Roadway Inventory Data for EMS Response – the MIRE Development

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Safety Data – It's More Than Just Crash Data

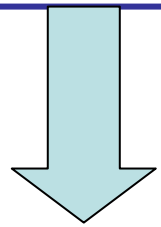
Good inventory safety data is the key to sound decisions on the design and operations of roadways

- Roadway characteristics
- Operations (volumes, classifications, WIM, turning movements)
- Roadside features
- Driver history and exposure (age)
- Agency assets

Minimum Inventory of Roadway Elements - MIRE

"A listing of roadway and traffic inventory elements that are critical for use in current and future":

- Local and state safety programs
- Safety tools
- National safety and inventory systems
- Safety research and evaluation



MIRE Inventory Safety Data

Involving

- Highway Safety Improvement Programs
- Safe community programs
- Emergency medical response analysis (golden hour)
- Injury prevention programs (seat belts, pedestrian, bicycle)
- Trauma response (including GIS)
- Epidemiology

Minimum Inventory of Roadway Elements - MIRE

Program Offices

- FHWA Office of Safety Research and Development
- FHWA Office of Safety

Project Team

- HSRC – UNC Highway Safety Research Center
- VHB Consultants (BMI-SG)

MIRE Background

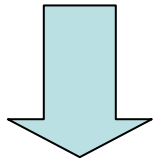
- Scanning Trip – AASHTO, FHWA, NCHRP safety scan to Netherlands, Germany, Australia (2003)
- Scanning trip report – Traffic Safety Information Systems in Europe & Australia (Oct 2003)
- White paper – Traffic Safety Information Systems International Scan: Strategy Implementation (Sep 2004)
  - Build upon the recommendations from the international safety scan
  - Expand the strategies for improving safety data and information systems
  - Provide specific action items to implement these strategies

Whitepaper Strategy Areas

- Increase support for both safety programs and safety information systems (the data) from top-level- administrators in federal, state, and local transportation agencies
- Improve safety data by defining “good inventory data” and institutionalizing continual improvement towards established performance measures.
- Improve safety data by making it easier to collect, store, and use
- Improve safety data by increasing the use of critical safety analysis tools which themselves require good data
- Improve and protect safety data by storage and linkage with critical non-safety data

Strategy 2 Recommendations

Improve safety data by defining good inventory data and institutionalizing continual improvement toward established performance measures



- Develop definitions of good safety data
- Develop performance measures to capture the current status of these elements in an agency's safety database.
- Increase the emphasis on safety inventory data in FHWA and NHTSA traffic records assessments
- Insure that good data are incorporated into efforts related to developing XML schemes.

MIRE Development - Review

- Inventory elements in existing highway inventory systems and potential gaps (curvature, intersections)
- Model Minimum Uniform Crash Criteria (MMUCC) – de-facto standard for crash data variables used by states and local jurisdictions when improving their crash data systems
- Current and proposed inventory elements in other national databases that provide good current work, but inadequate for future needs
  - HPMS – Highway Performance Monitoring System
  - TSIMS – Transportation Safety Information Management System

MIRE Development - Review

- Inventory elements needed in existing and proposed tools
  - IHDSM – Interactive Highway Design Safety Model
  - AASHTO's Data and Analysis Guide
  - Highway Safety Manual
  - SafetyAnalyst –
  - PBCAT – Pedestrian and Bicycle Crash Analysis Tool
- Other critical variables that may be collectable with future technology such as pedestrian and bicycle exposure data

MIRE Development: SAFETEA-LU

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

- Section 2006(e) State Traffic Information System Improvements
- USDOT Secretary will define **model data elements** for safety analysis and safety grants
- Great fit with SAFETEA-LU to meet the **model data elements** in the new safety information system grants

MIRE Development

- MIRE Workshop @ 32nd International Traffic Records Forum (3 Aug) - engage safety and inventory community
  - DOT data collection managers
  - State and local data users
  - Roadway safety researchers
- Draft recommendation based on workshop feedback
- Final report of MIRE data elements – Nov 2006

MIRE Development – MIRE Matrix

- Straw man data categories and data elements
- Critical safety data inventory elements
  - Needed by State and local agencies to conduct internal analysis
  - Required by existing safety analysis tools and resources
  - Envisioned to be needed by future tools and analyses
- Four key sources for MIRE matrix elements
- MIRE data elements prioritized(1st, 2nd) with current state data collection status

MIRE Development – MIRE Matrix

- Proposed data elements based on:
  - HPMS universe and sample sections
  - IHSDM - *Interactive Highway Safety Design Module (FHWA)*
  - Safety Analyst – FHWA safety management tools
  - TSIMS – *Traffic Safety Information Management System* (AASHTO)

MIRE Development – MIRE Matrix

- Also considered:
  - *Highway Safety Information System* (FHWA)
  - Roadway research efforts
  - Highway Safety Manual
  - Non-traditional safety areas: roundabouts, pedestrian, & bicycle

MIRE Matrix - Data Categories

- Location/linkage variables
- Roadway classification
- Segment – cross section surface descriptors
- Lane descriptors
- Shoulder descriptors
- Lane descriptors
- Median descriptors
- Roadside descriptors

MIRE Matrix - Data Categories

- Segment alignment
- Segment traffic operations control
- At grade intersection descriptors (general)
- At grade intersection descriptors (each approach)
- Interchange and ramp descriptors
- Other junction descriptors
- Traffic data

MIRE Matrix - Lane Descriptor Data Elements

- Number of lanes
- Average lane width
- Climbing/passing lane
- Left/right lane turn lane
- Marked bicycle lanes
- TWLTL (two-way left turn lane) presence
- Number of peak hour lanes

MIRE Matrix - Traffic Data Elements

- Average annual daily traffic (current & future)
- Hourly traffic volumes
- Percentage truck
- High occupancy vehicle (HOV) lanes
- Pedestrian count/exposure
- Bicycle count/exposure
- Directional factor
- Percent trucks (average & peak)

MIRE Development
MIRE Workshop Objectives

- Get feedback on adequacy of the proposed MIRE and priority of data elements
- Solicit suggestions for:
  - Additional / fewer data elements
  - Ease of collecting data elements
  - Changes in methodology that may be required to collect data
- Determine how best to proceed toward developing a draft MIRE implementation plan

MIRE Development
MIRE Workshop Results

- Consensus that MIRE will follow the MMUCC development process
- Data dictionary/codes to be developed beyond the current FHWA MIRE contract
- Changes to both MIRE data categories and data elements within the categories
- FHWA Pooled Fund – Digital Highway Measurement System potentially can be an integral part of an agencies strategic safety program that includes MIRE

Conclusion

- Anticipated that MIRE will become a companion to MMUCC (Minimum Model Uniform Crash Criteria)
- Voluntary, but envision MIRE will become a de-facto standard as well for states and local jurisdictions in improving crash data systems
- Adopted model elements will be used by states applying for SAFETEA-LU grants to certify they have adopted SAFETEA-LU model data elements or are working toward adopting them
- MIRE data elements could be collected through HPMS – HPMS Reassessment may define these synergies

Interested Party

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