

# Assessment of Pedestrian Facilities Along Marcos Highway

J.R.F. REGIDOR, K.R.S. MARCELO and J.P.B. SALVADOR

Institute of Civil Engineering  
University of the Philippines Diliman

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# Background of the study

- Pedestrian facilities in the country are in varying conditions due to several factors
  - Traffic Condition in the particular area
  - Driver and Pedestrian Behavior
  - Capacity of the facility
  - Management of the local authorities

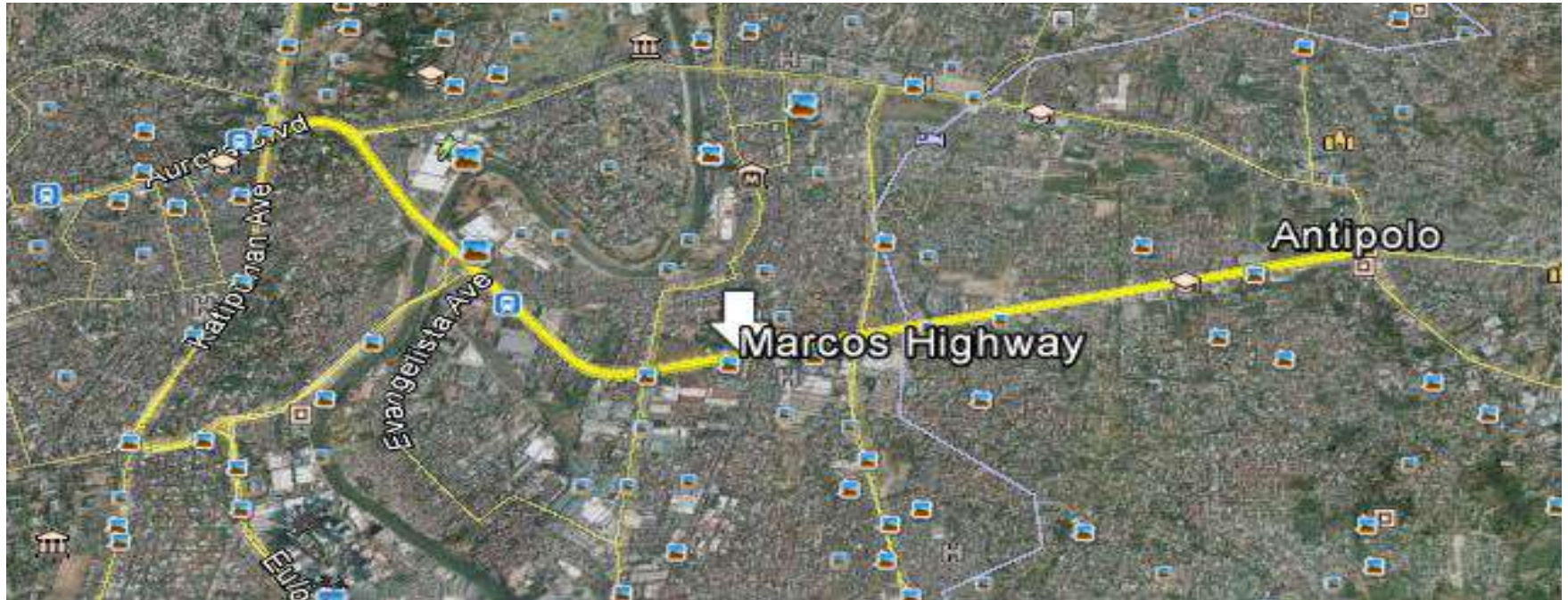
# OBJECTIVES

- Assess the conditions of existing pedestrian facilities on the given roads
- Determine the overall rating of the facility in terms of certain factors
- Develop recommendations to improve walkability

## Expected output

- Overall rating of the entire stretch of the road
- Determine factors that mostly affect the rating
- Recommendations for improvements along the highway

# Study Area



	Marcos Highway
Starts at	14°35'19.29"N 121° 6'15.29"E Katipunan Avenue
Ends at	14°37'31.21"N 121° 7'28.12"E Masinag
Length	6.76km

# Significance

- To determine whether there is a need for improvement for a pedestrian facility
- Provide a safe walking environment for pedestrians

# Methodologies for rating

## 1. **Global Walkability Index**

- **Walkability Rating Method for Asian Cities.**

## 2. iRAP (Road Assessment Program)

## 3. Level of Service (Highway Capacity Manual)

# Global Walkability Index

Global Walkability Index (GWI) uses method of rating

pedestrian facilities through 3 main factors:

1. Safety
2. Security
3. Convenience



# Field Walkability 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	Security from Crime	The general feeling of security from crime on a certain stretch of road.
3	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.
4	Motorist Behavior	The behavior of motorists towards pedestrians as an indication of the kind of pedestrian environment.
5	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.
6	Disability Infrastructure	The availability of, positioning of, and maintenance of infrastructure for the disabled.
7	Maintenance and Cleanliness	The need, availability and condition of walking paths. This parameter is amended from the parameter "Maintenance and Cleanliness" in the Global Walkability Index.
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	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.

