Agenda

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

Meeting:	RTP Regional Transportation Safety Plan Work Group, Mtg. #3
Date:	Thursday, Oct. 20, 2016
Time:	9 to 11 a.m.
Place:	Room 501
Purpose:	Review regional high injury corridors (HIC) and system evaluation measures
Outcome(s):	Agreement to move forward with the HIC and safety system evaluation measures

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9 a.m. Welcome and introductions
- Work Group member transportation safety related updates

9:20 a.m. Refresher: RTP update, work group purpose, timeline

9:30 a.m. Safety System Evaluation Performance Measures
- Performance Measures Work Group input
- Definition of a regional safety project

10:15 a.m. Regional High Injury Corridors - discussion
- Understanding what they are and how they can be used

10:55 a.m. Next Steps for updating the Regional Transportation Safety Plan

11:00 a.m. Adjourn

Items included in meeting packet (copies will be provided at the meeting):
1. Agenda
2. Memo
3. Regional High Injury Corridors (HICs): Click **HERE** to access the map online
4. Excel file: HIC to-from streets
5. Draft HIC Commonly Asked Questions
6. July 26 meeting summary

Next Meeting
Tentative: Tuesday Dec. 6, 9-11 a.m. Council Chamber
- Finalize performance measures and targets, crash data analysis overview

600 NE Grand Ave.
Portland, OR 97232-2736
www.oregonmetro.gov

Metro | *Memo*

Date: September 6, 2016

To: 2018 RTP Safety Work Group

From: Lake McTighe, Transportation Safety Project Manager

Subject: Mtg #3: System Evaluation Measures and High Injury Corridors

Outcome: Agreement on System Evaluation Measures and High Injury Corridors

Overview

The RTP Safety Work Group has made progress on the update of the 2012 Regional Transportation Plan (RTSP). Since its first meeting in May 2016, the work group has:

- Participated in a survey to assess local activities and actions contributing to the implementation of the RTSP
- Reviewed and provided input on the status of recommended actions from the 2012 RTSP
- Finalized a Policy Framework Report
- Reviewed and commented on updated safety data
- Heard what other cities and counties are doing related to safety
- Provided direction on elements to include in an updated regional safety performance target
- Reviewed input on safety performance measures and targets from the RTP equity and performance measure work groups
- Participated in a discussion and provided input on the development of the regional high injury corridors
- Previewed ODOT's process for collecting and analyzing crash data
- Provided direction to update and refine safety performance measures and targets
- Provided input to draft a definition for regional safety projects

All of the input provided by the work group thus far will be used to begin to develop draft strategies and actions for the updated RTSP and refinements to RTP safety policies, which is where the focus of the work group will turn early next year.

System Evaluation Measures

At the July 26 meeting the Safety Work Group reviewed and discussed the draft safety performance measures and targets. The following table summarizes where we are with the performance measures and targets. **The October 20 Safety Work Group meeting discussion will focus on the System Evaluation Measures.** The Work Group will finalize the target and monitoring measures discussion at the next meeting.

Recommended Safety Performance Measure/ Target	Status
RTP System Evaluation Measures: 1) Infrastructure investments - Percent of number and cost of safety projects in the RTP investment packages region-wide, and the percent of safety projects in areas with historically underrepresented communities. 2) Exposure to crash risk - Through the sum of all non-interstate vehicle miles traveled (VMT) per capita in Transportation Area Zones (TAZ) for RTP investment packages region-wide, and in historically underrepresented communities.	Metro as yet does not have a safety crash model that can predict crashes based on investment packages in the RTP. In lieu of a crash prediction model, which Metro is pursuing developing and which would include multiple factors from speed, to land use to population characteristics, Metro is recommending the two following system evaluation measures for safety. This will be the first time the RTP has included safety as a system evaluation measure. 1) Safety projects are defined as: infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s) to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth. *(Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.)* Safety definition has been updated to remove requirement of location on High Injury Corridors – projects on will be tracked separately in the RTP, and reference to Safe Routes to School projects – these will also be tracked separately.[1] 2) Through statistical analysis, Metro determined that VMT has a statistically significant correlation to crashes. This confirms what we know in that many factors play into crashes, but also confirms that exposure to non-freeway VMT is a crash risk factor that can help identify places that warrant additional safety focus or investment. (*historically underrepresented communities and are areas (Census tracts) which are above the regional rate for any of the following: People of Color, Households with Lower Incomes, People with Limited English Proficiency AND census tracts which are above the regional rate for both Older Adults and Young People*)

[1] Regional Safe Routes to School Infrastructure Project definition: Projects on the regional active transportation network, within a ¼ mile of a school whose main intent is to increase walking and/or bicycling access and safety to school.
Active Transportation Project definition: Projects that allocate a majority of the project cost to increasing bicycling and/or walking access on the regional active transportation network.

