

Sample of Bike and Pedestrian Service Level Evaluations

One of the biggest challenges for producing a Bicycle and Pedestrian plan will be to provide an inventory of existing conditions for bicycling and pedestrians in Town. In particular streets and intersections need to be assessed to identify areas where improvements are desirable. This is not intended to be a complete Road Safety Audit (RSA)¹ such as the state uses for projects.

This paper will look at the various ratings that have been used for bicycle and pedestrian planning. In particular it will identify the data needed for each approach. The goal of this paper is to help decide on rating schemes to use for the plan by eliminating ones that present too many challenges (either fiscal or labor) in collecting the needed data.

For the plan we will ignore local streets and concentrate on Arterial and Collector roads, plus a few local streets where a major traffic source is present. Even this will mean rating many miles of roads, plus a large number of intersections. Note: even with the reductions, we will probably need to use *sample sections* and then extrapolate for the initial report from there. We should try to collect actual data for any specific recommendations involving a road.

Bicycle Indices

There are three major bicycle rating schemes for roads that are used for bicycle plans. The three schemas are:

1. **Bicycle Level of Service (BLOS)** – This index is commonly used and has been modified so that the reader needs to know the exact version being used. For the rest of this paper we are referring to the model as developed by Sprinkle Consulting²
2. **Bicycle Compatibility Index (BCI)** – This is the standard developed by the Federal Highway Administration³. This is also commonly used but is also been reviewed and criticized.
3. **Level of Traffic Stress (LTS)** – This is a more recent study developed in California⁴ it emphasizes providing criteria for the safety of the network. Unlike the two prior studies it does analyze intersections as well as mid-block safety.

All of the above ratings may need to be tuned to Westborough's conditions. For example the LTS assumes most side streets are 25 MPH or less, where in Massachusetts 30 MPH is the norm.

¹ http://www.pedbikeinfo.org/planning/tools_audits.cfm

² <http://www.sprinkleconsulting.com/Images/UserSubmitted/BicycleLevelofServiceModel.pdf>

³ <http://safety.fhwa.dot.gov/tools/docs/bci.pdf>

⁴ <http://transweb.sjsu.edu/project/1005.html>

There are two major bicycle rating schemes for intersections, these are:

1. **Bicycle Intersection Safety Index (BISI)** - This is the standard developed by the Federal Highway Administration⁵. The actual report considers both bicycle and pedestrian safety.
2. **Level of Traffic Stress (LTS)** – This is the same study listed above, there are separate calculations for intersections.

Pedestrian Indices

While there major criteria for pedestrians is the presence or absence of sidewalks, there are approaches for rating road safety:

1. **Pedestrian Level of Service (PLOS)** – This index was also developed by Sprinkle Consulting⁶
2. **Pedestrian Environment Quality Index⁷ (PEQU)** – This method was developed to reflect the whole
3. **Safe Routes To School (SRTS)** – This is the national program to support walking and biking to schools, they have a *Walkability Checklist*⁸. This checklist is more opinion than specific measure, so for this paper we will map the questions to data used by other studies.

There are two major bicycle rating schemes for intersections, these are:

1. **Pedestrian Intersection Safety Index (PISI)** - This is the standard developed by the Federal Highway Administration. See the BISI for the report reference.
2. **Safe Routes To School (SRTS)** – See the road safety section above.

Required Data

The following table lists the data items used to calculate all the indices with a check for each specific index need for the data. Note: for intersections, the data is needed for one or both roadways.

⁵ <http://www.fhwa.dot.gov/publications/research/safety/pedbike/06130/06130.pdf>

⁶

http://www.sprinkleconsulting.com/Images/UserSubmitted/Modeling%20the%20Roadside%20Environment_A%20Pedestrian%20Level%20of%20Service.pdf

⁷ <http://www.sfhealthequity.org/elements/24-elements/tools/106-pedestrian-environmental-quality-index>

⁸ <http://drusilla.hsrb.unc.edu/cms/downloads/walkabilitychecklist.pdf>

Data Item	Bicycle					Pedestrian				
	Road			Intersection		Road			Intersection	
	BLOS	BCI	LTS	BISI	LTS	PLOS	PEQI	SRTS	PISI	SRTS
Lane Width (outside lane)	√	√	√	√	√	√	√	√	√	√
Number of Lanes	√	√	√	√	√	√	√	√	√	√
One Way?				√			√		√	
Shoulder Width	√	√	√	√		√			√	
Bike Lane Width		√	√	√		√	√	√	√	√
Shoulder Width Reduction (due to encroachments)	√									
Parking Lane Width		√	√	√		√	√	√	√	√
Parking Lane Occupancy		√	√							
Speed Limit	√	√	√	√	√	√	√			√
Traffic Volume	√	√		√		√		√		
Truck Traffic Volume	√	√								
Volume of Right Turns		√								
Number of driveway cuts							√		√	
Pocket Bike Lane (where a right turn lane is present)					√					
Intersection/crosswalk type				√					√	
Traffic control type				√	√		√	√	√	√
Right turn on red allowed				√					√	
Sight Distance				√						
Sidewalk Width and Type						√	√			
Buffer width sidewalk to road						√	√	√		√
Impediments and obstructions to sidewalk								√		√
Crosswalk present				√			√	√		√
Additional signage for crossing							√			
Pavement Condition	√									
Traffic calming (type)							√		√	
Residential vs Commercial Area		√		√			√		√	
Lighting Present				√			√		√	