Proven Safety Countermeasures

Local Safety Initiatives

(10.3.2018)
Presentation Overview:

Over the next few minutes...

• Proven Safety Countermeasures

• Local Safety Initiatives
  – County/Regional Safety Plans
  – Systemic Safety Improvements
  – Safety Studies & Road Safety Audits
This list of Proven Safety Countermeasures has now reached a total of 20 treatments and strategies that practitioners can implement to successfully address roadway departure, intersection, and pedestrian and bicycle crashes.
# Local Safety Initiatives:

## Why Focus on Local Safety?

### Serious Injury and Fatality Road Locations (2008-2012)

<table>
<thead>
<tr>
<th>Emphasis Area</th>
<th>Types of Local Roads</th>
<th>Local vs. State Roads</th>
<th>Total Fatalities and Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>County</td>
<td>City</td>
<td>Township</td>
</tr>
<tr>
<td>Young Driver</td>
<td>18%</td>
<td>38%</td>
<td>7%</td>
</tr>
<tr>
<td>Roadway Departure</td>
<td>24%</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>Intersection</td>
<td>11%</td>
<td>56%</td>
<td>3%</td>
</tr>
<tr>
<td>Speed</td>
<td>19%</td>
<td>35%</td>
<td>9%</td>
</tr>
<tr>
<td>Restraints</td>
<td>21%</td>
<td>30%</td>
<td>9%</td>
</tr>
<tr>
<td>Alcohol Related</td>
<td>21%</td>
<td>36%</td>
<td>9%</td>
</tr>
<tr>
<td>Older Driver Involvement</td>
<td>14%</td>
<td>42%</td>
<td>3%</td>
</tr>
<tr>
<td>Motorcycle Operator/Passenger</td>
<td>19%</td>
<td>37%</td>
<td>7%</td>
</tr>
<tr>
<td>Rear End</td>
<td>8%</td>
<td>45%</td>
<td>1%</td>
</tr>
<tr>
<td>CMV</td>
<td>9%</td>
<td>28%</td>
<td>2%</td>
</tr>
<tr>
<td>Pedestrian Involvement</td>
<td>7%</td>
<td>72%</td>
<td>4%</td>
</tr>
<tr>
<td>Distracted</td>
<td>15%</td>
<td>33%</td>
<td>5%</td>
</tr>
<tr>
<td>Bicycle Involvement</td>
<td>9%</td>
<td>72%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Local Safety Initiatives:

Why Focus on Local Safety?

- Nationally, more than 75% of all roads are maintained by local agencies.

- Approximately 40-60% of fatalities occur on the locally owned roadways.
Local Safety Initiatives:

Brought to you by the Ohio Department of Transportation

- County & Regional Safety Plans
- Systemic Safety Project Development
- Safety Studies & Road Safety Audits

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County & Regional Safety Plans

Systemic Safety Project Development

Safety Studies & Road Safety Audits

County & Regional Safety Plans
Local Road Safety Plans:
The What...

- Long-Range Transportation Plan
- Strategic Highway Safety Plan
- County & Regional Safety Plans
Multi-agency plan to reduce traffic fatalities and serious injuries on all public roads

- Mandated in 2005 Transportation Act
- Strengthened in MAP 21
Why is it important?

- What’s identified in the plan is eligible for funding
- It identifies Ohio’s safety priorities using data
- Identifies and tracks multi-agency strategies
- Leverages resources
Strategic Highway Safety Plan:

Steering Committee

- Network of stakeholders focused on common goals
- Review Crash Trends
- Discuss implementation
- Measure progress

ODOT Coordinator

PUCO
CEAO
FMCSA
Public Safety
MPOs
FHWA
LTAP
NHTSA
Rail Commission
Strategic Highway Safety Plan:
Focus on All Roadway Users

- Cars
- Trucks
- Trains
- Motorcycles
- Pedestrians
- Bicycles
Strategic Highway Safety Plan:

**Emphasis Areas**

<table>
<thead>
<tr>
<th><strong>Serious Crash Types</strong></th>
<th><strong>High Risk Drivers and Behaviors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway Departure</td>
<td>Impaired</td>
</tr>
<tr>
<td>Intersection</td>
<td>Seat Belts</td>
</tr>
<tr>
<td>Rear End Collisions</td>
<td>Speed</td>
</tr>
<tr>
<td>Highway/Railroad Crossings</td>
<td>Young and Older Drivers</td>
</tr>
<tr>
<td></td>
<td>Distracted Drivers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Special Vehicles and Roadway Users</strong></th>
<th><strong>Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorcycle and Bicycle Riders</td>
<td></td>
</tr>
<tr>
<td>Pedestrians</td>
<td></td>
</tr>
<tr>
<td>Commercial Vehicles</td>
<td></td>
</tr>
</tbody>
</table>

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Strategic Highway Safety Plan: Emphasis Area - Action Plans
County & Regional Safety Plans provide a framework for identifying, analyzing, and prioritizing roadway safety improvements on all public roads.

