

Appendix C: Stress Level Methodology for Evaluating Bicycle-Compatible Roadways

The following evaluation closely follows a methodology developed by Alex Sorton, Northwestern University Traffic Institute, and Thomas Walsh, Wisconsin DOT. Madison is one of the country’s model bicycle communities. Their system ranks the compatibility of existing roadways based on the relative level of stress a cyclist encounters on a given route. Adjustments can be made for conditions particular to New York City. The goal is to establish a predictable method for evaluating the subjective reactions of bicyclists to different roadway conditions. In addition, feasibility of implementation of Class 2 bicycle lanes can be determined along a specific route, subject to further analysis. Baseline data needed to complete the evaluation includes volume, as measured by curb lane hourly traffic volume, vehicular speed, and curb lane width.

Interpretation of Bicycling Stress Levels

<u>Stress Level</u>	<u>Cyclist Skill Level</u>	<u>Interpretation</u>
1	Low (L)	Inexperienced / Beginner
2	Low-Moderate (LM)	Intermediate
3	Moderate (M)	Intermediate - Experienced
4	Moderate-High(MH)	Experienced
5	High (H)	Expert

Stress levels are used to rate primary stress variables for proposed bicycle routes, assuming no changes to existing roadway conditions.

Primary Roadway Variables Affecting Stress

Curb lane width: Field measurement

Curb lane traffic volume: Average Daily Traffic x Peak Hour factor / number of lanes or highest hourly curb lane volume in a 24 hour period (Automatic Traffic Recorder count).

Curb Lane Width* vs. Stress Level

*Curb lane is the right-most travel lane on two-way streets, and the left most travel lane on one-way streets.

<u>Stress Level</u>	<u>Curb Lane Width</u> (without parking)	<u>Curb Lane Width</u> (with parking)
1	≥ 15'	≥ 23'
2	14'	22'
3	12'	20'
4	11'	19'
5	≤ 10'	≤ 18'

Streets with bus routes where frequency is greater than every 15 minutes, 2 feet should be added to all curb lane measurements.

Curb Lane Traffic Volume* vs. Stress Level

*Curb lane is the right-most travel lane on two-way streets, and the left most travel lane on one-way streets.

<u>Stress Level</u>	<u>Volume</u>	<u>Description</u>
1	<50	Not applicable to New York City.
2	<150	Low
3	151-300	Moderate-heavy
4	301-500	Heavy
5	>500	Approaching capacity

Vehicle Speed vs. Stress Level

<u>Stress Level</u>	<u>Speed</u>	<u>Description</u>
1	<15 mph	Not applicable to New York City.
2	<25 mph	Low
3	26-34 mph	Moderate
4	35-44 mph	High
5	>45 mph	Approaching highway speed