



VISION ZERO
zero deaths • zero serious injuries

MONTANA DEPARTMENT
OF TRANSPORTATION

Roadway Departure & Intersection
Crashes Emphasis Area
Great Northern Hotel
Helena, MT
October 11, 2017

Roy Peterson & Patricia Burke
Traffic & Safety Bureau,
Engineering Division
Montana Department of Transportation

Montana Comprehensive Highway Safety Plan



MONTANA
MDT
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May 2015

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Roadway Departure/Intersection Crashes

- Emphasis Area Overview
- Innovative New Tools for Advancing Safety Analysis
- Proven Safety Countermeasures



Emphasis Area

- Strategy Highlights:
 - Continued use of the Roadway Departure Study for identifying and screening potential HSIP projects
 - Several local agencies have been connected to the MDT's Safety Information Management System database
 - Centerline Rumblestrips installation is continuing
 - Horizontal Curve signing effort is continuing (goal is to complete by 2019)



Emphasis Area

- Strategy Highlights:
 - Education material is available (updated roundabout brochures, flashing yellow arrows, new rumble strip website, etc)
 - Education/Skills Training continuing
 - AARP – Driver Safety Class
 - 1st quarter: 43 classroom classes with 543 participants and 194 on-line participants
 - 2nd quarter: 57 classroom classes with 682 participants and 186 on-line participants
 - Operation Life Saver Training –
 - Presented at 22 driver’s education classes between May - July

Emphasis Area

- Strategy Highlights:
 - Education/Skills Training continuing
 - BikeWalk Montana
 - Melinda Barnes; conducted bicycle skills training in Hamilton, Glasgow and Helena; skills and bicycle laws training for the Helena Police Department.
 - Operation Safe Driver
 - Several schools participate in the Teens in Trucks Program
 - MT D.R.I.V.E. (Lewistown Driving Track)
 - Skills training includes skid control, controlled braking, evasive steering, cornering, and off road recovery. Trained 14,000 since 1979.

Montana Teen Traffic Safety



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Montana FCCLA

- 1,095 Members
 - 67 Chapters
- Launched at Annual Leadership Rally
 - Grants Available
 - Awarded by November 1
 - Completion date March 9
 - Prizes for Winning Projects



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Emphasis Area

- Strategy Highlights:
 - Montana Motorcycle Rider Safety (MMRS)
 - Has conducted Basic Skills along with Advanced
 - Centerline Rumble Strip Media campaign was conducted for about 2 months in the Great Falls/Havre area

Emphasis Area

- Strategy Highlights:
 - Funds for Law Enforcement (\$2,216,000 for FFY 2017)
 - \$683k for SETT (Enforcement)
 - \$580k for STEP (Enforcement)
 - \$175k for TSRO (Drug and Alcohol Training)
 - \$106k for 24/7 program (alcohol monitoring post DUI)
 - \$60k for Mini-Grants (Enforcement)
 - \$32k for Web Based Crash Trainer (Data and Training)



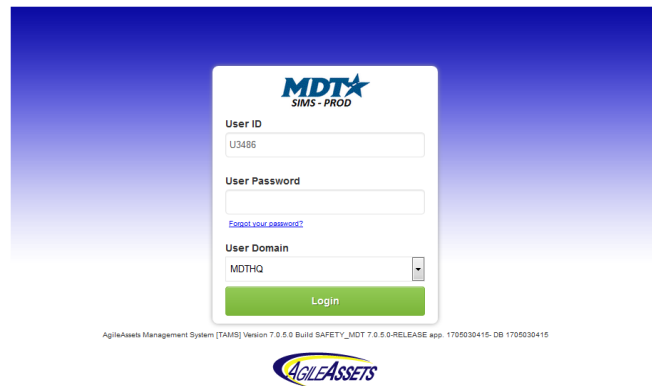
Emphasis Area

- Strategy Highlights:
 - Final stats for FY 2016
 - Total Enforcement Hours – 16,065
 - Total Traffic Stops – 18,642
 - Total Citations – 33,064
 - Included were:
 - » DUI/DUID – 467
 - » Seatbelts – 3,009 (citations and warnings)
 - » Speeding – 8,657 (citations and warnings)



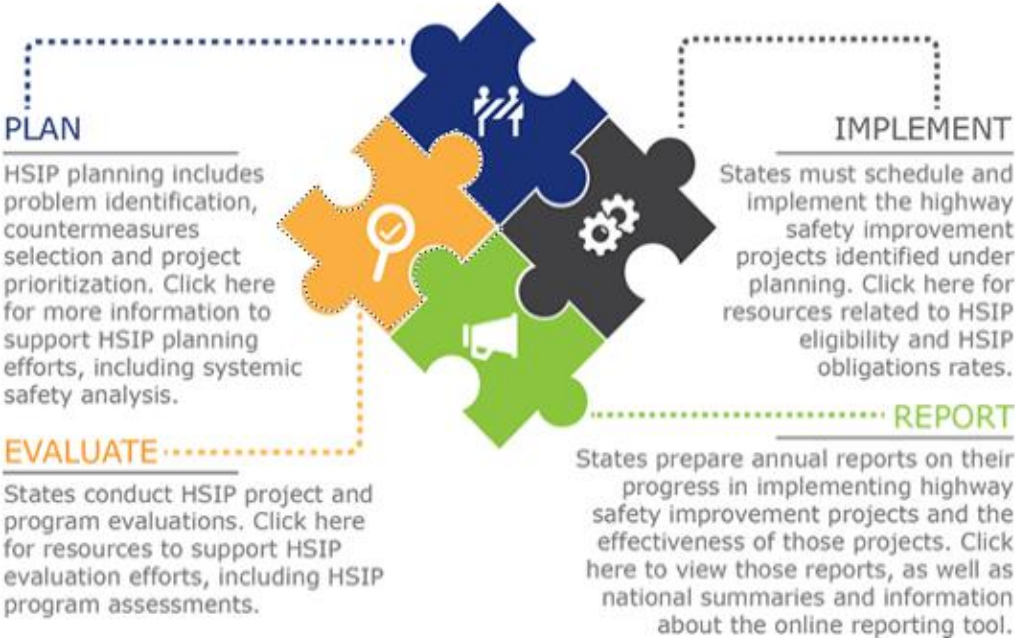
Innovative New Tools for Advancing Traffic Safety

- HSIP Program
- Roadway Departure Study
- Intersection Study
- Safety Information Management System (SIMS)



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Highway Safety Improvement Program (HSIP) – FHWA Program