Recommended Safety Performance Measure/ Target	Status
RTP Performance Target: By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025.	Safety performance target has been reviewed and shaped by the safety, performance measure and equity work group. The Safety Work Group will have an additional opportunity for review and discussion next year. • This target would replace the current 2014 Safety Performance Target. • Progress towards meeting the 2035 target (annual and interim targets) would be measured with the targets set in the RTP Monitoring Measures, using an "S-curve" distribution of declining fatal and serious injury deaths. • The target year of 2035 will not change in subsequent RTP updates.
RTP Monitoring Measures: Annual targets, based on a five year rolling average of the number of people killed and seriously injured in traffic crashes in the region, by mode, per 100 million vehicle miles traveled, and per 100 thousand people.	Based on the target of zero serious injuries and fatalities for all modes by 2035 and the interim 2020 and 2025 targets, Metro has identified annual rolling targets for all modes using an S-curve forecast trend. ODOT is using this approach in its recently updated TSAP. Metro would like the Safety Work Group to have another opportunity to review and discuss of the targets before bringing them to TPAC and JPACT next year.

Regional High Injury Corridors

Metro developed a set of high injury corridors and high crash intersections to support planning and prioritization of safety efforts. States, regions, cities and counties across the country are using various approaches to identifying high crash or high injury locations and corridors to address safety. Metro held a meeting in late August to receive input on the draft HICs. The RTP Performance Measures Work Group also provided input at their September 12 meeting. Based on that input Metro revised the HICs so that only roadways on the regional transportation network are included in the analysis. The resulting HICs did not change dramatically. There are auto, bike and pedestrian HICs and a combined set of corridors. l An interactive map of the corridors is available at: http://drcmetro.maps.arcgis.com/apps/webappviewer/index.html?id=6ef13c9a1bd242d4a85bbc7d44b02107

The attached draft "Commonly Asked Questions" and "GIS Analysis" documents provide additional information on the HICs. **Metro staff are seeking additional input to finalize the HICs for use in the 2018 RTP update.**

2018 RTP Safety Work Group

Mtg. #3
System Evaluation Measures & High Injury Corridors

October 20, 2016

Welcome & introductions

- Name & organization
- Transportation safety related updates

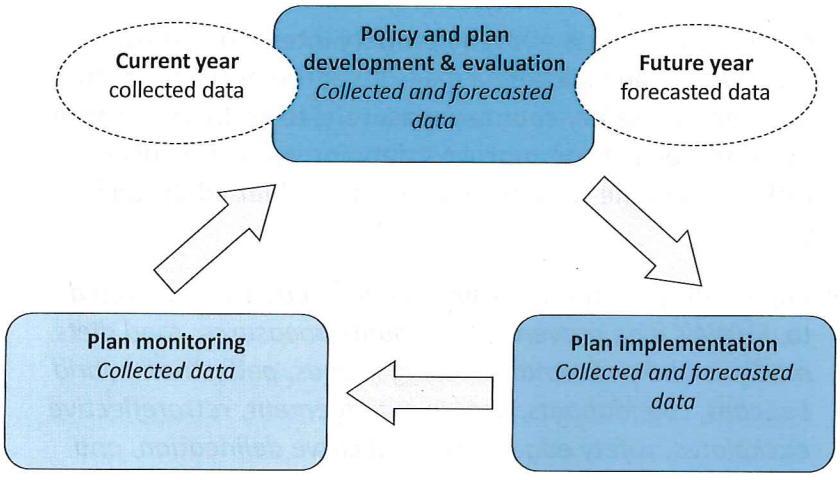
RTP update

- Sept 23 - RTP Forum
- Dec 2 - RTP Forum
- March 2017 – Metro Council/JPACT RTP priorities, evaluation framework, call for projects

RTP Work Group timeline/deliverables

- Oct 2016 – Safety system evaluation measures to TPAC and MTAC
- Jan 2017 finalize safety targets & monitoring measures
- April 2017 draft State of Safety Report
- Dec 2017 draft Safety Action Plan
- March 2018 public review of RTP / RTSAP

System Evaluation Measures for Safety



Safety System Evaluation Measure

Infrastructure Investments - Percent of number and cost of safety projects in the RTP investment packages region-wide and in areas with historically underrepresented communities.

