Local Road Safety Plans and Vision Zero

MOLLY O'BRIEN, P.E., PTOE, RSP

April 10, 2020
Agenda

- LRSPs
  - Review of LRSP Background and Purpose
  - LRSP Process
- Vision Zero
- Questions
1 - Review of LRSP Background and Purpose
LRSP Background and Purpose

What is a LRSP?
- Coordination between agencies on driver-related countermeasures
- Proactive safety improvements based on risk factor assessment
- Define a focused plan for practitioners to make informed, prioritized safety decisions
- Use results of the analysis to leverage and apply for funding

Goal – Proactive safety improvement projects and programs that can be implemented by the agency
LRSP Background and Purpose

- Driver-related countermeasures
  - Survey for driver-related countermeasures
  - Workshop with representation from 5E’s of safety
    - Engineering
    - Education
    - Enforcement
    - Emergency Response
    - Everyone

- Engineering countermeasures
  - List of proactive safety projects
LRSPs per the Feds:

“The systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types.

The approach provides a more comprehensive method for safety planning and implementation that supplements and complements traditional site analysis.

It helps agencies broaden their traffic safety efforts and consider risk as well as crash history when identifying where to make low cost safety improvements.”

FHWA – Office of Traffic Safety
Where have LRSPs been done?

- Minnesota (2009 - 2013)
- North Dakota (2012-2015)
- Iowa (2015 – ongoing)
- Kansas (2017 – ongoing)

- Under Development in:
  - California
  - FHWA (various jurisdictions)
  - Other locations throughout the country
2 – LRSP Process
LRSP Process Overview

- Data Collection
- Data Analysis
- Countermeasure Selection
- Develop Projects
- Develop LRSPs
- Stakeholder Outreach
Data Collection

- Crash data
- Roadway features
  - Lane width
  - Shoulder width/type
  - Speed limit
  - Pavement condition
  - Etc.
- Volume data
Data Collection from Local Agencies

- 911 address database
- Shoulder width and type
- Intersection lighting
- Curve chevron signage
- Centerline rumble strips
- Edgeline and/or shoulder rumble strips
- Transverse rumble strips
Database Development

- Segment database
- Intersection database
- Curve database
Data Analysis

- The KABCO injury severity scale (National Safety Council, 1990) is used to summarize crash data.
- The KABCO scale is used by the investigating officer on the scene to classify injury severity for occupants with five categories:
  - K – killed/fatal injury
  - A – disabling/serious injury
  - B – evident/minor injury
  - C – possible/unknown injury
  - O – no apparent injury/Property Damage Only (PDO)
Data Analysis

- Crash maps
  - K and A (Fatal and Serious Injury)
  - KABCO (all crashes)
- Comparison of crashes to Strategic Highway Safety Plan (SHSP) emphasis areas
- Crash analysis breakdowns (crash trees)
  - Paved vs unpaved roads
  - Vehicle vs nonmotorist
- High-crash location list
Data Collection from Counties

- Questionnaire on driver-related emphasis areas
  - Distributed prior to the workshop
  - Countermeasures discussed at the first workshop
Data Collection from Counties

- Example driver-related countermeasures
  - Younger drivers
    - Conduct additional training in schools
    - Enforcement of graduated driver’s license laws
  - Inattentive/distracted driving
    - Incorporate information on distracted driving into education programs for young drivers
    - Conduct education and awareness campaigns
    - Visibly enforce existing statutes to deter distracted driving
Project Selection Methodology

1. GIS data → Risk factor ranking → Decision tree
2. Draft project sheets → County Input → Project sheets
Risk Factors and Ranking

- Identification of systemic safety improvements
  - Risk factors can include:
    - Roadway features
    - Intersection features
    - Traffic volumes
  - Risk factor ranking will be conducted for:
    - Roadway segments
    - Intersections
    - Curves
Decision Trees

- Develop decision trees to aid in systematic selection of safety improvement projects for each:
  - Roadway segment
  - Intersection
  - Curve
Develop Project Sheets

