

Providers' and Users' Assessment of Public Transport and Facilities: Baguio City, Philippines

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Abstract: Integrated sustainable transport systems involve *appropriate* pedestrian linkages to public transport services. Determining an *appropriate* design for pedestrian linkages to public transport services requires study on the willingness of public transport users to walk, which is partly contingent to the quality and reliability of the public transport service that pedestrians attempt to connect to. Surveys were conducted in Baguio City to: (i) investigate the willingness of commuters to walk and (ii) determine the level of understanding of both commuters and jeepney drivers and operators on the proper functions of jeepney stops, public transport facilities and services. The study found that respondents are less likely to walk and require certain walking environment conditions. Moreover, commuters and jeepney drivers demonstrated a common understanding of proper functions of jeepney stops.

Keywords: Jeepney Stop, Public Transport, Opinion Survey, Likert Scale

1. INTRODUCTION

1.1 Background

Planning pedestrian environments is context-specific, as it highly requires an understanding of pedestrian needs, preferences, and factors that encourage or discourage walking. Individual characteristics, i.e. age, gender, physical ability, and income, are thus, the most fundamental elements that determine the decision to walk. Moreover, major considerations include pedestrian perceptions on: quality of infrastructure, e.g. pavement characteristics (Dixon 1996), shaded walkways (Jiang, Zegras, Mehndiratta 2012); and walking environment attributes that are valued as essential, e.g. busy area, cleanliness, trees, street art (Owen et al. 2004). Pedestrian accessibility and connectivity to different places and facilities are also major influencing factors. Incorporating such considerations in planning public transport systems have found to improve the level of service of public transport facilities, including public transport stops (O'Sullivan and Morrall 1996; Soria, Talavera 2013) in order to cater to pedestrian demand for quality public transport services and infrastructure.

Urban public transport in the Philippines is dominated by the jeepneys. Table 1 shows the modal share in the peak hours of the morning in Baguio City, wherein jeepneys and

walking are the dominant means of transport.

Table 1. Travel Activity for Morning Peak Hours, Baguio City, 2012

Mode	Citywide mode share of person-trips (in %)	Average person-trip length (in km)	Average occupancy (passenger per vehicle trip)
Walking	10.00	0.44	--
Car	8.50	4-5	2.64
PUJ	74.00	3-4	17.78
Taxi	3.30	4-5	2.41
Minibus	2.00	70	21
Motorcycle	2.00	4-5	1.37

Source: de Guzman, 2012, as cited in USAID, n.d.

With an annual growth rate of 6.19% from 2000-2008, a total of 4,271 jeepney units from 108 jeepney lines serviced Baguio City and its neighboring cities in 2012. Table 2 shows that jeepneys are clustered into trunklines based on route services. Each trunkline is assigned specific loading and unloading stops and staging areas. Staging areas are spaces wherein jeepneys are allowed to queue and wait for passengers

Table 2. Jeepney routes by trunklines in Baguio City, Philippines, 2012

Trunkline	No. of Jeepney routes	No. of jeepney units	No. of loading and unloading stops	No. of units allowed in staging areas
Green	34	978	95	669
Blue	34	2072	55	357
Red	24	514	72	520
Yellow	16	707	100	285
Total	108	4,271	322	1,831

Source: Traffic and Transportation Management Committee and Mr. Perfecto Itliong Jr., President and Chairman of the Federation of Jeepney and Taxi Drivers and Operators of Baguio, Benguet and La Trinidad, 2012

Despite the designation of loading and unloading areas, compliance to jeepney stops is not strictly observed in Baguio City mainly due to gaps in physical infrastructure design, weak enforcement, and the vehicle rental arrangement or “boundary system”.

In Baguio City, jeepney stops are simply defined by a loading and unloading sign, as shown in Figure 1. Locations where jeepneys are not allowed to stop are simply defined by the *no loading and unloading sign*, as shown in Figure 2.

In general, loading and unloading stops lack basic design requirements, such as, no defined pavement markings that indicate the start and end of the loading and unloading area, resulting in unclear enforcement that promotes unorganized jeepneys crowding and queuing at the sign location (Figure 3), encroaching private vehicles (Figure 4), traffic build-up, and ultimately, an unreliable service function of the stops. Non-compliance to jeepney stops reduces the motivation for commuters to include walking particularly to public transport stops in a trip itinerary.

In addition, lack of labels that provide at the minimum, route information of jeepneys assigned to the stop also contributes to unclear enforcement of matching jeepney trunklines with designated stops and a less reliable service function, which ultimately reduces organization and planning convenience of walking trips. Lack of information is a universally

accepted major deterrent to using public transport.



Figure 1. Loading and unloading zone sign



Figure 2. No loading and unloading zone sign



Figure 3. Jeepney parked at a no loading and unloading zone



Figure 4. Private vehicle encroached on the public transport space



Figure 5. Queued jeepneys for passengers in Baguio city streets

The fundamental provision for roofed shelters and seats in jeepney stops are essential features that are lacking, resulting in inconvenience and physical difficulties when waiting for jeepneys.

Non-compliance to jeepney stops may be tolerable in routes that are sparsely populated; however, in central business districts, jeepney stops should be properly located and designed, as it is a basic and important component to enhance public transport service operation and to encourage commuters to walk. Figure 5 shows a typical jeepney terminal in Baguio City that is managed on the city streets, signifying lack of space and planning for public transport stops.

Jeepney market structure governed by the boundary system promotes on-street competition among drivers for passengers. As a consequence, commuters could be less inclined to include walking in trip itineraries since jeepney stops could be perceived to be less functional and less reliable facilities that may fall short on satisfying commuter expectations of a convenient access to public transport.

Overall, relevant major challenges identified in Baguio City include: lack of traffic facilities at critical points, lack of off-street loading and unloading stations for public utility vehicles, disproportionate volume of pedestrians on sidewalks and overpasses, uneven sidewalks due to uncoordinated design and lay-out, and undisciplined drivers and pedestrians on the streets (City Environment and Parks Management Office 2014).