- **Recommendation: Add as new system evaluation measure**

Safety project definition

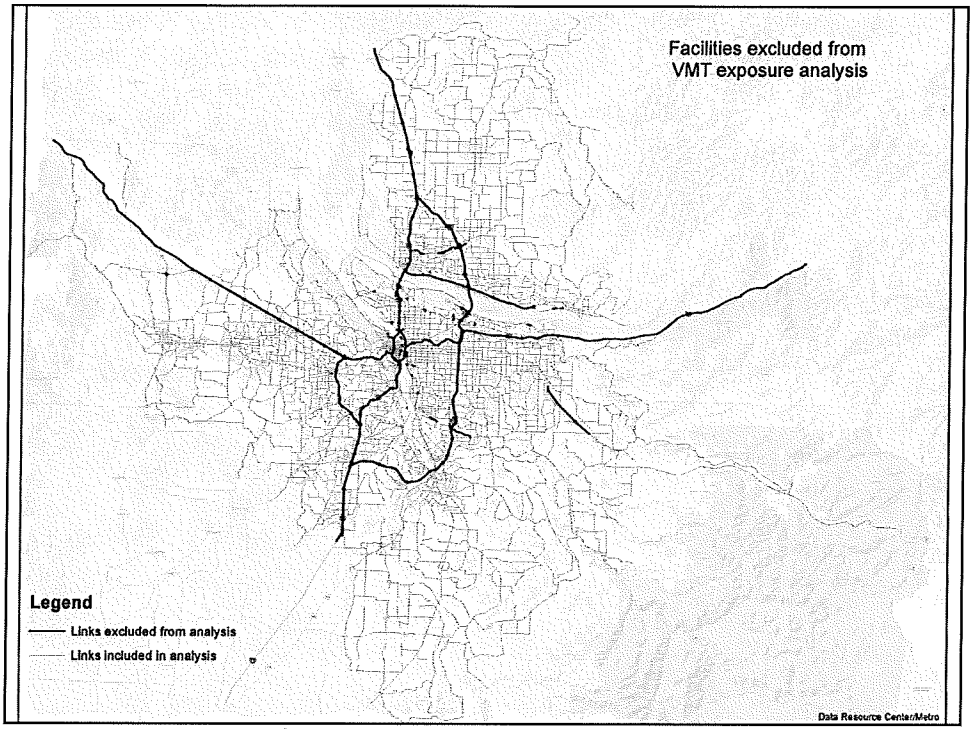
Infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s) to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth.

Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.

Safety System Evaluation Measure

VMT Exposure - Exposure to crash risk through the sum of all non-freeway vehicle miles traveled (VMT) per capita in Transportation Area Zones (TAZ) for RTP investment packages region-wide and in historically underrepresented communities.

- **Recommendation: Add as new system evaluation measure**



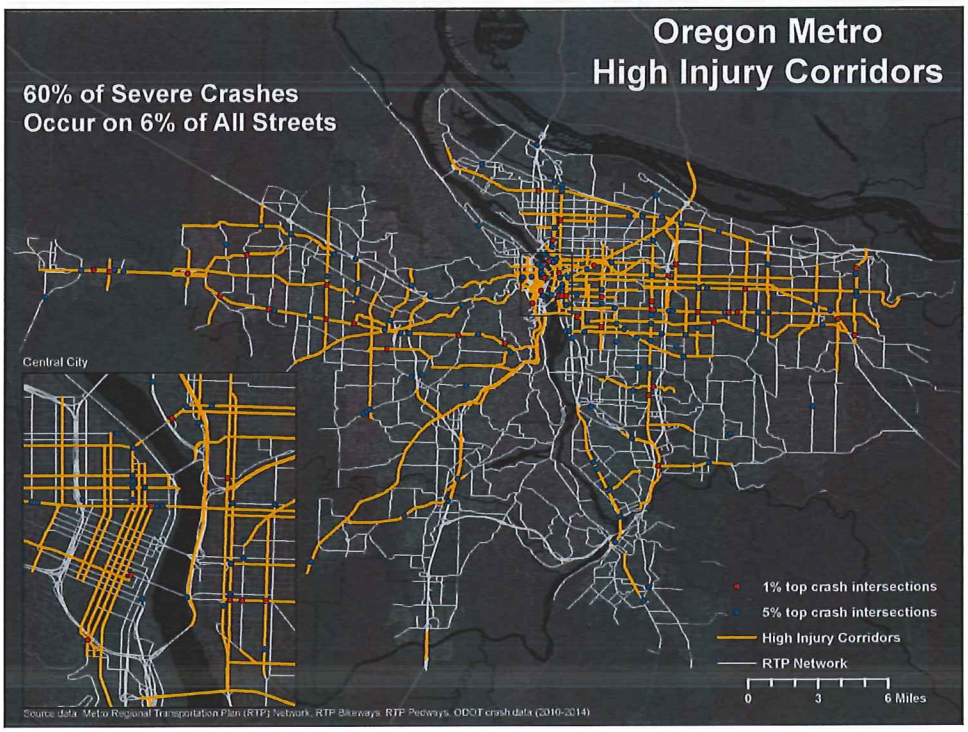
System Evaluation Measures timeline

Oct. 28 – TPAC

Nov. 2 – MTAC

Dec. TBD – RTP Performance Work Group

Dec. 16 - TPAC



HIC timeline

Nov 2016 – refine list and FAQ

Dec 16, 2016 – TPAC

Jan 18, 2017 – MTAC

Feb 16, 2017– JPACT

Feb 22, 2017 – MPAC

Next steps

- Oct 2016 – Safety system evaluation measures to TPAC and MTAC
- Dec 2016/Jan 2017 – HIC and safety crash data to advisory committees
- Tuesday Jan, 24 2017 – 9-11 a.m. Safety Work Group Meeting
  - finalize safety targets & monitoring measures
  - discuss data to be updated in State of Safety Report