Location of Project with respect to County, on a Zoomed in Map, and Aerial of Project Location

Summary of Systemic Ranking for the Location

Brief Crash Data Summary for the Location

Opinion of Probable Cost for the Identified Improvements

Additional Information/Notes

PROJECT SHEET LAYOUT

Icon Displaying Project Type (Intersection, Curve, or Segment)

Unique GPS Identification Number

Key Emphasis Area Crashes that the Project is anticipated to Address (from the Iowa Strategic Highway Safety Plan)

Other Information at this Location that is Important for Developing the Recommendations within the Decision Tree

Opinion of Probable Cost Disclaimer, Project Description Form Disclaimer, and Project Location Map Sources
SEGMENTS
Segments – Potential Risk Factors

- Volume
- Lane width
- Shoulder type
- Access density
- Lane departure crashes
## Segments – Potential Countermeasures and CMFs

<table>
<thead>
<tr>
<th>Safety Countermeasure</th>
<th>Crash Modification Factor</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wider (6-inch) Pavement Markings</td>
<td>0.825</td>
<td>$2,000/mile</td>
</tr>
<tr>
<td>Clear and Grub</td>
<td>0.78</td>
<td>$5,000 - $20,000/mile</td>
</tr>
<tr>
<td>Edgeline Rumble Strips</td>
<td>0.61 – 0.67</td>
<td>$2,000/mile</td>
</tr>
<tr>
<td>Centerline Rumble Strips</td>
<td>0.55 – 0.91</td>
<td>$1,000/mile</td>
</tr>
<tr>
<td>Pave 2-ft Shoulder with Rumble Strips</td>
<td>0.75 – 0.99 “Pave Shoulder”</td>
<td>$65,000/mile</td>
</tr>
<tr>
<td></td>
<td>0.61 – 0.67 “Edge Rumble Strip”</td>
<td></td>
</tr>
</tbody>
</table>

---
Segments – Potential Countermeasures

- New Pavement Markings:
  - Edgelines
  - Centerlines

- Edgeline Rumble Strips

- Centerline Rumble Strips

- Clear and Grub within 15 feet of Each Side of Road

- Pave Shoulder with Safety Edge

Note: All Improvements Shall Conform with the Latest Version of the MUTCD and/or Applicable Standards
Segments – Site Specific Countermeasures

- Provide safer slopes and ditches
- Modify horizontal alignment
- Remove/relocate objects in hazardous locations
- On-pavement markings for speed control
- Post-mounted delineators
- Guardrail
- Curve treatments along segment
VISION ZERO
What is Vision Zero?

“Vision Zero is a strategy to eliminate all traffic fatalities, while increasing safe, healthy, equitable mobility for all.” (Vision Zero Network)
Traditional vs. Vision Zero Approach

**TRADITIONAL APPROACH**
- Traffic deaths are INEVITABLE
- PERFECT human behavior
- Prevent COLLISIONS
- INDIVIDUAL responsibility
- Saving lives is EXPENSIVE

**VISION ZERO**
- Traffic deaths are PREVENTABLE
- Integrate HUMAN FAILING in approach
- Prevent FATAL AND SEVERE CRASHES
- SYSTEMS approach
- Saving lives is NOT EXPENSIVE

(Vision Zero Network)
Vision Zero Cities

A Vision Zero City meets the following minimum standards:
- Sets clear goal of eliminating traffic fatalities and severe injuries
- Mayor has publicly, officially committed to Vision Zero
- Vision Zero plan or strategy is in place, or Mayor has committed to doing so in clear time frame
- Key city departments (including Police, Transportation and Public Health) are engaged.
Minimum Requirements

- Goal and timeframe for elimination of fatalities
- Mayor officially committing to Vision Zero
  - Directing staff to prioritize Vision Zero
- Action Plan in place
- Key departments actively engaged
  - Public health
  - Law enforcement
  - Transportation
- Regular task force meetings to evaluate efforts
5 – Questions
Thank You!

Molly O’Brien, P.E., PTOE, RSP
Kimley-Horn
Molly.obrien@Kimley-horn.com