Characteristics of Ridesharing as a Sustainable Transport Tool in Metro Manila

Jose Regin F. Regidor and Ma Sheilah G. Napalang

Abstract The increasing requirement for mobility in urban centers and the declining level of service of public transportation has led to worsening congestion. The introduction of smartphone application-based modes of transportation has been described as an innovative strategy to address the problem. This paper presents the outcomes of studies on ridesharing in Metro Manila where ridesharing services are classified under Transport Network Services (TNCs). The main objective is to determine the reasons behind the popularity of ridesharing services, specifically Uber and GrabCar, in Metro Manila, and the corresponding decline of preference and patronage of conventional taxis. A comparative analysis of TNCs and conventional taxis is presented using key indicators. These include travel speed, reliability, passenger expense, and quality of service. For completeness, the study included GrabTaxi services, which represented a basic upgrade of conventional taxis through an app-based system designed to facilitate getting rides. Travel diaries from regular users of ridesharing services were collected and analyzed. Other surveys performed included perception surveys among commuters using TNCs and conventional taxis. Based from the results of the analysis, ridesharing services, specifically Uber and GrabCar are preferred over conventional taxis. TNCs perform better in terms of reliability and safety. Uber and GrabCar were found to have better quality of service compared to conventional taxis. Meanwhile, it was also found that the advantages and attractiveness of ridesharing are very similar to app-enhanced taxis (i.e., GrabTaxi). The study presents recommendations on how both ridesharing and conventional taxis may be improved in the context of sustainable transport as ridesharing is perceived to reduce dependence on private cars but at the same time attracts commuters away from other public transport modes in

J. R. F. Regidor (✉)
Institute of Civil Engineering, College of Engineering, University of the Philippines, Diliman, 1101 Quezon City, Philippines
e-mail: jfregidor@up.edu.ph

M. S. G. Napalang
School of Urban and Regional Planning, University of the Philippines, Diliman, 1101 Quezon City, Philippines
e-mail: mgnapalang@up.edu.ph

W. Leal Filho et al. (eds.), *Sustainable Development Research in the Asia-Pacific Region*, World Sustainability Series, https://doi.org/10.1007/978-3-319-73293-0_22

Metro Manila, including the necessity of government to regulate certain aspects of the TNC operations.

Keywords Ridesharing · Uber · Grab · Conventional taxis · Quality of service Reliability

1 Introduction

The United Nations (2012) estimates that 50% of the world's population now reside in urban centers and projects that this will reach 80% by 2050. The Philippines is an example of this phenomenon where urban population increased from 29% in 1955 to 45% in 2015. By 2050, it is projected that the urban population of the Philippines will reach 60%. This increase in urban population has consequently increased the need for mobility in urban centers. In a study conducted by the Japan International Cooperation Agency (JICA 2014), the traffic demand in Metro Manila was estimated at 12.8 million trips per day and 69% of these total trips use public transportation. However, transportation infrastructure development is slow and many projects including much-delayed mass transit lines are only beginning to be constructed, in the final stages of design or scheduled for bidding out for the private sector to implement. Due to this, innovative application-based modes of transportation have become popular in key urban centers in the Philippines, particularly in Metro Manila where the urban transportation problem is perceived to be most severe.

This paper seeks to describe the characteristics of application-based modes of public transportation currently operating in the Philippines. Issues and concerns pertaining to their operations are identified and discussed. The paper also attempts to evaluate how and if these modes contribute to the promotion of sustainable transportation. Included, too, are discussions on the role and responses of the government in as far as regulation is concerned.

2 Sustainable Transportation

Although there are several definitions of sustainable transportation found in literature, this paper adopts that of the Centre for Sustainable Transportation (CST 2005, as quoted by Littman 2016, p. 8), which reads:

A sustainable transportation system is one that:

– *Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations;*

- *Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy;*
- *Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.*

The above quoted characterization of sustainable transportation is accepted by many experts including the Transportation Research Board's (TRB) Sustainable Transportation Indicators Subcommittee and the European Council of Ministers of Transport (Litman 2016). This paper will focus on four aspects of sustainable transportation in its analysis of emerging modes of public transportation: (1) efficiency, as manifested in reliability of service, (2) safety, (3) affordability, and (4) minimization of consumption of non-renewable resources such as fuel by reducing congestion.

