

**EVALUATIONS OF LOW
COST SAFETY
IMPROVEMENTS
POOLED FUND STUDY**

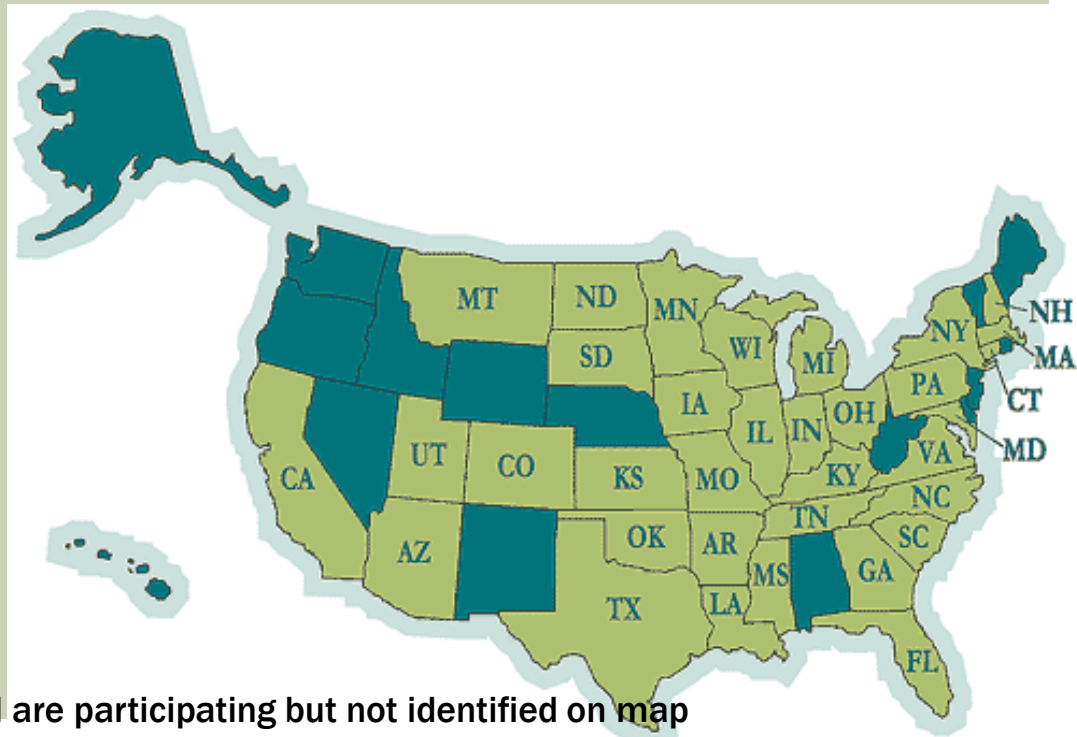
Brad Estochen

MnDOT Safety
Engineer

OBJECTIVE

- Develop reliable estimates of lower cost safety improvements
 - Focus on strategies identified in NCHRP 500 Guidebooks
 - Rigorous before-and-after evaluations
 - Leverage large sample sizes through participating states

- 38 States Participating



Alabama, Washington, Nevada and Rhode Island are participating but not identified on map

SCOPE OF WORK AND BUDGET

- \$4.4 million (total) contributed
- Original Scope was to conduct
 - 20 strategies
 - 5 years
 - 4 stages
- Current Scope is
 - X strategies
 - 10 years
 - 8 stages



PHASE 1 - RETROSPECTIVE EVALUATION

- Increased retroreflectivity of STOP signs.
- Flashing beacons at STOP-controlled intersections
- STOP AHEAD pavement markings.
- Installing center two-way left-turn lanes on two-lane roads.