# Survey form

Surveyed Road Stretch	1	2	3	4	5	6	7	8	9	10	$(\sum(x*length*10*count))/\#)/10$
1) Walking Path Modal Conflict	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
2) Security from Crime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
3) Crossing Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
4) Motorist Behavior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
5) Amenities (Cover, benches, public toilets, street lights)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
6) Disability Infrastructure and Sidewalk Width	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
7) Maintenance and Cleanliness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
8) Obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
9) Availability of Crossings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
10) Pedestrian Count	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11) Length of Surveyed Stretch (km)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Unweighted Average											<input type="text"/>

Reference: The Global Walkability Index: Talk the Walk Walk the Talk

# Sample Factor Evaluation Guide

Rating	Description	Example
1	Pedestrian infrastructure is completely blocked by permanent obstructions	
2	Pedestrians are significantly inconvenienced. Effective width is <1m	
3	Pedestrian traffic is mildly inconvenienced; effective width is < or = 1 meter	
4	Obstacle presents minor inconvenience; effective width is > 1m	
5	There are no obstructions	

Parameter:  
Obstructions

# Field Reconnaissance





# Findings

- Sidewalks

Westbound	Eastbound
5.71 km	5.43 km





# Map Overview



Map source: earth.google.com

# Road Stretches

Table 1 Survey Area Boundaries

Road Stretch No.	From	To	Length measured on field (km)
1	Katipunan	Maj. Santos Dizon St.	1.003
2	Maj. Santos Dizon St.	Evangelista Avenue	0.583
3	Evangelista Avenue	Petron	0.673
4	Petron	Amang Rodriguez Avenue	0.398
5	Amang Rodriguez Avenue	Bgy. Dela Paz	0.535
6	Bgy. Dela Paz	Sta. Lucia	0.46
7	Gil Fernando Avenue	Town and Country	0.498
8	Town and Country	Samsonville	0.461
9	Samsonville	AMA	0.523
10	AMA	Masinag	0.92
11	Masinag	Park Place	0.961
12	Park Place	Phoenix Fuel Station	0.907
13	PLDT	McDonald's	0.454
14	Gil Fernando Avenue	Caltex/Shell Station	0.307
15	Caltex/Shell Station	Ligaya	0.74
16	Ligaya	LRT Foot Bridge	0.73
17	LRT Foot Bridge	Start Marcos Bridge	0.842
18	Start Marcos Bridge	Monte Vista Footbridge	0.551



# Field Survey Results

FIELD SURVEY FORM

Name of Surveyor	Juan Pablo Salvador		
Time Started	2:33 PM	Time End	7:10 PM
Date of Survey	3/13/2015		

Direction	<input checked="" type="checkbox"/> Eastbound	<input type="checkbox"/> Westbound
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Road Stretch Number	1	2	3	4	5	6	7	8	9	10
1. Walking Path Modal Conflict	4	3	4	4	4	3	5	3	3	4
2. Availability of Walking Paths	4	3	3	4	4	3	4	2	3	3
3. Amenities	4	4	4	4	5	4	4	4	4	4
4. Disability Infrastructure	3	4	4	4	5	4	3	3	2	3
5. Obstructions	4	5	4	4	5	4	4	3	3	4
6. Security from Crime	3	4	4	3	4	3	4	3	4	4

FIELD SURVEY FORM

Name of Surveyor	Kelvin Ryan Marcelo		
Time Started	2:33 PM	Time End	7:10 PM
Date of Survey	3/13/2015		

Direction	<input checked="" type="checkbox"/> Eastbound	<input type="checkbox"/> Westbound
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Road Stretch Number	1	2	3	4	5	6	7	8	9	10
1. Walking Path Modal Conflict	3	3	3	4	4	3	4	2	2	3
2. Availability of Walking Paths	4	3	3	4	4	4	4	4	3	3
3. Amenities	4	3	4	4	4	4	4	4	4	4
4. Disability Infrastructure	3	4	4	4	5	5	4	3	2	3
5. Obstructions	4	4	5	4	5	3	3	2	2	3
6. Security from Crime	3	4	3	4	4	4	4	3	4	4



# Field Survey Results

## FIELD SURVEY FORM

Name of Surveyor	Juan Pablo Salvador			
Time Started	10:04 AM	Time End	11:35 AM	
Date of Survey	3/16/2015			

Direction	<input type="radio"/> Eastbound	<input checked="" type="radio"/> Westbound
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Road Stretch Number	11	12	13	14	15	16	17	18		
1. Walking Path Modal Conflict	4	3	4	4	4	5	3	4		
2. Availability of Walking Paths	4	3	4	4	4	4	4	4		
3. Amenities	5	3	4	4	5	4	4	4		
4. Disability Infrastructure	5	4	3	3	4	4	3	2		
5. Obstructions	4	3	4	3	4	5	4	4		
6. Security from Crime	5	4	5	4	4	4	4	2		

## FIELD SURVEY FORM

Name of Surveyor	Kelvin Ryan Marcelo			
Time Started	10:04 AM	Time End	11:35 AM	
Date of Survey	3/16/2015			

Direction	<input type="radio"/> Eastbound	<input checked="" type="radio"/> Westbound
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Road Stretch Number	11	12	13	14	15	16	17	18		
1. Walking Path Modal Conflict	4	3	4	4	5	4	2	4		
2. Availability of Walking Paths	4	2	4	4	4	4	4	4		
3. Amenities	4	3	4	4	4	4	3	2		
4. Disability Infrastructure	4	3	3	4	5	5	4	3		
5. Obstructions	3	2	3	3	5	5	4	4		
6. Security from Crime	4	3	3	4	4	4	4	2		