Based on the 2013-2023 Comprehensive Land Use Plan of Baguio City, provision of equitable distribution and allocation of urban services, facilities, and utilities in all areas, provision of facilities to encourage walking, and rationalization of non-motorized public transport facilities are identified relevant general actions that promote walking (City Environment and Parks Management Office 2014).

1.2 Objectives and Hypotheses of the Study

The primary objective of the study is to investigate considerations on pedestrian facilities in influencing the willingness of commuters to walk in varying distances in Baguio City. The study also aimed to determine the level of understanding of commuters and jeepney drivers and operators on the proper service functions of jeepney stops, public transport services and facilities, as factors that would be able to enhance service operations, and promote walking.

The study posits that the quality of public transport services and facilities significantly promotes the inclusion of walking in a trip itinerary. Moreover, the study posits that compliance to jeepney stops, which affects trip schedule reliability, is significant features that promote public transport use.

2. LITERATURE REVIEW

The importance of a public transport stop may be overlooked in the Philippines. As Suksawang (2014) mentioned bus stops are key links in the journeys of transit riders, particularly for individuals with disabilities. Furthermore, inaccessible bus stops often prevent them from using fixed-route bus services, forcing them to use the more expensive paratransit services. While Wang, et al., (2013) evaluated the best placement of a bus stop whether at the far-side or near-side of the intersection using microscopic traffic simulation. They found that the near-side bus stop performs better under the current ordinary signal control situation while the far-side bus stop can be improved significantly by the adoption of a Bus Priority Signal

System. Pulugurtha, S.S., et al. (2011) use regression analysis based on demographics/socio-economic characteristics and land use characteristics in the selection of ideal locations for transit stops along a route. From the point of view of operators, the bus stop design guideline for Greater Manchester (2007) discussed about them to have an input into the assessment work because changes to bus stop positions could impact on bus operations. Caulfield and O'Mahony (2009) found that bus users were found to gain the highest benefit from the provision of real-time transit stop information.

Pedestrian facilities especially those that provide access to public transport stops should be conducive for walking. Wibowo, et al., (2015) evaluated the walking infrastructure and environment in Bandung City, Indonesia where they developed an index that measures the quality of the walking facilities. Ghani, N.A., et al. (2015) rated the pedestrian facilities in Malacca World Heritage Site using a pedestrian index (P-index) with four indicators – mobility, safety, facility and accessibility. Hence, the proper location of stops is also affected by the accessibility and walkability of the area. In Metro Manila, given the current condition of the pedestrian walkways, a recent study by Bongulto, et.al (2016) where they compared commuters who walk or use the pedicab as access or egress mode in the area of Malate, Manila where several jeepney service route are also available, the average walking distance was 520 meters. This result was a bit higher from the study conducted by Wibowo (2008) regarding the average walking distance to access the rail (LRT1, LRT2, and MRT3) stations which was on the average around 400 meters (See Figure 23). We can then say that in these areas people are willing to walk around 400 to 500 meters and may also be true in most parts of Metro Manila where you have these activities, land uses, and environment present. This current average walking distance could further be extended if the walking facilities could be further improved especially those going towards public transport stops.

3. METHODOLOGY

Ocular survey of existing jeepney stops was conducted in Baguio city to understand and observe how jeepneys use the stops. Similar behavior can be observed on how they use the stops akin to jeepneys in Metro Manila as mentioned previously.

Questionnaire surveys were conducted during the last week of December 2016 regarding the opinion of jeepney drivers and operators as well as commuters regarding the location and use of jeepney stops as an important part of the jeepney service and how these affect their operation as well as the behavior of commuters on the road. Another set of questionnaire survey was conducted using images to describe the quality of walkway facilities to determine the willingness of commuters to walk a certain distance which can be used to design and locate jeepney stops. Another set of questionnaire survey was conducted describing the images of jeepney stop facilities and other forms of public transport vehicles using a 5-point likert scale whose results could then be used to improve public transport services. Using images plus a statement describing the image is a better way of getting the opinion of respondents since they can appreciate better the situation.

Since face-to-face questionnaire survey was conducted, very few samples were rejected and most were due to incomplete answers to the questions. However, persons with disabilities were not asked regarding walkways since the desired outcome is first to get the assessment of the public of their general understanding of walkway facility characteristics. A more targeted survey may be done later to accommodate PWDs in further improving walkway facilities for them. After collating all the correctly answered forms, these were inputted in a spreadsheet for processing. Descriptive and statistical analyses of data regarding the

socio-economic profile of both respondents were then conducted and how these would relate to their answers.

Categorization of socio-economic profile of commuters and drivers as against their assessments was then performed. In a developing country like the Philippines, since most car users may be using less jeepney service when commuting than those without cars, the frequency of jeepney use can be used as a proxy variable to represent income categories of commuters. Driver's age and years of driving experience were evaluated with regards to their assessment of the jeepney stop. While commuter's gender and frequency of jeepney use were assessed with regards to their assessment about jeepney stops, their willingness to walk as well as their level of satisfaction with public transport modes, services and facilities. F-test (Figure 6) for equal variances (S^2_X and S^2_Y) and two-tailed t-test for means (Figure 7) between two samples at 95% level of confidence were employed to determine the statistical significance in the comparison of the means of their assessments in most of these cases.

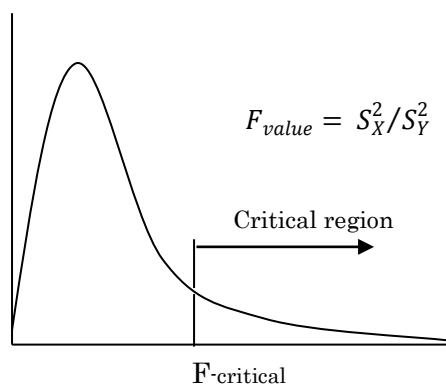


Figure 6. F-test for variance between two samples

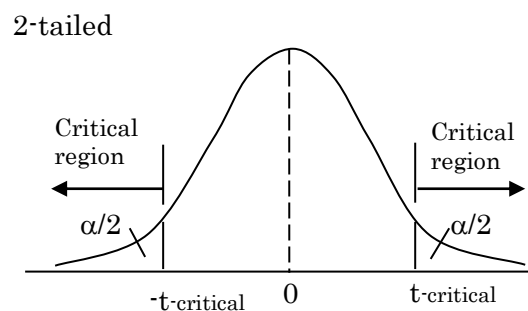


Figure 7. t-test for means between two samples

4. RESULTS AND ANALYSIS

A total of 110 jeepney drivers and operators and 100 commuters, with an average age of 40.4 and 35.9 years old respectively, participated in the surveys. Surveyed jeepney drivers are experienced drivers with an average of approximately 15 years of driving experience and operate for an average of 11.4 hours daily.

