

Oregon Department of Transportation

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# Project Safety Management System (PSMS)

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## Biennial Report 2008



OREGON DEPARTMENT of TRANSPORTATION  
TECHNICAL SERVICES  
TRAFFIC-ROADWAY SECTION  
<http://www.odot.state.or.us/tstrafmgtpublic>

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2</b>	<b>PROJECT SAFETY MANAGEMENT SYSTEM (PSMS).....</b>	<b>2</b>
2.1	SUMMARY OF ACCOMPLISHMENTS.....	3
2.2	SUMMARY OF PLANNED ACTIVITIES .....	4
<b>3</b>	<b>HIGHWAY SAFETY PROGRAM (STIP).....</b>	<b>5</b>
3.1	SUMMARY OF ACCOMPLISHMENTS.....	5
3.2	SUMMARY OF PLANNED ACTIVITIES .....	8
<b>4</b>	<b>SAFETY PRIORITY INDEX SYSTEM (SPIS) .....</b>	<b>9</b>
4.1	SUMMARY OF ACCOMPLISHMENTS.....	9
4.2	SUMMARY OF PLANNED ACTIVITIES .....	11
<b>5</b>	<b>OTHER SAFETY INITIATIVES .....</b>	<b>12</b>
5.1	SUMMARY OF ACCOMPLISHMENTS.....	12
5.2	SUMMARY OF PLANNED ACTIVITIES .....	14
<b>6</b>	<b>THE FUTURE .....</b>	<b>14</b>

# 1 INTRODUCTION

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) mandated that states develop and maintain six transportation management systems, one of which was a Safety Management System (SMS). As defined by the Federal Highway Administration (FHWA) a SMS is "a systematic process which increases the likelihood of reaching safety goals by ensuring that all opportunities to improve highway safety are identified, considered, implemented as appropriate, and evaluated in all phases of highway planning, design, construction, maintenance, and operations"

In response to the mandate, Oregon Department of Transportation (ODOT) began to develop a SMS. The National Highway Designation Act of 1995 made development of this management system optional, but ODOT recognized the benefits and has continued to develop a Safety Management System, comprised of the *Project Safety Management System (PSMS)*.

The Transportation Equity Act for the 21<sup>st</sup> century (TEA 21), enacted in 1998, provided for increased research funding for safety and continued the funding for safety improvement projects, the Hazard Elimination Program. The Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), enacted in 2005, further increased federal funding for safety improvements through the Highway Safety Improvement Program (HSIP).

SAFETEA-LU further requires all states to develop a Strategic Highway Safety Plan (SHSP) and identify a strategic approach to addressing the states most severe safety concerns. In addition SAFETEA-LU requires states to submit an annual report to FHWA describing not less than 5% of their highway locations exhibiting the most severe safety needs, potential remedies to the hazardous locations, estimated costs of the remedies and any impediments to implementation of the remedies (other than cost).

## Report Summary

This biennial report on the progress of the PSMS fulfills the requirement in the *Safety Management System Agreement*, dated February 24, 2000 between the Oregon Department of Transportation and the Federal Highway Administration (FHWA). Below in tables are summaries of the accomplishments for different categories of activities for the calendar years 2007 and 2008. Each of the items is detailed in the corresponding sections of the report.

### TABLE FOR SECTION 2 - SUMMARY OF PSMS ACTIVITIES

<b>Accomplishments in 2007 &amp; 2008</b>
<ul style="list-style-type: none"><li>• Intergovernmental Agreements with PSU and OSU, Contracts with Consultants and Research Projects</li></ul>
<ul style="list-style-type: none"><li>• Partnership between Traffic Roadway Section and Transportation Safety</li></ul>
<ul style="list-style-type: none"><li>• Safety Investigators User Group</li></ul>