3 Ridesharing and Ridesourcing

Ridesharing refers to a mode of transportation in which individual travelers share a vehicle for a trip and split travel costs such as gas, toll, and parking fees with others that have similar itineraries and time schedules. Conceptually, ridesharing combines the flexibility and speed of private cars with the reduced cost of fixed line systems, at the expense of convenience (Furuhata et al. 2013). Ridesharing is a powerful strategy to address traffic congestion, fuel emissions and gasoline dependency. A simple concept is followed: fill up empty seats to maximize the vehicle's occupancy potential and reduce vehicles on the roadway. Unlike taxis and Transportation Network Companies (TNCs), drivers are not motivated by profit but by reduced travel cost. Passengers also have a common origin and destination with the driver (Rayle et al. 2014; Shaheen 2014).

On the other hand, ridesourcing companies utilize technology to provide on-demand transport services with the promise of higher reliability and reduced wait times (Rayle et al. 2014). These are generally referred to Transportation Network Companies (TNCs) and defined as 'an organization that provides pre-arranged transportation services for compensation using an internet-based technology application or a digital platform technology to connect passengers with drivers using their own personal vehicles' (DOTC 2015).

4 App-Based Public Transportation in Metro Manila

Based on the definition given in the previous sub-section, the more prominent innovation in the transportation system operating in the Philippines is ridesourcing as described in the following sections.

4.1 Grab

Grab started with GrabTaxi, a subsidiary of Malaysia's MyTeksi, which is a smartphone-based hailing and booking service first introduced in Metro Manila in 2013 (Grab Philippines). The service was later opened in three other major urban centers, Cebu City, Davao City, and Iloilo City, and expanded its operations to other cities as well. The company has expanded its services to include GrabCar (private cars that can be hired through the application on demand and is much like Uber) and Grab Express (express delivery service). At one time, the company attempted to provide motorcycle taxi service on demand via GrabBike. This was disallowed by the LTFRB as motorcycle taxis are officially illegal in the Philippines.

4.2 Uber

Uber was introduced in the Philippines in 2013. Unlike GrabTaxi, Uber provides pre-arranged transportation services for compensation, using an online-enabled application or platform technology to connect passengers with drivers using their own personal, non-commercial vehicles (Dela Paz 2015).

In 2016, Uber introduced its ride-sharing services, UberPool and UberHop. UberPool matches riders 'coming from the same area heading at the same direction at the same time' for more efficient energy use and reduction of fuel emissions (UberPool 2016a). On the other hand, UberHop 'enables riders heading in the same direction to share a ride during rush hour for a flat fare' (UberHop 2016b). As of April 2016, there were 9 pick-up and drop-off points in Quezon City, Mandaluyong City, and Makati City during the morning service and 9 "pick-up" and "drop-off" points in the three cities, with Bonifacio Global City (BGC), a mixed use development, as an additional area for the evening service.

4.3 Other Ridesharing and Ridesourcing Services

Another service available in Metro Manila is Wunder, a carpooling service, which was introduced in 2016. This service was established in Germany and is probably operating closest to the original concept of carpooling in that it mainly depends on available vehicles for the typical commutes in the morning (e.g., home to workplace) and afternoon (e.g., workplace to home). That is, vehicles generally have only two trips per day and do not roam the streets for passengers like Grab and Uber vehicles. It claims the following benefits (Wunder 2016):

- Sharing costs and saving money
- Meeting new people
- Reducing the number of cars on the road
- Avoid crowded public transportation
- Helping the environment

A new entrant into the transportation market in Metro Manila is the ridesourcing motorcycle taxi service called "Angkas" (backride in the local language). It is unclear who developed or manages the smartphone application for this service. However, it is enterprising enough to take advantage of the worsening traffic situation in Metro Manila coupled with the surge in the number of motorcycles. Motorcycle taxis are generally illegal in the Philippines and particularly in urban areas mainly due to safety concerns but are unregulated yet popular in rural areas where there is a lack of public transport services and poor road infrastructure. Grab, for example, ceased operations of its GrabBike when the LTFRB issued a memo reminding about the prohibition against such services for public transportation.

