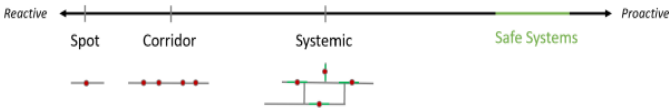
Collaborative Sciences Center for ROAD SAFETY

RESEARCH BRIEF

An Enhanced Systemic Approach to Safety

The traditional transportation safety management approach involves the identification of crash hotspots, in which public agencies prioritize locations eligible for safety improvements based on historical collision concentrations. This project presents an enhanced approach that consists of targeting systemic improvements at high-risk sites across a road network based on specific roadway features that are associated with a particular crash type.

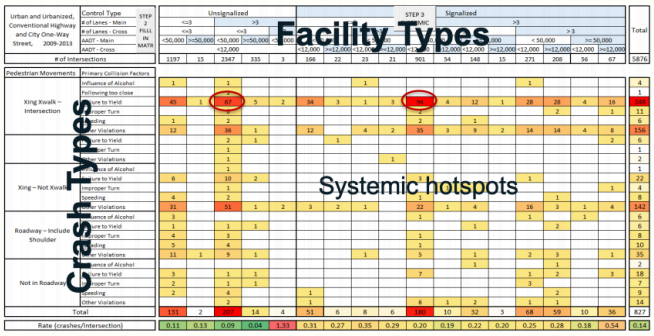


Continuum of reactive to proactive approaches to injury prevention.

The systemic approach uses historical crash data to identify the types of roadways that suffer from recurring safety concerns, designating it as reactive to data, but also provides a more proactive mechanism to make improvements to sites that have the same risk factors present but have not experienced many—or any—crashes. The systemic approach is a flexible, data-informed methodology that aims to identify recurring safety concerns by identifying the crash profiles that are associated with certain roadway features.

For this study, researchers developed a method for agencies to conduct a systemic safety analysis that takes the form of a transparent systemic crash matrix and shows what types of crashes occur on what types of facilities, with rows representing crash characteristics and columns corresponding to facility types.

Using such a matrix provides agencies with a snapshot of systemic problems within their networks, which is both easy to assemble and to interpret, thus overcoming potential barriers to changes in road safety management due to limited institutional capacity or financial means. The framework is flexible enough to allow agencies different safety priorities and with varying degrees of data availability to implement it. The report includes background principles, detailed guidance on data management, analysis, and interpretation, and a case study using California crash data.



Example systemic pedestrian matrix illustrating what types of crashes are happening on what type of facilities, using California data.

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