### TABLE FOR SECTION 3 - HIGHWAY SAFETY IMPROVEMENT PROGRAM

<b>Accomplishments in 2007 &amp; 2008</b>
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<ul style="list-style-type: none"> <li>Highway Safety Improvement Program (HSIP) Report</li> </ul>
<ul style="list-style-type: none"> <li>Highway Safety Project Guide</li> </ul>
<ul style="list-style-type: none"> <li>Statewide Transportation Improvement Program (STIP) – Safety Summary</li> </ul>
<ul style="list-style-type: none"> <li>Crash Reduction Factors Update</li> </ul>
<ul style="list-style-type: none"> <li>Benefit Cost Worksheet and Economic Factors</li> </ul>
<ul style="list-style-type: none"> <li>Training Provided</li> </ul>
<ul style="list-style-type: none"> <li>Development of TransGIS</li> </ul>
<ul style="list-style-type: none"> <li>Development of Tool to Geocode Crash Data</li> </ul>
<ul style="list-style-type: none"> <li>Development of Performance Measure Tool for Safety</li> </ul>

**TABLE FOR SECTION 4 – NETWORK SCREENING - SAFETY PRIORITY INDEX SYSTEM (SPIS)**

<b>Accomplishments in 2007 &amp; 2008</b>
<ul style="list-style-type: none"> <li>2007 and 2008 SPIS Reports published</li> </ul>
<ul style="list-style-type: none"> <li>Prototype of SPIS Analysis Module (SAM)</li> </ul>
<ul style="list-style-type: none"> <li>FHWA required Top 5% report based on SPIS</li> </ul>
<ul style="list-style-type: none"> <li>Enhanced Top 5% Reports (SPIS All Roads)</li> </ul>
<ul style="list-style-type: none"> <li>SPIS Analysis Module (SAM)</li> </ul>

**TABLE FOR SECTION 5 - OTHER SAFETY INITIATIVES**

<b>Accomplishments in 2007 &amp; 2008</b>
<ul style="list-style-type: none"> <li>Lead State Initiative – Lane Departure Projects (phase II)</li> </ul>
<ul style="list-style-type: none"> <li>Repeat Offender Transfer Provision- Section 164 Penalty Funds</li> </ul>
<ul style="list-style-type: none"> <li>Speed Monitoring</li> </ul>
<ul style="list-style-type: none"> <li>Rumble Strip Experimentation</li> </ul>

**2 PROJECT SAFETY MANAGEMENT SYSTEM (PSMS)**

The Oregon DOT's *Project Safety Management System* is a comprehensive data analysis and reporting system designed to improve the safety of Oregon's transportation system and

reach all safety goals. The PSMS will help reduce the traffic fatality rate in Oregon from the 2003 rate of 1.36 fatalities per 100 million vehicle miles traveled, to the goal in our Oregon Transportation Plan of 0.99 by the year 2010. The PSMS and associated tools give highway project leaders and designers pertinent PC-based and internet based crash, safety, roadway and traffic mitigation information to perform safety analyses and make safety investments where they will count the most.

## **2.1 Summary of Accomplishments**

### Intergovernmental Agreements with PSU and OSU, Contracts with Consultants and Research Projects

Traffic-Roadway utilized agreements with PSU and OSU and a contract with DKS and Associates as necessary to complete safety program work. As a result, Intergovernmental Agreements with Portland State University and Oregon State University were executed. These research efforts assist ODOT's Traffic-Roadway Section in research and completion of safety goals.

*Status: Ongoing*

*Completed Research:*

*Enhancing the Oregon Crash Reporting Process: A Feasibility Assessment*

*Collision Diagramming Tool Evaluation*

*Advisory Speed (for curve Warning Signs) Study*

*Current Research:*

*Safety Investigation Manual (phase 2)*

*Evaluating the Effectiveness of the Safety Investment Program*

*Determining Optimum Safety Countermeasures for Speed Related Crashes*

*Curve Warning Sign Evaluation*

*Assessment of Statewide Intersection Safety Performance*

*Evaluating the Safety and Operations of High Speed Signalized Intersections*

### Partnership between Traffic Roadway Section and Transportation Safety

In March of 1999, a formal Safety Management System partnership between Traffic Engineering and Operations Section and Transportation Safety Division was established. This partnership has continued with regular communications including monthly meetings, joint committee work and ongoing coordination to provide engineering, education and enforcement solutions to transportation safety problems.

