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FHWA Update

Carol Tan, PhD
Office of Safety & Operations R&D
August 18, 2022

MIRE – Sarah Weissman Pascual

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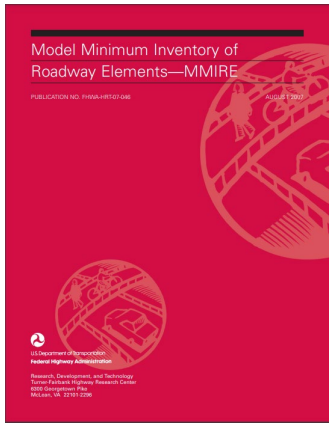
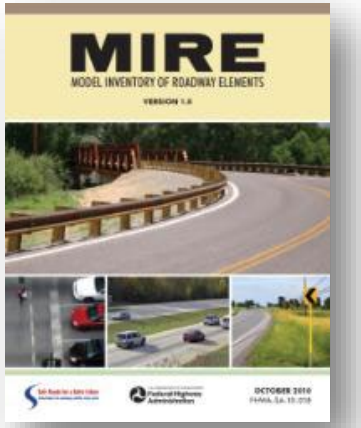
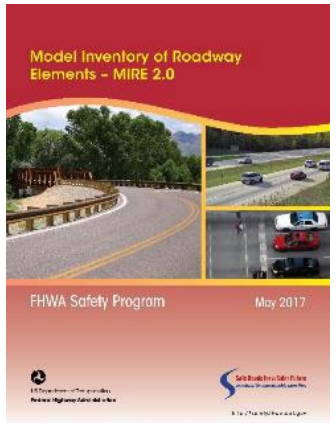
2007
MMIRE





2010
MIRE 1.0

2017
MIRE 2.0



2023-2024
MIRE 2.1

Source: FHWA

Model Inventory of Roadway Elements Fundamental Data Elements (MIRE FDE): Example Illustrations

FHWA-SA-22-058
Source: FHWA

https://safety.fhwa.dot.gov/rsdp/downloads/MIRE_FDE_Example_Illustrations_508.pdf

Interactive Highway Safety Design Model

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Software

- Concluded software development in October 2021
- Tech Support by Geometric Design Lab will continue through September 2024

Training (FHWA-NHI-380100)

- Virtual training in a blended web-conference training format (self-paced modules + instructor-led modules via webinar)
- Est. course length is 14 hours
- Cost is $75
- LINK

FREE Pilot Training Opportunity

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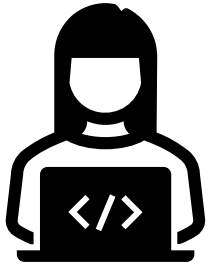
- FHWA is seeking volunteers to participate in a pilot of a new NHI web-based, self-paced course “Introduction to Data-Driven Safety Analysis”
- Participants will have two weeks to complete the 6-8 hour course and exam
- Training is an introduction, but novice and experienced practitioners are welcome (feel free to share with others within your organization)
- **Participants will be capped at the first 50 people**
- **Email Jerry to sign up yourself or others (jerry.roche@dot.gov)**