The process results in a prioritized list of issues, factors, actions, and improvements that can be used to reduce fatalities and serious injuries across a region’s roadway network.
County & Regional Safety Plans: The Why...

ODOT is encouraging the development of County & Regional Safety Plans (mini-SHSPs) across Ohio.

**BENEFITS:**

- Provides a **central point of coordination** for the various stakeholders involved in safety at local and regional levels.

- Documents priority emphasis areas & safety locations at the county and regional level, helping **justify the need for future safety projects**.

- Provides a valuable input into in the **transportation planning process**.
County & Regional Safety Plans: The How...

**STEP 1:** Establish Leadership

**STEP 2:** Analyze the Safety Data

**STEP 3:** Determine Emphasis Areas

**STEP 4:** Identify Strategies

**STEP 5:** Prioritize & Incorporate Strategies

**STEP 6:** Evaluate and Update the Plan
**Geographic Scope:**

**The Where...**

County Safety Plans (CSP) are intended for counties outside of metropolitan regions.

Regional Safety Plans (RSP) are intended for areas covered by metropolitan planning organizations.

Both consider all-roads within a county or region regardless of ownership.
Basic Plan Elements:

- Partner Pledge & Goals
- Crash Data Overview
- Priority Emphasis Areas
- Priority Safety Locations
- Action Plan
Partner Pledge & Goals:
Focus on multi-agency engagement

The plan should focus on engaging key regional safety partners:

- County Engineers
- Local Engineers & Decision makers
- Local law enforcement
- ODOT DSRT
- Others

The plan should document successes to date and historic accomplishments
## Partner Pledge & Goals:

**Focus on Federal & Regional Safety Performance Measures**

### Transportation Safety Performance Measures

<table>
<thead>
<tr>
<th>PERFORMANCE MEASURE</th>
<th>2015 BENCHMARK</th>
<th>2020 TARGET</th>
<th>2020 TRACK</th>
<th>2040 TARGET</th>
<th>2040 TRACK</th>
<th>2017 GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fatalities</td>
<td>96</td>
<td>-10%</td>
<td>10.2%</td>
<td>-39%</td>
<td>27.2%</td>
<td>X</td>
</tr>
<tr>
<td>Number of serious injuries</td>
<td>890</td>
<td>-10%</td>
<td>-7%</td>
<td>-39%</td>
<td>-32.9%</td>
<td>X</td>
</tr>
<tr>
<td>Number of non-motorized fatal &amp; serious injuries</td>
<td>138</td>
<td>-10%</td>
<td>22.7%</td>
<td>-39%</td>
<td>180.5%</td>
<td>X</td>
</tr>
<tr>
<td>Rate of fatalities per 100 million VMT</td>
<td>0.69</td>
<td>0.63</td>
<td>0.76</td>
<td>0.42</td>
<td>0.86</td>
<td>X</td>
</tr>
<tr>
<td>Rate of serious injuries per 100 million VMT</td>
<td>6.40</td>
<td>5.83</td>
<td>5.95</td>
<td>3.91</td>
<td>4.21</td>
<td>X</td>
</tr>
</tbody>
</table>

**Notes:**
- The benchmark and targets represent five year rolling averages
- Million Vehicle Miles Traveled (MVMT)
- "TARGET" = Performance target included in the 2016-2040 MTP
- "TRACK" = Progress should current trends continue

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Crash Data Overview:

Establish a baseline..

**YEAR-BY-YEAR COMPARISON OF SAFETY PERFORMANCE**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF FATALITIES</th>
<th>NUMBER OF SERIOUS INJURIES</th>
<th>NUMBER OF NON-MOTORIZED FATAL &amp; SER INJ</th>
<th>RATE OF FATALITIES/100 MVMT</th>
<th>RATE OF SERIOUS INJ/100 MVMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>100</td>
<td>967</td>
<td>113</td>
<td>0.72</td>
<td>6.95</td>
</tr>
<tr>
<td>2011</td>
<td>102</td>
<td>949</td>
<td>115</td>
<td>0.74</td>
<td>6.86</td>
</tr>
<tr>
<td>2012</td>
<td>104</td>
<td>939</td>
<td>123</td>
<td>0.76</td>
<td>6.80</td>
</tr>
<tr>
<td>2013</td>
<td>98</td>
<td>921</td>
<td>125</td>
<td>0.71</td>
<td>6.65</td>
</tr>
<tr>
<td>2014</td>
<td>97</td>
<td>898</td>
<td>133</td>
<td>0.70</td>
<td>6.46</td>
</tr>
<tr>
<td>2015</td>
<td>100</td>
<td>883</td>
<td>138</td>
<td>0.72</td>
<td>6.33</td>
</tr>
<tr>
<td>2016</td>
<td>104</td>
<td>877</td>
<td>144</td>
<td>0.74</td>
<td>6.26</td>
</tr>
</tbody>
</table>