*Status: Ongoing*

### Safety Investigators User Group

The Safety Investigators User Group was formed with Region Traffic Representatives and Central Traffic Staff as well as Safety Division staff. The purpose of the group was to meet and give input to central staff developing new tools, guidance and training. The group also receives information on the newest developments and helps

guide the priorities of the development of ODOT's PSMS. The group also meets to discuss the yearly SPIS reports and FHWA reporting requirements.

*Status: Ongoing*

## **2.2 Summary of Planned Activities**

### PSU/OSU Intergovernmental Agreement

Continue research in the following:

*Safety Investigation Manual (phase 2)*

*Evaluation of the Effectiveness of the Safety Investment Program*

*Determining Optimum Safety Countermeasures for Speed Related Crashes*

*Safety of High Speed Signalized Intersections*

*Assessment of Statewide Intersection Safety Performance*

Other possible research includes:

*Calibration of Safety Performance Functions (SPF) for Oregon Roads*

*Assessment of Statewide Intersection Safety Performance*

*Assessment of Lane Departure Crashes on Oregon Roads*

*Assessment and Evaluation of Data Needs for the Highway Safety Manual*

## **3 HIGHWAY SAFETY PROGRAM - STIP**

The Statewide Transportation Improvement Program, known as the STIP, is Oregon's four year transportation capital improvement program. It is the document that identifies the funding for, and scheduling of, transportation projects and programs and includes ODOT's Highway Safety Program projects. Funding for Highway Safety in the STIP is from two sources, the Highway Safety Improvement Program (HSIP) and the Safety Investment Program (SIP).

The *Highway Safety Improvement Program (HSIP)* is a federally funded program that mandates each state systematically survey all highways to identify hazardous locations, segment and elements. The HSIP is made up of three components, Highway Safety Improvement Projects, Highway Grade Rail Crossing (HGRX) Safety Projects, and the High Risk Rural Roads (HRRR) Projects. Highway Grade Rail Crossing Safety activities are reported to FHWA by ODOT Rail Division. They are not included in this report.

The overall objective of HSIP is reducing the number and severity of crashes and decreasing the potential for crashes on all highways. Primarily the HSIP project funds are used to fund safety projects on state highways. The HRRR are exclusively for rural roads and primarily used on county roads. Agencies may submit applications for HRRR project funding to the ODOT Local Agency program office.

The *Safety Investment Program (SIP)* is a process to selectively make safety investments on roadways with a history of fatal and serious injury crashes. The goal of SIP is to create a balance to meet the competing needs of two important transportation facility elements –

safety and pavement preservation; and to provide the most cost effective means of reducing fatalities and severe injuries on safety projects.

Five mile sections of the state highway system are categorized by the number of fatal and severe crashes during a three period. The following is the stratification for SIP categories:

- Category 1: 0 (no) fatal or injury A (serious) crashes;
- Category 2: 1 to 2 fatal or injury A crashes;
- Category 3: 3 to 5 fatal or injury A crashes;
- Category 4: 6 to 9 fatal or injury A crashes;
- Category 5: 10 or more fatal or injury A crashes.

### **3.1 Summary of Accomplishments**

#### Highway Safety Improvement Program (HSIP) Report

These reports detail ODOT's accomplishments for the fiscal years 2006 and 2007. The reports summarize the both the HSIP and HRRR activities for the previous year and document the progress being made to implement safety improvements and the effectiveness of such projects.

*Status: Complete*

#### Highway Safety Project Guide

A new program guide was completed with additional criteria outlined by SAFETEA-LU and also a recommendation from the Highway Safety Engineering Committee that the Department adopt the guidelines not just for HSIP funded projects but for all safety projects. This is a departure from previous practice where only the federally funded HEP projects must meet the guidance. Formerly the HEP projects had to meet the requirement of a benefit cost ratio of greater than 1.0 to be eligible for HEP funding.