Countermeasure Service Life Guide

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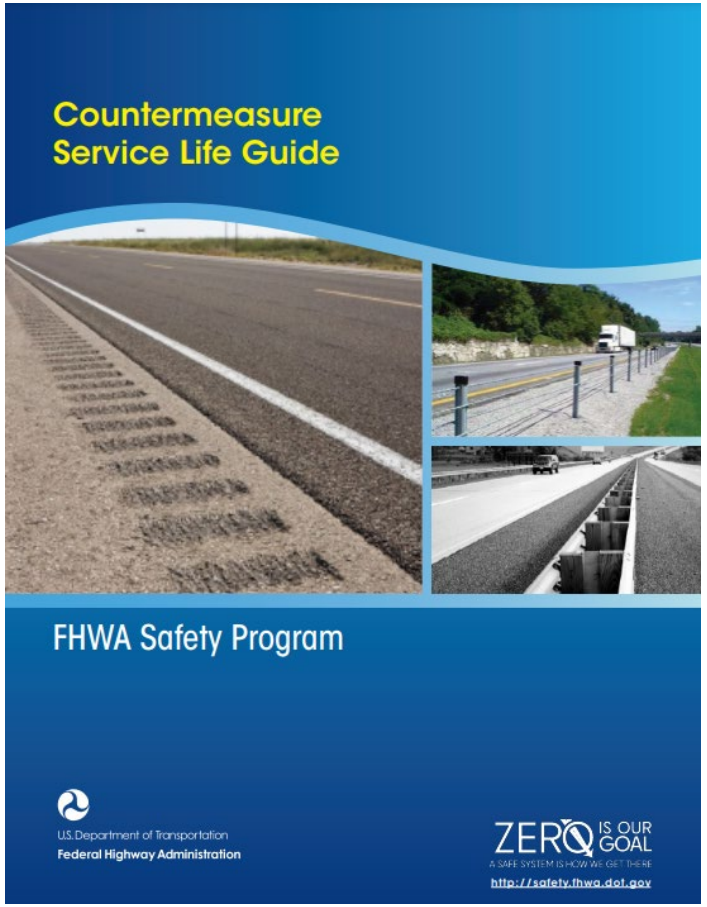
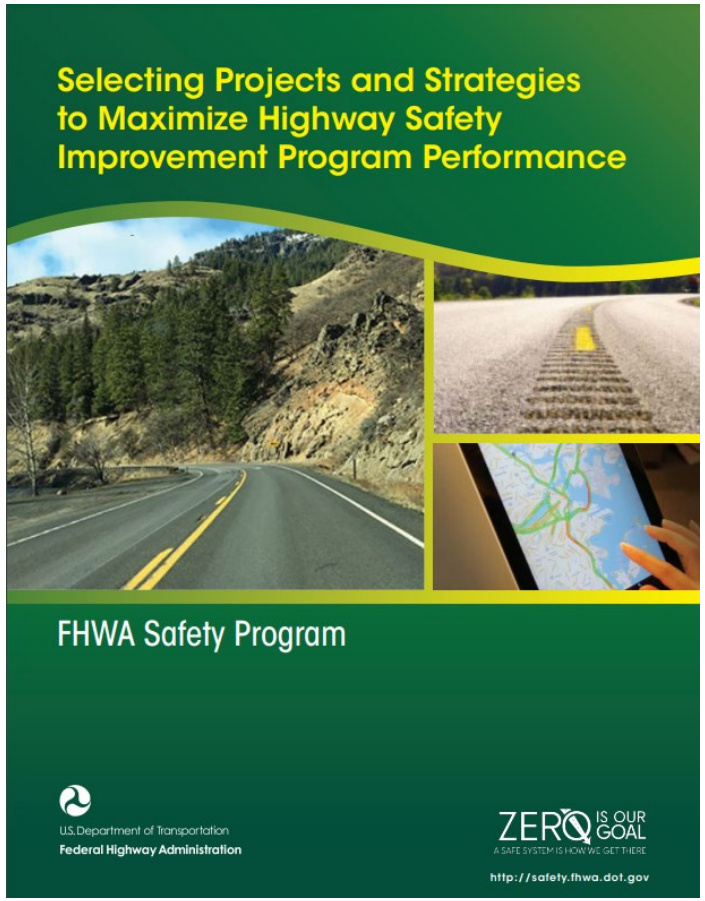


FHWA-SA-21-026
Source: FHWA

- help practitioners make consistent, data-driven decisions for evaluating and ranking safety countermeasures through the use of prescribed countermeasure service lives
- provides typical service lives for a wide range of countermeasures implemented with Highway Safety Improvement Program funding
- demonstrates the benefits to standardizing countermeasure service life application within an agency
- provides background information on factors that can impact countermeasure service life and analytical considerations when conducing benefit-cost analysis for multiple countermeasures or alternatives with differing service life

Selecting Projects and Strategies to Meet Safety Performance Targets



FHWA-SA-20-001
Source: FHWA

- Outlines opportunities throughout the safety management process to maximize lives saved and injuries prevented
- Proposed two new methods: BCR (KA) and Countermeasure Score
- Two Case Studies on new methods included
- Published March 2021

