

McTrans Director's Updates



A Look Ahead at HCM 7.0 from Practitioners' Perspective

Pedestrian Level of Service at Two-Way Stop-Controlled Intersections and Crossings

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To promote safer livable urban spaces and healthy urban environments, more attention has been directed to cost-effective multimodal solutions comprising transit and pedestrian infrastructure investments. The HCM has evolved to provide practitioners with a research-backed methodology to support planning such facilities accounting for pedestrian needs. Currently, HCM6 presents Pedestrian Level of Service (PLOS)

methods for urban streets, signalized intersections, Two-Way Stop-Controlled (TWSC) intersections, midblock crossings, and off-street pedestrian facilities. This article highlights new features for TWSC pedestrian LOS and analysis, based on [NCHRP 17-87: Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities](#).

New Performance Measures

In HCM6, PLOS for TWSC is based on the pedestrian delay only. The HCM7 methodology adds the Percent of Satisfied and Unsatisfied Pedestrians as new PLOS measures. These measures are sensitive to variables that affect the safety and comfort perception from the pedestrians' perspective, such as motorized traffic and crossing treatments.

Pedestrian Level of Service	
Flow (ped/hr)	1
Two-Stage Crossing	Yes
Pedestrian Platooning	No
Conflicting Vehicular Flow (veh/h)	1700
Average Delay (s)	2.9
Prob. of Non-Delayed Crossing, P_{nd}	0.670
Level of Service (LOS)	A

Pedestrian Step 7: PEDESTRIAN SATISFACTION PROBABILITIES AND LOS	
Approach	EastBound
Ped. Experiencing Not Yielding Indicator Var., I_{NY}	0
Satisfaction/Dissatisfaction Odds, $O(S/D, \text{no delay})$	95.150
Probability of Satisfaction, $P(S, \text{no delay})$ (%)	99.0
Probability of Dissatisfaction, $P(D, \text{no delay})$ (%)	1.0

Upcoming Implementation of HCS

Crossing Treatments

HCM7 includes eight new pedestrian crossing treatment options for a total of 15 configurations. Each affects the yield rate of motorized traffic, with a significant effect on P LOS. These rates resulted from a compilation of studies from multiple researchers, as shown in the table below. The average values can be calibrated by the user within an acceptable range.

Crossing Treatment	Yield Rate (%)		Sample Size (sites)
	Average	Range	
No treatment (unmarked)	24	0–100	37
Crosswalk markings only (any type)	33	0–95	58
Crosswalk markings, plus:			
Pedestal-mounted flashing beacon	26	0–52	2
Overhead sign	35	12–57	2
Overhead flashing beacon (push-button activation)	51	13–91	14
Overhead flashing beacon (passive activation)	73	61–76	29
In-roadway warning lights	58	53–65	11
Median refuge island	60	0–100	21
Pedestrian crossing flags	74	72–80	6
In-street pedestrian crossing signs	76	35–88	20
Rectangular rapid-flashing beacon (RFFB)	82	31–100	64
School crossing guard	86	—	1
School crossing guard and RFFB	92	—	1
Pedestrian hybrid beacon (HAWK)	91	73–99	37
Mid-block crossing signals, half signals	98	94–100	13

Sources: Ryus et al. (14), Fitzpatrick et al. (15), Huang et al. (18), Turner et al. (19), Banerjee and Ragland (20), Ellis Jr. et al. (21), Shurbutt et al. (22), Mitman et al. (23), Pécheaux et al. (24), Mitman et al. (25), Ross et al. (26), Brewer and Fitzpatrick (27), Fitzpatrick et al. (28), Nemeth et al. (29), Yang et al. (30), Zheng and Eleftheriatou (31), Schneider et al. (32), Al-Kaisy et al. (33), and Hockmuth and Van Houten (34).

Pedestrian Volumes and Adjustments for the Major Street Crossing			
Crosswalk Length, Stage One (ft)	20	20	
Crosswalk Length, Stage Two (ft)	20	20	
Median Refuge	☒ Yes	☒ Yes	☐ Yes
Start-Up and End Clearance Time (s)	1.0	1.0	
Crosswalk Markings	☒ Yes	☒ Yes	☐ Yes
Crossing Treatment	Rectangular rapid-flashing beacon (RRFB) ▾	Rectangular rapid-flashing beacon (RRFB) ▾	No extra t
Motorist Yield Rate	0.80	No extra treatment	
Rectangular Rapid-Flashing Beacon	☒ Yes	Pedestal-mounted flashing beacon	☐ Yes
Pedestrian Platooning	☐ Yes	Overhead sign	☐ Yes
Crosswalk Width (ft)		Overhead flashing beacon (push-button)	☐ Yes
Show Pedestrian Delay and LOS	☒ Yes	Overhead flashing beacon (passive)	
		In-roadway warning lights	
		Median refuge island	
		Pedestrian crossing flags	
		In-street pedestrian crossing signs	
Upstream Signal	☐ Yes	Rectangular rapid-flashing beacon (RRFB)	
		School crossing guard	
		School crossing guard and RRFB	
		Pedestrian hybrid beacon (HAWK)	
		Mid-block crossing signals, half signals	
Proportion of Time Blocked	Left Thru Right	Left Thru Right	