Jeepney drivers, operators and jeepney passengers provided an assessment, according to the Likert scale of 5 choices (5-Absolutely Agree, 4-Agree, 3-Neutral, 2-Disagree, 1-Absolutely Disagree), on 15 statements relating to the service function of jeepney stops. Table 3 shows the level of understanding on the socially acceptable minimum service functions of jeepney stops and the variance of the two sets of opinions through an F-Test and a T-Test.

Determining first whether the ratings of both sets are of equal or unequal variance through an F-test at 95% level of confidence and applying the t-test also at 95% level of confidence to determine a difference in the mean of the two population sets, only statement (14): *“If jeepney dispatch will be scheduled, they will be able to pick up less passengers and therefore earn less”*, although have equal variance in the opinion of drivers and passengers, their means differ with the drivers favoring the statement more. The stronger agreement to the statement by drivers reveals the prominent notion that the current boundary system, which promotes on-street competition and disinclines drivers to comply with designated stops, would generate more revenue compared to a system operating on a reliable schedule, which promotes more public transport use.

Table 3. Statistical test of jeepney stops assessment by drivers and passengers

Statement	Respondents	Mean Assess.	F-Test Two-Sample for Variances			t-Test for Means: Two-Sample Equal/Unequal Variances		
			F value	F-critical (one-tailed)	Decision	t-value	T-critical (two-tailed)	Decision
(1) Jeepneys should only stop on designated jeepney stops to drop off and pick up passengers	Driver	4.39	1.275	1.384	Equal Var.	-0.716	1.971	No Dif.
	Pax	4.46						
(2) Jeepneys that do not follow the jeepney stops to pick up and drop off passengers are causing traffic congestion on the road	Driver	4.04	0.725	0.725	Equal Var.	0.117		
	Pax	4.02						
(3) Passengers should be blamed for not properly alighting and embarking on designated jeepney stops	Driver	3.40	0.899	0.725	Unequal Var.	-0.274		
	Pax	3.44						
(4) Jeepneys should be allowed to pick up and drop off passengers anywhere along the road	Driver	2.39	0.902	0.725	Unequal Var.	1.466		
	Pax	2.17						
(5) If we strictly enforce the traffic rule that jeepneys should only pick up and drop off passengers at designated stops, many jeepneys will be caught not following this traffic rule	Driver	4.10	0.745	0.724	Unequal Var.	1.752		
	Pax	3.87						
(6) The take home revenue of jeepney drivers will suffer if we strictly enforce this traffic rule that jeepney should only pick up and drop off passengers at defined stops	Driver	3.41	1.002	1.384	Equal Var.	1.856		
	Pax	3.11						
(7) No passengers would like to wait at the jeepney stop because there are no amenities (roof, benches, etc) anyway	Driver	3.47	0.950	0.725	Unequal Var.	-0.533		
	Pax	3.55						
(8) People will wait at the jeepney stop if it is provided with amenities like roofing, benches, well-lighted at night, etc	Driver	4.12	1.193	1.384	Equal Var.	-1.584		
	Pax	4.30						
(9) People do not wait at the jeepney stop because it is not properly located along the road	Driver	3.52	0.800	0.725	Unequal Var.	0.727		
	Pax	3.42						
(10) Jeepney stops should be for exclusive use of jeepneys. Buses and UVs should also have their own stops	Driver	4.23	0.778	0.725	Unequal Var.	0.849		
	Pax	4.13						
(11) Jeepney drivers are in favor of being organized like proper scheduling of dispatch so that they will not crowd at the jeepney stops	Driver	4.31	0.623	0.725	Equal Var.	1.228		
	Pax	4.18						
(12) Jeepneys should have a time limit when dropping off or picking up of passengers at a jeepney stop	Driver	4.00	1.379	1.384	Equal Var.	-0.855		
	Pax	4.11						
(13) Jeepneys can wait as long as they want at the stops to pick up passengers	Driver	2.26	0.630	0.725	Equal Var.	-1.862		
	Pax	2.54						
(14) If jeepney dispatch will be scheduled, they will be able to pick up less passengers and therefore earn less	Driver	3.21	1.006	1.384	Equal Var.	2.737	1.971	With Dif.
	Pax	2.81						
(15) If jeepneys will be properly scheduled, the operation will become efficient and will even earn more	Driver	3.94	1.161	1.384	Equal Var.	-1.562	1.971	No Dif.
	Pax	4.13						

Based on the results, both groups agreed (indicative of a mean of 4.00 or higher) on the following statements: that (1) *Jeepneys should only stop on designated jeepney stops to drop off and pick up passengers*, (2) *Jeepneys that do not follow the jeepney stops to pick up and drop off passengers are causing traffic congestion on the road*, (5) *If we strictly enforce the traffic rule that jeepneys should only pick up and drop off passengers at designated stops, many jeepneys will be caught not following this traffic rule and regulation*, (8) *People will*

wait at the jeepney stop if it is provided with amenities like roofing, benches, well-lighted at night, etc., (10) Jeepney stops should be for exclusive use of jeepneys. Buses and UVs should also have their own stops, (11) Jeepney drivers are in favor of being organized like proper scheduling of dispatch so that they will not crowd at the jeepney stops, (12) Jeepneys should have a time limit when dropping off or picking up of passengers at a jeepney stop, and (15) If jeepneys will be properly scheduled, the operation will become efficient and will even earn more. Hence, commonly agreed minimum service function requirement on jeepney stops include the need for: strict enforcement of jeepney stop compliance (1, 2, 5, 10), developed jeepney stop infrastructure highlighting design features on safety and convenience (8), and a reliable dispatch and stop schedule (11, 12, 15).