5 Government Regulations of TNC/TNVS

In the Philippines, the Land Transportation Franchising and Regulatory Board (LTFRB), a line agency under the Department of Transportation (DOTr) is tasked with economic regulatory functions for road public transport services. It has the authority over public land transport services in terms of:

a. Route/area of operation prescription and regulation in terms of viable route capacities;
b. Issuance of the Certificate of Public Convenience (CPC), otherwise called as franchise, to entities worthy to be public transport operators with corresponding franchising terms and conditions;
c. Prescription of fares/charges on public transport services;
d. Promulgation and enforcement of rules and regulations pertaining to public transport service operations.

Table 1 TNC/TNVS requirements

For submission upon application	For submission upon hearing
• Formal offer of documentary evidence • Motion for Application of Provision Authority • Filled out application form • Publication in major newspapers • Proof of Citizenship • Proof of Good Standing (TNC) • Proof of Accreditation of the Vehicle (TNC)	• Photocopy of Passenger Insurance Policy (LTFRB Board Accredited Insurance Provider) • List of TNVS drivers and vehicles • 2 copies of operator data sheet with recent 2″ × 2″ picture • Statement of Financial Capability Form and Proof of Entries • ITR or BIR Certificate of Registration • Certificate of Business Name (DTI) • Location Map of Garage or Address of Operator
Requirements for the applicants driver/s	Requirements for the applicant's vehicle
• Proof of accreditation of the Driver by TNC • Professional Drivers' License • NBI Clearance • PNP Clearance	• OR/CR with Year Model or Delivery Receipt/Sales Invoice

The Agency is tasked to ensure the safety of passengers as well as safeguard them against sudden increase in fares, beyond their paying capacity. Towards the fulfillment of these tasks, the LTFRB monitors the entry of new public transportation providers.

Hence, when e-hailing transport services where introduced in the Philippines, the LTFRB issued guidelines in the form of four Memorandum Orders (LTFRB 2015a, b, c, d) to regulate the operation of the two key players: Transportation Network Companies (TNCs) and its contractor/partner, the Transportation Network Vehicle Service (TNVS). The requirements are summarized in Table 1.

It must be highlighted that one of the key requirements is the requirement for TNCs to obtain permit to operate is the passenger insurance coverage, which is not covered by the comprehensive vehicle insurance. Another safeguard for passenger well-being, apart from the NBI and PNP clearances, is the requirement for drivers to be accredited by the TNC, hence improving accountability. Even with the stringent regulation for entry, the number of applications for transport network vehicle service (TNVS) has ballooned to almost 30,000 in 2016 from only 3000 in 2015 (Tan 2016).

Another aspect of ridesourcing services that have been subject to deliberation for regulation is the matter of surge pricing, or the spiking of fares during peak periods due to increased demand. It was reported that during the Christmas rush in 2016, surge prices in Metro Manila were reported to vary between ₱2000 and ₱28,000 per ride (CNN Philippines 2016). This has prompted the LTFRB to issue a memorandum to the two prominent apps-based services in Metro Manila to put a cap on their fares. Specifically, Uber is directed "that the maximum allowable price surge

on the fare shall be twice the rates for time covered and distance travelled excluding the base fare". It likewise directed Grab Philippines to "lower its fare per kilometer from ₱12.00–₱16.00 to ₱10.00–₱14.00 depending on the type of vehicle used."

The LTFRB stopped granting franchises to Uber in July 2016 due to complaints from taxi companies. It also ordered Angkas and Wunder to cease operations due to safety concerns (i.e., absence of passenger insurance) without a proper franchise.

6 Basic Characteristics of Ridesourcing in Metro Manila

The number of TNVS vehicles has quickly overtaken the number of conventional taxis in Metro Manila. Data from the LTFRB has shown that as of 2015, for example, there were 3628 ordinary taxis registered in the National Capital Region (NCR) while TNVS units were at 9735 or almost triple the number of taxis. Almost all the TNVS units are either Uber (76.64%) or Grab (23.36%) vehicles with the exception of ordinary taxis that are registered also as GrabTaxis. It is reasonable to assume that since then, there has been a significant increase in the number of TNCs due in part to their popularity that has translated into an attractive option for those looking for income through transportation service provision.