The SAFETEA-LU legislation expanded the criteria for eligibility of the HSIP funds, but also calls for a higher degree of data use in determining the priority of projects and the project selection process. Also the new legislation calls for an emphasis on fatal and serious injury crashes. Oregon's use of SPIS has traditionally placed a high emphasis on the more serious crashes and includes a component of severity in the calculations.

SAFETEA-LU significantly increased the federal HSIP funds available for ODOT's Safety Program. This did not increase the amount of safety funds for safety projects, but it did increase the percentage of safety funds that are federal funded. Previously HEP accounted for about 10% and SIP accounted for 90% of the Safety program funds (SIP was either state funds or other eligible federal funds). The new HSIP funds account for over half of ODOT's Safety Program. With the additional penalty funds from Section 164, currently ODOT's Safety Program is about 75% federal funds that are required to meet HSIP eligibility.

As a result of the significantly higher portion of federal safety funding the new guidance requires all safety projects programmed in the STIP, whether using federal funds or not, to meet the eligibility criteria. This results in a "higher bar" being set for all safety projects. Formerly a positive benefit cost ratio was the primary criteria ODOT used for federal HSIP funding of safety projects. Sometimes where a safety need was identified a positive benefit cost ratio was not attainable, so additional criteria was included. In addition to the

positive benefit cost ratio a top 5% SPIS site or a Category 3, 4, or 5 SIP segment may justify expenditure of safety funds.

Details of how to handle currently programmed STIP projects (2006- 2011), during the transition need to still be worked out, since many of the current STIP safety projects were programmed before the additional criteria were set, it is not known how many of the projects meet the new requirements. This seems to be a self imposed problem, since neither the legislation, nor FHWA, requires the additional criteria (i.e., benefit cost or top 5%). See: [http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway\\_safety\\_program.shtml](http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway_safety_program.shtml) for a copy of the draft guidelines.

Status: 100% Complete

Statewide Transportation Improvement Program (STIP) – SAFETY Summary

Just about \$59 million was programmed for construction of safety projects (primarily infrastructure improvements) over the 2 year period 2008-2009, compared to just over \$51 million the previous two years. This total does not include preliminary engineering, right-of-way, non-safety construction costs, Traffic Safety Grants, Rail Crossing projects or local safety projects. A summary is shown in the table below.

**STIP Actuals (\$ in Thousands) – HSIP and Other**

Region	2008	2009
1	\$16,662	\$14,679
2	\$1,552	\$11,899
3	\$2,111	\$1,482
4	\$4,691	\$2,603
5	\$2,569	\$694
<b>Total</b>	<b>\$27,585</b>	<b>\$31,357</b>

For the 2010-2013 STIP, categories were added for High Risk Rural Roads and Safe Routes to School by SAFETEA-LU. The OTC approved significantly more funds to the Highway Safety Limitation than provided by federal funding alone. HSIP is approximately \$14.5 million per year with the additional \$14 to \$15.4 million made up of other eligible federal and state funds.

**STIP Targets approved by OTC (\$ in Millions)**

	2010 Actuals	2011 Actuals	2012 Targets	2013 Targets
Region 1	\$9,228	\$16,656	\$13,113	\$13,677
Region 2	\$10,274	\$2,681	\$9,149	\$9,521
Region 3	\$2,591	\$2,698	\$3,069	\$3,201
Region 4	\$3,390	\$0	\$1,953	\$2,037
Region 5	\$491	\$450	\$1,116	\$1,164
Total Highway SAFETY (HSIP and	\$25,974	\$22,485	\$28,400	\$29,600

<i>other)</i>				
Quick Fix			\$500	\$500
High Risk Rural Roads	\$1,200	\$1,200	\$1,200	\$1,300
Safe Routes to Schools	\$900	\$900	\$900	\$1,000
<b>Safety Total</b>	<b>\$28,074</b>	<b>\$24,585</b>	<b>\$31,000</b>	<b>\$32,400</b>

*Status: Ongoing*

Crash Reduction Factors Update

Accurate crash reduction factors (CRF) are critical to selecting the most cost-effective countermeasures for highway safety improvement projects. The CRF list is the primary resource used by engineers for safety project development and evaluation. Since the original development of Oregon DOT's CRF list, there have been significant improvements to evaluate the effectiveness of engineering countermeasures which has produced a wealth of new published research. There is a clear need to validate ODOT's crash reduction factors using this work and incorporate new countermeasures into the list.