# Average Rating

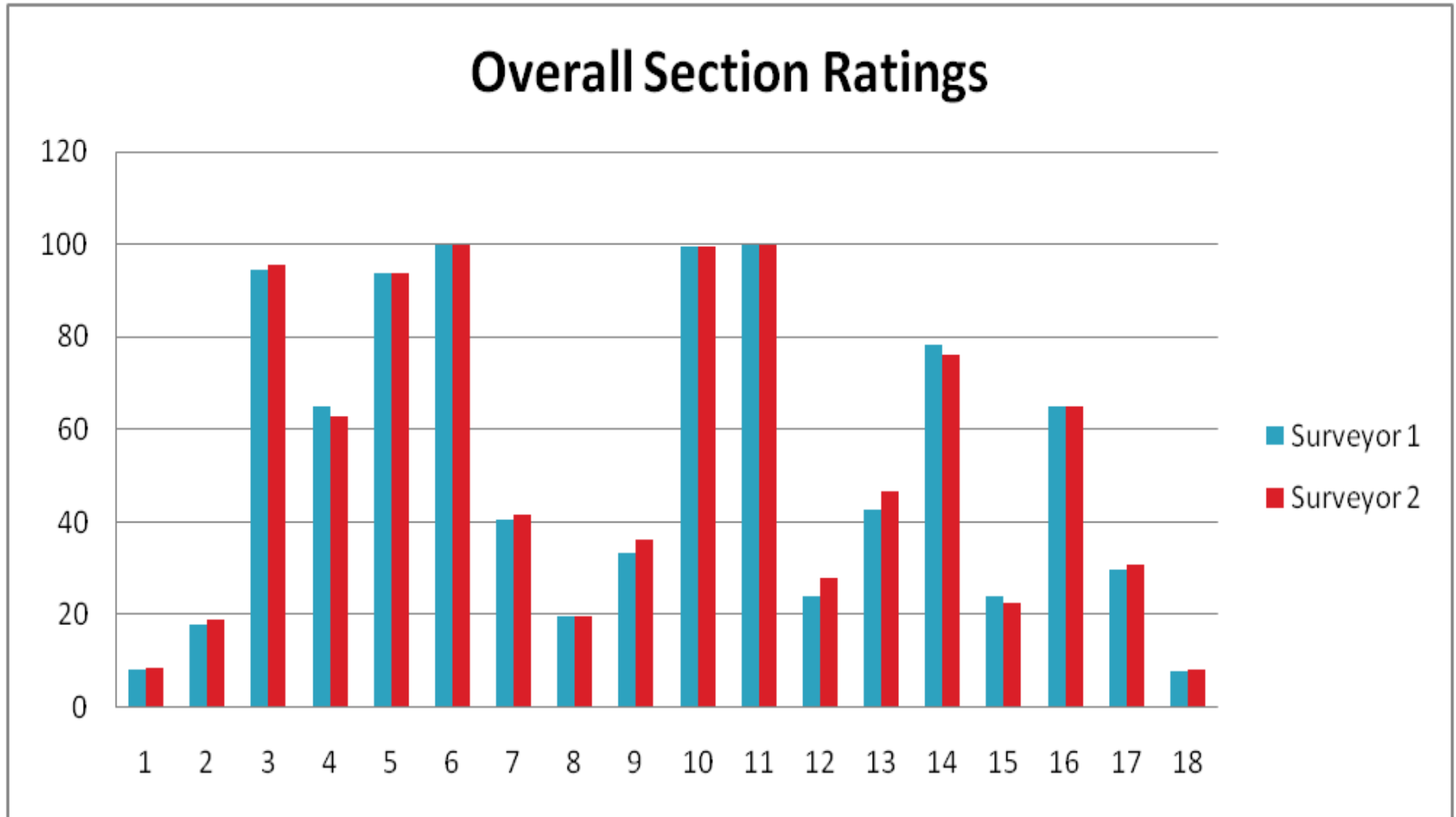


Figure 1. Overall Section Ratings from Survey Team A

# Availability of Crossings



Map source: earth.google.com

# Availability of Crossings

## Distance between Footbridges

Footbridge Interval	Length (m)
1	496
2	942
3	178
4	244
5	751
6	565
7	346
8	164
9	472
10	1048
11	611
12	310

## Parameter 3 (Crossing Safety) Rating for every road stretch

Stretch no.	Rating
1	1
2	1
3	2
4	1
5	1
6	3
7	2
8	1
9	1
10	2
11	2
12	1
13	2
14	3
15	1
16	1
17	2
18	1

