COMPLETE STREETS
Safety Analysis

U.S. Department of Transportation
Federal Highway Administration

The Federal Highway Administration (FHWA) Office of Safety and Operations Research and Development published the *Complete Streets—Safety Analysis* report.[1] This report provides transportation practitioners and other stakeholders with a resource that identifies and describes current capabilities, best practices, and future data and analysis needs to quantify the safety performance effects of the multiple safety treatments agencies implement simultaneously during Complete Streets projects.

Background

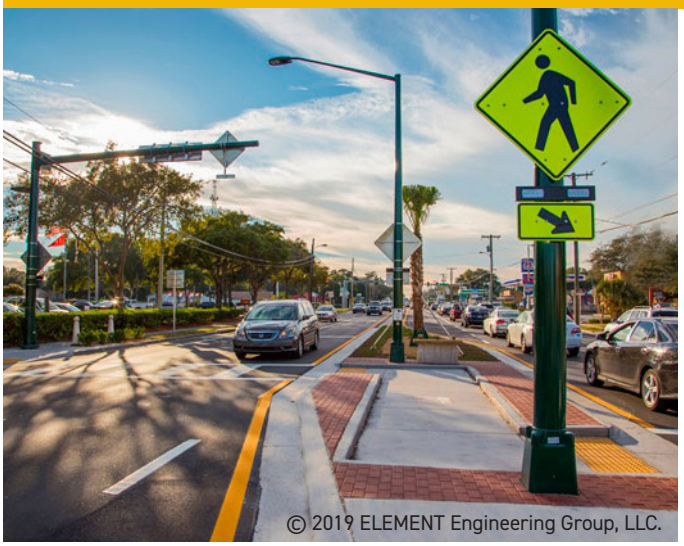
"*A Complete Street is safe, and feels safe, for all users.*"[2] Complete Streets prioritizes safety for all users and seeks to plan, design, and operate streets that minimize or eliminate the chances of fatal and life-changing injuries. FHWA is taking a leadership role in advancing Complete Streets, leading efforts to identify and overcome challenges and capitalize on opportunities to expand the implementation of Complete Streets. FHWA's Complete Streets initiative seeks to increase the proportion of projects that are built with Federal-aid funds that are also safe for all users.

The ability to fully quantify the expected safety benefits of Complete Streets transformations using crash-based, data-driven safety analysis (DDSA) methods is limited.[3] *The Complete Streets—Safety Analysis* report addresses this challenge by applying existing analysis methods from the Highway Safety Manual to the Complete Streets context, assessing their effectiveness, and documenting future research needs.[1,4]

Report Highlights

- Common combinations of treatments implemented on Complete Streets projects (chapter 2).
- Current crash modification factor (CMF) availability for common Complete Streets treatments (chapter 3).
- Complete Streets safety analysis primer (chapter 4).
- Catalog of common Complete Streets treatments and methods for combining CMFs (appendices A and B).
- Five detailed case studies with analysis results (Appendix C).

To see the full report scan the QR code or visit: https://highways.dot.gov/research/publications/safety/FHWA-HRT-24-074



Treatment Combinations and CMF Capabilities

The Complete Streets Safety Analysis project identified a geographically diverse sample of 85 Complete Streets projects from both urban and rural areas and collected data on each project, including which treatments were implemented as part of the project.[1]

The report explores these data, including the number of treatments applied per project, the common area type and treatment category types, and the most common treatments and combinations of two, three, and four treatments. The report also includes an assessment of current CMFs for quantifying the safety performance effects of the common Complete Streets treatments. The assessment showed several gaps in CMF availability for common Complete Streets treatments due to data- and method-related challenges in developing CMFs for pedestrian and bicyclist safety treatments and for the most severe crash types.

Case Studies

The project involved safety performance analyses of five Complete Streets case study projects.[1]

The project team used case studies to compare different analysis methods and develop the guidance included in the report. The case studies represent a range of contexts, from rural towns to urbanized areas, and include various treatment combinations.

Complete Streets Safety Analysis Primer

Chapter 4 of the report is a primer on conducting DDSA of Complete Streets projects to estimate the combined safety effect of multiple treatments.

The primer lays out processes for the following two analysis applications:

- *Predictive analysis:* The preconstruction application, where analysts estimate the expected safety performance of a proposed Complete Streets project compared to an alternative condition (e.g., the no-build condition).
- *Safety effectiveness evaluation:* The postconstruction application, where analysts estimate the safety effectiveness of a finished Complete Streets project (e.g., the build condition).

The primer describes the data and preparation required and provides a step-by-step walk-through of the analysis methods. The primer then discusses common challenges and limitations in existing data and methods and future research needs. Transportation practitioners can use this primer to estimate the safety benefits of a proposed or finished Complete Streets alternative. Researchers can use this primer to evaluate the safety effectiveness of constructed Complete Streets projects or to identify and address the challenges related to the current data and methods.

Conclusions

The report concludes by summarizing existing challenges, limitations, and future directions and opportunities.

References

1. FHWA. 2024. *Complete Streets—Safety Analysis.* Report No. FHWA-HRT-24-074. Washington, DC: Federal Highway Administration.
2. U.S. Department of Transportation (USDOT). n.d. "Complete Streets in FHWA" (web page). https://highways.dot.gov/complete-streets, last accessed November 30, 2023.
3. USDOT. 2022. "Data-Driven Safety Analysis (DDSA)" (web page). https://highways.dot.gov/safety/data-analysis-tools/rsdp/data-driven-safety-analysis-ddsa, last accessed November 30, 2023.
4. AASHTO. 2010. *Highway Safety Manual, 1st Edition.* Washington, DC: American Association of State Highway Transportation Officials (AASHTO). https://www.highwaysafetymanual.org/Pages/About.aspx, last accessed November 30, 2023.

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