2018 RTP
Methodology for Transportation Safety System Evaluation Measures
10/17/2016

Evaluation Measure Title: **Transportation Safety – Vehicle Miles Traveled (VMT) Exposure**

Purpose: To identify whether the package of future transportation investments will increase transportation safety, by reducing per capita vehicle miles traveled exposure for the region's residents and look at the difference in exposure in areas with high concentrations of historically underrepresented communities and the region.

RTP Goals

	Foster vibrant communities and compact urban form		Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
●	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure assesses the following questions for the region's transportation system:

1) What is the region's vehicle miles traveled (per capita) and how does it change with the proposed package of transportation investments?
2) What is the difference in exposure to vehicle miles traveled (per capita) for historically underrepresented communities? Has the proposed transportation investment program held steady or decreased the vehicle miles traveled exposure in historically underrepresented communities?

The **Transportation Safety – Vehicle Miles Traveled Exposure** system evaluation performance measure is calculated by aggregating non-freeway vehicle miles traveled (VMT) within each transportation analysis zone (TAZ); non-freeway VMT in each TAZ are aggregated together to identify total non-freeway VMT for the entire region.

To determine the potential exposure to crash risk, total non-freeway VMT for the entire region is divided by the residential population of the region. Additionally, non-freeway VMT in each TAZ is divided by the residential population of that TAZ.

TAZs which overlap with historically underrepresented communities are flagged to determine the non-freeway VMT exposure per capita for historically underrepresented communities. Then the non-freeway VMT exposure per capita is looked in those flagged TAZs with high concentrations of historically underrepresented communities and compared to the region. The per capita exposure is also looked at for the base year to the future year.

Output Units: Vehicle miles traveled per capita (VMT/per person)

Potential Output of Assessment:

	Base Year	Interim Year	Future Year – Financially Constrained	Future Year – Strategic
Region-wide	VMT/per person*			
Historically Underrepresented Communities				

Key Assumptions to Method:
Dataset Used:

Dataset	Type of Data
Geospatial project information for proposed transportation projects	Observed
Vehicle miles traveled	Forecasted

Tools Used for Analysis: Metro's travel demand model and ArcGIS

Vehicles Miles Traveled Considerations:
Non-freeway miles exposure were calculated for the **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure to account for more human-scale interactions between vehicles, pedestrians, bicyclists, transit riders, and other users of the street and the potential exposure to crashes and serious injury by between vehicles and other users.

The vehicle miles traveled exposure was calculated by assessing the vehicle miles traveled seen within each transportation analysis zone (TAZ) and dividing the overall VMT by the number of residents in the TAZ. The measure is not speaking to who is generating the VMT, rather looking at human-scale exposure.

2018 RTP
Methodology for Transportation Safety System Evaluation Measures
10/17/2016

Evaluation Measure Title: **Transportation Safety – Infrastructure Investments**

Purpose: To identify where and at what level the package of future transportation investments increases transportation safety, through the development of transportation infrastructure with proven safety countermeasures, for the region's residents and to look at the difference in distribution in areas with high concentrations of historically underrepresented communities and the region as a whole.

RTP Goals

	Foster vibrant communities and compact urban form		Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
●	Enhance safety and security		Ensure fiscal stewardship
	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Infrastructure Investments** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation investments are addressing known transportation safety issues?
2) What percentage of transportation safety investments are located in historically underrepresented communities? Is there a difference of transportation safety investment levels in areas with historically underrepresented communities?

The method for calculating the **Transportation Safety – Infrastructure Investments** performance measure will entail a geospatial analysis the region's proposed transportation safety investments which intersect identified high injury corridors and historically underrepresented communities, and the amount of investment allocated to transportation safety projects region-wide and in historically underrepresented communities. Additionally, the percentage of transportation safety projects which intersect regional high injury corridors will be looked at region-wide and also looked at in areas with a high concentration of historically underrepresented communities.

Output Units: Percentage (%) of transportation safety projects and percentage of cost for transportation safety projects region-wide, in historically underrepresented communities and intersecting regional high injury corridors

2018 RTP
Methodology for Transportation Safety System Evaluation Measures
10/17/2016

Potential Output of Assessment:

	Base Year	Interim Year	Future Year – Financially Constrained	Future Year – Strategic
Region-wide	% Safety Projects, % cost allocated to Safety Projects			
Historically Underrepresented Communities	% Safety Projects, % cost allocated to Safety Projects			

Key Assumptions to Method:
Dataset Used:

Dataset	Type of Data
Geospatial project information for proposed transportation projects	Observed
Regional High Injury Corridors	Observed

Tools Used for Analysis: ArcGIS

Definition of a Safety Project:
Infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s)* to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth.

**Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.*

Definition of Regional Safe Routes to School Infrastructure Project:
Projects on the regional active transportation network, within a ¼ mile of a school with the primary intent to increase walking and/or bicycling access and safety to a school.

Definition of Regional High Injury Corridor:
Regional High Injury Corridors (HICs) were identified to support planning and prioritization of corridor safety efforts by providing a quantitative assessment of the crash performance of roadways on the Regional Transportation Plan (RTP) network in order to identify where the highest concentrations of severe crashes involving a motor vehicle occur on the RTP network. A majority (60%) of severe crashes occur on 23% of the roadways on the RTP network. and 6% of all streets in the region. To identify the HICs, 2010-2014 crash data from the Oregon Department of Transportation was analyzed, weighting crashes for each mode of travel by severity. Corridors were created based on the location of severe crashes, which were given an aggregate crash score based on the frequency and severity of crashes, normalized by the length of the segment. The corridors identified as HICs are the roadway segments with the highest crash score per mile on the regional transportation network.

ODOT Crash Data

Transportation Development Division

Metro - 2016 RTP

Robin Ness, Crash Analysis and Reporting, Manager

July 26, 2016

Oregon's Modal Crash Data

Crash Data Responsibilities

Who

DMV

What, When, Why

Transportation Development

Action

Safety, Highway, DMV, Motor Carrier, TDD, Rail Public Transit, Other Agencies

The Data

Crash Data

Crash Level

- 56 data fields/elements all pertinent to the overall crash event

Vehicle Level

- 19 data fields/elements for each involved vehicle

Participant Level

- 29 data fields for each active or injured participant in each crash

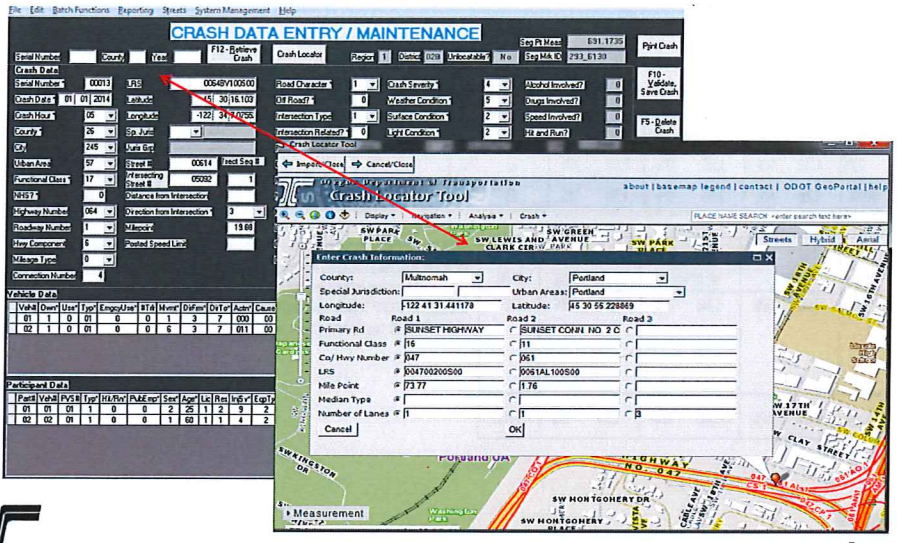
Derived Level Data

- 17 system generated data derived from codes in the three crash levels

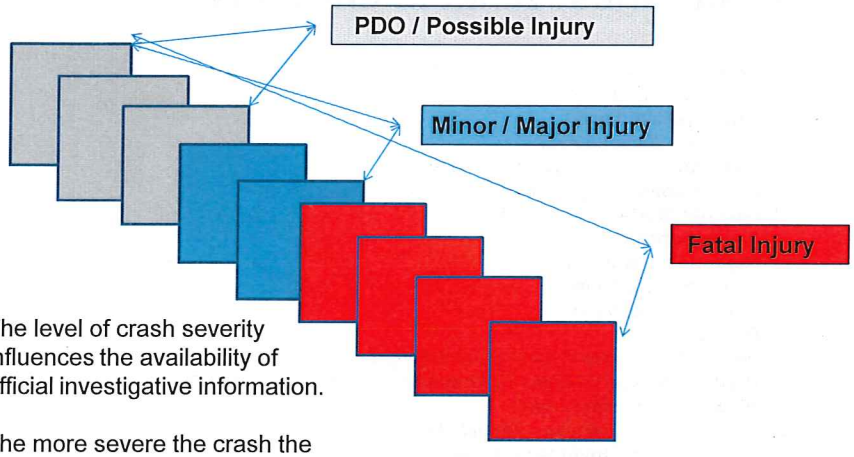
Crashes are Geo-Located

•Lat-long & LRS (assigned at the time of the crash coding)

Crash Data Entry System



Information & Data Sources by Crash Severity



The level of crash severity influences the availability of official investigative information.