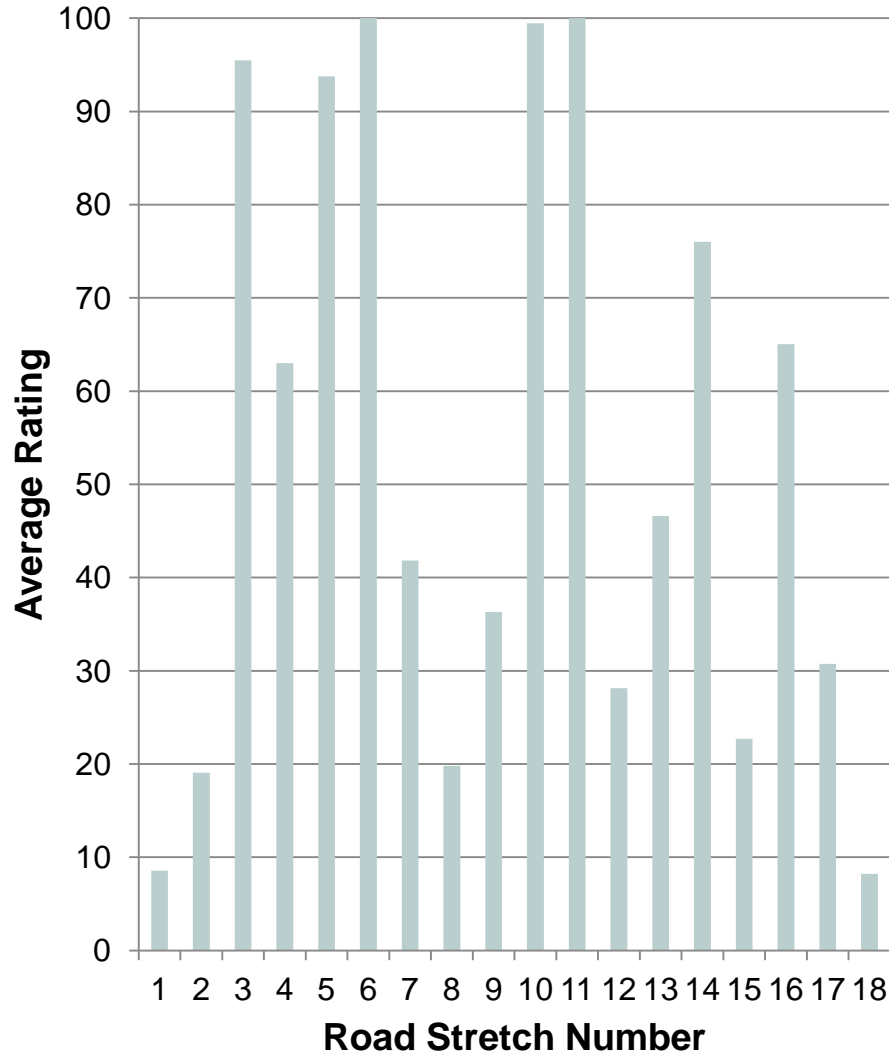


# Motorist Behavior and Grade Crossing Safety

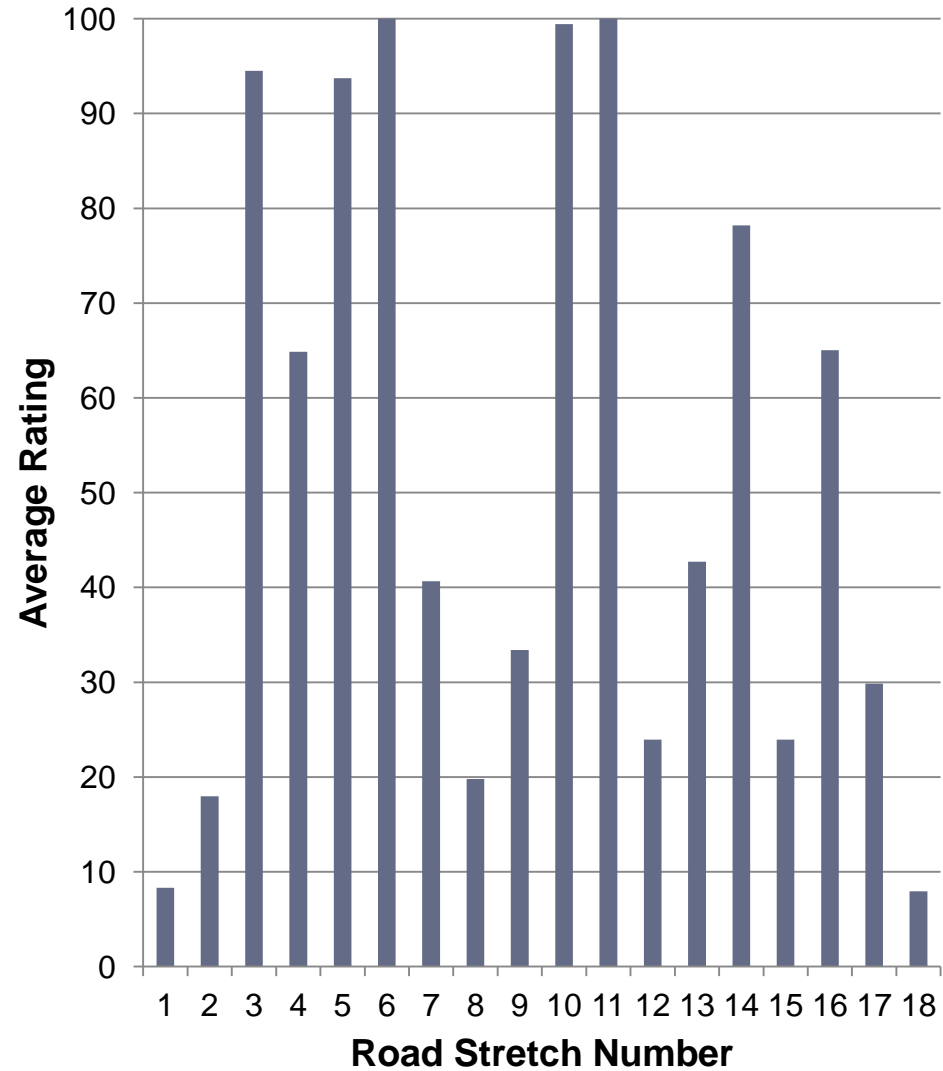


# Motorist Behavior and