

Name: \_\_\_\_\_

### Bicycle Compatibility Index (BCI) Model

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This class worksheet introduces an accepted method for quantifying the “capability of specific roadways to accommodate both motorists and bicyclists” (Harkey, Reinfurt and Sorton 1998) using University Drive in San Marcos, Texas as an example. The BCI includes 9 variables in the model. Use the photograph to determine 3 of them; the remaining 6 are provided.



University Drive near Moon Street image by Google, 2010

The following BCI formula was adapted to U.S. feet from meters and used in further research by Hallett, Luskin and Machemehl (2006):

BCI = 3.67

- (0.966 \* BL) ) BL = presence of a bicycle lane or paved shoulder greater than 3 feet, No = 0, Yes = 1
- (0.125 \* BLW) ) BLW = bicycle lane (or paved shoulder) width in feet (to the nearest tenth)
- (0.152 \* CLW-1) ) CLW = curb lane width, feet (to the nearest tenth)
- + (0.002 \* CLV) ) CLV = curb lane volume, vehicles per hour (v/hr) in one direction
- + (0.0004 \* OLV) ) OLV = other lane(s) volume—same direction, v/h
- + (0.035 \* SPD) ) SPD = 85th percentile traffic speed, mph
- + (0.506 \* PKG) ) PKG = presence of a parking lane with more than 30 percent occupancy, No = 0, Yes = 1
- (0.264 \* AREA) ) AREA = type of roadside development, Residential = 1, Other type = 0
- + (AF) ) AF = Adjustment factors include large truck volume, parking turnover and right turn volumes; see references for details.

**1. What is this section of University Drive’s Bicycle Compatibility Index? \_\_\_\_\_**

Use the following given factors, and find the remaining 3 from the photograph above.

- bicycle lane width (BLW) = 0
- curb lane width (CLW) = 12 feet
- curb lane volume (CLV) = 400 vehicles per hour
- other lane volume (OLV) = 400 vehicles per hour
- traffic speed (SPD) = 30 mph
- adjustment factors (AF) = 0.1

*Suggestion: write the factors in the space provided in the formula above.*

**2. What level of service grade and compatibility level equates to the BCI? \_\_\_\_\_**

Use the table below:

BCI Range	Level of Service (LOS)	Compatibility Level
≤1.50	A	Extremely high
1.50-2.30	B	Very high
2.31-3.40	C	Moderately high
3.41-4.40	D	Moderately low
4.41-5.30	E	Very low

>5.30	F	Extremely low
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**3. Based on the inputs to the BCI model, what could be done to improve the roadway's bicycle compatibility?**

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References:

- Hallett, Ian, David Luskin, and Randy Machemehl. 2006. *Evaluation of On-Street Bicycle Facilities Added to Existing Roadways*. Report No. FHWA/TXDOT-06/0-5157-1. Austin, TX: Center for Transportation Research, The University of Texas at Austin. Available online at [http://www.utexas.edu/research/ctr/pdf\\_reports/0\\_5157\\_1.pdf](http://www.utexas.edu/research/ctr/pdf_reports/0_5157_1.pdf)
- Harkey, D.L., D.W. Reinfurt, and A. Sorton. 1998. *The Bicycle Compatibility Index: A Level of Service Concept, Implementation Manual*. Publication No. FHWA-RD-98-095. Washington, D.C.: Federal Highway Administration., Available online at <http://www.hsrc.unc.edu/research/pedbike/98095/index.html>.