**TREND**
- (Increasing)
- (Decreasing)
- (Increasing)
- (Increasing)
- (Decreasing)

**Notes**
- The values shown represent five year rolling averages (ex. for 2004-2008) 
  \(106+113+95+93+121)/5=106\)
- Shaded orange cells indicate the highest value for each respective column.
Crash Data Overview:
Focus on actionable information for various partners

SEVERE CRASH FREQUENCY BY MAINTENANCE AUTHORITY AND FUNCTIONAL CLASS

City or Municipal Highway Agency

County Highway Agency

ODOT Maintained

Minor Arterial Roads, 7

Major Collector Roads, 4

Minor Collector Roads, 3

Local Roads, 2

Minor Collector Roads, 2

Local Roads, 3

Minor Collector Roads, 1

Minor Arterial Roads, 2

Major Collector Roads, 1

Town or Township Highway Agency

Local Roads, 2

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Crash Data Overview:
Focus on actionable information for various partners

FATAL & SERIOUS INJURY PER 10,000 POPULATION BY CRASH TYPE

<table>
<thead>
<tr>
<th>CRASH TYPE</th>
<th>TOTAL FSI</th>
<th>MAINTAINING AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CITY/TOWN/VILLAGE</td>
<td>TOWNSHIP</td>
</tr>
<tr>
<td>Fixed Object</td>
<td>30.0%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Head On</td>
<td>13.2%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Sideswipe - Passing</td>
<td>10.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Angle</td>
<td>8.9%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Overturning</td>
<td>8.7%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Left Turn</td>
<td>7.1%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Rear End</td>
<td>5.9%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Pedalcycles</td>
<td>4.8%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Animal</td>
<td>2.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Sideswipe - Meeting</td>
<td>2.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>2.3%</td>
<td>9.4%</td>
</tr>
<tr>
<td>Parked Vehicle</td>
<td>1.3%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Other Non-Vehicle</td>
<td>1.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other Non-Collision</td>
<td>0.5%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Other Object</td>
<td>0.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Right Turn</td>
<td>0.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Priority Emphasis Areas:
Identify and communicate the baseline

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Serious Injury</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>11</td>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Minor Injury</td>
<td>11</td>
<td>5</td>
<td>3</td>
<td>17</td>
<td>5</td>
<td>19</td>
<td>6</td>
<td>10</td>
<td>12</td>
<td>9</td>
<td>97</td>
</tr>
<tr>
<td>Injury Possible</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>PDO/No Injury</td>
<td>15</td>
<td>9</td>
<td>12</td>
<td>14</td>
<td>17</td>
<td>16</td>
<td>56</td>
<td>24</td>
<td>12</td>
<td>11</td>
<td>186</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>20</td>
<td>26</td>
<td>48</td>
<td>32</td>
<td>40</td>
<td>72</td>
<td>48</td>
<td>39</td>
<td>31</td>
<td>386</td>
</tr>
</tbody>
</table>

Impaired Driving Crashes by Hour of Day

Crash Frequency by Lighting Condition:
- Dark - Lighted Roadway
- Dark - Roadway Not Lighted
- Dark - Unknown Roadway Lighting
- Dawn
- Daylight
- Dusk

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Priority Emphasis Areas:

Identify and communicate the baseline

Holmes County, Speed-Related Crash Density (2008-2017)
Priority Safety Locations:
Identify priority locations by roadway owner
Emphasis Area Action Plans:
Define the how...

OHIO STRATEGIC HIGHWAY SAFETY PLAN
REAR-END COLLISION ACTION PLAN

**Fatality Goal**: Reduce the number of fatalities related to rear end crashes from 47 in 2013 to 43 in 2017.

**Serious Injury Goal**: Reduce the number of serious injuries related to rear end crashes from 1,248 in 2013 to 1,151 in 2017.

**Emphasis Area Team Leader**: Michelle May, ODOT

**Strategy 1**: Advance the use of new technologies and roadway designs that reduce rear end crashes.

<table>
<thead>
<tr>
<th>Step #</th>
<th>Action Step Leader</th>
<th>Description</th>
<th>Output Measure</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>ODOT - Michael McNeil/Jason Yost</td>
<td>Implement dilemma zone detection at select spot locations.</td>
<td># of systems implemented % reduction in rear-end crashes</td>
<td>Annual</td>
</tr>
</tbody>
</table>

**Strategy 2**: Apply proven and low-cost safety countermeasures to reduce rear end crashes and their severity. Examples include improving the visibility and timing of signals, removing unwarranted signals, installing turn lanes and building medians to control access.