Grade Crossing Safety

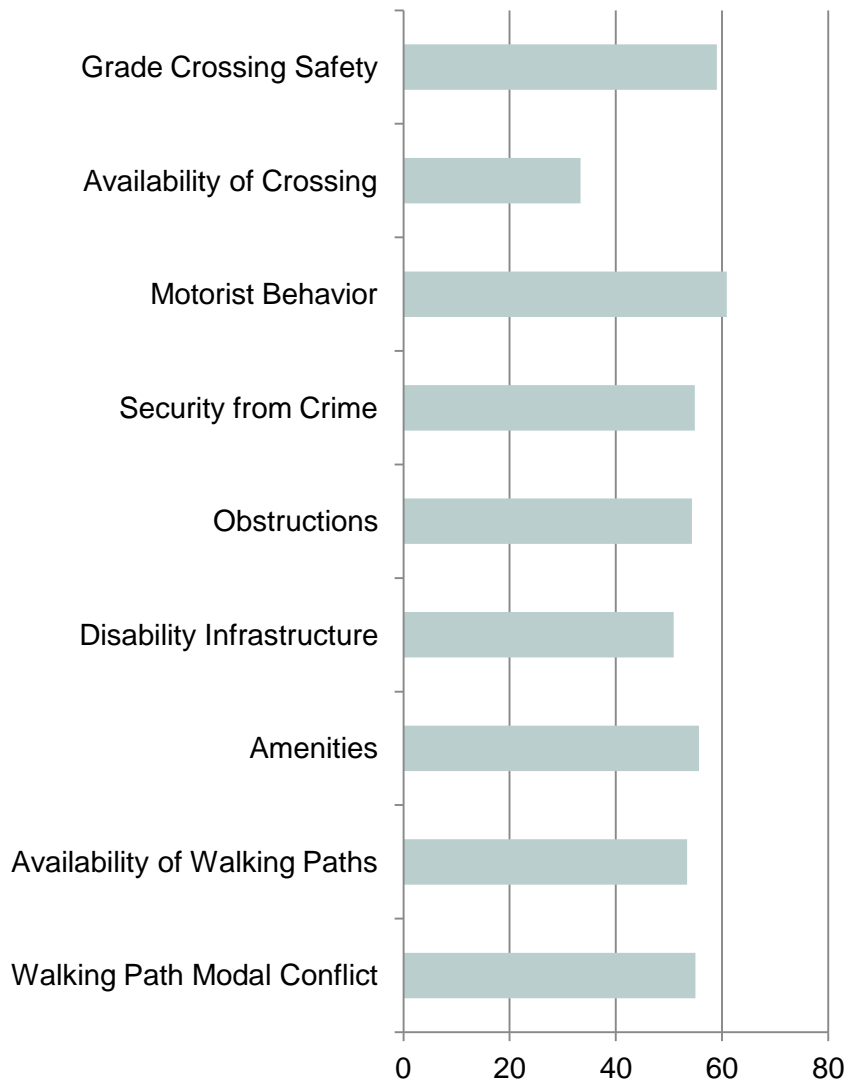




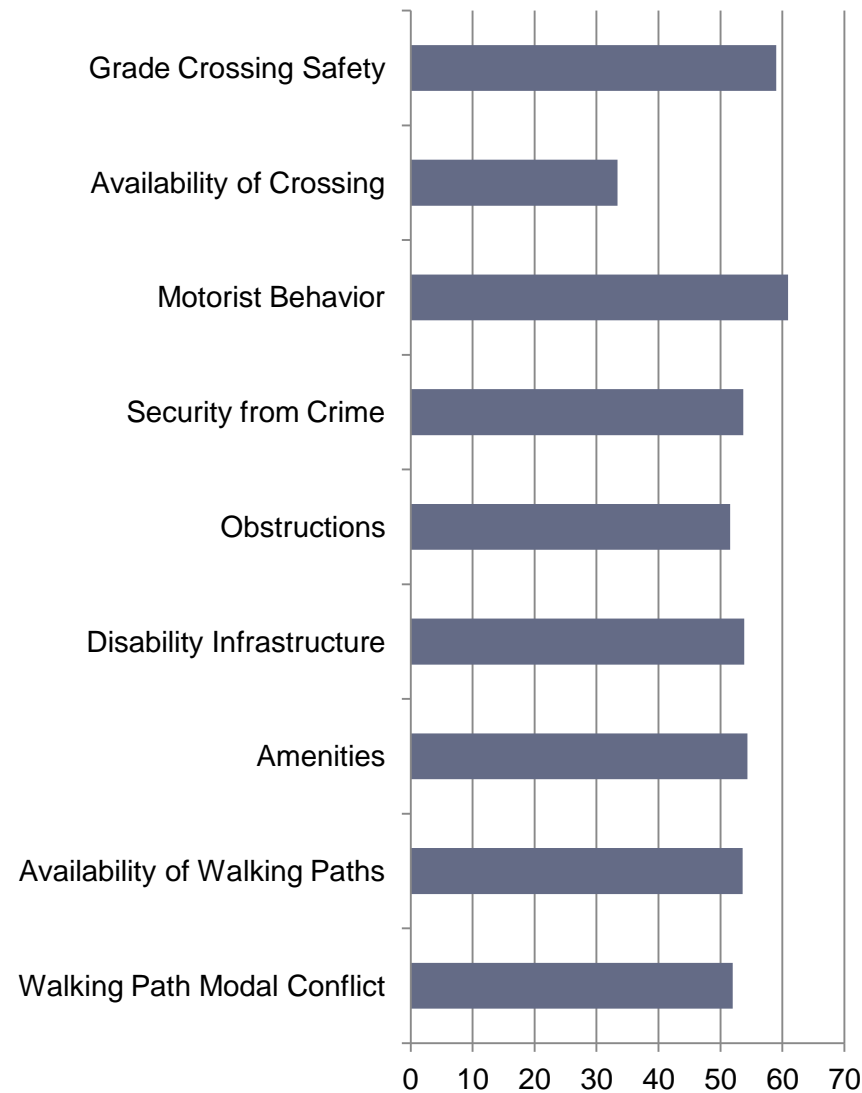
**Average Road Stretch Rating from  
Surveyor 1**