Since it was first introduced in late 2014, the number of Uber users, as denoted by the number of sign-ups has grown to over 433,000 (Uber 2016a, b), most of whom are from within Metro Manila but with more recent registrations from surrounding provinces.

6.1 Trip Purpose

Based on the 2016 Uber Manila survey covering 1450 respondents out of the 15,360 users who received the survey instrument, the most popular trip purposes for use are commuting to work/home (67%), social activities (49%), going shopping (30%), and travelling to/from business meetings (29%). Figure 1 shows the outcomes of the survey conducted by Uber where respondents could provide multiple answers for their trip purposes. This can be compared with the results of the study by Nistal and Regidor (2016) that covered both Uber and Grab Car. Figure 1 shows the main trip purposes of Uber and Grab Car users.

6.2 Passenger Profiles, Preferences and Perceptions

Out of the total number of respondents of the Uber Manila Survey (2016), 57% do not own a car and 43% own one. Of those owning a car, 52% indicated that they are driving less and 15% stated that they have not changed frequency of driving due to Uber.

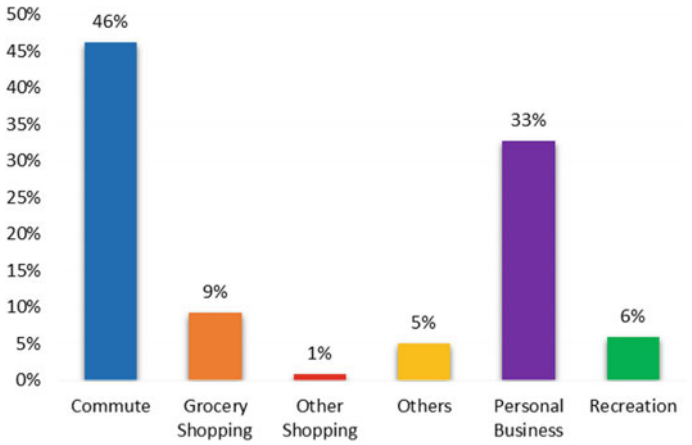

Fig. 1 Primary trip purposes of Uber and Grab Car users (Nistal and Regidor 2016, with permission)

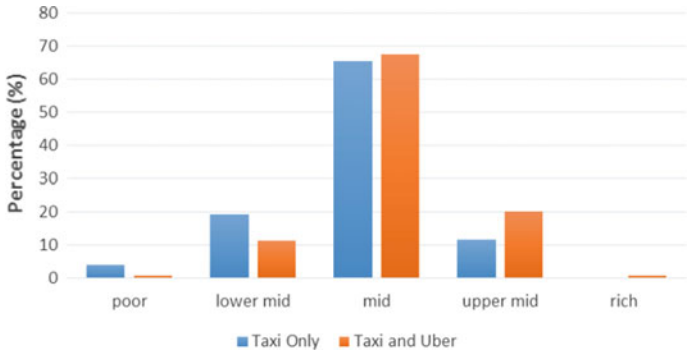

Fig. 2 Income Class Distribution of Respondents (Nistal and Regidor 2016, with permission)

The respondents' profiles in the study by Nistal and Regidor (2016) indicated that users of both ordinary taxis and Uber belong to the middle income class. This is shown in Fig. 2.

In a study by Dela Peña and Dizon (2016), the reasons for passengers preferring GrabTaxi to conventional taxis are mainly according to convenience, reliability, and safety. These are shown in Fig. 3, where responses are categorized accordingly.

Convenience appears to be the top reason for preference of app-enhanced taxis for a variety of reasons, including easy access of service through smartphone application, reducing the necessity to wait at curbside as when hailing regular taxi and the fare has already been set prior to the ride, eliminating negotiations with the driver. Incidentally, convenience was also found to be the top reason for preferring