Considerations on pedestrian facilities influencing the willingness of commuters to walk varying distances were evaluated with the rating scale: (1) *Do not want to walk*, (2) *Will walk 3-5 minutes equivalent to one street block*, (3) *Will walk 5-10 minutes equivalent to two street blocks*, (4) *Will walk 10-15 minutes equivalent to three street blocks*, and (5) *Will walk 15-20 minutes equivalent to four street blocks*.

As shown in Figure 8 below, in general, the respondents are found to be less inclined to walk. With a highest average rating of only 3.09, the longest time acceptable for walking is 5-10 minutes, with a threshold distance equivalent to two street blocks and certain walkway conditions: sidewalk with benches, trees to provide shade, and good landscaping. Of the same range found to be reasonable for walking require the following conditions: *covered walkway and clean environment* (3.06) and *provision of escalators along steep walkways similar to Hong Kong* (3.03).

Typically present in Baguio City streets, deterrents to walking with ratings near 1.0 involve situations that are characterized with walkways occupied by parked or passing vehicles, and household and vending activities.

In assessing the level of satisfaction (LOS) on public transport services and facilities (Figure 9), services with the rating that provides the highest level of satisfaction include: *stops with roof and seats and information on jeepney or bus arrival* (3.73) and *orderly queuing of passengers with scheduled arrival of jeepneys or buses* (3.67). Moreover, respondents scored a dissatisfied rating of 1.61 in a disorganized order of waiting and securing a ride.

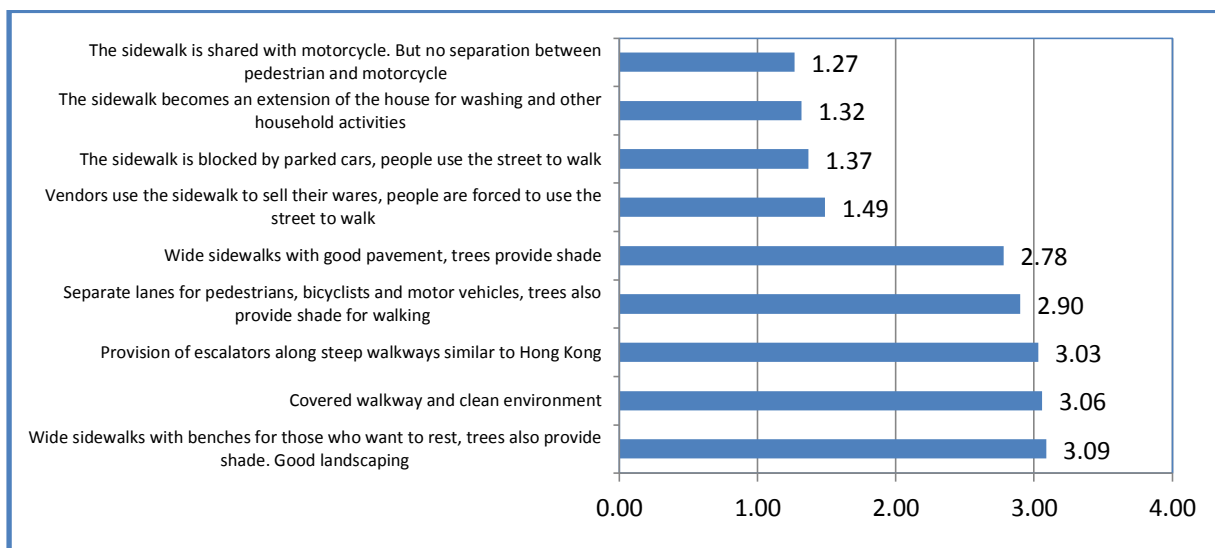


Figure 8. Walkway and sidewalk assessment and willingness to use them

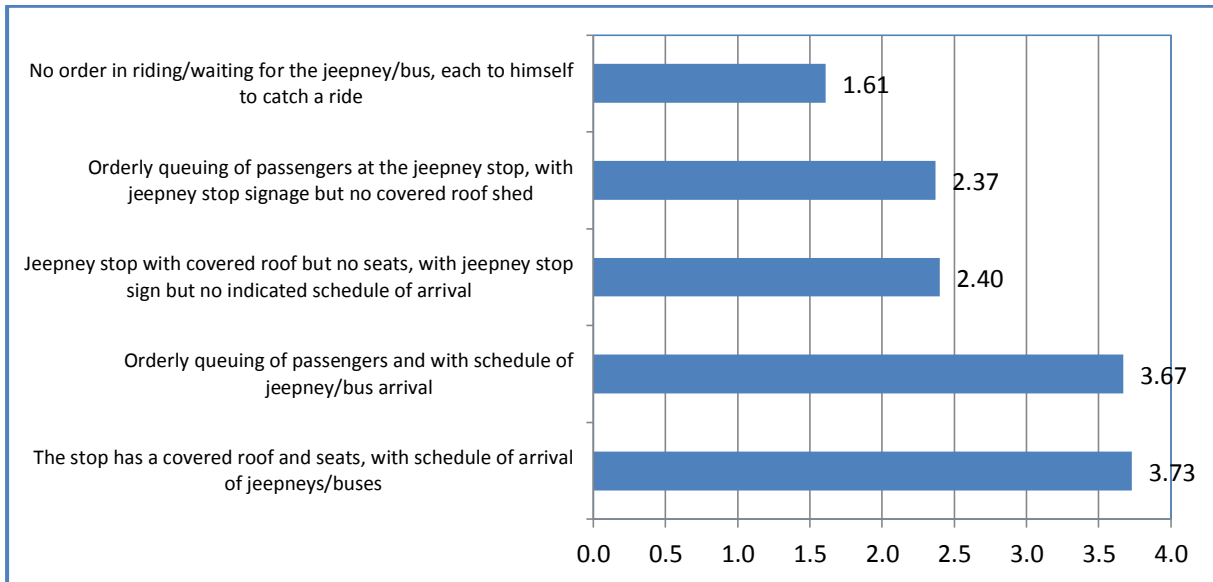


Figure 9. Level of satisfaction survey results regarding public transport services and facilities

On the types of public transport vehicles (Figure 10), respondents have scored a dissatisfied rating (1.69) for jeepneys characterized to be undercapacitated, with people hanging at the back; however, respondents have scored a nearly satisfied rating for a *traditional jeepney* vehicle design (3.50). Respondents have shown preference for the traditional jeepney vehicle design over more advanced public transport vehicles that are comparable in size and capacity to the jeepney, as *minibuses and hybrid electric jeepneys* received a rating of 3.12 and 3.16, respectively. With the highest rating of 3.52 for the *hybrid bus with two doors for easy entry/exit, uses tap card for payment with a video camera inside for safety*, respondents have shown preference for higher capacity vehicles over smaller capacity vehicles.