**Average Road Stretch Rating from  
Surveyor 2**



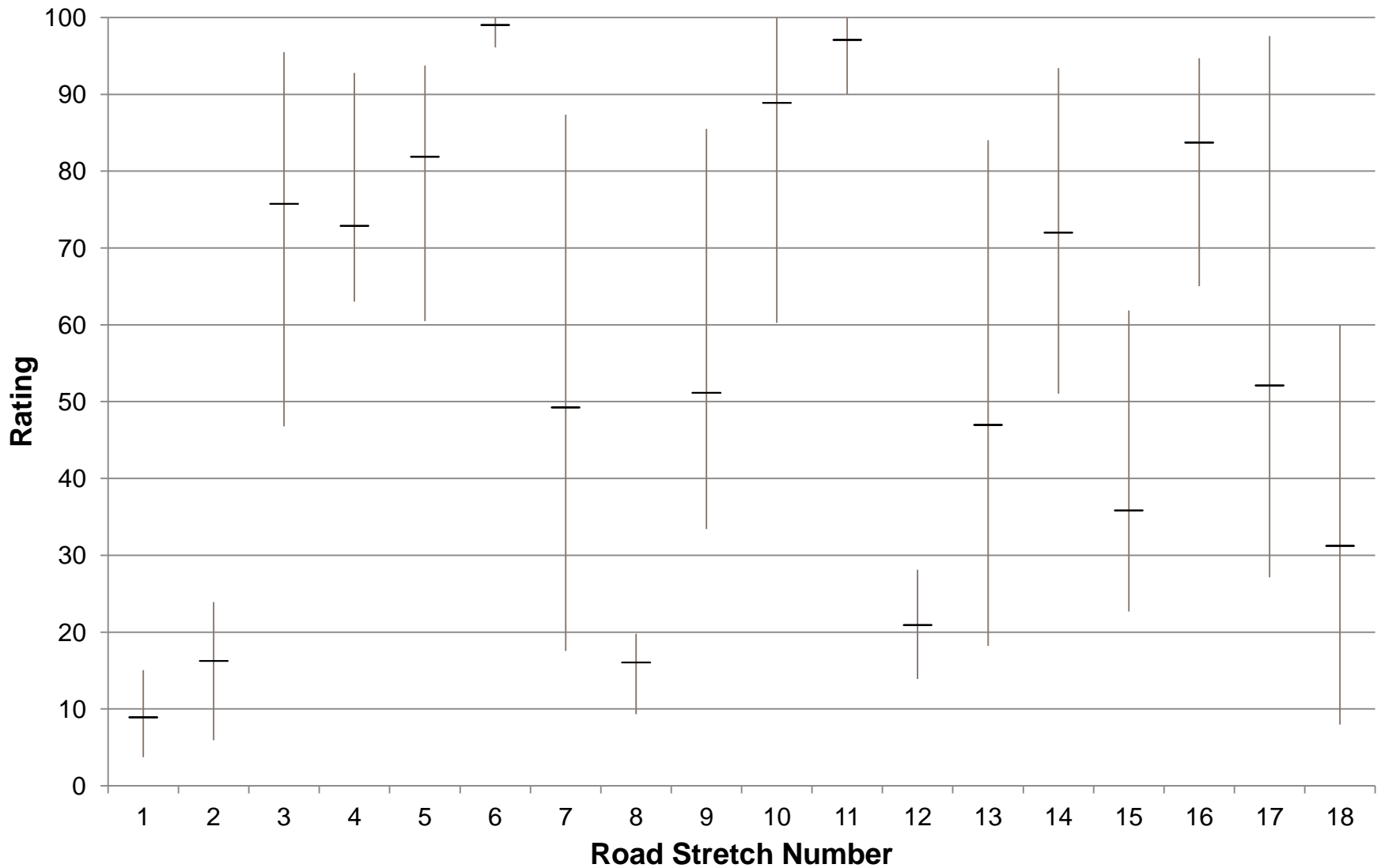
**Average Parameter Rating from  
Surveyor 1**