- Plan
- Implement
- Report
- Evaluate

HSIP Program Summary

Network Screening



Office Review



Field Review



**Cost Estimate /
Benefit Cost**



**Rank Projects /
Nominate Projects**

← Yearly Screening Process

← History / Crash Trend

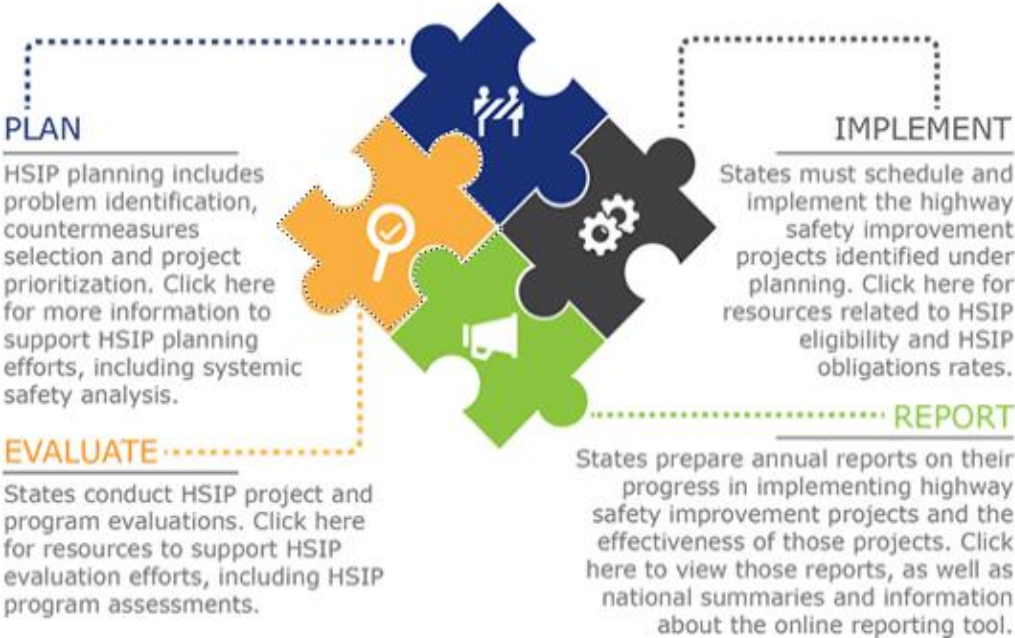
← Mitigation / Countermeasures

← Addressable Crashes / BC

← Projects to Design



Highway Safety Improvement Program (HSIP) – FHWA Program



- Plan
- Implement
- Report
- Evaluate

HSIP Program Summary

INNOVATIVE TOOLS

- Roadway Departure Study
- Intersection Study
- Safety Information Management System (SIMS)

Roadway Departure & Intersection Studies

Safety Performance Functions (SPF's)

Mathematical Formula – function of crashes/year

- Roadway Departure – type of facility
- Intersection – intersection traffic control and traffic volumes