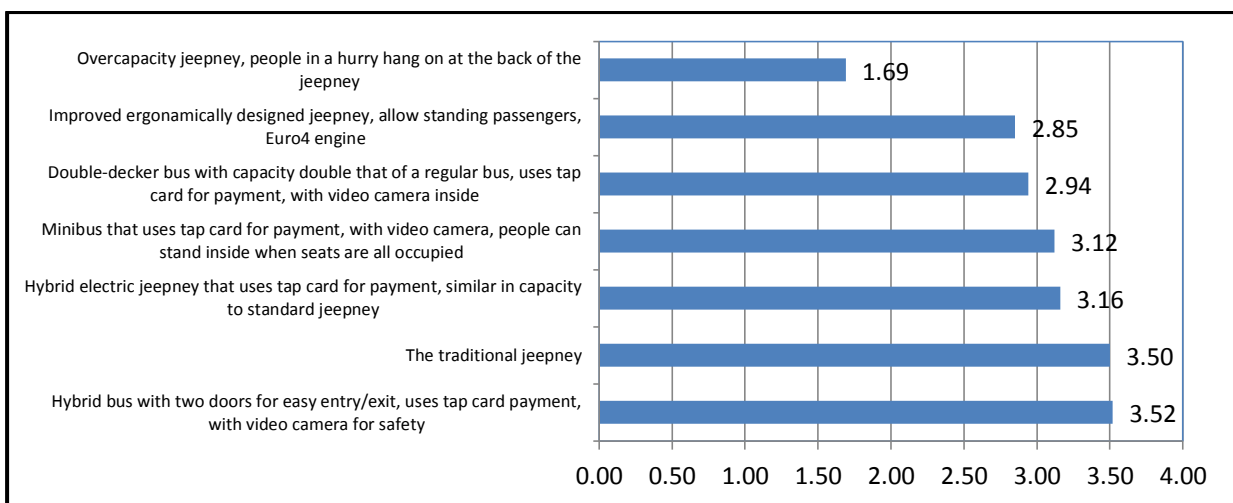


Figure 10. Level of satisfaction survey results regarding public transport vehicles

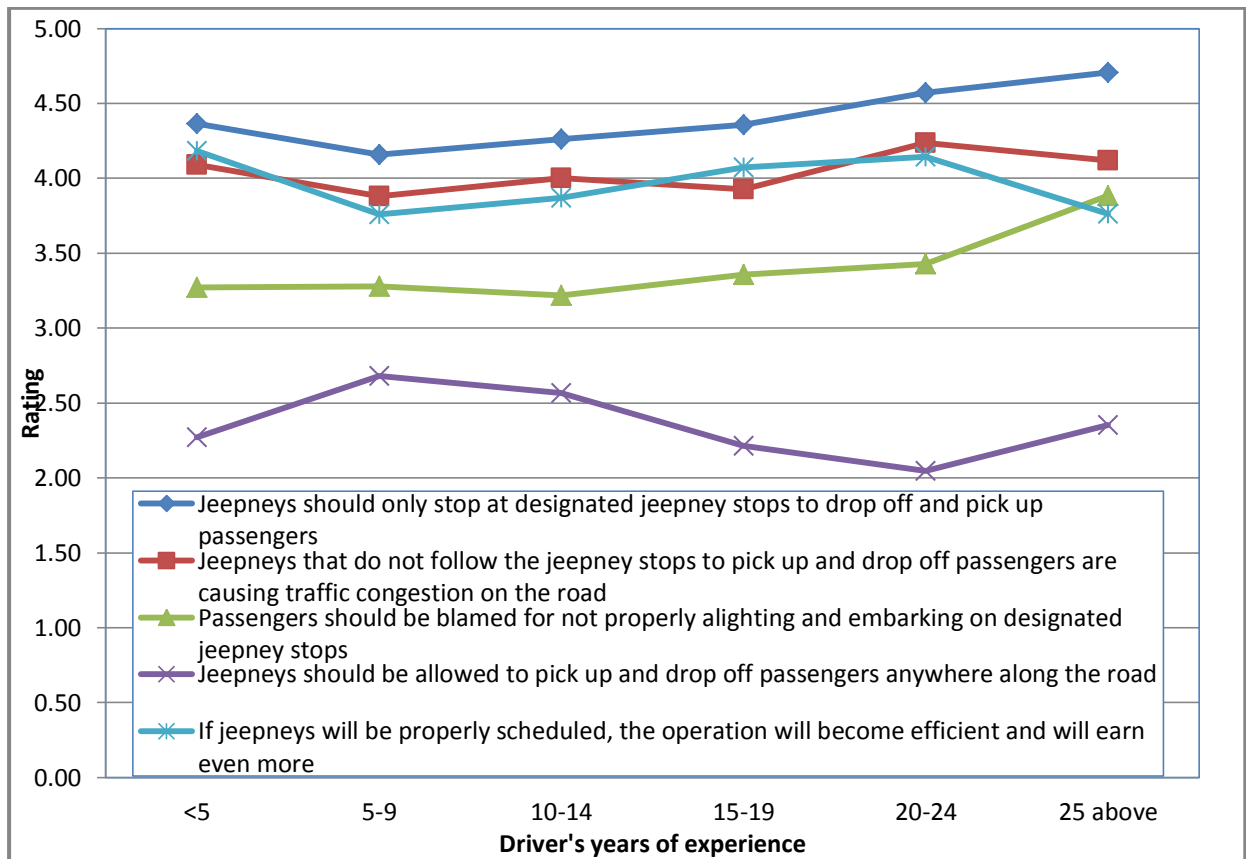


Figure 11. Important assessment trend regarding jeepney stops with respect to driver's years of experience