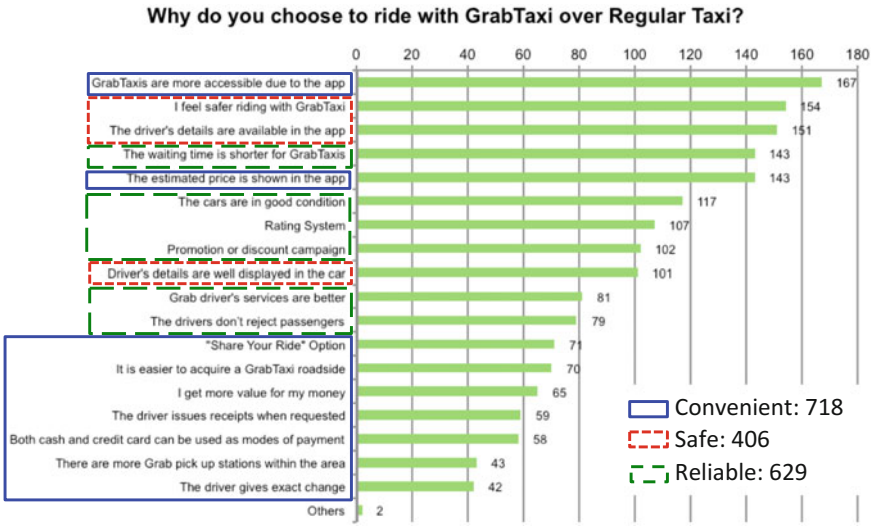

Fig. 3 Reasons for preference of GrabTaxi over regular taxi (Dela Peña and Dizon 2016, with permission)

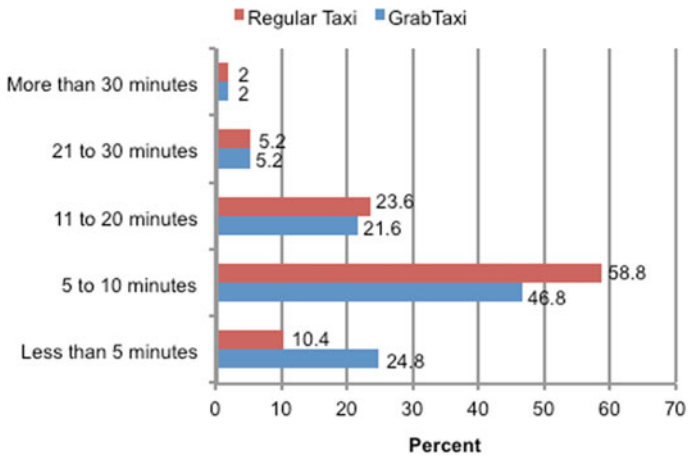

Fig. 4 Perceived waiting time for Regular Taxi and GrabTaxi (Dela Peña and Dizon 2016, with permission)

ridesourcing services like Uber and Grab in the study by Paronda, Regidor and Napalang (2016); with safety coming in second and reliability third.

One key indicator for reliability is waiting time, which in the study of Dela Peña and Dizon (2016) is perceived to be longer for regular taxis, with an average weighted mean of 10.11 min for taxis and 9.27 min for GrabTaxi as shown in Fig. 4.

Transportation Network Vehicle Services (TNVS) are perceived by commuters to have the potential to contribute to the overall transportation system efficiency by (1) improving private and public transportation connectivity, (2) make ride-sharing more convenient, and (3) reduce need for self-driving according to the survey by Uber Philippines (2016).

7 Evaluation of Ridesourcing Services

The ridesourcing services in Metro Manila can be evaluated from the perspective of sustainable transport. In this case, sustainability is discussed in terms of reliability, safety, affordability, and traffic congestion reduction. These are discussed in the following sections.

7.1 Reliability

Recent researches on e-hailing services like Uber and GrabTaxi and their variants in the Philippines have revealed that these have delivered on their promise of improved reliability and shorter waiting time for the most part. However, there have been reported instances when drivers of these services refuse to book passengers during inclement weather or holiday rush, particularly when the known destination is congested.

7.2 Safety

To date, there have only been a few reported cases of threats to the safety and security of passengers using TNVS in Metro Manila with a bigger concern expressed for drivers taking advantage of passengers during times of high demand (Lozada 2015). In fact, safety is the second highest rated reason for commuters to choose TNVS over regular taxis. However, the bigger issue is the lack of insurance for passengers using TNVS, which are largely non-commercial private vehicles. Comprehensive vehicle insurance only covers damage to own property as well as that of the third party in case of road crashes and does not include passengers.