Considers the magnitude of the safety issues

Traffic Volumes

Type of Facility & Control

Total Crashes and Fatal/Serious Injury Crashes

Analyses the nature of the safety problem

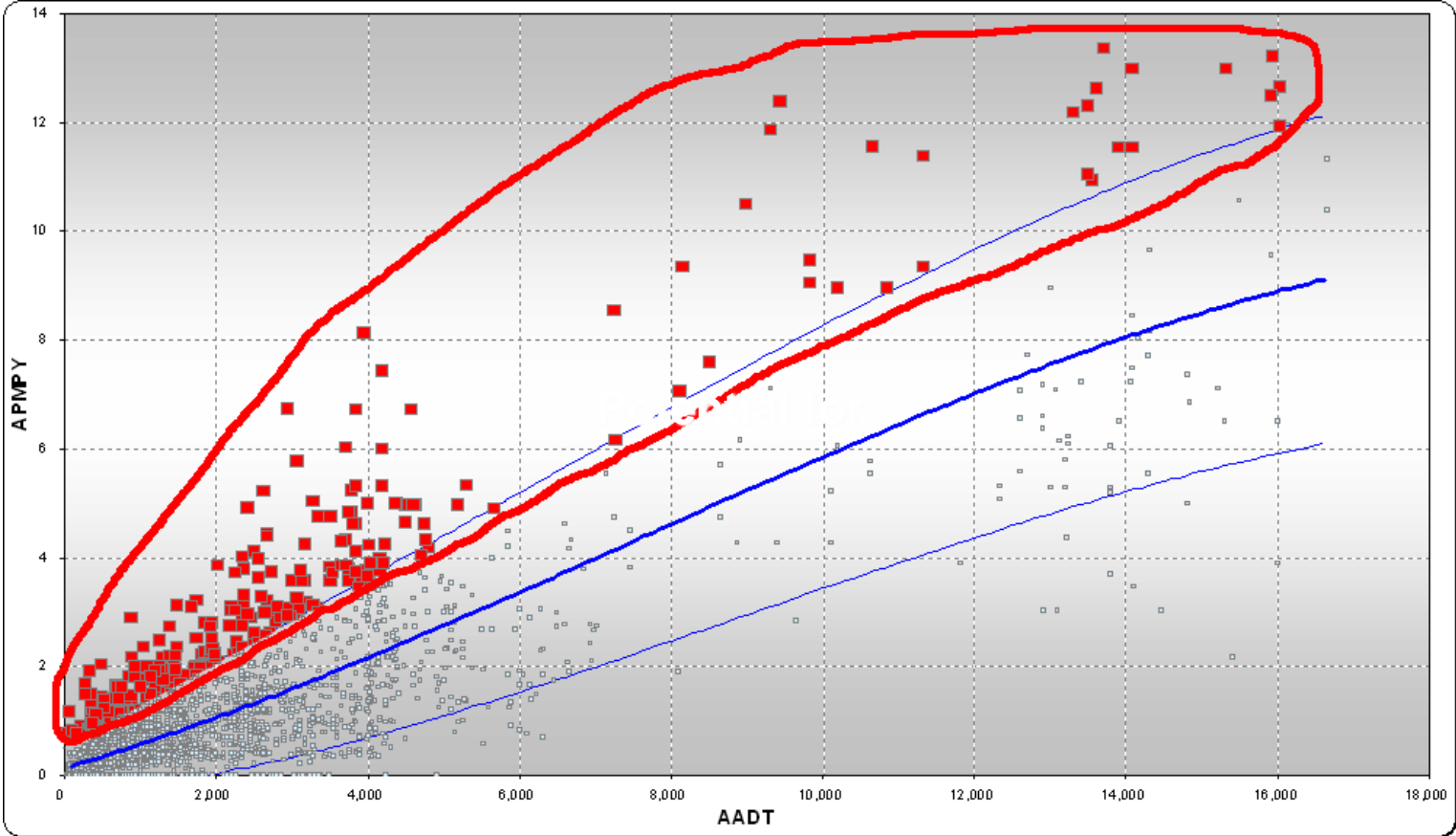
Utilizes the diagnostic norms

Side Street Volumes



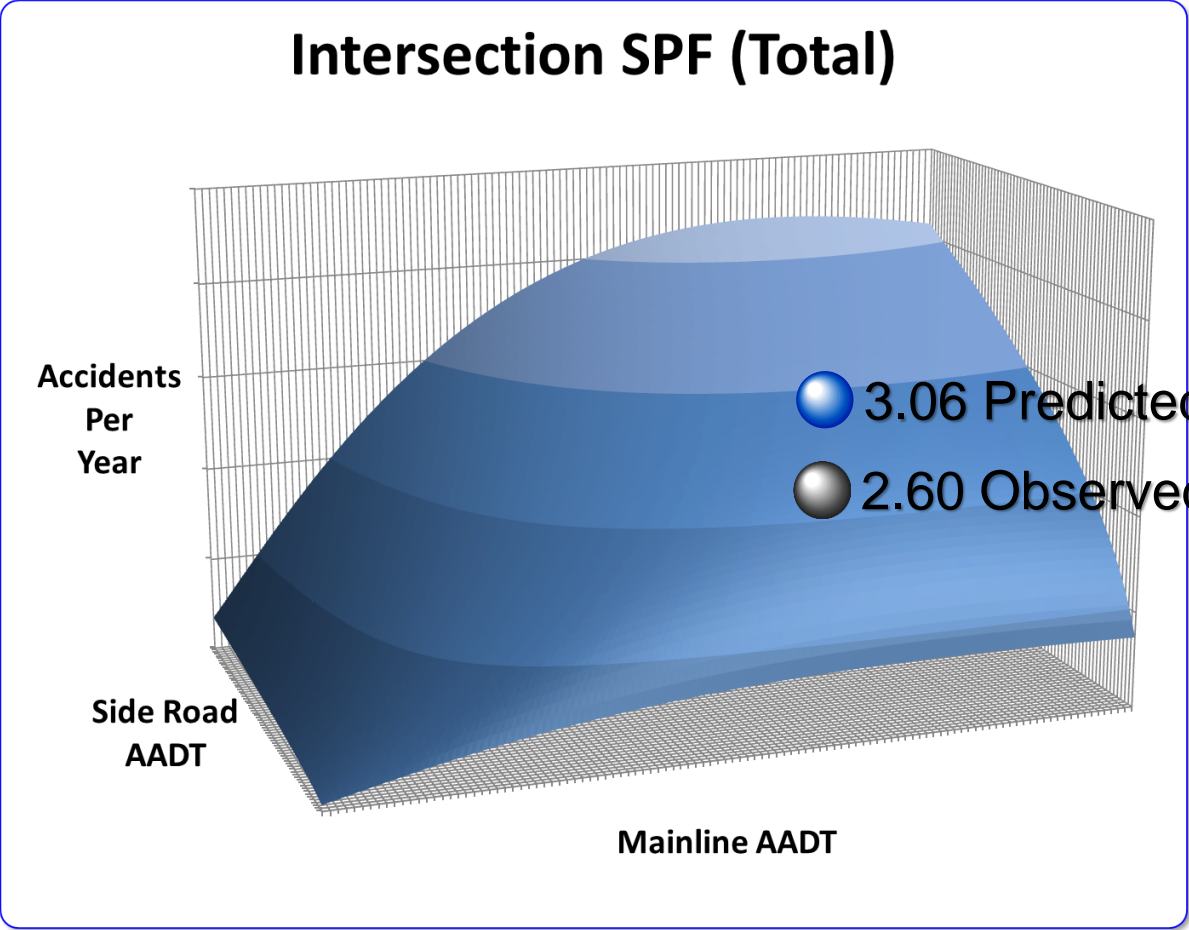
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Roadway Departure Study




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Intersection Study



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Intersection Study – Diagnostic Norms



Montana Department of Transportation
DiExSys™ Roadway Safety Systems
Diagnostics Comparison Percentages Baselines

11/03/2016
 Job #: 20161103160729

Highway Class: MT - Urban 4-Lane Divided UnSignalized 4-Leg Intersections - AADT All Totals (2016)

Baseline Statistics	Statewide Average		Baseline Statistics	Statewide Average	
CATEGORY	# ACC's	%	CATEGORY	# ACC's	%
Property Damage Only (PDO)	681	70.21%	Large Boulders or Rocks	0	0.00%
Injury (INJ)	286	29.48%	Rocks in Roadway	0	0.00%
Fatal (FAT)	3	0.31%	Barricade	0	0.00%
Persons Injured	427		Wall or Building	0	0.00%
Persons Killed	3		Crash Cushion	0	0.00%
Single Vehicle Accidents	27	2.78%	Mailbox	0	0.00%
Two Vehicle Accidents	862	88.87%	Other Fixed Object	6	0.62%
Three or More Vehicle Accidents	81	8.35%	Involving Other Object	1	0.10%
Unknown Number of Vehicles	0	0.00%	Road Maintenance Equipment	0	0.00%
On Road	960	98.97%	Unknown Accident Type	9	0.93%
Off Road	9	0.93%	Total Fixed Objects	24	2.47%
Off Road Left	1	0.10%	Total Other Objects	1	0.10%
Off Road Right	8	0.82%	Daylight	795	81.96%
Off Road at Tee	0	0.00%	Dawn or Dusk	22	2.27%
Off Road in Median	0	0.00%	Dark - Lighted	123	12.68%
Unknown Road Location	1	0.10%	Dark - Unlighted	28	2.89%
Overturning	1	0.10%	Unknown Lighting	2	0.21%
Other Non Collision	0	0.00%	No Adverse Weather	837	86.29%
Vehicle Cargo or Debris	0	0.00%	Rain	55	5.67%
Pedestrian	11	1.13%	Snow or Sleet or Hail	69	7.11%
Broadside	313	32.27%	Fog	4	0.41%
Head On	7	0.72%	Dust	1	0.10%
Rear End	380	39.18%	Wind	3	0.31%
Sideswipe (Same Direction)	96	9.90%	Unknown Weather	1	0.10%
Sideswipe (Opposite Direction)	8	0.82%	Dry Road	706	72.78%
Approach Turn	75	7.73%	Wet Road	122	12.58%



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Safety Information Management System (SIMS)

MDT
SIMS - PROD

User ID
U3486

User Password
[Forgot your password?](#)

User Domain
MDTHQ

Login

AgileAssets Management System [TAMS] Version 7.0.5.0 Build SAFETY_MDT 7.0.5.0-RELEASE app. 1705030415-DB 1705030415



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HSIP – SIMS Network Screening



