Assessing Walkability in the City of Tacloban

Sheila Flor D. JAVIER [a], Jerome N. Ballarta [b], Jose Regin F. Regidor [c]

[a] *National Center for Transportation Studies University of the Philippines, Diliman, Quezon City, 1101, Philippines*
[a] *E-mail: sdjavier@gmail.com*
[b] *National Center for Transportation Studies University of the Philippines, Diliman, 1101, Philippines*
[b] *E-mail: jballarta.ncts@gmail.com*
[c] *Institute of Civil Engineering, University of the Philippines, Diliman, Quezon City, 1101, Philippines*
[c] *E-mail: r.regin@gmail.com*

Abstract: Philippine cities have become more aware of the impacts of increased motorization to the environment. Cities now have sought to improve their transport systems towards achieving environment-friendly and disaster-resilient transport. Part of the initiatives in cities seeking to improve air quality and promote healthy lifestyles is the promotion of walking. This paper presents the application of a methodology developed by the Asian Development Bank to evaluate the walkability of cities. The methodology was applied to Tacloban City and walkability results were compared to other medium-sized cities in the Philippines. The obtained walkability scores for Tacloban City are particularly low in "amenities", "disability infrastructure", and "obstruction". Overall walkability rating of the city is slightly lower than the average of other Asian cities. It was also observed that there is a lack of clear policies and political advocacy that cater to the needs of pedestrians (and non-motorized transport or NMT in general) in the City, which is similar to other Asian local cities.

Keywords: Walkability, Cities

1. INTRODUCTION

Walkability is the extent to which the built environment is "walking-friendly." A walkable city is a city whose citizens have the option and preference to walk to their destinations safely, comfortably, and within acceptable levels of service. A walkability survey was conducted to assess the quality of the walking environment in Tacloban city.

Tacloban City is a city with a population of 242,809 (as of August 1, 2015). It is located in the northeastern part of the Island of Leyte as shown in Figure 1. It has one hundred thirty-eight (138) barangays divided into ten political subdivisions or areas.

Tacloban City is also one of the cities which was devastated by Typhoon Haiyan or Typhoon Yolanda in 2013, causing massive destruction across the city. After five (5) years, the city was able to rise from the devastation and build disaster-resilient infrastructure.

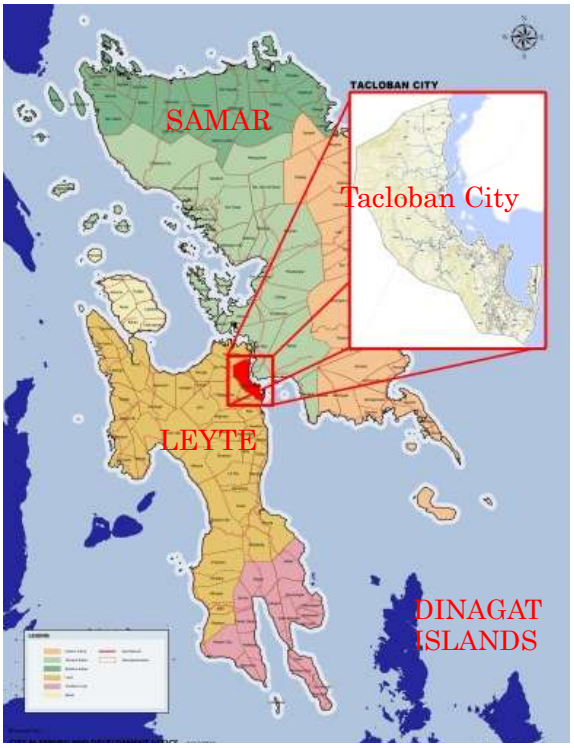

Figure 1. Location of Tacloban City

2. METHODOLOGY

The study team employed a procedure for determining the walkability index for Asian cities prescribed by ADB through CAI ASIA[1]. The method is a modification of the World Bank-developed "Global Walkability Index" and involves the survey of field walkability parameters shown in Table 1. Surveyors were asked to walk separately the selected road stretches for each land use types. They were asked to rate these road stretches from 1 to 5 for each parameter (1 being the lowest, 5 being the highest). They were provided with qualitative description with pictures for each rating scale. The averages for each parameter were translated into a rating system from 0 (lowest score) to 100 (highest score). Walkability ratings in different land use types were derived by taking the average of the individual parameters' averages. The output of the survey is a set of walkability scores for selected areas of various land use types in Tacloban city.

