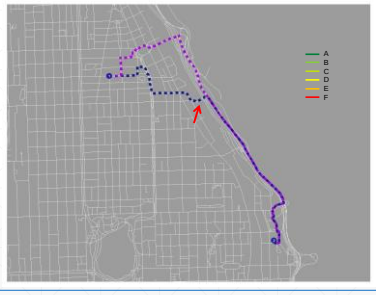
Bicycle Switching Model

Development Update

CMAP Bicycle and Pedestrian Task Force – 12/14/2016

Model overview

- Identify trips that may be affected by the facility improvement
- Determine the difference in travel costs due to the improvement
- Estimate the probability of an auto trip switching to bicycle mode



Model overview

- Auto trips eliminated
- VMT reduction

Description	Zone	Annual Auto Trips Eliminated	Annual VMT Eliminated
43rd St Access Bridge to Lakefront Trail	335	781	3,241
Milwaukee and Lake Av Multi-use Path	468	1,430	3,220
Old Orchard Rd from Harms Rd to Woods Dr	522	71	5
US 14/Northwest Hwy from Hough St to Lake Zurich Rd	982	294	729
Sycamore Av, Walnut Av and Unmarked Street Bike Lanes	381	51	146
Chestnut Av Multi-Use Path	471	61	76
Golf Rd Path from Roosevelt Blv to Ring Rd	427	152	336
IL 19/Irving Park Rd from Schaumburg Rd to Park Blv	323	183	236
Flag Creek Bicycle Corridor	619	1,257	4,247
108th Av Trail Connection	717	2,383	7,941
Ridgeland Av from College Dr to 135th St	702	183	729
Bike to Metra	736	821	2,698
North Aurora Rd Underpass at CN/EJ&E	1310	274	960

→Air quality benefits

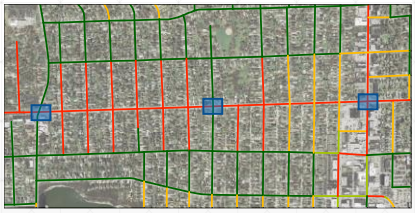
→Programming tool, *not a planning tool*

Level of Traffic Stress – components

- Segments
  - Physically separated bikeways: LTS = 1
  - Bike lanes vs. mixed traffic
- Intersection approaches
  - Lack of region wide data
- Crossings
  - Signalized vs. unsignalized

Mekuria, Maaza C., Peter G. Furth, and Hilary Nixon. *Low-Stress Bicycling and Network Connectivity*. Mineta Transportation Institute. San Jose, CA. May 2012

Level of Traffic Stress – example



Level of Traffic Stress – modifications

- Traffic volume – PENALTY
- Off street – BONUS

LINK_ID	ST_NAME	BLOS	LTS	LTS_Score_v3
19867514	HANEY RD	A	1	1.015646
948704145		A	1	0.5
19868874	WAUSAU AVE	A	1	1.023563
19852836	S 84TH AVE	A	1	1.021451
27680225	FAIRWAY DR	B	2	2.029218
1020943629		A	1	0.5
130129520	S PARKER RD	D	4	4.114043
19867452	E 154TH ST	E	4	4.302545
796242141	BLACK RD	E	4	4.721018

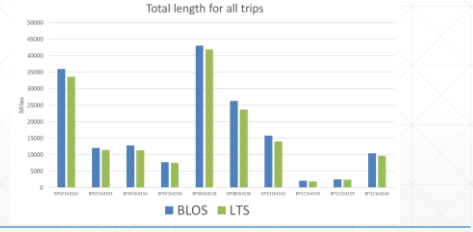
Level of Traffic Stress vs. LOS

- Data availability
- No correspondence between BLOS and user tolerance
- "Black box" formula
- Insufficient treatment for newer/enhanced on-street facilities

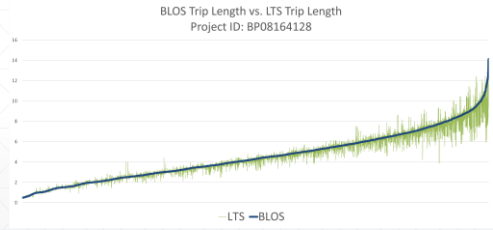
Current limitations

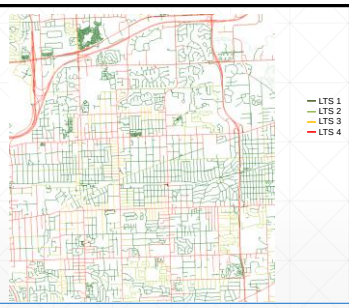
- Data availability
- Does not evaluate latent demand
- No empirical validation
- Not a routing tool – does not assign bike trips to the network
  - Cannot answer the question: "How many people will use this facility?"
- Programming tool, *not a planning tool*

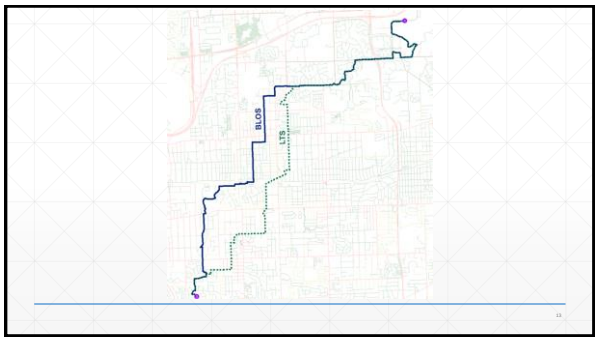
Comparison to BLOS method – Total trip length



Comparison to BLOS method – Individual trip lengths







Model results

Project ID	BP07164158	
	BLOS	LTS
Annual Auto Trips Eliminated	486	436

- Village of Park Forest
- Proposed side path along Western Ave.
- Connecting Old Plank Road Trail and Thorn Creek Trail

Project ID	BP11164160	
	BLOS	LTS
Annual Auto Trips Eliminated	152	112

- Village of Lake in the Hills
- Proposed bike path along Lakewood Road
- Extend existing path north from Algonquin Road, connecting to existing paths at Reed Road and Miller Road

Project ID	BP12164159	
	BLOS	LTS
Annual Auto Trips Eliminated	597	598

- Village of Romeoville
- Multi-Use path through ComEd right-of-way
- Connecting to existing path along Airport Road