7.3 Affordability

Ride hailing services like Grab used to allow passengers to offer tips to TNVS drivers to book a ride. This was perceived as a form of bidding practice where the

driver will have the option to choose the passenger with the highest tip. In addition, as mentioned in the sub-section on regulation of TNCs/TNVS, fares can spike drastically during peak periods and inclement weather due to surge pricing. These pricing mechanisms puts the commuters at the disadvantage and will potentially hinder those that are not willing to pay more from availing of the ridesourcing services. The 2016 Forbes survey conducted by Ford Motor Company confirmed that "*60% of the Filipino respondents said their commutes are getting more expensive, mainly because of higher fares, higher fuel costs, and choosing taxis and ride-hailing services over cheaper options*" (Tordesilla 2016). Grab removed this option for tipping and drivers can no longer use this as basis for choosing passengers.

Uber has long incorporated surge pricing in their fares. Surge pricing is basically additional charges levied on passengers for times when traffic congestion is severe and/or there are a limited number of Uber vehicles available for engagement. Surge pricing is typically used as an incentive to Uber drivers to go into an area where there is a demand for their services. This, of course, originally was premised on the assumption that most Uber drivers were part-timers and not operating like taxis.

7.4 Reduction of Congestion

Based on the data from Uber, the availability of TNVS has reduced the need for self-driving. Due to this, demand for parking spaces may be reduced. In fact, TNVS has been used in New Jersey as a parking solution (Hawkins 2016). However, it still does not address the issue of extensive utilization of low occupancy vehicles like private cars and taxis/TNVS which has been identified as one of the root causes of congestion in urban centers. It is, however, commendable that there are recent initiatives from the TNCs to move towards ridesharing (i.e., UberPool and UberHop) and improved access to mass transportation (i.e., Grab to MRT promo launched in the Metro Manila for a limited period where passengers booking a trip to any of the MRT stations will be given 50 peso discounts on their fares).

8 Conclusion

Although it has been established in the studies that have been conducted and cited in this paper that apps-based transportation services provide attractive alternatives to the riding public, it is also clear that most users are those who mainly use taxis or other public transport modes rather than commuters shifting from private vehicles (Dela Peña and Dizon 2016; Nistal 2016; Paronda et al. 2016). Add to this the industry report that TNVS have boosted car sales in the Philippines (Lorenciana 2017), with small sedan model cars being the most popular among people who have the intention of using these for Uber or Grab. As such, the experience in Metro

Manila is far from what ridesharing/ridesourcing companies claim as their contribution towards achieving sustainable transport. In fact, it can be argued that TNVS popularity has led to more vehicles roaming Metro Manila roads as their operations are practically like that of taxis, with most Uber and Grab vehicles being driven full-time rather than part-time.

It is also clear that government regulations are necessary to protect the rights and well-being of the commuters. Moreover, it is also the government's task to ensure that ridesharing and ridesourcing should be part of rational, integrated transport system, complementing other more efficient and higher-capacity modes.

To ensure that the potential benefits of TNVS are realized for a sustainable transportation system, the following issues must be addressed:

- Mode shift—it must be evaluated whether passengers shifted from lower or higher capacity vehicles. If it is the latter, then this could translate to increase in car use, thereby exacerbating congestion. On the other hand, when passengers shifted from private transport to Uber/Grab, then this does not necessarily mean less car use because the Uber/Grab car simply replaced the private vehicle in terms of road space usage.
- Trip chain—there is also a need to determine the typical trip chains for multi-mode use by commuter, whether Uber or Grab served the main mode or used for the initial or last miles.

Acknowledgements The authors would like to acknowledge the Engineering Research and Development for Technology (ERDT) Program for supporting this research. The authors express their gratitude to the Land Transportation Franchising and Regulatory Board and Uber Philippines for providing data for this study. Acknowledgements are also due to research assistants Jasper Dela Peña, Micah Angela Dizon, Patrick Nistal and Arden Paronda.

References

CNN Philippines. (2016). *LTFRB orders Grab, Uber surge cap*. CNN Philippines. October 12, 2016. http://cnnphilippines.com/news/2016/12/27/LTFRB-orders-Grab-Uber-surge-cap.html. Last accessed 6/14/2017.