DDSA How-To Guides

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Traffic Impact Analyses

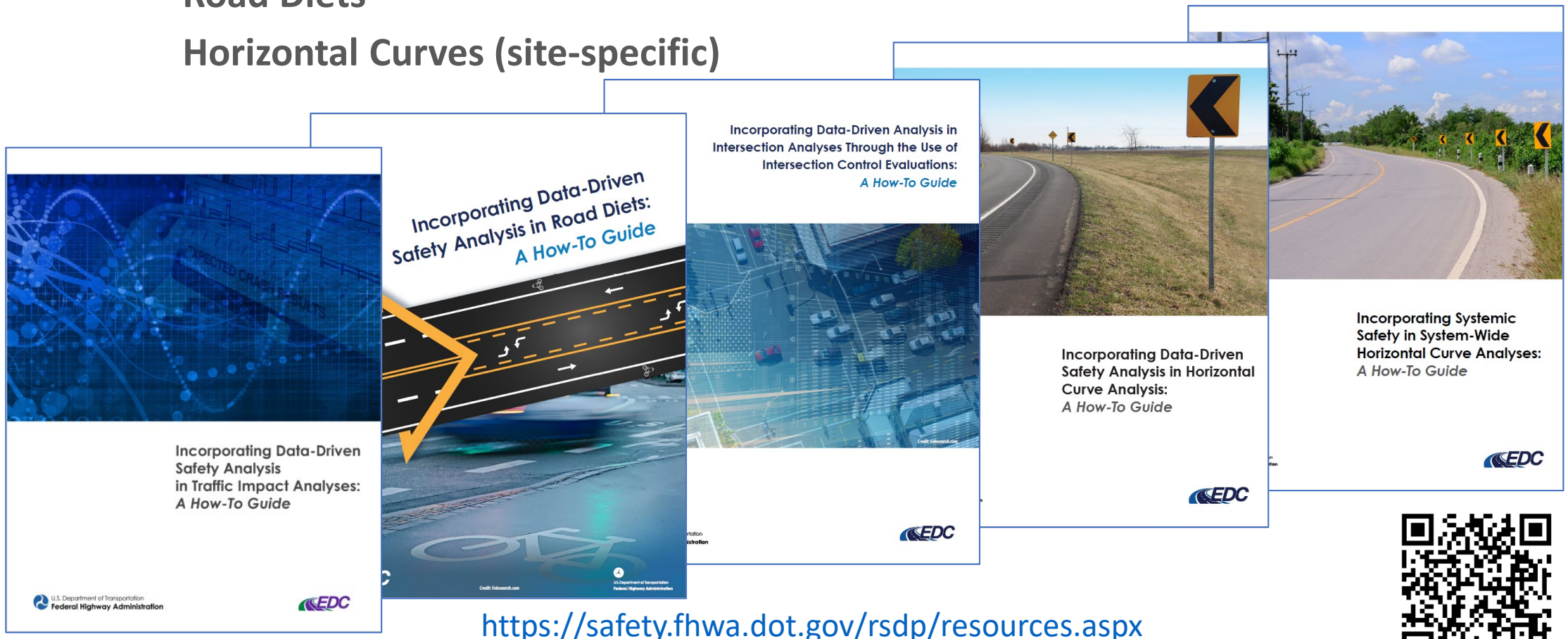
Intersection Control Evaluation

Road Diets

Horizontal Curves (site-specific)

Horizontal Curves (systemic)

Re-Allocation of Existing Roadway Widths



https://safety.fhwa.dot.gov/rsdp/resources.aspx

Safety Data and Analysis Case Studies

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Partially Funded by the HSM Implementation Pooled Fund, TPF-5(255)

- 21 total case studies with 12 focused on HSM related applications
- Case Study Template provided by User Liaison Subcommittee ACS20(1)
- Various applications, methods, tools, and facility types
- HSM Implementation Pooled Fund Members ranked and prioritized potential case studies

https://safety.fhwa.dot.gov/rsdp/safety_casestudies.aspx

- OH: Data Governance
- NY: Data Integration
- SC: SC61 Rural Safety Project
- IN: IN SR37 Improvement
- KY: Network Screening Process
- MO: Data Mgmt & Spatial Integration
- LA: MPO Data Governance
- WFL: Road Safety & Traffic Assessment
- WI: SR75 Intersection Screening
- MI: I-94 Interchange Alternatives
- TX: I-37 Interstate Access Justification
- MN: I-35 Planning Study
- MA: Safety Data Visualization
- AL: Roadway Redesign for Ped Safety
- AZ: Data Management on LRS
- CA: High Injury Network & Planning for Zero
- CT: Enterprise Data System & Processes
- FL: Safe Strides 2 Zero
- OH: Intersection Inventory
- VT: Intersection MIRE Data
- FL: MIRE Data Collection

Local Road Safety Plan DIY Site

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https://safety.fhwa.dot.gov/LRSPDIY/