The more severe the crash the more information to build the crash causative factors.

Police Crash Report Origination (2015 Preliminary Injury and Fatal Crashes)

CRASH DATA FILE - POLICE REPORT ORIGINATION

YEAR	STATE POLICE		COUNTY POLICE		CITY POLICE		TRIBAL POLICE		OTHER POLICE		UNKNOWN REPORT		ON SCENE NO REPORT		NO INVESTIGATION		CRASHES TOTAL
2015	4,250	14%	3,565	12%	8,784	30%	22	0%	14	0%	15	0%	5,445	18%	7,570	26%	29,665
TOTAL	4,250	14%	3,565	12%	8,784	30%	22	0%	14	0%	15	0%	5,445	18%	7,570	26%	29,665

YEAR	POLICE		ON SCENE NO REPORT		NO INVESTIGATION		TOTAL
2015	16,650	56%	5,445	18%	7,570	26%	29,665
TOTAL	16,650	56%	5,445	18%	7,570	26%	29,665

OTHER POLICE: Report in file from security police, military police, port office, transit police, safety officers, etc.
UNKNOWN: Police report in file, identity of reporting police agency unknown.
(Due to missing or illegible identifying data.)
ON SCENE NO REPORT: No police report in file. Private driver report states police at scene.
NO INVESTIGATION: No police report in file and no statement of police at scene.

PDO crashes. What is enough?

- ❑ DMV Serial Number - *(Crash Level)*
- ❑ Date - *(Crash Level)*
- ❑ Time - *(Crash Level)*
- ❑ Location - (Crash Level)
- ❑ Roadway attributes - *(Crash Level)*
- ❑ Crash / Collision Type - *(Crash Level)*
- ❑ Weather /Surface / Light - *(Crash Level)*
- ❑ Traffic Control - *(Crash Level)*
- ❑ Reporting Agency - *(Crash Level)*
- ❑ Work / School Zones - *(Crash Level)*
- ❑ Causes - *(Crash Level)*
- ❑ Events - *(Crash Level)*
- ❑ Vehicle Ownership / Use / Type / Emergency Use – *(Vehicle Level)*
- ❑ Participant Type / Gender / License Status - *(Participant Level)*
- ❑ Hit-&-run – *(Vehicle Level)*
- ❑ Safety & Restraint Use - *(Vehicle Level)*
- ❑ Alcohol & Drug Involved - *(Participant Level)*
- ❑ Speed Involved - *(Participant Level)*

Crash Level Fields

General / Conditions Related

- DMV Crash Serial Number
- Crash Date
- Crash Hour
- Weather Condition
- Road Surface Condition
- Light Condition
- Investigating Agency

Location Related

- County
- City
- Urban Area
- Functional Classification
- National Highway System
- Roadway Number
- Highway Component
- Mileage Type
- Connection Number
- Linear Referencing System (LRS)
- Latitude
- Longitude
- Special Jurisdiction
- Jurisdiction Group

Location Related continued

- *Street Number*
- *Nearest Street Number*
- *Intersection Type Sequence Number*
- *Distance from Intersection*
- *Direction from Intersection*
- *Milepoint*

System Generated Location Related

- Population Range
- Road Control
- Route Number

Crash Descriptions / Factors

- Crash Type
- Collision Type
- Crash Severity
- Crash Cause 1,2,3
- Crash Event 1,2,3

Roadway Attributes

- *Posted Speed*
- *Character of Road*
- *Off Roadway*
- *Intersection Type*
- *Roundabout*
- *Driveway Related*
- *Number of Lanes*
- *Number of Turning Legs*
- *Median Type*
- *Location of Impact*
- *Traffic Control Device*
- *School Zone*
- *Work Zone*
- *Traffic Control Device Functional*

Vehicle Level Fields

- Vehicle Ownership
- Special Use
- Vehicle Type
- Emergency Use
- Movement
- Direction To & From
- Action
- Causes 1,2,3
- Events 1,2,3
- Vehicle Speed Flag (Linked)
- Vehicle Hit and Run
- Safety Equipment Use in Vehicle (linked)
- Vehicle Occupant Count (Linked)

*Linked fields – are those that calculate the entries for a summary count at the crash level

Participant Level Fields

- Participant Type
- Public Employee
- Hit & Run
- Public Employee
- Gender
- Age
- License Status
- Residence Status
- Airbag
- Movement
- From & To
- Non Motorist Location
- Action
- Errors 1,2,3
- Causes 1,2,3
- Event 1,2,3

- Participant Safety Use (*linked)
- Blood Alcohol Content Test Results (*linked)
- Alcohol Use Reported (*linked)
- Drug Use Reported (l*inked)

*Linked fields – are those that calculate the entries for a summary count at the crash level

Benefits of Reduced Data Elements

Coding limited fields for PDO's reduces time required to code each crash. Over the last 10 years PDO crashes constituted approximately 53% if all crashes coded.