Dela Paz, C. (2015). *Taxis beware: Government introduces 4 new transport categories*. Rappler Philippines. May 11, 2015. http://www.rappler.com/business/industries/infrastructure/92857-new-transport-categories. Last accessed 6/14/2017.

Dela Peña, J. A., & Dizon, M. A. P. (2016). *Comparative study of GrabTaxi and regular taxis within Metro Manila*. Unpublished research report. Institute of Civil Engineering, University of the Philippines, Philippines (53 pp).

DOTC. (2015). Department order no. 2015-011-further amending department order no. 97-1097 to promote mobility. Department of Transportation and Communications. Philippines. http://dotr.gov.ph/images/issuances/DO/2015/DO2015-11.pdf. Last accessed 12/18/2017.

Furuhata, M., Dessouky, M., Ordónez, F., Brunet, M., Wang, X., & Koenig, S. (2013). Ridesharing: The state-of-the-art and future decisions. *Transportation Research Part B, 57,* 28–46.

Grab. (2013). A Southeast Asian Journey, https://www.grab.com/ph/about/. Last accessed 6/12/2017.

Hawkins, A. J. (2016). New Jersey town decides to pay Uber instead of building a parking lot. The Verge. October 3, 2016. https://www.theverge.com/2016/10/3/13147680/uber-new-jersey-free-ride-parking-lot-train-commute. Last accessed 6/14/2017.

JICA. (2014). *Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III and Region IV-A)*. Philippines: Final Report. Japan International Cooperation Agency.

LTFRB. (2015a). Memorandum Circular No. 2015-015—Rules and Regulations to Govern the Accreditation of Transportation Network Companies (TNCs). Land Transportation Franchising and Regulatory Board. Philippines. http://ltfrb.gov.ph/media/downloadable/MC_NO._2015-015_.pdf. Last accessed 6/16/2017.

LTFRB. (2015b). Memorandum Circular No. 2015-016—Terms and Conditions for Transport Network Companies (TNCs). Land Transportation Franchising and Regulatory Board. Philippines. http://ltfrb.gov.ph/media/downloadable/MC_NO._2015-016_.pdf. Last accessed 6/16/2017.

LTFRB. (2015c). Memorandum Circular No. 2015-017—Implementing Guidelines for Transportation Network Vehicle Service (TNVS). Land Transportation Franchising and Regulatory Board. Philippines. http://ltfrb.gov.ph/media/downloadable/MC_NO._2015-017_.pdf. Last accessed 6/16/2017.

LTFRB. (2015d). Memorandum Circular No. 2015-018-Terms and Conditions of a Certificate of Public Convenience to Operate a Transportation Network Vehicle Service (TNVS). Land Transportation Franchising and Regulatory Board. Philippines. http://ltfrb.gov.ph/media/downloadable/MC_NO._2015-018_.pdf. Last accessed 6/16/2017.

Litman, T. (2016). *Well measured: Developing Indicators for sustainable and livable transport planning*. Victoria Transport Policy Institute. http://www.vtpi.org/wellmeas.pdf. Last accessed 6/14/2017.

Lorenciana, C. S. (2017). *Uber and Grab boost car sales*. The Freeman. March 3, 2017. http://www.philstar.com:8080/cebu-business/2017/03/16/1681568/uber-and-grab-boost-car-sales. Last accessed 6/13/2017.

Lozada, D. (2015). *Are Grab drivers abusing commuters' rights?* Rappler Philippines. September 9, 2015. http://www.rappler.com/move-ph/105269-grab-taxi-car-abuse-commuters-rights. Last accessed 6/13/2017.

Nistal, P. D. (2016). *Comparative study of Uber and regular taxi service characteristics*. Unpublished research report. Institute of Civil Engineering, University of the Philippines, Philippines (120 pp).

Nistal, P. D., & Regidor, J. R. F. (2016). Comparative study of Uber and regular taxi service characteristics. In *Proceedings of the 23rd Annual Conference of the Transportation Science Society of the Philippines*, Quezon City, Philippines, August 8. http://ncts.upd.edu.ph/tssp/wp-content/uploads/2016/08/Nistal-Regidor.pdf. Last accessed 6/15/2017.