Ideally, a comprehensive walkability study incorporates findings from (1) pedestrian interviews, (2) stakeholder interviews (for national and local government agencies), and (3) field walkability survey. This study is limited only to the conduct of the field walkability survey. One goal of a walkability study is to benchmark the walkability score of a city with others, and to inform policy makers, development agencies and other stakeholders on the results to enable them to improve walkability.[2] The scores obtained from field surveys will give indication of the condition of current pedestrian infrastructure and facilities so that actions for improvement could be proposed.

---

[1] Ibid.

[2] "Walkability Survey Tool" (January 2011), **http://cleanairinitiative.org/portal/sites/default/files/documents/18_Walkability_Survey_Tool_2011.pdf**, CAI ASIA, accessed May 2012

Table 1. Field Walkability Survey Parameters

#	Parameter	Description
1	Walking Path Modal Conflict	The extent of conflict between pedestrians and other modes on the road, such as bicycles, motorcycles and cars.
2	Availability of Walking Paths	The need, availability and condition of walking paths. This parameter is amended from the parameter "Maintenance and Cleanliness" in the Global Walkability Index.
3	Availability of Crossings	The availability and length of crossings to describe whether pedestrians tend to jaywalk when there are no crossings or when crossings are too far apart.
4	Grade Crossing Safety	The exposure to other modes when crossing roads, time spent waiting and crossing the street and the amount of time given to pedestrians to cross intersections with signals.
5	Motorist Behavior	The behavior of motorists towards pedestrians as an indication of the kind of pedestrian environment.
6	Amenities	The availability of pedestrian amenities, such as benches, street lights, public toilets, and trees, which greatly enhance the attractiveness and convenience of the pedestrian environment, and in turn the surrounding area.
7	Disability Infrastructure	The availability of, positioning of, and maintenance of infrastructure for the disabled.
8	Obstructions	The presence of permanent and temporary obstructions on pedestrian pathways. These ultimately affect the effective width of the pedestrian pathway and may cause inconvenience to pedestrians.
9	Security from Crime	The general feeling of security from crime on a certain stretch of road.

3. DATA COLLECTION

Figure 2 shows the maps of selected areas for this study including the general land use characteristics of each area. The selected areas were the identified commercial, residential and institutional areas in the Comprehensive Land Use Plan of Tacloban city. Public transport terminal areas selected were most of the public and private terminals converge.

Figure 2: Map of 8 Selected Areas for the Walkability Survey

Tacloban's overall walkability index is 56.66 out of a possible maximum score of 100. This is slightly higher than the walkability results of Olongapo City (56.32) where a similar walkability survey was conducted in 2010. Figure 3 and Table 2 show the overall scores for each assessment item and for each type of area. Figure 4 graphically shows the values in Table 2 using a web chart. Found in the Appendices of this report are detailed scores for each road stretch in each survey site.

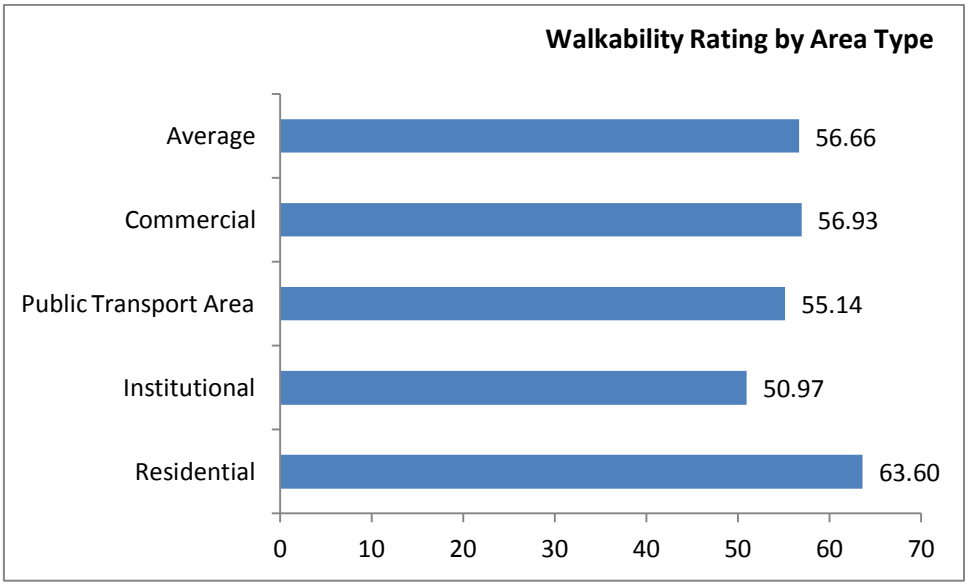

Figure 3: Overall Walkability Ratings for Tacloban City

Table 2: Walkability Scores of Tacloban City (Scores - out of a maximum possible 100)