Safety ▾

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★ Quick Links ▾ ⚙ Settings ▾ ? Help

Setup ▾ Database ▾ **Network Screening ▾** Diagnosis ▾ Countermeasure ▾ Analysis ▾ Reports ▾ System Info ▾

Safety > Network Screening

Step 0(Admin):Setup ▾
Step 1:Profile Management
Step 2:Screening

Save Data Retrieve Data

Scenario Menu ▾

Load Profile Edit Scope Calculate LOSS Identify Hotspots

* Scenario Name	Has Results	Year of ADT	* Safety
▶ 2015 HSIP - RD Injury + Fatal - LOSS IV, 2004-2013	<input type="checkbox"/>	2008	All Rou
2016 HSIP - RD + Dark (2005-2014)	<input type="checkbox"/>	2009	All Rout
2016 Safety Needs Study Trial	<input type="checkbox"/>	2012	All Rout
8714 AADT Investigation	<input type="checkbox"/>	2013	C00002
All MIRE Sections	<input type="checkbox"/>		MIRE S
C000001; Injury Model; 2005-2014	<input type="checkbox"/>	2009	C00000

<<< 1 2 3 4 5 6 7 8 9 10 >>> Rows 1-6 of 194 total rows

Crash Percent Threshold Menu ▾

* Highway Class	Threshold Value
▶ Interstate Principal Arterial	

<<< 1 2 3 4 5 6 >>> Rows 1-1 of 6 total rows

Scenario Profile Hotspots

Main Location-Results Menu ▾ Filter applied

Select Location for Diagnosis?	Loc. Corridor	Direction	Lane	Accm. Mileage (from)	Accm. Mileage (to)	Ref Post+Offset (fr...
▶ <input type="checkbox"/>	C000001E	Both	All	0	666.645	000+0.000
<input type="checkbox"/>	C000002E	Both	All	0	95.053	000+0.000
<input type="checkbox"/>	C000003N	Both	All	0	109.035	000+0.000
<input type="checkbox"/>	C000004N	Both	All	0	58.057	000+0.000
<input type="checkbox"/>	C000005N	Both	All	0	186.403	000+0.000

<<< 1 2 3 4 5 6 7 8 9 10 >>> Rows 1-5 of 574 total rows

Secondary Location-Results Menu ▾ Filter applied

Loc. Corridor	Direction	Lane	Accm. Mileage (from)	Accm. Mileage (to)	Ref Post+Offset (from)	Ref Post+Offset (to)	Black S
▶ C000001E	Both	All	4.6	5.6	004+0.585	005+0.587	<input checked="" type="checkbox"/>
C000001E	Both	All	4.7	5.7	004+0.685	005+0.687	<input checked="" type="checkbox"/>
C000001E	Both	All	4.8	5.8	004+0.785	005+0.787	<input checked="" type="checkbox"/>

<<< 1 2 3 4 5 6 7 8 9 10 >>> Rows 1-3 of 500 total rows



HSIP – SIMS – GIS Mapping & Display



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Quick Links - Settings

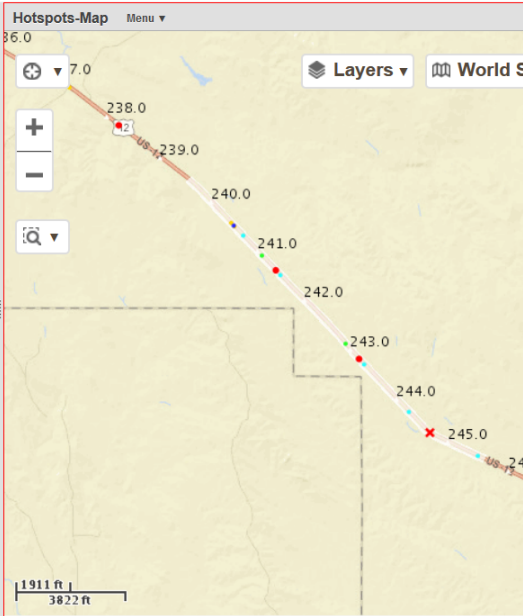
Setup Database Network Screening Diagnosis Countermeasure Analysis Reports System Info

Safety > Diagnosis > Step 1:Reactive - Hotspots & GIS

Select Screening Scenario 2015 HSIP - RD Injury + Fatal - LOSS IV; 2004-2C

Hotspots	Menu	Filter applied					
Sel	S...	Loc. Corridor	Acc...	Acc...	Ref Po...	Ref Po...	Comments
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C000012E	7.1	9	007+0.093	009+0.088	PWB/DAH - Yes - RD crashes and rollovers. Snow/Ice/Dark trend. Half of the cras
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	10.9	16	010+0.939	015+0.961	PWB/DAH - No - UPN 7750 - bridge and culvert work to address 2011 (approx) flc
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	18.9	22	018+0.921	022+0.051	PWB/DAH - No - Review parameters of UPN 7750 - bridge work to address floodir
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	24.4	29.7	024+0.456	029+0.757	PWB/JMF - No - 2014 HSIP List RP 27.689-28.562 No Diagram! No Newer Cras
<input type="checkbox"/>	<input type="checkbox"/>	C000014E	79.7	85.9	079+0.702	085+0.870	PWB - UPN 4889 Reconstruction (Two Projects RP 77-82.89 and RP 87.89-88.0)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	110.7	113.2	110+0.888	113+0.237	PWB/SM - No crash patterns identified using pattern recognition tools.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	141.5	143.5	141+0.542	143+0.541	PWB/SM - Overturning crash pattern identified using pattern recognition tools.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	157.8	160.1	157+0.813	160+0.113	PWB/SM - No crash patterns were identified using pattern recognition tools. The n
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	162	164.3	162+0.017	164+0.322	PWB/SM - No crash patterns were identified using pattern recognition tools. The n
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C000014E	239.5	245.6	239+0.538	245+0.607	PWB - Pattern Map - Overturning and Dry Road.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000015N	0.4	2.1	000+0.400	002+0.092	PWB/RF- no - Snow or sleet or hail, off road, overturning, no impairment suspecte
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000015N	4.7	6.6	004+0.691	006+0.588	PWB/RF- no - Snow or sleet or hail, driver - unknown contributing facotr, no impair
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000015N	17	18.3	016+0.992	018+0.293	PWB/RF- no - No impairment suspected, unknown contributing factor, off road pat
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000015N	21.9	23.8	021+0.894	023+0.813	PWB/RF- No - only one new crash and all crashes outside previous boundary are
<input type="checkbox"/>	<input checked="" type="checkbox"/>	C000015N	29.3	31	029+0.297	031+0.003	PWB/RF- no - Unknown contributing factor, daylight, no impairment suspected pat

Rows 111-125 of 540 total rows



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HSIP – SIMS – Diagnosis Tools