2005 – 2014 = 461,212 Total Crashes
2005 – 2014 = 246,295 PDO Crashes

Benefits

- Anticipated time savings 1 - 2 hrs. per crash tech daily
- Savings applied to coding more crashes monthly
- Reduce production loss due to extended medical leave or temporary vacancies
- Reduce overtime required
- Recover annual file completion timelines
- Availability of injury and fatal data sooner

2015 -2016 Crash Data

Challenges

- Staff resources impact annual file completion
- Increase in traffic crashes
- Increased demand for data
- Problematic fatal crash police reporting
- Meeting NHTSA and HSIP data requirements
- Supporting mandated Map 21 & Fast Act

Goals

- Supporting mandated Map21 & Fast Act Performance Measures needs
- Legislature - tracking impact of speed increases on safety
- Legislature - Tracking impact of legalized recreational marijuana on safety
- Development of interactive reporting on-line tool – Tableau (?)
- Regain earlier completed year
- Working with electronic crash reports versus hardcopies

2015 -2016 Crash Data

Current Mitigation Steps

Process

- 2015 - Process all injury and fata crashes first, PDO later
- Produce mid-year injury and fatal data / final year to include PDO later
- 2016 – propose reduction in data elements for PDO crashes
- 2016 - All motor vehicle related traffic crashes with pedestrian or bicycle will be coded as injury crashes. We believe they have at minimum a "possible injury"
- 2016 – Proposing the same injury severity rule for motorcycle crashes

Training / Staffing

- Modified crash data technician training methodology
- Development of workbook
- Training version of Crash Data System
- Added a 2-year limited duration position crash technician

Items of Interest ?

2017 Legislative Concept

- Proposed amendment to raise the property damage loss required report from > $1500 to > $3000

TransGIS http://wpdotappl21.odot.state.or.us/transgis/

- Proposing new symbology for injury and fatal crashes in TransGIS
- Proposing a buffering tool that will produce comprehensive-like reports

Data Sharing

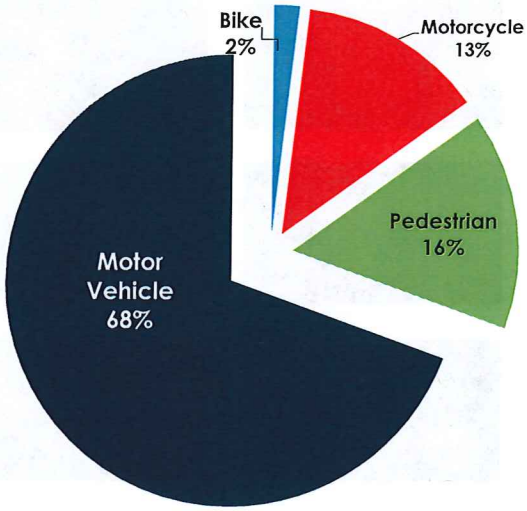
- Oregon Health Authority / EMT / Trauma Registry / Hospital Admission - outcomes
- Veterans Administration / Driver Records - relationship to Vet Ocular injuries / PTSD

2016 Fatalities - Oregon Traffic Toll Report

	Current Year 7/24/2016	Previous Year 7/23/2015	Percent Change
Total Fatalities to Date	246	249	-1.2%
Pedestrian	29	43	-32.6%
Pedalcyclist	2	3	-33.3%
Motorcycle	32	38	-15.8.0%

Fatality by Participant Type - 2015

Bike	8
Motorcycle	59
Pedestrian	69
Motor Vehicle	309
Total	**445**



2015 – Fatal Crash Types Involved (All Fatal Crashes)

- Pedestrians (69)
- Fixed Objects (152)
- Overturns (40)
- Animals (2) Deer / 1 MC
- Non-collisions (2) water / ejected
- Bicyclist (8)
- MV in Transport (78) other
- MC (58)

ODOT Crash Data Reporting & Productions

Web Publications	Interactive Crash Reporting	Web Mapping Tools
Crash Diagraming	Ad-Hoc / Custom Reports	Federal Reporting Web Sites
Performance Measures	MPO Reporting Tools	Other Sites

Questions?