Criteria	Residential	Institutional / Educational	Public Transport Terminal	Commercial	Average
1. Walking path modal conflict	77	63	55	63	64
2. Availability of walking paths	72	58	50	59	60
3. Availability of crossings	79	63	61	57	65
4. Grade crossing safety	75	60	56	60	63
5. Motorist behavior	76	64	58	68	67
6. Amenities	38	51	41	48	44
7. Disability infrastructure	21	38	31	33	31
8. Obstructions	67	52	48	53	55
9. Security from crime	68	63	58	55	61
Walkability Score	**64**	**57**	**51**	**55**	**57**

The residential area scored slightly higher than the other three types. Among the assessment parameters, Tacloban City scored lowest in “Disability Infrastructure”. The city also scored low in “Amenities”, and “Obstructions”. Highest pedestrian counts were obtained in the commercial area. Institutional and public transport terminal areas have moderately high pedestrian volumes (see Figure 5)

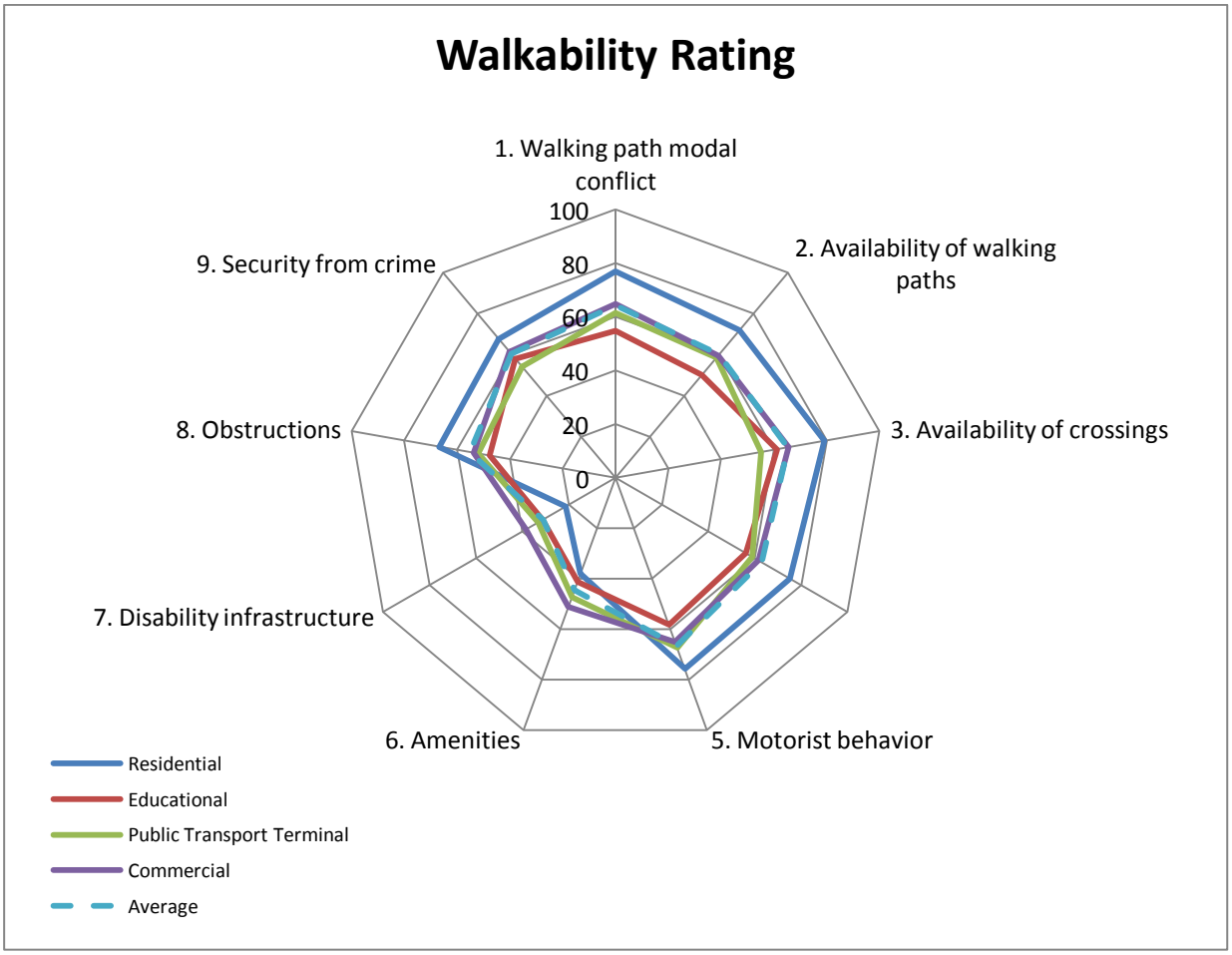

Figure 4: Web Chart of Walkability Parameters for Tacloban City

Other Data Summaries

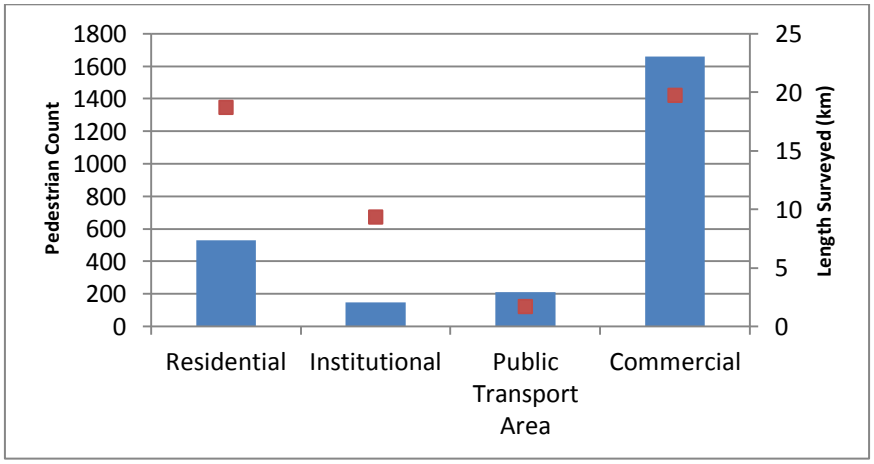

Figure 5: Pedestrian Counts and Surveyed Lengths

4. ASSESSMENT

An absolute value for the desired level of walkability score for a city has not been defined, but the scores could find more meaning if compared with walkability scores of other cities. A walkability study[3] for Asian cities was conducted by ADB in 2011 and their findings are reflected in Table 3 and Table 4 vis-à-vis the scores for Olongapo City and Tacloban City.

The walkability score of Tacloban City is slightly higher than Olongapo City. However, it is below than the walkability scores of other cities in the country and below than the walkability scores of other Asian cities. The walkability parameters wherein the average rating of Tacloban City is below than the other Asian cities are: "Amenities", "Disability Infrastructure" and "Obstructions". Improvement in walkability infrastructures will certainly increase the walkability rating of Tacloban City.