Safety ▾

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Quick Links ⚙️

Setup ▾ Database ▾ Network Screening ▾ Diagnosis ▾ Countermeasure ▾ Analysis ▾ Reports ▾ System Info ▾

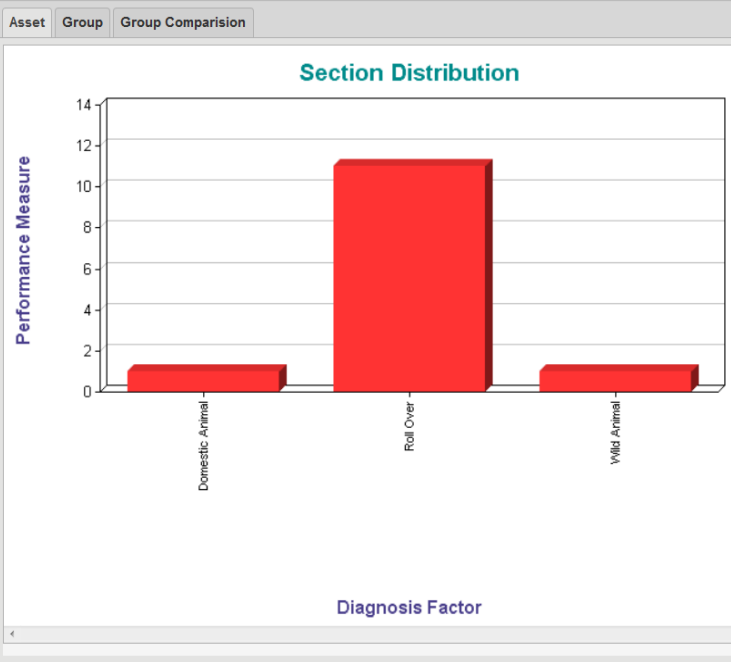
Safety > Diagnosis > Step 2: Location Based Diagnosis with Group > Step 2:Diagnosis Analysis ☆ Save Data

Diagnostics Factor: Crash Type
 Comparison Group: By Class
 Diagnostics Period: 2004-2013
 County Name: No County
 Location Type: Hotspots
 Functional Class: Minor Arterial

Select a hot spot to Find Details

Loc. Corridor	Direction	Lane	Accm. ...	Accm. ...	District	County	Ref Post+Offset (from)
C000014E	Both	All	3.4	5.5	Butte	BROADWATER	003+0.405
C000014E	Both	All	10.9	16	Butte	BROADWATER	010+0.939
C000014E	Both	All	18.9	22	Butte	BROADWATER	018+0.921
C000014E	Both	All	24.4	29.7	Butte	MEAGHER	024+0.456
C000014E	Both	All	110.7	113.2	Billings	WHEATLAND	110+0.888
C000014E	Both	All	141.5	143.5	Billings	GOLDEN VALLEY	141+0.542
C000014E	Both	All	157.8	160.1	Billings	MUSSELSHELL	157+0.813
C000014E	Both	All	162	164.3	Billings	MUSSELSHELL	162+0.017
C000014E	Both	All	239.5	245.6	Glendive	ROSEBUD	239+0.538
C000015N	Both	All	0.4	2.1	Butte	BEAVERHEAD	000+0.400
C000015N	Both	All	4.7	6.6	Butte	BEAVERHEAD	004+0.691
C000015N	Both	All	17	18.3	Butte	BEAVERHEAD	016+0.992

Rows 90-101 of 559 total rows



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HSIP – SIMS - Database Queries



Safety ▾

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★ Quick Links ▾ ⚙ Settings ▾ ? Help

Setup ▾ Database ▾ Network Screening ▾ Diagnosis ▾ Countermeasure ▾ Analysis ▾ Reports ▾ System Info ▾

Save Data Retrieve Data

1.0 Crash Data
 2.0 Animal Maintenance Data
 3.0 MIRE Elements Data
 4.0 DOJ Citation Data

Comprehensive Crash Information
 Individual Crash Data Tables

Crash Data
 Person Data
 Vehicle Data
 Person Violation Data
 Crash Image Data
 Crash Narrative Data
 Crash Business Information
 External Crash Image (from SMS)
 Contributing Circumstances

Crash Record Num...	Crash Location	Corridor	RefPost+Off...	City	Count	Occ. Day of Week	Collision Type	Junction Relation (SmartCop)	Relation to TrafficWay (SmartCop)	W...	
50053707	000140240+0510	C000014E	240+0.510	ROSEBUD			Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck	
50049393	000140240+0440	C000014E	240+0.440	ROSEBUD			Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck	
50038646	000140243+0310	C000014E	243+0.310	ROSEBUD			Roll Over	NON-JUNCTION	ROADSIDE LEFT	Ck	
50003204	000140244+0271	C000014E	244+0.271	ROSEBUD			Wild Animal	NON-JUNCTION	ON ROADWAY	Ck	
09C2929200601	000140241+0100	C000014E	241+0.100	ROSEBUD	6/13/2009	23:00	SAT	Roll Over	NON-JUNCTION	SHOULDER	Ck
50051795	000140244+0710	C000014E	244+0.710	ROSEBUD	10/1/2013	13:00	TUE	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck
50020502	000140240+0496	C000014E	240+0.496	ROSEBUD	1/10/2011	22:00	MON	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Blk
0800011930602	000140240+0700	C000014E	240+0.700	ROSEBUD	6/11/2008	10:00	WED	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck
0800011930204	000140241+0500	C000014E	241+0.500	ROSEBUD	2/22/2008	10:30	FRI	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck
0700015881005	000140242+0900	C000014E	242+0.900	ROSEBUD	10/30/2007	02:30	TUE	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck
0600012160802	000140245+0500	C000014E	245+0.500	ROSEBUD	8/31/2006	20:30	THU	Domestic Animal	NON-JUNCTION	ON ROADWAY	Ck
0600017590703	000140243+0200	C000014E	243+0.200	ROSEBUD	7/15/2006	16:17	SAT	Roll Over	NON-JUNCTION	ROADSIDE RIGHT	Ck
0700011930902	000140241+0400	C000014E	241+0.400	ROSEBUD	9/12/2007	11:12	WED	Roll Over	NON-JUNCTION	ON ROADWAY	Ck

Rows 1-13 of 13 total rows



HSIP – SIMS – Crash Narratives



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Setup Database Network Screening Diagnosis Countermeasure Analysis Reports System Info

Safety > Database > 1.0 Crash Data > Comprehensive Crash Information

Date From 1/1/2004 Date To 1/1/2014

Crash Vehicles Person Crash Image (SmartCop) Crash Image (from SMS) Narrative and Business Contributing Circumstances

Crash Business Menu

City

Zip Code

Telephone No.