Updated ODOT Crash Reduction factors based on PSU research include new national efforts by NCHRP and extend the Crash Reduction factors to cover all 4E's. Develop a usable tool or report form for ODOT employees that can also be used by local agencies for understanding the applicability of countermeasures to particular crash types and inherent limitations.

*Status: 100% Complete*

Benefit Cost Worksheet and Economic factors

Updated ODOT's Benefit Cost worksheet with new crash reduction factors and include updated economic factors for the costs of crashes

*Status: 100% Complete*

Training Provided

- Oregon Transportation Safety Conference;
- FHWA Training on new tools: Safety ANALYST and Highway Safety Manual
- Introduction to Highway Safety (ITE) 10 modules
- New Approaches to Highway Safety
- International Traffic Records Forum
- Caltrans Traffic Safety Investigator Training

Development of TransGIS

ODOT supports the development and deployment of an easy to use and upgradeable mapping tool, TransGIS. The software is a simplified GIS in which users can generate maps of crash data, SPIS sites, SIP projects, pavement condition, ADT and other data. Additional tools and elements are being developed by ODOT GIS Group. Most recently all TransGIS pages contain imagery (air photos or relief maps).

*Status: Ongoing*

#### Development of Tool to Geocode Crash data

ODOT GIS completed a new tool that allows Crash Data Unit staff to geocode all crash data with latitude and longitude for use with GIS maps. Beginning in 2007 the staff began coding all crashes with geocodes. In addition to helping locate the crash with better precision the geocode will allow local agencies to receive the data with geocodes already established for the first time. Along with other methods to geocode all public roads in Oregon this will provide a powerful tool for locals to analyze and locate their crash data

*Status: 100% Complete*

#### Development of Performance Measurement Tool for STIP projects

ODOT Traffic-Roadway developed several prototypes of excel spreadsheets to measure performance of Safety Projects beyond the report to FHWA. Tested the crash reduction of total crashes and fatal and serious injury crashes plus compared crash rates before and after by region and for the entire state.

The report pointed out several difficulties with trying to objectively measure the performance of the safety projects and we believe the Highway Safety Manual will assist with eliminating some of the effects of regression to the mean in the simple before and after analysis.

Put the project on hold until the Highway Safety Manual is published.

*Status: 50% Complete*

### **3.2 Summary of Planned Activities**

#### Training

Developing a course in Safety Investigations by OSU/PSU

Safety Training for Local Agencies

Training on the New Highway Safety Manual scheduled to be distributed in 2010

Roadside Safety Audits (RSA) training

#### HSIP Reports

Improve the HSIP reports, with more comprehensive reporting, including all Safety Projects not just those funded with HSIP funds. Develop better evaluation tools and better tracking of the projects, through the new project delivery tools being developed.

#### Collision Diagramming

Work with Crash Data Unit to implement a new Collision diagramming tool based on earlier evaluation.

## Implement Safety Investment Program (SIP) Research

The SIP research will ultimately recommend several improvements to the program. Develop a plan to implement the research recommendations.

## Safety Scoping Tool

Develop some simple GIS tools for locals to work with geocoded crashes, evaluate their systems and plot crash maps by crash types, severity or other. AASHTO has a proposal to develop free software in GIS to produce simple analysis and provide extended capability for GIS based data for locals.