Table 3: ADB Walkability Scores for 3 Cities[4] in the Philippines compared with Tacloban City and Olongapo City

City	Commercial	PT Terminal	Educational	Residential	WALKABILTY SCORE (Average)
Tacloban City	56.93	55.14	50.97	63.60	56.66
Olongapo City	59.17	54.94	55.69	55.47	56.32
Metro Manila	78.52	49.44	53.89	- no data -	60.62
Davao City	69.07	59.63	58.89	51.11	59.68
Cebu City	68.18	57.04	64.44	46.53	59.05

Table 4: Average Rating by Parameter for the 13 Asian Cities[5] compared with Tacloban City and Olongapo City

Parameter	Other Asian Cities	Olongapo City	Tacloban City
1. Walking path modal conflict	64.39	60	64
2. Availability of walking paths	57.83	57	60
3. Availability of crossings	68.11	69	65
4. Grade crossing safety	59.49	62	63
5. Motorist behaviour	58.10	66	67
6. Amenities	48.58	47	44
7. Disability infrastructure	39.17	32	31
8. Obstructions	55.98	53	55
9. Security from crime	62.63	61	61
WALKABILITY SCORE	**57.14**	**56.32**	**56.66**

[3] Source: "Walkability and Pedestrian Facilities in Asian Cities: State and Issues, by James Leather, Herbert Fabian, Sudhir Gota, and Alvin Mejia, ADB Sustainable Development Working Paper Series No. 17, February 2011, ADB.
The 13 cities are: Cebu (Philippines), Colombo (Sri Lanka), Davao (Philippines), Ha Noi (Viet Nam), Ho Chi Minh City (Viet Nam), Hong Kong, China (People's Republic of China [PRC]), Jakarta (Indonesia), Karachi (Pakistan), Kathmandu (Nepal), Kota (India), Lanzhou (PRC), Manila (Philippines), and Ulaanbaatar (Mongolia).