<table>
<thead>
<tr>
<th>Step #</th>
<th>Action Step Leader</th>
<th>Description</th>
<th>Output Measure</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>ODOT - Michelle May</td>
<td>Develop an MPO-led pilot program that encourages local governments to install low-cost safety treatments that reduce rear-end collisions.</td>
<td># of public agencies involved # of treatments installed % reduction in rear-end</td>
<td>Annual</td>
</tr>
</tbody>
</table>
Emphasis Area Action Plans: Define the how...
Plan Development:

Available ODOT Resources:

- Examples & Templates
- Crash Data & Analysis
- Technical Assistance
Systemic Safety Project Development

County & Regional Safety Plans

Systemic Safety Project Development

Safety Studies & Road Safety Audits
Rather than attempting to reduce crashes at spot locations, a **systemic approach** takes a broader view and seeks to reduce the **potential for crashes** across an entire roadway system using low-cost safety improvements.
Systemic Safety Project Development:
The Why...

ODOT is encouraging the development of systemic safety projects that utilize proven countermeasures and impact the local system.

**BENEFITS:**

- Promotes the use of **low-cost safety proven** safety countermeasures to address severe crash types occurring across an entire roadway system, regardless of roadway ownership.

- Regional implementation can **reduce the burden** on individual agencies to plan, design, and implement.
Systemic Safety Project Development:
The How...

Legend:
Focus Area:

Emphasis Area
- Young Driver: County 18%, City 38%, Township 7%
- Roadway Departure: County 24%, City 22%, Township 9%
- Intersection: County 11%, City 56%, Township 3%
- Speed: County 19%, City 35%, Township 9%
- Restraints: County 21%, City 30%, Township 9%
- Alcohol Related: County 21%, City 36%, Township 9%
- Older Driver Involvement: County 14%, City 42%, Township 3%
- Motorcycle Operator/Passenger: County 19%, City 37%, Township 7%
- Rear End: County 8%, City 45%, Township 1%
- CMV: County 9%, City 28%, Township 2%
- Pedestrian Involvement: County 7%, City 72%, Township 4%
- Distracted: County 15%, City 33%, Township 5%
- Bicycle Involvement: County 9%, City 72%, Township 6%
Systemic Safety Project Development:

The How...

LEGEND:
- Fatal Crash:
- Serious Injury Crash:
- Road:
- County Boundary:
- Other spatial data:
Systemic Safety Project Development: The How...

LEGEND:
- High Risk Network:
- Low Risk Segment:
- County Boundary:
Systemic Safety Project Development:

The How...

LEGEND:
- Muni Road: 
- County Road: 
- State Road: 
- Potential treatment location:
Systemic Safety Project Development:

The How...

LEGEND:
- Muni Road: [Orange]
- County Road: [Green]
- State Road: [Blue]
- Potential treatment location: [Black dot]
Systemic Safety Project Development:
The How...

COUNTERMEASURE BUNDLE:
Leading Ped Intervals & Increased crossing times
High-Visibility Crosswalk Markings
Systemic Safety Project Development:

The How...

COUNTERMEASURE BUNDLE:
- Reduced Ped Intervals & Increased Crossing times
- High-Visibility Crosswalk Markings

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Safety Studies & Road Safety Audits
A **safety study** analyzes roadway and traffic data to determine why crashes are occurring at a certain location and identifies short and long term countermeasures to reduce them.

A **road safety audit** is a proactive, formal safety performance examination of an existing or future road or intersection by a multidisciplinary team.
ODOT is encouraging local governments & regional planning organizations to conduct safety studies & road safety audits at priority safety locations.

**BENEFITS:**

- Promotes a culture of safety and provides opportunities for stakeholders to come together to **understand and address safety issues**.

- These types of spot safety studies are almost always required when pursuing **available federal safety funds**.
Safety Studies & Road Safety Audits:
The What...

County X

LEGEND:
Priority Safety Segment:
Priority Safety Intersection:
Safety Studies & Road Safety Audits:
The What...
Local Safety Assistance Available: The How...

**REGIONAL & COUNTY SAFETY PLANS:**
Our team can help navigate any or all of the safety plan development process.

**SYSTEMIC SAFETY IMPROVEMENTS:**
Our team can help local partners develop a systemic safety project and secure resources for implementation.

**ROAD SAFETY AUDITS & SAFETY STUDIES:**
Our team can help local partners complete a road safety audit or safety study, identify countermeasures and apply for HSIP funds.

ODOT’s Highway Safety Program is providing free consultant assistance to local agencies and regional planning organizations to assist with safety project development and funding applications.

https://ODOT.formstack.com/forms/local_safety_assistance_request
Local Road Safety Initiatives

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