## **4 NETWORK SCREENING - SAFETY PRIORITY INDEX SYSTEM (SPIS)**

The *Safety Priority Index System (SPIS)* is a method developed in 1986 by the Oregon Department of Transportation (ODOT) for identifying potential safety problems on state highways. The development of SPIS complies with the federal Highway Safety Improvement Program (HSIP). When Oregon began developing its Safety Management System in response to the 1991 ISTEA, it identified SPIS as one of several essential building blocks. In 1996, based upon recommendations of Dr. Robert Layton at Oregon State University, changes were made in the weightings of indicator values (crash severity, crash frequency, crash rate) that make up the composite score.

SPIS is a tool used to identify crash history in 0.10 mile segments on state highways. SPIS scores are developed based upon crash frequency, severity, and rate. A prioritized list is created for each region (the top 10 percent of statewide SPIS sites) and is provided to regions annually for analysis and possible corrective action.

### **4.1 Summary of Accomplishments**

#### 2007 and 2008 SPIS Reports Published

The SPIS reports are generated and distributed to Regions for investigation about mid year each year.

In 2008 there were total of 5,032 sites on this year's top 10% SPIS site list. Below is summary for the last five years.

Oregon Department of Transportation  
2008 Safety Priority Index System  
5 Year History Summary

<u>Year</u>	<u># Top 10% Sites</u>	<u># Repeat Sites</u>	<u># New Sites</u>	<u>Cutoff SPIS Value</u>
2008	5,032	3,390	1,642 (33%)	44.27
2007	5,031	3,529	1,502 (30%)	44.60
2006	4,953	3,420	1,533 (27%)	45.49
2005	5,038	3,679	1,359 (29%)	43.91
2004	5,154	3,655	1,499 (29%)	44.49

*Status: 100% Complete*

### Prototype of SPIS Analysis Module (SAM)

In conjunction with the SPIS rewrite project, a new type of tool was developed. The SPIS Analysis Module or SAM, is a take off of the SPIS program, using the same calculations as SPIS, but allows for constrained and varied analysis of State Highways. Using the same routines SAM can vary the length of the analysis from 0.10 miles to 5 mile segments. Also the analysis can be constrained to include only certain collision types, roadway types, and weather conditions. The program is limited to the data in the roadway inventory files. Currently the prototype allows only a handful of important elements.

The Prototype was never completed, but may serve as a prototype for future efforts.

*Status: Prototype, 80% complete (not likely to put much more effort into development at this point)*

### FHWA required Top 5% report based on SPIS

As part of the new HSIP, states are required to submit an annual report describing not less than 5 percent of their highway locations exhibiting the most severe safety needs. The intent of this provision is to raise public awareness of the highway safety needs and challenges in the states.

ODOT uses our Safety Priority Index System (SPIS) tool to identify and prioritize its most severe safety needs. In addition, to the listing of top 5% SPIS sites, the report also includes:

- Potential remedies to the hazardous locations identified;
- Estimated costs of the remedies; and
- Impediments to implementation of the remedies other than costs.

Eventually this report will include all public roads in Oregon, including City and County roads (this will be accomplished before August 31, 2009). Currently ODOT's systems do not allow the same ranking system for County and City roads. To accommodate a statewide listing of severe safety needs either the roadway inventory system will be upgraded to allow the inclusion of all public roads or another system will be adopted for these other roads. ODOT is currently exploring which approach to take.

Potential remedies may be in any, or a combination, of the "4 E" areas (engineering, enforcement, education, and emergency medical services). Detailed improvement remedies and costs may not be available for all locations. For those locations where no studies were performed, the Region Traffic Offices made their best estimate of potential remedies and costs using their experience, statewide average costs, or other available means, including consulting with the Transportation Safety Division staff for possible behavioral safety programs. The remedies and costs were also presented as typical remedies and costs grouped by roadway or improvement types. It is recognized (and expected) that details and costs of proposed improvements will change during formal project development.

Among the new requirements of SAFETEA-LU is a deadline for reporting the top 5% by August 31<sup>st</sup> of each year. Previously we had until the end of the calendar year to perform investigations of the sites. In 2006 when the reporting requirement took

effect, ODOT was in the middle of rewriting their crash data system and recoding SPIS. This resulted in a delay of getting crash data to the region offices until mid-summer. Additional requirements of SAFETEA-LU include estimated costs to address sites and a list of impediments. In spite of the delays and some incomplete information ODOT region staff worked hard to complete most of the investigations and report on the top 5%.