Pedestrian and Bicycle Crash Analysis Tool

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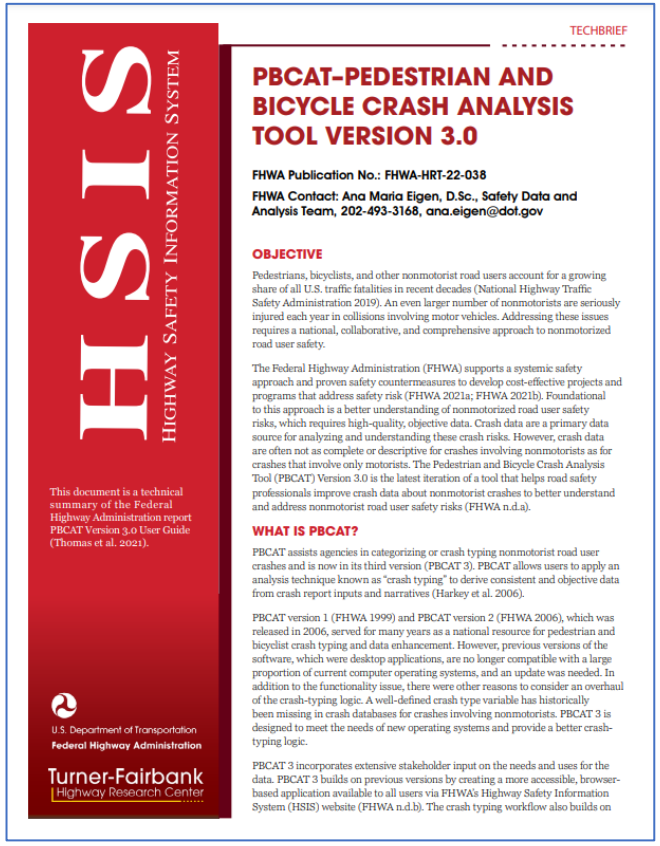


HSIS
HIGHWAY SAFETY INFORMATION SYSTEM

This document is a technical summary of the Federal Highway Administration report PBCAT Version 3.0 User Guide (Thomas et al. 2021).

U.S. Department of Transportation
Federal Highway Administration

Turner-Fairbank Highway Research Center

TECHBRIEF

PBCAT–PEDESTRIAN AND BICYCLE CRASH ANALYSIS TOOL VERSION 3.0

FHWA Publication No.: FHWA-HRT-22-038

FHWA Contact: Ana Maria Eigen, D.Sc., Safety Data and Analysis Team, 202-493-3168, ana.eigen@dot.gov

OBJECTIVE

Pedestrians, bicyclists, and other nonmotorist road users account for a growing share of all U.S. traffic fatalities in recent decades (National Highway Traffic Safety Administration 2019). An even larger number of nonmotorists are seriously injured each year in collisions involving motor vehicles. Addressing these issues requires a national, collaborative, and comprehensive approach to nonmotorized road user safety.

The Federal Highway Administration (FHWA) supports a systemic safety approach and proven safety countermeasures to develop cost-effective projects and programs that address safety risk (FHWA 2021a; FHWA 2021b). Foundational to this approach is a better understanding of nonmotorized road user safety risks, which requires high-quality, objective data. Crash data are a primary data source for analyzing and understanding these crash risks. However, crash data are often not as complete or descriptive for crashes involving nonmotorists as for crashes that involve only motorists. The Pedestrian and Bicycle Crash Analysis Tool (PBCAT) Version 3.0 is the latest iteration of a tool that helps road safety professionals improve crash data about nonmotorist crashes to better understand and address nonmotorist road user safety risks (FHWA n.d.a).

WHAT IS PBCAT?