<< >> Row 0 of 0 total rows

Crash Narrative Menu

Owner's Agency

MONTANA HIGHWAY PATROL

Text Field Editor

Menu

VEHICLE #1 WAS TRAVELING EAST ON US 12. VEHICLE #1 IS A UHUAL PULLING A TRAILER WITH A PICKUP ON THE TRAILER. THE PICKUP IS A 2003 FORD RANGER PICKUP VIN DRIVER STATED THE UHAUL PULLED HIM OFF THE RIGHT HAND SIDE OF ROAD. VEHICLE WENT OFF RIGHT HAND SIDE OF ROAD. DRIVER OVERCORRECTED AND THE VEHICLE WENT ACROSS THE HIGHWAY AND DOWN INTO THE DITCH. DRIVER OVERCORRECTED TO THE RIGHT AND THIS CAUSED IT TO ROLL ONTO THE DRIVER'S SIDE.

Close



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HSIP – SIMS – Countermeasures



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Setup ▾ Database ▾ Network Screening ▾ Diagnosis ▾ Countermeasure ▾ Analysis ▾ Reports ▾ System Info ▾

Home Safety > Countermeasure > Treatments ☆

Treatments Master List Menu ▾										
* Treatment Name	* Large Project Unit Cost	* Small Proj. Unit Cost	* Unit	Clearing House	* CMF	* Year	CRF	* Salv...	* Servi...	
Fence-Wildlife Friendly	\$1.46	\$1.70	LINEAR...	Find CMF?	1	2015	0	1	20	
Fencing (Domestic Animals)	\$0.01	\$0.01	Mile	Find CMF?	0.3	2015	0.7	1	20	
Flashing Beacon at Intersection (3 Leg Red/Yellow)	\$0.01	\$50,000.00	Each	Find CMF?	0.61	2015	0.39	1	10	
Flashing Beacon at Intersection (4 Leg Red/Yellow)	\$0.01	\$50,000.00	Each	Find CMF?	0.66	2015	0.34	1	10	
Flashing Beacon at Intersection (4-Way Red)	\$0.01	\$50,000.00	Each	Find CMF?	0.3	2015	0.7	1	10	
Flashing Beacons Mounted on Intersection Warning Signs	\$0.01	\$5,000.00	LUMP S...	Find CMF?	0.73	2015	0.27	1	10	
Flashing Beacons Mounted on Curve Warning Signs	\$0.01	\$5,000.00	LUMP S...	Find CMF?	0.73	2015	0.27	1	10	
▶ Flatten Side Slopes	\$0.01	\$0.01	Mile	Find CMF?	0.68	2015	0.32	1	20	
Flexible Delineation (White & Yellow)	\$74.76	\$86.00	Each	Find CMF?	0.75	2015	0.25	1	4	
Flexible Delineation-Surface Mounted	\$70.14	\$81.00	Each	Find CMF?	0.75	2015	0.25	1	4	
Four-Way Stop Sign	\$0.01	\$0.01	Each	Find CMF?	0.47	2015	0.53	1	10	
Guardrail (Box Beam Rail) at Road Edge	\$33.78	\$38.80	LINEAR...	Find CMF?	0.77	2015	0.23	1	15	
Guardrail (Box Beam Rail) On Inside of Curve	\$33.78	\$38.80	LINEAR...	Find CMF?	0.72	2015	0.28	1	15	
Guardrail (Box Beam Rail) On Outside of Curve	\$33.78	\$38.80	LINEAR...	Find CMF?	0.37	2015	0.63	1	15	
Guardrail (W-Beam with 9 ft posts) at Bridge Ends	\$28.01	\$32.20	LINEAR...	Find CMF?	0.56	2015	0.44	1	15	



HSIP – SIMS – Project Tracking



AgileAssets Management System [TAMS] Version SAFETY_MDT 7.0.3.0-RELEASE app. 1512031643-1512031643 Build

U
★ Quit

Setup ▾ Database ▾ Network Screening ▾ Diagnosis ▾ Countermeasure ▾ Analysis ▾ Reports ▾ System Info ▾

Safety > Analysis > Safety Projects > Step 4:Completed Projects ☆

Safety Projects ▾

- Step 1:Project Composition
- Step 2:Recommended Projects
- Step 3:Programmed Projects
- Step 4:Completed Projects
- Step 5:Discarded Projects

Completed Projects Menu ▾

Insert Completed Project Locations Update Economic Loss Update Actual Project B/C

Local District	Financial Project Number	Project Status	Economic Loss-Before	Economic Loss-After	Approved?	JAC	Estimated Benefit/Cost	Actual Benefit (EUAB)	Actual
la	UPN 5870	Completed ▾	\$519,400.00	\$50,000.00	<input type="checkbox"/>	\$20,709.60	\$33,205.22	0.5	\$93,823.00
Falls	UPN 6083	Completed ▾	\$27,394,700.00	\$8,441,300.00	<input type="checkbox"/>	\$1,669,980.91	\$34,254.57	48.75	\$3,787,679.00
Falls	UPN 5380	Completed ▾	\$1,779,800.00	\$1,253,300.00	<input type="checkbox"/>	\$106,254.06	\$12,037.79	8.83	\$105,105.00
la	UPN 5014	Completed ▾	\$1,547,100.00	\$447,800.00	<input type="checkbox"/>	\$79,574.82	\$108,493.35	0.73	\$219,691.00
la	UPN 5876	Completed ▾	\$1,325,900.00	\$788,700.00	<input type="checkbox"/>	\$63,775.79	\$34,978.31	1.82	\$107,295.00

<< < 1 2 3 4 5 6 >> Rows 15-19 of 27 total rows

Financial Information Menu ▾

Insert Delete Insert Like

Project ID	Project Number	* Project Activity Phase	* Phase Status	* Fund Source	Federal Project Number
213	UPN 6083	All Phases ▾	Recommen... ▾	HSIP ▾	6083