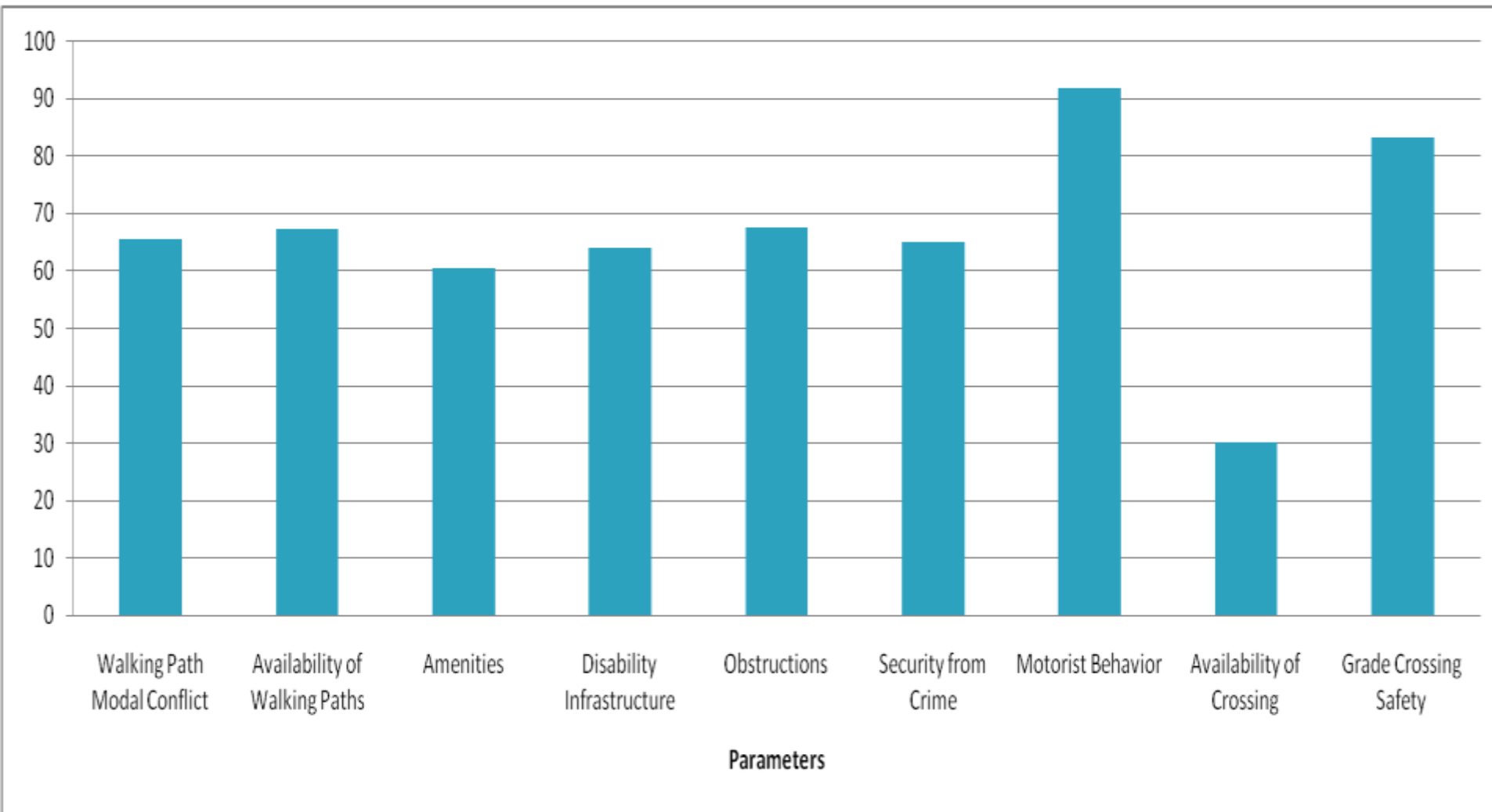
**Average Parameter Rating from  
Surveyor 2**