Paronda, A. G. A., Regidor, J. R. F., & Napalang, M. S. G. (2016). Comparative analysis of transportation network companies (TNCs) and conventional taxi services in Metro Manila. In *Proceedings of the 23rd Annual Conference of the Transportation Science Society of the Philippines*, Quezon City, Philippines, August 8. http://ncts.upd.edu.ph/tssp/wp-content/uploads/2016/08/Paronda-et-al.pdf. Last accessed 6/15/2017.

Rayle, L., Shaheen, S., Chan, N., Dal, D., & Cervero, R. (2014). *Ap-based, on-demand Francisco*. Working Paper. University of California Transportation Center, University of California, Berkeley, United States. https://www.its.dot.gov/itspac/dec2014/ridesourcingwhitepaper_nov2014.pdf. Last accessed 6/15/2017.

Shaheen, S. (2014). Introduction to ridesharing: Overview of definitions and setting the stage. In *ACT International Conference*, University of California, Berkeley, August 5, 2014. http://actweb.org/wp-content/uploads/2014/12/ACT_Powerpoint_Ridesharing_Shaheen.pdf. Last accessed 6/15/2017.

Tan, K. J. (2016). Uber to offer fixed fare in Metro Manila starting Wednesday. ABS CBN News. October 8, 2016. http://news.abs-cbn.com/business/10/08/16/uber-to-offer-fixed-fare-in-metro-manila-starting-Wednesday. Last accessed 6/13/2017.
Tordesilla, K. (2016). 3 in 10 Filipinos dread their commute, says survey. CNN Philippines. May 12, 2016. http://cnnphilippines.com/metro/2016/05/12/filipinos-commute-worst-part-of-day-forbes-survey.html. Last accessed 6/13/2017.
Uber. (2016a). UberPool Mnl FAQs. https://newsroom.uber.com/philippines/uberpool-mnl-faqs/. Last accessed 6/13/2017.
Uber. (2016b). UberHop Pickup and Dropoff Info and FAQ. https://newsroom.uber.com/philippines/uberhop-info-and-faqs-2/. Last accessed 6/13/2017.
UN. (2012) World Urbanization Prospects, The 2011 Revision, Department of Economic and Social Affairs. United Nations. http://www.un.org/en/development/desa/population/publications/pdf/urbanization/WUP2011_Report.pdf. Last accessed 6/15/2017.
Wunder. (2016). https://www.wunder.org. Last accessed 6/12/2017.

Author Biographies

Prof. Regidor obtained his doctorate in Civil Engineering at the Yokohama National University in Japan and his master's degree at the University of the Philippines Diliman. He is currently with the Institute of Civil Engineering of the University of the Philippines Diliman. He is also a Research Fellow at the National Center for Transportation Studies of which he was Director from 2006 to 2012, and engaged in research mainly on environmentally sustainable transport, leading the study team that formulated the "National EST Strategy for the Philippines" from 2008 to 2011 with support from the UNCRD. He has also worked for the World Bank, contributing to the formulation of a "Transport Infrastructure Framework Plan and Roadmap for the Philippines" in 2013–2014, and crafting working papers on the "Politics of Transport Reform in Metro Manila" and "Promoting Partnerships for Transport Planning." He was part of a study team of experts that undertook "A Study of Long-Term Transport Action Plan for ASEAN" in a project supported by the Clean Air Asia and the Institution for Transport Policy Studies of Japan.

Dr. Napalang obtained her doctorate in Civil Engineering at the Tokyo Institute of Technology in Japan and her master's degree at the Virginia Polytechnic Institute and State University. She is member of the faculty of the School of Urban and Regional Planning and serves as the current Director of the National Center for Transportation Studies of the University of the Philippines Diliman Her research focus is on social impacts of transportation reforms and equitable transportation. She has been engaged in projects for the implementation of the Bus Rapid Transit in the Philippines and led the study to evaluate the 'Impacts of Urban Transport Reforms on the Jeepney Operations in Cebu City'. She is one of the core members of the recently established *Women in Transport Leadership (WiTL)*, a knowledge sharing network aimed at creating knowledge, fostering innovation and empowering female-to-female collaboration to address diverse transport challenges, particularly issues related to gender and transport. She was Chair of the Department of Civil Engineering at Xavier University in Cagayan De Oro City in the southern Philippines.