<< < 1 >> Rows 1-1 of 1 total rows

Before After

Location Status- Before Menu ▾

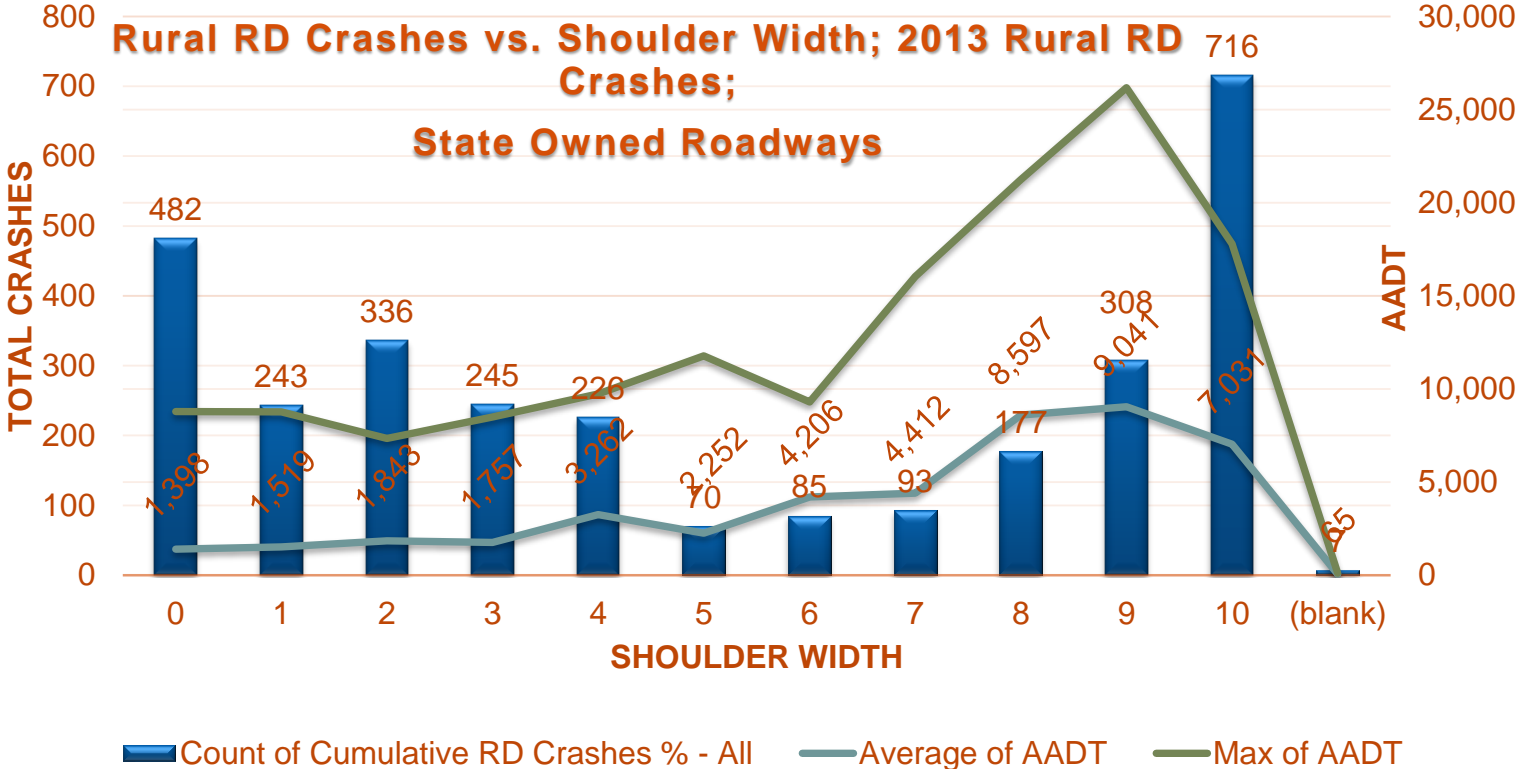
Update Economic Loss

Project Location ID	Project ID	* Loc. Corridor	Accm. Mileage (from)	Accm. Mileage (to)
250	213	C000060N	28.634	53.4

<< < 1 >> Rows 1-1 of 1 total rows



SIMS(Crash Data + Roadway Data)



HSIP – SIMS – Citation Data



Safety ▾

AgileAssets Management System [TAMS] Version null-21318 Build

- Setup ▾
- Database ▾
- Network Screening ▾
- Diagnosis ▾
- Countermeasure ▾
- Analysis ▾
- Reports ▾
- System Info ▾

🏠 Safety > Database > 4.0 DOJ Citation Data ☆

Menu ▾		
Level Override?	Violation Level Court Appearance Mandatory?	Violation Description
	<input type="checkbox"/>	Operate a Vehicle Which Has Not Been Properly Registered
	<input type="checkbox"/>	MISCELLANEOUS EQUIPMENT - REGULATIONS SEATBELT VIOLATION
	<input checked="" type="checkbox"/>	ROW Violation - Fail To Yield To Vehicle On Through Highway
	<input type="checkbox"/>	MISCELLANEOUS EQUIPMENT - REGULATIONS SEATBELT VIOLATION
	<input checked="" type="checkbox"/>	MANDATORY FINANCIAL RESPONSIBILITY
	<input type="checkbox"/>	MISCELLANEOUS EQUIPMENT - REGULATIONS SEATBELT VIOLATION
	<input checked="" type="checkbox"/>	IMPAIRED DRIVING OPERATING WITH ALCOHOL CONCENTRATION OF 0.08% BAC OR GREATER - 1ST OFFENSE
	<input type="checkbox"/>	Operate Motor Vehicle With Defective Or Shattered Windshield
	<input type="checkbox"/>	Seatbelt Violation
	<input type="checkbox"/>	Seatbelt Violation
	<input type="checkbox"/>	VEHICLE REGISTRATION - OPERATING WITH EXPIRED REGISTRATION - FAILURE TO REREGISTER
	<input checked="" type="checkbox"/>	DRIVING WITH VEHICLE IN UNSAFE CONDITION



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 OF TRANSPORTATION

Proven Safety Countermeasures

- Initiated by FHWA 2008 and updated in 2012
- <https://safety.fhwa.dot.gov/provencountermeasures/>

Purpose of directive:

- Highlight effective countermeasures
- Encourage these countermeasures to be more wide spread throughout the highway system
- Begin tracking them for each state

Proven Safety Countermeasures

FHWA Proven Safety Countermeasures

- Safety Edge
- Roundabouts
- Corridor Access Management
- Backplates with Retroreflective Borders
- Longitudinal Rumble Strips and Stripes on 2-Lane Road



Proven Safety Countermeasures

FHWA Proven Safety Countermeasures

- *Enhanced Delineation* and Friction for Horizontal Curves
- Medians and Pedestrian Crossing Islands in Urban and Suburban Areas
- Pedestrian Hybrid Beacon
- "Road Diets" (Roadway Reconfiguration)

Proven Safety Countermeasure- Roundabouts

- Enhanced safety
- Intersection efficiency –traffic moves
- Potential air quality benefits
- Fuel Savings
- Improved aesthetics
- U-turns are allowed



Proven Safety Countermeasure- Roundabouts

- Public resistance is common
- Before construction: 2 to 1 against roundabout
- **Education is crucial**
- After construction: 3 to 1 in favor of roundabout
- Visualizations & traffic simulations are very helpful



Proven Safety Countermeasures

- Roundabouts

Safety Performance is Major Reason for Continued Focus

- Reduction of Total Crashes by 39%
- Reduction of Injury Crashes by 76%
- Reduction of Fatal and Incapacitating Crashes by 89%

www.highwaysafety.org



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The Vail Trail - November 1994 Prior to Modern Roundabout



The Vail Trail - January 5, 1996

— Editorial —

Shocker: Maybe the roundabout isn't so bad after all

We at the Trail have had a lot of fun in the past year taking stabs at Vail's roundabout, projecting all manner of doomsday scenarios for the project...