# Range of values of Section Ratings

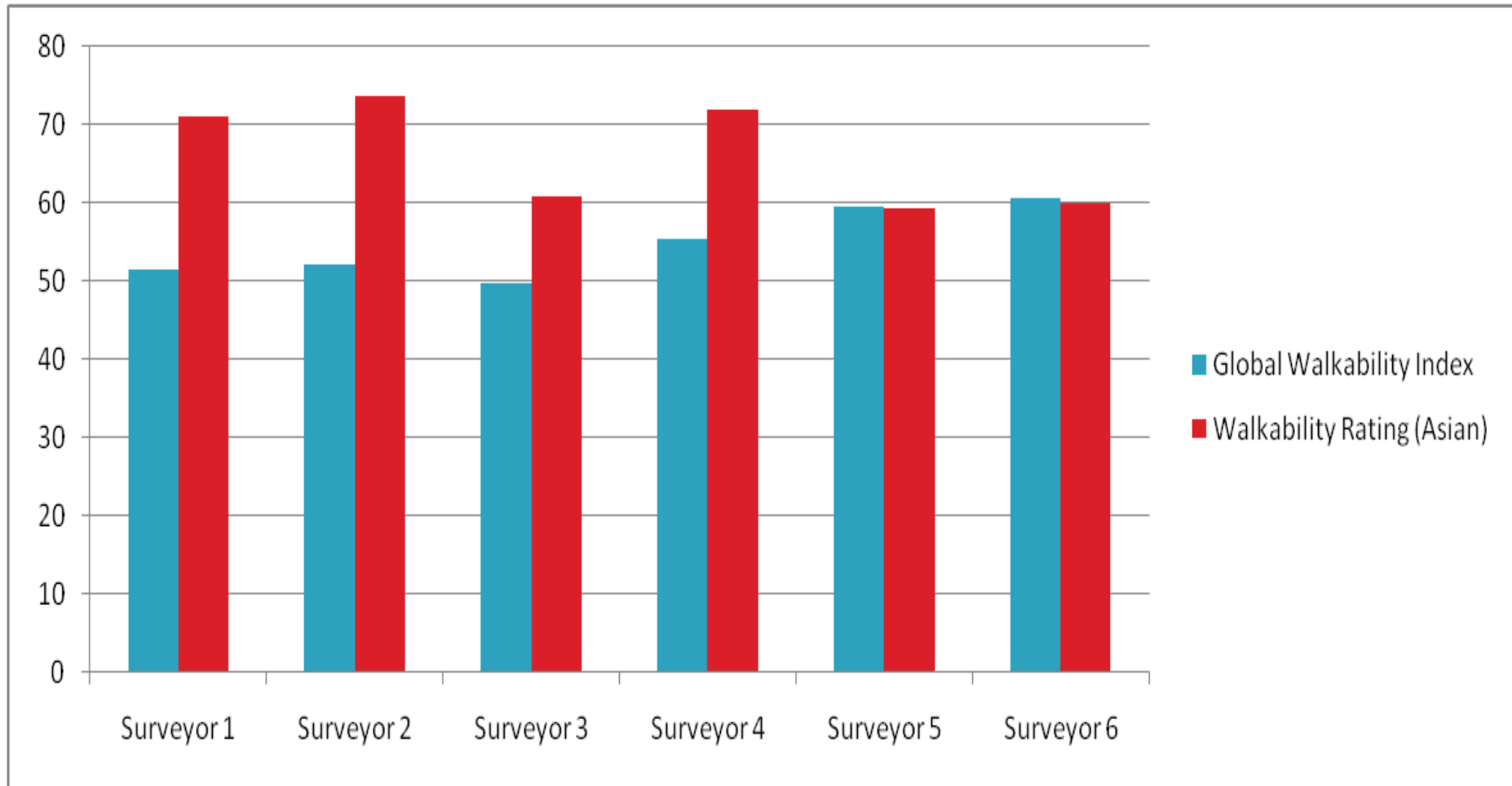


# Asian Method



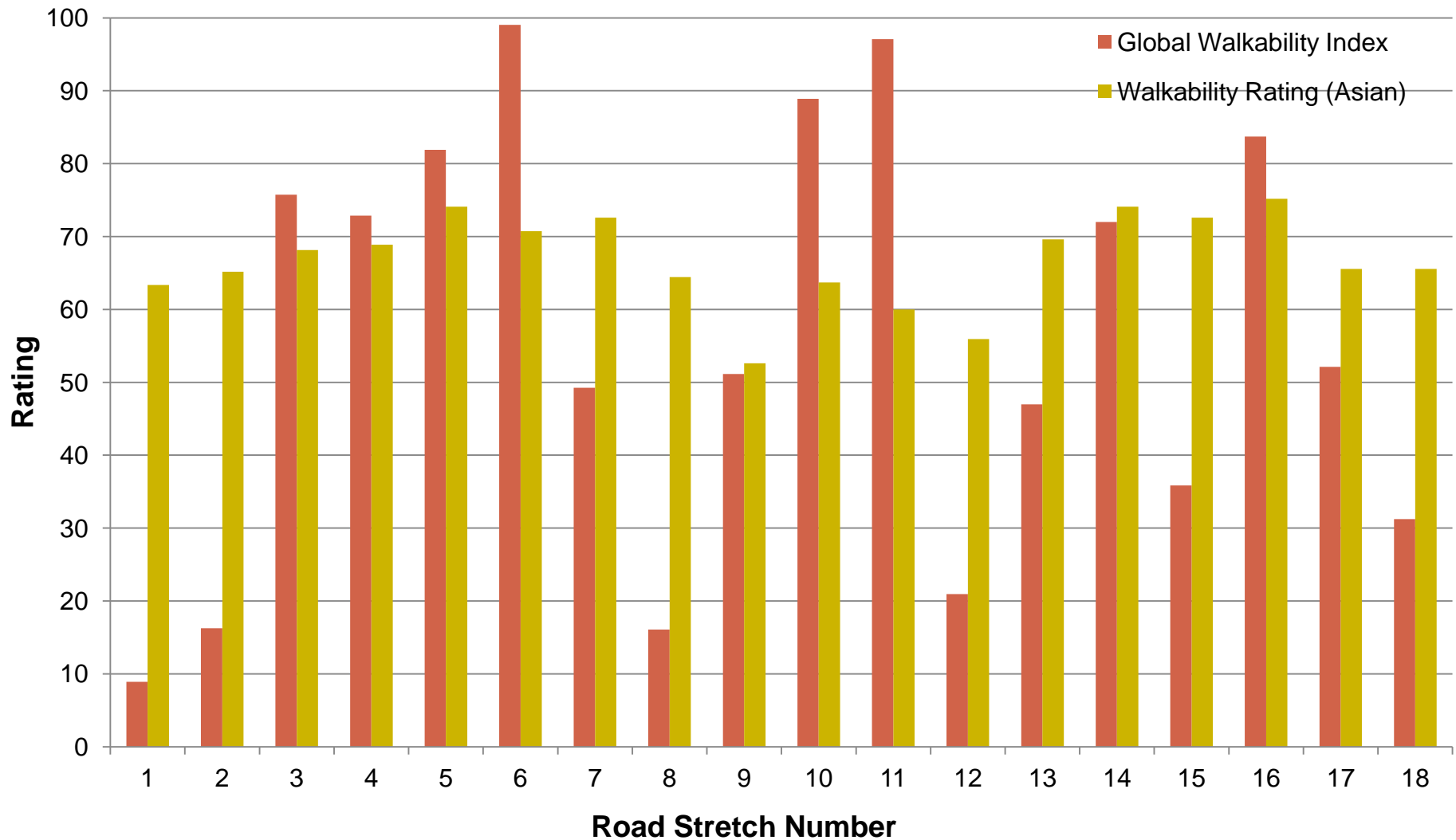
**Average Parameter Rating using Asian Method**

# GWI vs Asian Method



**Comparison of Overall Ratings for GWI and Asian Method**

# GWI vs Asian Method



Comparison of Section Rating between GWI and Asian Method

# Overall Road Rating for Marcos Highway

	Global Walkability Index
Surveyor 1	51.42%
Surveyor 2	52.09%
Surveyor 3	49.56%
Surveyor 4	55.24%
Surveyor 5	59.30%
Surveyor 6	60.55%
Marcos Highway Rating	54.69%

# Conclusion

- Field walkability surveys such as the GWI and Asian Method can be considered as good tools for evaluating pedestrian facilities;
- Marcos Highway overall rating is 54.69%
  - *Davao: 59.68%; Manila: 60.62%; Cebu: 59.05% (CAA, 2011)*
- Improvements may be considered based on the ratings of parameters associated with pedestrian facilities;
- Some modifications may be needed in the methods in order to adapt them to local conditions

# References

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