[4] Ibid.

[5] Ibid.

The 13 Asian cities included in the preceding Table 3 are Cebu (Philippines), Colombo (Sri Lanka), Davao (Philippines), Ha Noi (Viet Nam), Ho Chi Minh City (Viet Nam), Hong Kong, China (People's Republic of China [PRC]), Jakarta (Indonesia), Karachi (Pakistan), Kathmandu (Nepal), Kota (India), Lanzhou (PRC), Manila (Philippines), and Ulaanbaatar (Mongolia). Table 4 shows that Olongapo City's and Tacloban City's average ratings are slightly lower than the average of other Asian cities. However, both cities (Olongapo City and Tacloban City) obtained higher score in the "motorist behavior" parameter.

5. CONCLUSION

It is a general condition in Asian local cities that there is a lack of clear policies and political advocacy that cater to the needs of pedestrians (and non-motorized transport or NMT in general). This seems to be true also for the case of Tacloban City.

The draft strategy for the Philippines states that: "Reserving and reclaiming space for pedestrian traffic is as important as providing lanes for cars." (Presidential Administrative Order No. 254) It identified the promotion of effective accessibility and efficient mobility for all as a strategy toward achieving environment and people-friendly infrastructure development. Also, it identifies the provision of pedestrian lanes and bike lanes as a strategy for social equity and gender perspective. It also promotes walking as a utilitarian mode.

Tacloban City must have clearer pedestrian-focused strategies to echo the Philippine policy stated above.

The specific measures that could be undertaken to improve walkability are as follows:

- Pedestrian walkways. This includes ensuring a minimum of 1.0 meter to 1.5 meters clearance on walkways by removing obstacles or by widening the path, to provide a clear passageway for wheelchair users.
- Pedestrian crossings. This includes a) removing the slight drop (25 millimeters) from the footpath to the road and providing tactile to indicate the edge of the road for the visually impaired; b) thickening road crossing lines to guide the visually impaired to walk within the designated crossing; c) installing vibrating push button (with audio alert) at traffic signal posts to help the visually impaired; and d) providing at-grade i.e., road-level crossings where traffic conditions permit.
- Traffic signs. This includes using higher reflectivity materials for traffic signs and street name signs to improve visibility.

Walkability scores are particularly low in "amenities", "disability infrastructure", and "obstruction", (items 6, 7, and 8, respectively). Suggested improvements are:

- Amenities: provide facilities that would enhance comfort, convenience, and attractiveness of pedestrian environment such as benches, street lights, public toilets, and trees.
- Disability infrastructure: Effective sidewalk width (totally free from obstructions) must accommodate the width of a standard wheelchair (0.815m minimum passage width) and dropped curbs at intersections and crossings must be provided to ensure smooth and seamless path for the physically challenged. Sidewalk standard (US, FHWA) is to provide 1.525m width to accommodate two wheelchairs passing opposite each other and allow 180-degree turn.

- Obstructions: sidewalks must be cleared from permanent obstructions (e.g. posts, abutting structures, shanties, etc.) and temporary obstructions (vendors, stalls, parked vehicles, etc.) such that the effective width available for walking is at least 1.0m. For areas with heavy pedestrian volume, sidewalks must be wider to ensure desirable levels of service.

REFERENCES

Abley Transportation Consultants Limited "Walkability level of service", http://www.levelofservice.com/, accessed May 2012.

An Assessment of Walkability in a Medium-Sized Philippine City.

"Walkability and Pedestrian Facilities in Asian Cities: State and Issues, James Leather, Herbert Fabian, Sudhir Gota, and Alvin Mejia, ADB Sustainable Development Working Paper Series No. 17, February 2011, ADB.

"Walkability Survey Tool" (January 2011), http://cleanairinitiative.org/portal/sites/default/files/documents/18_Walkability_Survey_Tool_2011.pdf, CAI ASIA, accessed May 2012.