...Our primary concern was the combination of slick roads, rental cars and an unfamiliar driving concept. However, people seem to have figured out the contraption. What's more, the gridlock appears to be gone.



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Proven Safety Countermeasures – Centerline Rumblestrips



Proven Safety Countermeasures – Centerline Rumble Strips

Roadway departure crashes account for more than **two-thirds** of all Montana's roadway fatalities.



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Proven Safety Countermeasures – Centerline Rumble Strips

Roadway Departure Campaign continued through 2017



Proven Safety Countermeasures – Centerline Rumble Strips

Roadway Departure Campaign

Myth Crashers Video - **It Only Takes A Second**



<http://www.mdt.mt.gov/visionzero/roads/roadway-departure.shtml>

Proven Safety Countermeasures – Centerline Rumble Strips

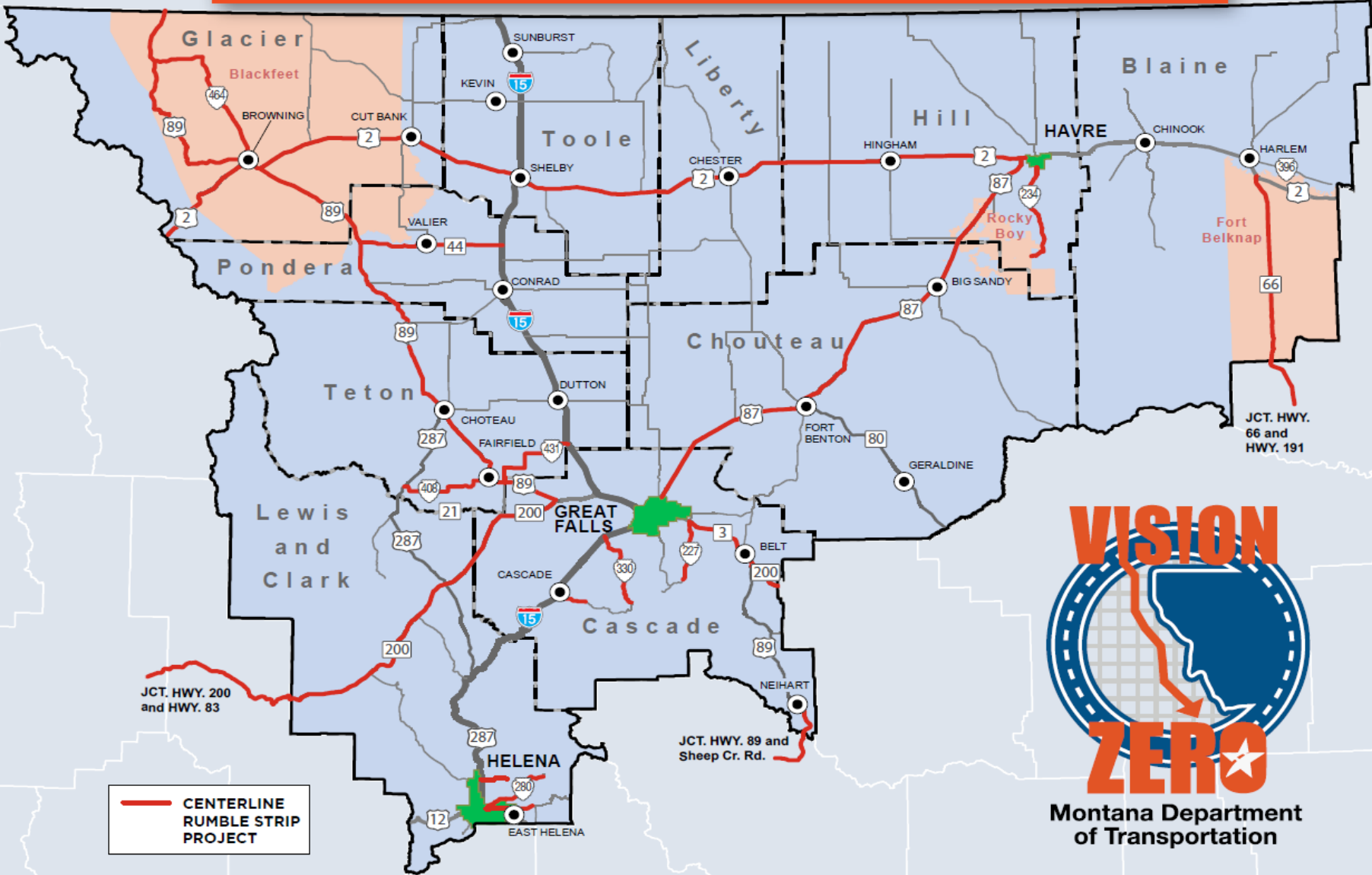
Education Campaign on Centerline Rumblestrips

- Paid newspaper ads
- Television Interviews
- Recorded radio spots
- Developed talking points (shared with HQ/District personnel)
- Developed new webpage
 - <http://www.mdt.mt.gov/visionzero/rumblestrips/>
- Social Media
 - Facebook Ads
 - Instagram



Proven Safety Countermeasure-

GREAT FALLS DISTRICT RUMBLE STRIP INSTALLATION



Proven Safety Countermeasures – Centerline Rumble Strips

Centerline Rumble Strip Installation Plan

- Butte District – completed
- Billings District – completed
- Great Falls District – completed
- Glendive District – next summer
- Missoula District – Summer 2019



Proven Safety Countermeasures

– Enhanced Delineation on Horizontal Curves

Centerline Rumble Strip Installation Plan

- Missoula District - completed
- Butte District – completed
- Great Falls District – currently in construction phase one of the job order contract
- Billings District – 2018/2019
- Glendive District – 2018/2019





Engineering a Safer Drive

MDT's *Traffic and Safety Bureau* provides management, design, and technical support for traffic and safety engineering; and is responsible for traffic signal operations. This team of professionals looks carefully at road designs to ensure the safest possible drive.

TRAFFIC AND SAFETY BUREAU »



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Comprehensive Highway Safety Plan
<http://www.mdt.mt.gov/visionzero/plans/chsp.shtml>

Pam Langve-Davis, CHSP Coordinator, 406-444-7646, plangvedavis@mt.gov