Developing a Measure of Traffic Calming Associated with Elementary School Students’ Active Transport

Lisa M. Nicholsona,b, PhD

[lnicho4@uic.edu](mailto:lnicho4@uic.edu)

Lindsey Turnera, PhD

[lindseyt@uic.edu](mailto:lindseyt@uic.edu)

Sandy J. Slatera, PhD

[sslater@uic.edu](mailto:sslater@uic.edu)

Haytham Abuzayd, MA

[habuza3@uic.edu](mailto:habuza3@uic.edu)

Jamie F. Chriquia, PhD

[jchriqui@uic.edu](mailto:jchriqui@uic.edu)

Frank Chaloupkaa, PhD

[fjc@uic.edu](mailto:fjc@uic.edu)

a The Institute for Health Research and Policy

Health Policy Center

University of Illinois Chicago

1747 W. Roosevelt Road

Chicago, IL 60608

USA

**Address Correspondence to Corresponding Author:**

b Lisa M. Nicholson, PhD

Visiting Research Scientist

University of Illinois Chicago

1747 W. Roosevelt Road

Chicago, IL 60608

Email: [lnicho4@uic.edu](mailto:lnicho4@uic.edu)

Phone: 1-614-389-3425

**Abstract**

The objective of this study is to develop a measure of traffic calming with nationally available GIS data from NAVTEQ and to validate the traffic calming index with the percentage of children reported by school administrators as walking or biking to school, using data from a nationally representative sample of elementary schools in 2006-2010. Specific models, with and without correlated errors, examined associations of objective GIS measures of the built environment, nationally available from NAVTEQ, with the latent construct of traffic calming. The best fit model for the latent traffic calming construct was determined to be a five factor model including objective measures of intersection density, count of medians/dividers, count of low mobility streets, count of roundabouts, and count of on-street parking availability, with no correlated errors among items. This construct also proved to be a good fit for the full measurement model when the outcome measure of percentage of students walking or biking to school was added to the model. The traffic calming measure was strongly, significantly, and positively correlated with the percentage of students reported as walking or biking to school. Applicability of results to public health and transportation policies and practices are discussed.

**Keywords:** Traffic Calming, GIS-measures, physical activity, active transport, walking and biking to school