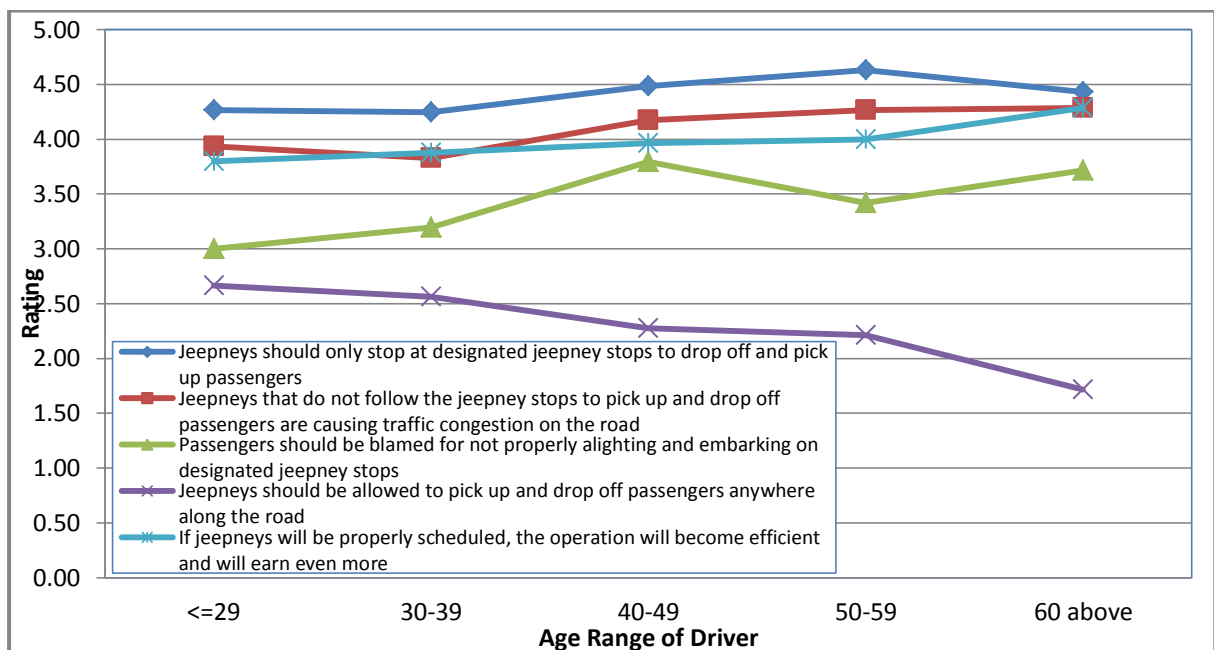


Figure 12. Important assessment trend regarding jeepney stops with respect to driver's age

A more detailed analysis on the profile of the jeepney driver, i.e. driving experience and age, was performed. Figure 11 shows the trend that more experienced drivers tend to agree to the following: (1) *Jeepneys should only stop at designated jeepney stops to drop off*

and pick up passengers, (2) Jeepneys that do not follow the jeepney stops to pick up and drop off passengers are causing traffic congestion on the road, (3) Passengers should be blamed for not properly alighting and embarking on designated jeepney stops, and (4) If jeepneys will be properly scheduled, the operation will become efficient and will earn even more. Moreover, more experienced drivers also tend to disagree that Jeepneys should be allowed to pick up and drop off passengers anywhere along the road. On average, drivers with 20-24 years of experience demonstrated the highest level of understanding on the service function of jeepney stops. Nearly neutral views, with a slight inclination for more experienced drivers towards the notion that passengers are the main contributors to the non-compliance to jeepney stops, was recorded.

Table 4. Comparison between male and female commuters' assessment of jeepney stops

Opinion regarding jeepney stops	Gender	Mean Assess.	F-test two-sample for variances			Test for Means: Two-Sample Equal/Unequal Variances			
			F-Value	F-Critical (one-tailed)	Decision	t-value	t-critical (2-tailed)	Decision	
(1) Jeepneys should only stop at designated jeepney stops to drop off and pick up passengers	Female	4.41	1.645	1.754	Equal Var.	-1.175	1.984	No Diff.	
	Male	4.59							
(2) Jeepneys that do not follow the jeepney stops to pick up and drop off passengers are causing traffic congestion on the road	Female	4.04	1.071	1.754	Equal Var.	0.323	1.984		
	Male	3.97							
(3) Passengers should be blamed for not properly alighting and embarking on designated jeepney stops	Female	3.38	1.173	1.754	Equal Var.	-0.788	1.984		
	Male	3.59							
(4) Jeepneys should be allowed to pick up and drop off passengers anywhere along the road	Female	2.11	1.082	1.754	Equal Var.	-0.813	1.984		
	Male	2.31							
(5) If we strictly enforce the traffic rule that jeepneys should only pick up and drop off passengers at designated stops, many jeepneys will be caught not following this traffic rule and regulation	Female	3.82	1.429	1.754	Equal Var.	-0.820	1.984		
	Male	4.00							
(6) The take home revenue of jeepney drivers will suffer if we strictly enforce this traffic rule that jeepney should only pick up and drop off passengers at defined stops	Female	2.94	0.943	0.611	Unequal Var.	-2.276	2.008		With Diff.
	Male	3.52							
(7) No passengers would like to wait at the jeepney stop because there are no amenities (roof, benches, etc) anyway	Female	3.37	2.512	1.754	Unequal Var.	-3.172	1.990		
	Male	4.00							
(8) People will wait at the jeepney stop if it is provided with amenities like roofing, benches, well-lighted at night, etc.	Female	4.30	1.155	1.754	Equal Var.	-0.082	1.984		
	Male	4.31							
(9) People do not wait at the jeepney stop because it is not properly located along the road	Female	3.31	1.300	1.754	Equal Var.	-1.616	1.984		
	Male	3.69							
(10) Jeepney stops should be for exclusive use of jeepneys. Buses and Uvs should also have their own stops	Female	4.10	1.891	1.754	Unequal Var.	-0.649	1.994		
	Male	4.21							
(11) Jeepney drivers are in favor of being organized like proper scheduling of dispatch so that they will not crowd at the jeepney stops	Female	4.28	0.624	0.611	Unequal Var.	1.754	2.017	No Diff.	
	Male	3.93							
(12) Jeepneys should have a time limit when dropping off or picking up of passengers at a jeepney stop	Female	4.04	1.390	1.754	Equal Var.	-1.248	1.984		
	Male	4.28							
(13) Jeepneys can wait as long as they want at the stops to pick up passengers	Female	2.49	1.097	1.754	Equal Var.	-0.607	1.984		
	Male	2.66							
(14) If jeepney dispatch will be scheduled, they will be able to pick up less passengers and therefore earn less	Female	2.75	1.000	1.754	Equal Var.	-0.945	1.984		
	Male	2.97							
(15) If jeepneys will be properly scheduled, the operation will become efficient and will earn even more	Female	4.13	1.498	1.754	Equal Var.	-0.059	1.984		
	Male	4.14							