Upcoming HCS Pedestrian Inputs, including HCM7 Crossing Treatments



Pedestrian Crossing with Signals and Crossing Guard

Conclusions

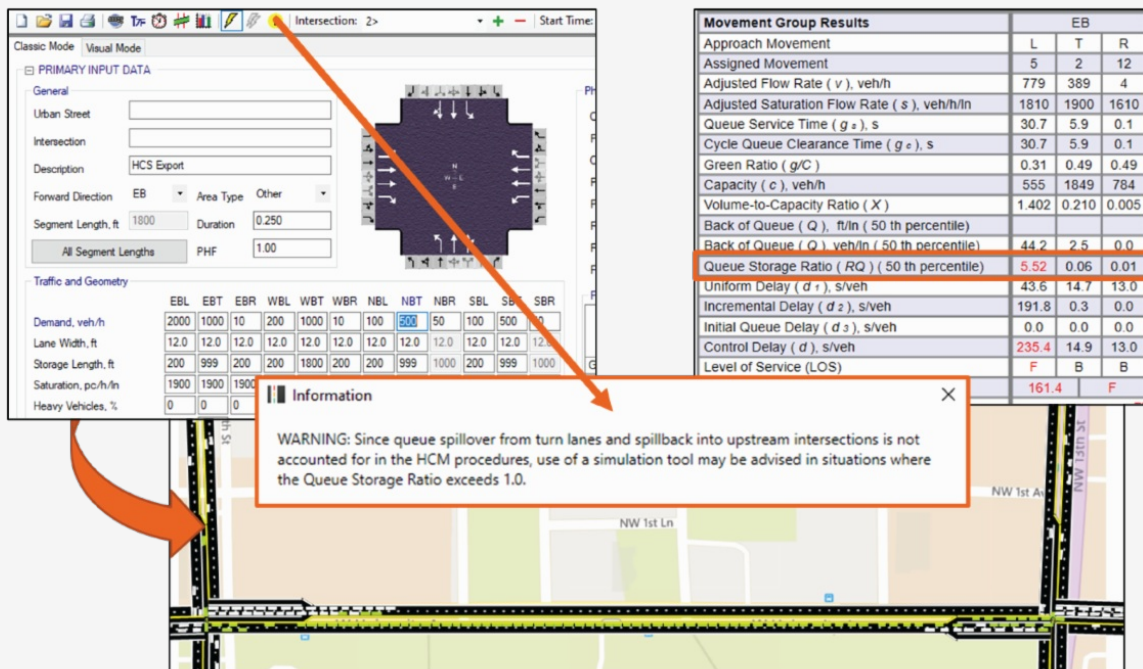
Following the trend of promoting multimodal urban transportation and more livable cities, the upcoming Highway Capacity Software (HCS 2022) release will implement HCM7 methods for pedestrian analysis at TWSC intersections and crossings. The method is more sensitive to the pedestrian perspective of safety and comfort, in addition to traditional delay measures. Also, 15 crossing configurations are covered by the model, allowing for the practitioners to plan their facilities, accounting for pedestrians on a new level.

TIPS & HINTS

Chapter 06 - HCM and Alternative Analysis Tools Compliance

HCS Streets Examples

Compliant to HCM Chapter 6: HCM and Alternative Analysis Tools, HCS modules warn the user when specific configurations should be modeled in a microsimulation environment. In the example, a signalized intersection with an insufficient left-turn pocket was exported to TSIS-CORSIM using a one-click feature on HCS Streets, where queue spillback reaching the upstream intersection is visualized.



Welcome Jeremy Gluck!

We are very excited to welcome Jeremy Gluck to our team as an Application Developer Analyst!

Jeremy is a Computer Scientist from Melbourne, Florida. He graduated with a Bachelor's in Computer Science from the Florida Institute of Technology in 2020. "I'm honored to work at UF because it's one of my ideal choices for graduate study."

At McTrans, he will be working with our software development team to maintain and improve HCS and TSIS-CORSIM.

Visit Our Exhibition Booth at the TRB Annual Meeting 2022

We are thrilled to be back in Washington, D.C. in January as the [TRB Annual Meeting](#) returns to an in-person format. As usual, we will hold an exhibition booth where our experts will be available to showcase our latest products and address any questions from visitors.

This is an exciting time as the HCM7 is being published by TRB, with new methods being implemented in the upcoming Highway Capacity Software 2022 Release. Visitors will be able to take a sneak peek into the rebranded HCS2022 and learn about our new initiatives, such as new training courses and an updated version of our traffic microsimulation tool, TSIS-CORSIM2022

Make sure to stop by at **Booth #1131** and say hello to our team! The Exhibit Hall will be open at the following times:

Sunday, Jan 09, 4 pm – 7 pm

Monday, Jan 10, 9 am – 4 pm

Tuesday, Jan 11, 9 am – 4 pm



SimSub Activities at TRB

The SimSub subcommittee at TRB (ACP80) prepared a [list of activities](#) at the TRB 2022 Annual Meeting that may interest the traffic simulation community.

Please see the information and draft agendas for the ITE SimCap and SimSub meetings at TRB. Please note that the ITE SimCap meeting (held at the 2022 TRB Annual Meeting) is now 100% virtual. There will be no in-person meeting location at the Convention Center.

ITE SimCap Meeting | ITE

January 11, 1:00 - 2:30p EST

Virtual. [More Information](#)

2022 SimSub Annual Meeting | TRB

January 11, 6:00 - 7:30p EST

Room 204 Convention Center. [More Information](#)

Upcoming Training Webinars

Highway Capacity Analysis Virtual Training

12 PDHs are provided for each series

Jan 25 - 27, 2022 1 - 5 PM ET

Mar 08 - 10, 2022 1 - 5 PM ET

Highway Safety Analysis Virtual Training

8 PDHs are provided for each series

Feb 22 - 23, 2022 1 - 5 PM ET

Apr 05 - 06, 2022 1 - 5 PM ET

[Ready to Register?](#)



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