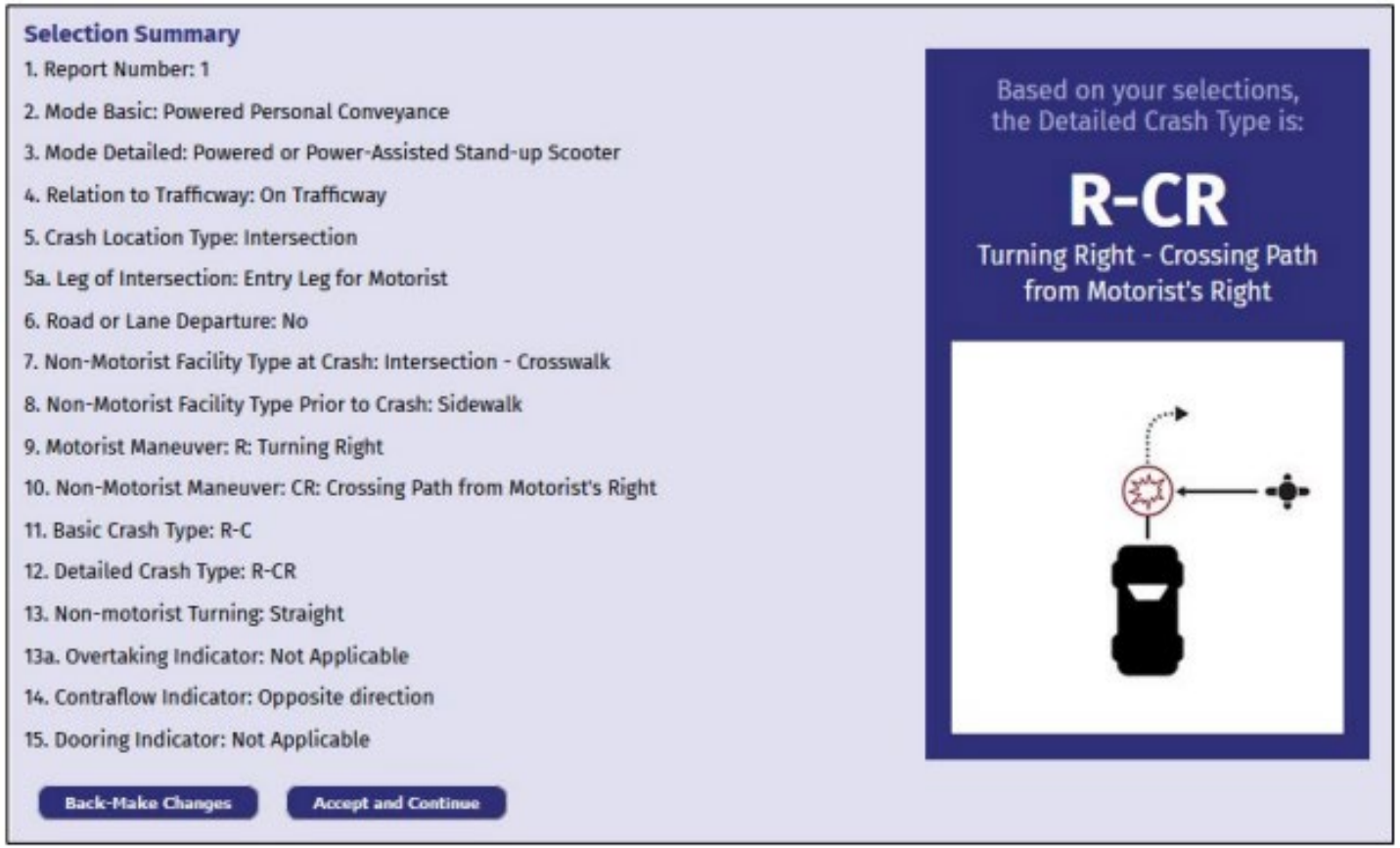
PBCAT assists agencies in categorizing or crash typing nonmotorist road user crashes and is now in its third version (PBCAT 3). PBCAT allows users to apply an analysis technique known as "crash typing" to derive consistent and objective data from crash report inputs and narratives (Harkey et al. 2006).

PBCAT version 1 (FHWA 1999) and PBCAT version 2 (FHWA 2006), which was released in 2006, served for many years as a national resource for pedestrian and bicyclist crash typing and data enhancement. However, previous versions of the software, which were desktop applications, are no longer compatible with a large proportion of current computer operating systems, and an update was needed. In addition to the functionality issue, there were other reasons to consider an overhaul of the crash-typing logic. A well-defined crash type variable has historically been missing in crash databases for crashes involving nonmotorists. PBCAT 3 is designed to meet the needs of new operating systems and provide a better crash-typing logic.

PBCAT 3 incorporates extensive stakeholder input on the needs and uses for the data. PBCAT 3 builds on previous versions by creating a more accessible, browser-based application available to all users via FHWA's Highway Safety Information System (HSIS) website (FHWA n.d.b). The crash typing workflow also builds on

FHWA-HRT-22-038
Source: FHWA

Version 3 now available!



https://www.pbcat3.org/

Expanding safety data – Yusuf Mohamedshah

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Transportation Research Informatics Platform (TRIP) Maturity and Use Cases:

1) Measuring and Monitoring Operational Performance of TSMO Strategies
2) Identifying Secondary Crash Occurrence and Contributing Factors.
3) Non-Recurring Congestion Monitoring and Analysis.
4) Pedestrian Activity and Safety