*Status: Complete*

#### Enhanced Top 5% reports (SPIS All Roads)

Currently ODOT uses our Safety Priority Index System (SPIS) tool to identify and prioritize its most severe safety needs. In August of 2009 this report will need to include all public roads in Oregon, including City and County roads.

Two obstacles exist, the linear referencing system used by cities and counties make it difficult to use the current SPIS methodology and insufficient data on the traffic volumes on local roads do not allow crash rates to be determined. To expand the SPIS to include local agency roads (city and county roads) requires more data on the local road system, including traffic volumes and a common referencing system similar to either a mileposting system or a geographic information system (GIS).

Developments in GIS lead us to believe that GIS is the answer to calculate SPIS statewide. First, all crash data, including local road systems crashes, will be geocoded with latitudes and longitudes, beginning in 2007. Second, an effort to map road information including volumes to all local roads in Oregon to GIS is underway (OR-Trans). Together these two developments form the basis of developing a statewide method for expanding SPIS to the local road system.

A stakeholder group has been formed and the project has kicked off including describing the requirements of the new system.

*Status: 5% complete*

#### SPIS Analysis Module (SAM)

Use SAM (see description above) as a prototype for developing a similar tool in GIS under the SPIS All Roads project above.

*Status 5% complete*

## **4.2 Summary of Planned Activities**

### Highway Safety Manual (SafetyAnalyst)

There has been a growing recognition that transportation professional lack the needed tools to explicitly consider safety when making decisions. Several years ago the need for including highway safety in the Highway Capacity Manual was raised. The Transportation Research Board recognized the need for a standalone manual on Highway Safety to provide the best factual information in a useful and widely accepted form.

The Highway Safety Manual (HSM) represents that effort to identify and assemble the best currently available information on safety and measures for performance, prediction and evaluation of safety. The HSM will provide information and tools to assist in making decisions that have a positive impact on safety. The HSM will be a tool for predicting the safety consequences of actions in design, policy, planning and operations.

The HSM contains synthesizes of validated highway research and adopts that research for practice. It provides the foundation for analytical tools and methods for predicting the impacts of design decisions on highway safety. A release date for the HSM is still pending.

ODOT should begin research into the data needs and requirements for the new analysis contained in the soon to be released Highway Safety Manual and SafetyAnalyst tool from AASHTO.

The HSM will describe a superior method to perform network screening and potential problem areas. The HSM requires a minimum inventory of roadway elements in addition to crash and volumes to provide a network screening tool. ODOT has been collecting much of the data necessary but may be lacking some key components. Local agencies may be lacking much of the data required for network screening, but may be able to use the HSM methods on specific projects for decisions about the best options to employ.

## **5 OTHER SAFETY INITIATIVES**

Other Safety Initiatives that don't fit well in the above categories are listed below. This list is not exhaustive and does not include all engineering safety initiatives carried forth by other parts of ODOT, such as cable median guardrail for crossover crashes, upgrading guardrail/concrete barrier ends, upgrading roadside areas, corridor planning, pedestrian safety programs, bike safety programs, rail crossing safety programs and operations and modernization projects that also improve safety.

### **5.1 Summary of Accomplishments**

#### Lead State Initiative – Lane Departure Projects (phase II)

This initiative examined the two elements, run-of-road (ROR) and head-on non-freeway crashes. It is to be noted that ROR crashes also includes opposing flow sideswipe crashes.

The report analyzed several aspects of the problem, identified problem areas (e.g. fixed object crashes), summarized major concerns, developed performance measures to use as a goal, and developed recommended actions/strategies for the department to reduce the occurrence and severity of lane departure crashes. Phase 1 was completed in 2006.

