%
With Violations	28	56%
– Counterflow/Out of line	9	18%
– Illegal parking/Illegal terminal	7	14%
– Traffic obstruction	9	18%
– Others(Driving without proper attire, towed, traversing a main road)	3	6%
TOTAL	50	100%

In response to this, the local government units established regulations in their effort to control pedicabs. In 1990, Metro Manila Council passed Ordinance No. 6, which states that tricycles and pedicabs are limited to operating within the tertiary and subdivision roads of local governments (Tadiar, 2012). To even strengthen the control over pedicabs, the Department of Interior and Local Government (DILG) issued Memo Circular 2007-01, which prohibits tricycles and pedicabs from operating along national highways (Memorandum Circular No. 2007-01, 2007). This DILG Circular is part of the ongoing public utility vehicle (PUV) modernization program of the National Government. Manila City Government passed a regulation, Ordinance No. 8291, which states the guidelines for the operation and registration of pedicabs; the guidelines include the banning of these modes from 46 streets in Manila City (Fillone & Mateo-Babiano, 2018). Based on FGD results, pedicab drivers are aware of this regulation, but enforcement is lax and there is a tacit rule on the streets that they are being allowed as a form of livelihood given the scarcity of jobs available in the city.

In summary, driving a pedicab-for-hire is a male-dominated livelihood but women are also deeply involved in the trade, not as drivers but as managers of these fleets of pedicabs-for-hire. In line with the localization of service, say, in the barangay level,

servicing the neighborhood where most people know each other, women drivers can also be encouraged to try this form of livelihood where safety for women drivers may not be an issue. This is also to affirm the issue of non-resident pedicab drivers providing their services in the area, which should be discouraged.

Influencing Travel Behavior

There are significant factors, such as socioeconomic and demographic factors, urban form, and transportation system features, that affect the travel behavior of individuals. Choo et al. (2008) analyzed the household travel survey in Seoul Metropolitan Area (SMA). The findings revealed that job, income, age, and gender affect the simple trip chains made by individuals and that there are more simple trip chains made than complex trip chains. Choi et al. (2014) reported that income is an attribute in the equality of transportation across different districts, using the travel data in SMA. Choi et al. (2014) investigated the relationship between travel behavior and urban form, and from the results, they reported that personal characteristics greatly influence travel behavior.

Using a national-level household travel survey in the United States (Choi et al., 2014) revealed that residential density and socio-demographic variables affect the travel characteristics of people. The results showed that vehicle use and fuel consumption are influenced by the number of drivers, workers, and children in a family, along with income, race, and ethnicity. Choi et al. (2014) revealed in their study that the local environment is attributed to the daily travel patterns of the people, based on their analysis of New York subway ridership. Ng & Acker (2018) compared the differences in travel patterns between United States and United Kingdom and found that vehicle ownership and urban form affect the differences between the two countries by utilizing data from the U.S. National Personal Transport Survey (NPTS) and U.K. National Transport Survey. Travel decisions are affected by “demographic change, urban density, connectivity and transit infrastructure” as reported by (Choi et al., 2014, p. 4). Hence, another way to address transportation issues in Manila City is by understanding and eventually influencing the travel behavior of drivers and commuters.

Proposed Solutions to Social Issues on Transportation

Several studies implement different solutions for illegal parking. Among these is paid parking. The study results showed that on-street parking management is effective in dealing with illegal on-street parking (Prajapatil et al., 2017). The study reported that an increase in pricing manipulates parking behavior (Zhang, 2014). Many countries have implemented a parking management paradigm that identifies the extent of illegal parking that should be legalized (Thanh & Friedrich, 2017). A toolkit is prepared for the solution for on-street parking management.

The paper proposes different management steps, including giving knowledge and awareness to communities about parking; building institutions for parking management, deciding allowable locations and time of parking locations and making these visible, building parking enforcement, prioritizing parking management, conducting surveys, applying on-street parking pricing, improving enforcement and parking design, refining pricing (according to zones and time-of-day), and improving and adjusting to problems (Barter, 2016).

Because of the alarming and problematic urban situation in the barangays surrounding Taft Avenue in Malate as well as the rest of the City of Manila and perhaps other Metro Manila cities, solutions are carried out to address these problems. Suggestions were also raised during the FGDs. These solutions include the relocation of street vendors, supporting PUV modernization program, and other said activities.

The authorities in the study area of the FGDs intend to relocate ambulant vendors to alleviate traffic problems; clearing of the road may widen the intended spaces for moving vehicles. Ambulant vendors are encouraged to coordinate with the City of Manila. It is suggested that vendors should obtain legal permits and other requirements. The legal permits could help barangays identify the vendors and where they can be relocated. Ambulant vendors may inquire where they can be relocated. Designated streets may be transformed into “night markets” for the relocated ambulant vendors.

When the street vendors were asked about being relocated, first, they emphasized that their contribution

is less compared to the contribution of privately owned and illegally parked vehicles to traffic problems. Second, if they were indeed relocated, they suggest that the relocation areas should be economically viable for their businesses.

During the focus group discussions, the introduction of e-trikes was presented. The utilization of these vehicles is also part of the strategy of the PUV Modernization Program. The operation of e-trikes is generally acceptable among the participants. The acceptance is due to the benefits e-trikes could bring to the community. For instance, e-trikes can minimize air pollution. Moreover, certain concerns were raised about the implementation of e-trikes. First, pedicab and *kuliglig* drivers will transition to operating e-trikes. However, most of these drivers reportedly have no driver's licenses. If e-trike operations are implemented, it would be necessary to have regulations and to conduct seminars discussing basic traffic rules. Second, passenger demand for e-trike should be studied.