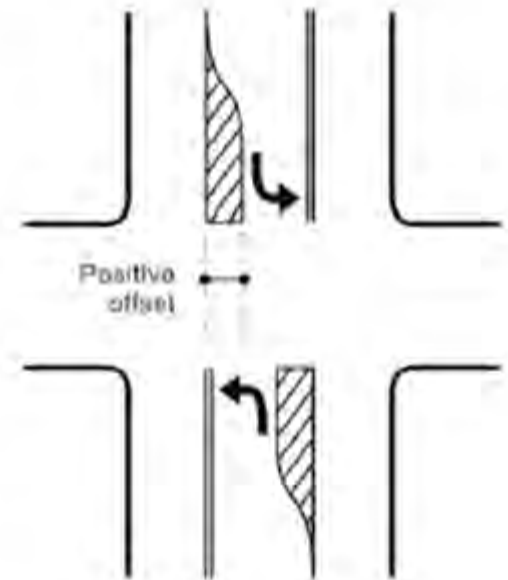
Completed



PHASE 2 – RETROSPECTIVE EVALUATION

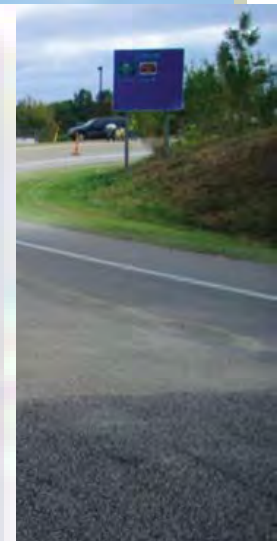
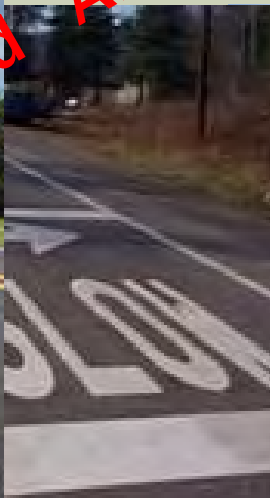
- Lane and shoulder width combinations on rural, two-lane, undivided roads.
- Improved curve delineation.
- Offset improvements for left-turn lanes.
- Advance street name signs.

Completed



PHASE 3 – PROSPECTIVE EVALUATION

- Surface friction treatment on curves.
- Surface friction treatment on ramps.
- In-lane pavement markings for curve warning.
- Larger chevrons.
- Edgeline rumble stripes on curves.
- Red light indicator lights.



Before Analysis Completed After Analysis Waiting Period

PHASE 4 – RETROSPECTIVE EVALUATION

- Rural two-lane undivided roads: nighttime delineation for curves (three strategies).
- Rural traffic calming for small towns (three strategies).

Completed



PHASE 5 – PROSPECTIVE EVALUATION

- Combination of centerline and edgeline rumble strips.
- Combination of median barrier and rumble strips.
- Signalized intersection multicountermeasures.
- STOP-controlled intersection multicountermeasures.



Before Analysis Completed After Analysis Completed

PHASE 6 – RETROSPECTIVE EVALUATION

■ Asphalt Pavement

- Thin hot-mix asphalt overlay.
- Chip seal, microsurfacing.
- Ultra-thin bonded wearing course.
- Open-graded friction course.
- Slurry seal.



■ Concrete Pavement

- Diamond grinding.
- Ultra-thin bonded wearing course.
- Microsurfacing and grooving.



Final Report Under Review – completed in 2014

PHASE 7 – RETROSPECTIVE EVALUATION

- Pedestrian signals, signs, markings, etc.
- Driver feedback signs.
- Active intersection conflict warning systems/dynamic signing.
- Pavement marking types and characteristics.

Underway estimated Completion February 2015

Solid Standard Continental Dashed Zebra Ladder



PHASE 8 – RETROSPECTIVE EVALUATION

- Restricted crossing U-turn (RCUT).
- Flashing yellow arrows.
- Access management.
- Realignment of horizontal curvature.
- Profiled thermoplastic pavement markings.



FUTURE OF ELCSI PFS

- Technical Advisory Panel/Annual Meeting June 4-5
- Open evaluation projects
- Budget update
- Future direction
 - Mucho Mas
 - Terminar
 - Yo no se
- Great Value from DOT perspective



PREGUNTA?

Brad Estochen

MnDOT State Traffic Safety Engineer

Bradley.estoche@state.mn.us

<http://www.fhwa.dot.gov/research/tfhrc/projects/safety/comprehensive/elcsi/>

Reports, presentations, schedule, details