Phase II of the initiative was to use allocate use of funds to provide funding for Safety projects to address some high crash corridors with the objective to reduce fatalities and serious injuries related to lane departure crashes. The project selection was overseen by the Highway Safety Engineering Committee (HSEC) and about 6 million dollars of 164 penalty funds were used to fund the projects. An evaluation on the effectiveness will be completed after three years of crash data are accumulated.

*Status: In progress (all 14 projects will be constructed by September 30, 2009)*

#### Repeat Offender Transfer Provision – Section 164 Penalty Funds

Oregon was assessed a penalty transfer of its federal construction funds as a result of failing to enact legislation covering all five points relating to Repeat DUII offenders. Penalty for non-compliance is currently 3.0 percent of the NHS Surface Transportation Program (STP) and Interstate Maintenance Funds annually. The funds are transferred to the state's 402 Program, State and Community Highway Safety Grant Program. These funds are eligible for use to fund either impaired driving programs or be granted to the Section 148, Highway Safety Improvement Program (HSIP).

Last year the funds were used to fund safety projects programmed on the STIP, (prior to last year the funds were used to supplement the safety program funds). For the foreseeable future these funds will be used to provide funding for STIP safety projects eligible for funding.

*Status: Ongoing*

#### Speed Monitoring

The Traffic-Roadway Section (TRS) monitors speeds on Oregon Highways through a series of speed monitoring stations. The 27 stations throughout the state are maintained by the Traffic Monitoring Unit of the Transportation Development Branch for collecting volumes and speeds. The speed data is analyzed and summarized by Traffic-Roadway Section staff quarterly during the year. Results are used for research, reports and informational requests.

*Status: Ongoing*

#### Rumble Strip Experimentation

ODOT has been experimenting with different types of rumble strips for several years. As part of several initiatives the department installed variations of rumble strips, including centerline rumble strips in passing areas and rumble strips integral with the fog line. As part of highway projects ODOT has also been installing rumble strips in advance of stop signs on rural roads. ODOT has been monitoring the results and sharing results with other national efforts to summarize results of different rumble strip applications. As a result we have modified our rumble strip criteria in the ODOT Traffic Manual to incorporate findings and give further guidance on placement. We are presently compiling results of several years' experimentation to evaluate the effectiveness of the devices and plan on revising the ODOT policy for use of Rumble Strips.

*Status: Ongoing*

## 5.2 Summary of Planned Activities

### Advocate for increased Safety Funding for System wide Improvements or Emphasis Areas

Currently the entire Safety Funding Program is regionally allocated to addressing high priority sites. Addressing needed Safety Improvement through funding either systematic improvements or emphasis areas would serve as an additional way to reduce fatal and serious injury crashes.

### Advocate for additional funds to address local agency safety needs

Currently half of Oregon's fatalities happen on local roads, two thirds on County roads and one third on city streets. Part of the problem though is it is spread out over ten times the mileage of the State Road System. Applying Safety dollars to that sporadic of crashes and having a significant impact requires good planning and excellent use of resources. By far lane departure crashes (run off the road crashes) in rural areas are the leading cause of fatal and serious injury. Followed by a distant second is intersection crashes.

## 6 THE FUTURE

The Transportation Research Board (TRB) is sponsoring the development of the Highway Safety Manual (HSM), anticipated in late 2008. The HSM will incorporate safety prediction methods that will be able to quantify the safety effects of decisions made in planning, design, operations, and maintenance. It will serve a role for safety analysis similar to that which the Highway Capacity Manual (HCM) serves for traffic operational analysis. The HSM will be targeted to professionals on the front-line of daily decision making within state highway agencies, as well as cities, counties and Metropolitan Planning Organizations.

These efforts might greatly change the direction of the ODOT PSMS in the future likely to lead to a more objective approach to safety and more effective and reliable tools.

ODOT's PSMS is committed to improving the data driven process included in the safety analysis of roadways in Oregon by improving the crash data access and also roadway inventory data. The PSMS should provide better trend analysis by summarizing the data in useful and intuitive ways. An additional component of the process will be to incorporate better evaluation tools, for evaluation of projects, policies, and countermeasures.