In general, all agreed that stakeholders who cause traffic congestion in the community should contribute to traffic alleviation. The universities in the district should take part in relieving traffic problems, such as being held accountable or involving the traffic-generated aspect in the accreditation processes of universities. Condominium management should ensure the allocation of parking spaces for their clients. Private car users, who are usually condominium residents, should be urged to ensure that a parking space is allotted for each vehicle owned. Furthermore, the MMDA should extend its efforts to reduce illegal parking violations. Barangay officials have begun removing unnecessary roadblocks in their area of jurisdiction. Parked cars left in the streets also make up some of the road obstructions and should be immediately removed.

Other suggestions include the installation of CCTVs in certain locations to apprehend traffic violators. Also, there is a need to conduct data gathering to include collective information about traffic, which encompasses the gathering of the volume of vehicles, bottleneck locations, and pedestrian counts to be utilized for traffic-related concerns and studies. Assignment of fixed jeepney stop locations should be introduced; this would promote discipline among drivers and commuters.

Conclusions and Recommendations

The study was able to identify significant issues and concerns as well as proposed solutions to traffic congestion problems experienced in the Malate District, City of Manila, that can be used to enforce a TDZ to improve vehicular flow and increase the capacity of the roads while considering social and gender issues as experienced by the vendors and pedicab drivers in the study area.

The results indicated that these informal sectors are greatly entrenched as they practice their trade in the area. They have been present in the area for around nine years for street vendors and more than 12 years for pedicab drivers. Street vendors and pedicab drivers work long hours spending more than 12 hours per day on average plying their trade, which would mean that they are permanent fixtures for most times of the day, contributing to traffic congestion in the study area. Their average daily earnings indicated that they earn near or above the daily minimum average wage rate (PhP500 to PhP537 in 2019) in Metro Manila. The majority of pedicab drivers interviewed are confirmed to violate traffic rules and regulations, which contribute further to the congestion problem in the area.

This study attempted to investigate the gender role identification and disaggregating control of resources and decision-making within the households and community among pedicab drivers and street vendors in the TDZ in Malate. In the study area, pedicab drivers are men, but the pedicabs are either owned or managed by women. Both men and women engaged in street vending. Although women are more experienced in selling, men earn more than them. In future studies, the Moser framework could benefit from increased attention to variables intersecting gender and mobility issues. It would also be good to consider the other tools of the Moser framework with special attention to the differences between subgroups of women and subgroups of men.

The absence of sex-disaggregated data among city governments in the Philippines remains a priority concern for planning purposes for transportation and mobility. The sex-disaggregated data will be useful for policy planning and program development. Gender equality and women empowerment are the main ideas being advanced by the Gender and Development (GAD). The issues and problems in Malate District are similar to those experienced in other cities in

developing countries. The increasing volume of vehicles using limited road capacities is exacerbated by uncontrolled on-street parking by private cars (whether owned by condominium owners without parking spaces or private cars waiting for students during class dismissal near university gates), ambulant vendors occupying pedestrian sidewalks, pedicab drivers jostling for road space as they wait and pick up passengers, as well as uncontrolled service operation of public transport like jeepneys, UV express, and buses that drop off and pick up passengers anywhere along the road. They all contributed to the chaos happening along the streets of Malate District. A TDZ can be introduced to address these issues and problems.

In line with the TDZ, several strategies can be introduced, which may be government-led and with support from civil society, including the universities' administrations in the study area. These initiatives to manage the streets in Malate District aim to improve traffic flow along roads and pedestrian movement along sidewalks while instilling discipline in all road users, including pedestrians. By removing pedicabs and tricycles along the main thoroughfare and properly distributing and allocating them to specific local streets, their livelihood can be preserved. Providing priority to local residents who would like to offer pedicab service, including women drivers, should be supported by local legislation. The introduction of e-trikes, along with the necessary training and driver education, can help improve driver and passenger safety. Regulatory measures such as franchise ownership and driver's license should also be imposed. The local government unit should also provide infrastructure for proper stops and charging stations for e-trikes to promote the shift towards e-trikes. It is important to involve the drivers and pedicab owners through dialogue with the local government to ensure that their concerns are addressed. Ambulant vendors should be removed from using the pedestrian sidewalks to not hamper the movement of pedestrians, especially along main thoroughfares, and they can be provided spaces along open lots for temporary use or along roads with less traffic. A night market can also be introduced in a strategic street segment catering to students and locals in the area. With regards to the overspilling of private cars parking along the streets that are owned by condominium owners, there is a need to update the parking space requirements of condominiums under the National Building Code to take this into consideration. Strict enforcement of no

parking regulations for waiting and parked cars near university gates is needed to discourage this behavior. When the pandemic is over and the situation is back to normal, university students, through a change in travel behavior, can be encouraged to use the light rail system and can be picked up by their chauffeured cars in other LRT stations located along streets that are not congested.

Future research can explore simulation techniques to model the behavior of various agents within the TDZ. These include traffic signal optimization, the adjustment in the circulation system like introducing more one-way streets, introducing pedestrian streets with space allocated for vendors, and allowing curb parking on local streets with low vehicular flows during certain times of the day, among others. This will further give insights on how to improve and introduce rules in the TDZ. In addition, it is recommended to partner with relevant sectors or institutions such as health, education, tourism, or work. These are the likely trip purposes of men and women when they travel within the city where opportunities are available for the meaningful participation of women in transport and mobility study. This includes both women city residents and women experts on sustainable transportation and mobility.

Declaration of Ownership

This report is our original work.

Conflict of Interest

None.

Ethical Clearance

This study was approved by our institution.

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