In evaluating the age of the driver in relation to the assessment of jeepney stops (Figure 12), similar results to Figure 11 were obtained. Figure 12 shows that on average, more experienced and older drivers are more aware of the proper service function of jeepney stops. Drivers aged 50-59 years showed the highest level of understanding on the service function of jeepney stops. Older drivers are also characterized to ascribe to the notion that passengers are the main contributors to non-compliance of jeepney stops. Drivers aged 60 ascribe most to the belief that properly scheduled operations generate higher income.

A profile assessment on passengers has been performed in terms of gender in evaluating further opinions on jeepney stops. Results in Table 4 shows that only items (6) and (7) record marked difference between male and female opinions regarding jeepney stops. At 95% level of confidence, males agree more that *the take home revenue of drivers will suffer if we strictly enforce jeepneys to pick up and drop off passengers at defined stops and no passengers would like to wait at the jeepney stop because there are no amenities.*

Table 5. Male and female commuters assessment of public transport services and facilities

	Gender	Mean Assess.	F-test two-sample for variances			Test for Means: Two-Sample Equal/Unequal Variances		
			F-value	F-critical (one-tailed)	Decision	t-value	t-critical (2-tailed)	Decision
<i>Public transport services and facilities</i>								
<i>Orderly queuing of passengers at the jeepney stop, with jeepney stop signage but no covered roof shed</i>	Female	2.34	0.731	0.611	Unequal Var.	-0.452	2.013	No Diff.
	Male	2.45						
<i>Jeepney stop with covered roof but no seats, with jeepney stop sign but no indicated schedule of arrival</i>	Female	2.35	0.582	0.611	Equal Var.	-0.776	1.984	
	Male	2.52						
<i>No order in riding/waiting for the jeepney/bus, each to himself to catch a ride</i>	Female	1.52	0.609	0.611	Equal Var.	-1.842	1.984	
	Male	1.83						
<i>Orderly queuing of passengers and with schedule of jeepney/bus arrival</i>	Female	3.85	0.604	0.611	Equal Var.	1.515	1.984	
	Male	3.45						
<i>The stop has a covered roof and seats, with schedule of arrival of jeepneys/buses</i>	Female	3.72	0.652	0.611	Unequal Var.	0.642	2.015	
	Male	3.55						

Table 6. Male and female commuters' assessment of public transport vehicle characteristics

	Gender	Mean Assess.	F-test two sample for variances			Test for Means: Two-Sample Equal/Unequal Variance		
			F-value	F-critical (one-tailed)	Decision	t-value	t-critical (2-tailed)	Decision
<i>Public transport vehicle characteristics</i>								
<i>Overcapacity jeepney, people in a hurry hang on at the back of the jeepney</i>	Female	1.68	1.069	1.754	Equal Var.	-0.267	1.984	No Diff.
	Male	1.72						
<i>Hybrid bus with two doors for easy entry/exit, uses tap card payment, with video camera for safety</i>	Female	3.72	0.804	0.611	Unequal Var.	2.467	2.012	
	Male	3.03						
<i>Minibus that uses tap card for payment, with video camera, people can stand inside when seats are all occupied</i>	Female	3.24	0.946	0.611	Unequal Var.	1.573	2.008	
	Male	2.83						
<i>Hybrid electric jeepney that uses tap card for payment, similar in capacity to a standard jeepney</i>	Female	3.34	0.803	0.611	Unequal Var.	2.469	2.012	With Diff.
	Male	2.72						
<i>The traditional jeepney</i>	Female	3.62	0.733	0.611	Unequal Var.	1.616	2.013	No Diff.
	Male	3.21						
<i>Double-decker bus with capacity double that of a regular bus, uses tap card for payment, with video camera inside</i>	Female	3.04	0.930	0.611	Unequal Var.	1.507	2.009	
	Male	2.69						
<i>Improved ergonomically designed jeepney, allow standing passengers, Euro4 engine</i>	Female	2.92	1.427	1.754	Equal Var.	0.927	1.984	
	Male	2.69						

In the case of the male and female commuters' assessment of public transport services and facilities (Table 5), at 95% level of confidence, no difference in the mean ratings was found; however, females prefer more a public transport service that provides for scheduled arrival of jeepneys/buses and public transport stops that are equipped with features for comfort and convenience, i.e. roof and seats.

On the assessment of public transport vehicles by gender (Table 6), at 95% level of confidence, only for *Hybrid electric jeepneys that uses tap card for payment, similar in capacity to a standard jeepney* showed that females have a higher mean rating than men. However, in general, females gave a higher rating than males on new modes of transport, i.e. hybrid bus, minibus, hybrid electric jeepney, double-decker bus and an ergonomically designed jeepney.

