

Performance-Based Safety Evaluation on a Systemic Level The Wisconsin Story

Lee Gibbs

Senior Traffic Engineer, SRF Consulting Group, lgibbs@srfconsulting.com

Jeff Knudson

Senior Traffic Engineer, SRF Consulting Group, jknudson@srfconsulting.com

Phil Kulis

Traffic Engineer, SRF Consulting Group, pkulis@srfconsulting.com

The Wisconsin Department of Transportation (WisDOT), like many other state DOTs, face the challenge of addressing wide-ranging infrastructure needs with limited budget. Similar to many other DOTs, Wisconsin has historically used standards-based policies to address roadway safety, relying on the “assumed” safety that is inherent in standard designs. This policy may lead to implementing costly safety improvements even in the absence of historical safety concerns.

WisDOT is updating their policies to focus on performance-based safety evaluation measures and moving away from a pure standards-based policy. Instead of wholesale roadway improvements, performance-based practical design (PBPD) will “fix only what needs to be fixed” by using data-driven methodologies and substantive safety practices. These practices include the use of predictive crash modeling with Highway Safety Manual methodologies and application of FHWA’s Interactive Highway Safety Design Model (IHSDM) software to forecast crash frequency and severity of alternative project safety treatments. Having these alternative safety performance values then allows WisDOT to apply standard economic appraisal practices to determine the relative cost effectiveness of these safety treatments.

Wisconsin will be among the first states to formally adopt a PBPD policy for its improvement program. This practice will result in more efficient application of limited budget across the state. WisDOT, in conjunction with SRF Consulting Group, developed this policy and methodologies to apply PBPD in determining whether safety mitigation alternatives are cost effective for a project.

Keywords: safety; crash prediction modeling; benefit/cost analysis; HSM; IHSDM