Development of two Realistic Artificial Datasets (RAD)

1. Multidisciplinary Initiative on Methods to Integrate and Create realistic artificial dataset (MIMIC)
2. Development and Application of a Disaggregate Realistic Artificial Data Generator for Computationally Testing Safety Analysis Methods (DREDGE)

HSM Implementation PF (22 States) – Jerry Roche

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1. To advance ongoing efforts by lead States to implement the HSM
2. To expand implementation to all states

- Funded over 10 products, including:
  - SPF Decision Guide: Calibration vs. Development
  - SPF Development Guide: Developing Jurisdiction-Specific SPFs
  - Scale and Scope of Safety Assessment Methods in the Project Development Process
  - State Policies and Procedures on Use of the HSM
  - Highway Safety Benefit-Cost Analysis Guide and Tool
  - Crash Costs for Highway Safety Analysis
  - Safety Performance for Intersection Control Evaluation (SPICE) Screening Tool and Guide
  - Safety Analysis Needs Assessment for TSMO Applications
  - Countermeasure Service Life Guide
  - Safety Data and Analysis Case Studies (ongoing)
  - Advancing Application of DDSA (ongoing)
    - Explore the validity of combining predictive methods
    - Develop an implementation approach for NCHRP 17-62
    - Develop a Communications Guide for explaining safety analysis to non-safety professionals

https://www.pooledfund.org/Details/Study/484

HSM2 Implementation PF – Jerry Roche

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- Accelerate implementation of HSM2 and related analytical tools to assess current and future safety performance of existing roadways and alternative designs, and help practitioners make more informed decisions, better target investments, and reduce fatalities and serious injuries on the nation's roadways.
- Includes activities before and after publication of HSM2 (anticipated 2025).
- This study will conduct research and develop products to enable States to accelerate their implementation of HSM2.
- A Technical Working Group consisting of one representative from each participating agency will help identify and prioritize the specific tasks and products.
- Requested commitment is $80,000 over five years ($16,000 per year)
- 100% SP&R waiver obtained
- KS, KY, MO, OH, PA, TX, WA have all made commitments

https://www.pooledfund.org/Details/Solicitation/1577

Evaluation of Low-Cost Safety Improvements PFS (40 states) – Roya Amjadi

- HRT-20-052: Contributing Factors for Focus Crash and Facility Types (Quick Reference Guide HRT-20-053)
- HRT-20-061: Developing CMFs for High-Friction Surface Treatments (Friction Change Report HRT-20-062)
- HRT-20-72: Developing CMFs for Adaptive Signal Control Technologies (Techbrief HRT-20-073)
- HRT-21-013: Developing CMFs for Bicycle Lane Additions by Reducing Lane and Shoulder Widths (Techbrief HRT-21-012)
- HRT-21-053: Developing CMFs for Variable Speed Limits (Techbrief HRT-21-080)
- HRT-21-075: Developing CMFs for Guardrails, Utility Poles, and Side-Slope Improvements (Techbrief HRT-21-076)

https://highways.dot.gov/research/safety/evaluations-low-cost-safety-improvements-pooled-fund-study/evaluations-low-cost-safety-improvements-pooled-fund-study-elcsi%E2%80%93pfs

SHRP2 Naturalistic Driving Study PF (7 States) – Charles Fay

- Verification and Calibration of Microscopic Traffic Simulation Using Driver Behavior and Car-Following Metrics for Freeway Segments
- Incorporating the Impacts of Driver Distraction into Highway Design and Traffic Engineering
- Freeway Guide Sign Performance at Complex Interchanges: Reducing Information Overload
- Investigating How Multimodal Environments Affect Multitasking Driving Behaviors
- Validation of Performance-Based Design
- Developing Speed Crash Modification Factors (CMF) Using SHRP 2 RID Data

https://www.pooledfund.org/Details/Study/613

Automated Vehicles Human Factors and Safety Research

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- Driver Acceptance of Vehicle Automation – Function Specific (L1 – L2) Automation Applications
- Automated Vehicle Human Factors Safety Issues Related to Transportation Systems Management and Operations (Congestion, Work Zones, Weather, and Traffic Incident Mgmt)
- Automated Vehicle Human Factors Safety Issues related to Infrastructure
- Human Factors Issues Related to Truck Platooning Operations
- ADS for Rural America Demonstration Grant project (U. of Iowa)
- Ensuring Cooperative Automated Driving System (C-ADS) Vehicles and Vulnerable Road Users (VRU's) Safety Through Infrastructure