Table 7. Commuter assessment of jeepney stop characteristics versus frequency of usage of jeepneys

Opinion Regarding Jeepney Stops	Last Time rode Jeepney		
	Today (N=71)	During the last week (N=20)	This last month/year/cannot remember(N=9)
Jeepneys should only stop at designated jeepney stops to drop off and pick up passengers	4.46	4.60	4.11
Jeepneys that do not follow the jeepney stops to pick up and drop off passengers are causing traffic congestion on the road	4.03	4.20	3.56
Passengers should be blamed for not properly alighting and embarking on designated jeepney stops	3.51	3.25	3.33
Jeepneys should be allowed to pick up and drop off passengers anywhere along the road	2.15	2.15	2.33
If we strictly enforce the traffic rule that jeepneys should only pick up and drop off passengers at designated stops, many jeepneys will be caught not following this traffic rule and regulation	3.87	4.05	3.44
The take home revenue of jeepney drivers will suffer if we strictly enforce this traffic rule that jeepney should only pick up and drop off passengers at defined stops	2.97	3.55	3.22
No passengers would like to wait at the jeepney stop because there are no amenities (roof, benches, etc) anyway	3.52	3.45	4.00
People will wait at the jeepney stop if it is provided with amenities like roofing, benches, well-lighted at night, etc.	4.35	4.10	4.33
People do not wait at the jeepney stop because it is not properly located along the road	3.41	3.45	3.44
Jeepney stops should be for exclusive use of jeepneys. Buses and Uvs should also have their own stops	4.13	4.25	3.89
Jeepney drivers are in favor of being organized like proper scheduling of dispatch so that they will not crowd at the jeepney stops	4.25	4.00	4.00
Jeepneys should have a time limit when dropping off or picking up of passengers at a jeepney stop	4.11	4.15	4.00
Jeepneys can wait as long as they want at the stops to pick up passengers	2.41	3.15	2.22
If jeepney dispatch will be scheduled, they will be able to pick up less passengers and therefore earn less	2.80	2.70	3.11
If jeepneys will be properly scheduled, the operation will become efficient and will earn even more	4.14	4.05	4.22

In Table 7, no trend can be established with frequency of jeepney use against the assessment on jeepney stop characteristics. Hence, regardless of the jeepney riding experience, commuters agreed on the jeepney stop characteristics.

The results further showed that passengers who have more riding experience with the jeepney tend to be neutral to the current service characteristics of the public transport service like stops with no covered roof and no schedule of arrival of jeepneys. It was also found that one's riding experience has no clear difference as to how one assess public transport vehicles type or characteristics.

On the willingness to walk given the walkway characteristics, no difference in mean rating was found at a 95% level of confidence; however, males have a generally higher mean rating than females which indicates that males are willing to walk longer distances given particular conducive walking conditions (Table 8).

Table 8. Comparison between male and female commuters regarding willingness to walk given the walkway characteristics

Walkway characteristics	Gender	Mean Assessment	F-test two-sample for variances			Test for Means: Two-Sample Equal/Unequal Variances		
			F-Value	F-Critical (one-tailed)	Decision	t-value	t-critical (2-tailed)	Decision
Wide sidewalks with good pavement, trees provide shade	Female	2.63	0.766	0.611	Unequal Var.	-1.748	2.013	No Diff.
	Male	3.14						
Covered walkway and clean environment	Female	3.06	0.860	0.611	Unequal Var.	-0.042	2.010	
	Male	3.07						
Wide sidewalk with benches for those who want to rest, trees also provide shade. Good landscaping.	Female	3.08	0.938	0.611	Unequal Var.	-0.067	2.008	
	Male	3.10						
Vendors use the sidewalk to sell their wares, people are forced to use the street to walk	Female	1.51	1.575	1.754	Equal Var.	0.305	1.984	
	Male	1.45						
The sidewalk become an extension of the houses for washing and other household activities	Female	1.31	0.638	0.611	Unequal Var.	-0.179	2.017	
	Male	1.34						
The sidewalk is blocked by parked cars, people use the street to walk	Female	1.38	1.340	1.754	Equal Var.	0.200	1.984	
	Male	1.34						
The side walk is shared with motorcycle. But no separation between pedestrian and motorcycle.	Female	1.20	0.728	0.611	Unequal Var.	-1.516	2.013	
	Male	1.45						
Separate lanes for pedestrians, bicyclist and motor vehicles, trees also provide shade for walking	Female	2.92	0.870	0.611	Unequal Var.	0.186	2.010	
	Male	2.86						
Provision of escalators along steep walkways/pathwalks similar to Hong Kong	Female	2.92	1.272	1.754	Equal Var.	-1.404	1.984	
	Male	3.31						

5. SUMMARY OF FINDINGS AND CONCLUSION

In general, jeepney drivers and operators and commuters have shown a common level of understanding on the proper service functions of jeepney stops. Moreover, commonly agreed minimum service function requirements on jeepney stops include the need for: strict enforcement of jeepney stop compliance, developed jeepney stop infrastructure highlighting design features on safety and convenience, and a reliable dispatch and stop schedule.

Based on driver profiles, more experienced and older drivers have demonstrated a higher level of understanding on the proper service functions of jeepney stops and are on average, most open to a proper scheduling scheme, as it is believed to contribute to greater revenues.

On the willingness to walk, the longest time acceptable for walking in Baguio City is 5-10 minutes, with a threshold distance equivalent to two street blocks and provided that certain walkway conditions are available: sidewalk with benches, trees to provide shade, and good landscaping. Males also dominate the share of commuters who are more willing to walk longer distances, provided sidewalks that are conducive.

On public transport service operation, females have a stricter preference in favor of a scheduled system and more advanced vehicle technologies. Moreover, males agree more that the take home revenue of drivers will suffer if we strictly enforce jeepneys to pick up and drop off passengers at defined stops and no passengers would like to wait at the jeepney stop because there are no amenities.

Furthermore, passengers who have more riding experience with the jeepney tend to be neutral to the current service characteristics of the public transport service like stops with no covered roof and no schedule of arrival of jeepneys. Also, one's riding experience has no clear difference as to how one assess public transport vehicles type or characteristics.

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