600 NE Grand Ave.
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oregonmetro.gov

Regional High Injury Corridors (HICs) – Commonly Asked Questions

As of October 14, 2016

Regional High Injury Corridors (HICs) are stretches of roadways in the Portland metropolitan area where the highest concentrations of severe crashes involving a motor vehicle occur on the regional transportation network.[1] Metro developed a replicable and quantitative assessment of the crash performance on roadways on the regional transportation network to support planning and prioritization of corridor safety efforts. An interactive map of the draft HICs is **available online.**

A majority (60%) of severe crashes in the region occur on 23% of the roadways on the regional transportation network, and 6% of all streets in the region.

Corridors	Miles of Streets	% of all severe crashes (2010-2014)	% regional transportation network (1,739 miles)	% of all streets (6,565 miles)
Regional HIC (auto, bike, pedestrian)	398	60%	23%	6%
Auto HIC (auto only)	282	50%	16%	4%
Bike HIC (bike/auto)	177	50%	10%	3%
Ped HIC (pedestrian/auto)	133	50%	8%	2%

Why did Metro identify HICs?

Metro developed the HICs to help meet the safety goals and targets of the Regional Transportation Plan (RTP).[2] As part of the 2018 update of the RTP, Metro is updating the 2012 Regional Transportation Safety Plan and the 2012 Metro State of Safety Report. The 2014 RTP identified the need to identify HICs in the update of the transportation safety plan to provide another tool to support planning and prioritization of safety efforts.

[1] The regional transportation network is comprised of the arterial and throughway, freight, transit, bicycle and pedestrian networks shown in the network maps in Chapter 2 of the 2014 Regional Transportation Plan, http://www.oregonmetro.gov/regional-transportation-plan

[2] Metro is currently updating the RTP, including the safety performance measures and targets. A new safety target will be proposed in the 2018 RTP: "By 2035 eliminate transportation related fatalities and serious injuries for all users of the region's transportation system, with a 16% reduction by 2020 (as compared to the 2015 five year rolling average), and a 50% reduction by 2025."

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The 2012 Metro State of Safety Report identified several factors contributing to high severe crash rates in the region: arterial roadways, multi-lane roadways, lack of lighting, and behavior (e.g. drunk driving). At the time, however, Metro lacked the ability to quantify risk by specific roadways. A recommendation of the 2012 Regional Transportation Safety Plan was to develop performance measurements to identify high-crash arterials in the region. Metro began to research methods for identifying regional high injury corridors in 2015 to fulfill this recommendation and incorporate the findings into the update Regional Transportation Safety Plan and the 2018 RTP.

What methods did Metro use to identify the HICs?

To start, Metro reviewed methods used by San Francisco, Los Angeles, Florida, Toledo, Hillsborough County MPO, Kentucky, San Diego, Mid-Ohio Regional Planning Commission, Portland and ODOT. Metro had several goals for the methodology: that it be replicable so that it could be used over time to track changes; that it be quantifiable so that assessments could be made objectively; that it focus on severe crashes and not fender benders; and that it capture a majority of the severe crashes in the region while also resulting in a subset of roadways in order to support planning and prioritization; that segments be normalized by segment length. Metro utilized the approaches developed by San Francisco and Portland and then developed a GIS based analysis that achieved the goals. [3]

	Weights Assigned to Crash Types		
Crash Type	**Auto**	**Bike**	**Pedestrian**
Fatal	10	10	10
Severe	10	10	10
Moderate	0	3	3
Minor	0	3	3
Property Damage Only (PDO)	0	1	1

[3] "Identifying High Injury Density Corridors and Areas for Targeted Safety Improvements to Reduce Severe and Fatal Pedestrian Injuries: A Methodology" 2013 http://www.sfhealthequity.org/images/Merged_HIC_Methods_2015.pdf
Portland High Crash Network: https://www.portlandoregon.gov/transportation/54892 and High Collision Intersections: https://www.portlandoregon.gov/transportation/article/549274

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To identify the HICs, 2010-2014 crash data from the Oregon Department of Transportation was analyzed weighting crashes for each mode of travel by severity. Fatal and severe crashes for all modes (auto, bike, pedestrian) were assigned a weight of 10. Moderate and minor bike and pedestrian crashes were assigned a weight of 3; property damage only bike and pedestrian crashes were assigned a weight of 1.

Regional transportation networks (freight, arterial and throughway, transit, bicycle and pedestrian) indentified in the 2014 RTP were combined into one "regional transportation network." Corridors were created based on the location of severe crashes, which were given an aggregate crash score based on the frequency and severity of crashes, normalized by the length of the segment. The corridors identified as HICs are the roadway segments with the highest crash score per mile on the regional transportation network. The analysis was done separately for auto only crashes, bicycle/auto crashes, and pedestrian/auto crashes to identify the corridors where at least 50% of all severe crashes for each of the modes are occurring. The combined HIC networks identify 60% of all severe crashes. A step-by-step GIS analysis to develop the corridors is attached.

Intersections with the highest weighted crash scores are also identified. There are 42 intersections, or 1% of all 4,200 intersections in the region that have a weighted crash score greater than 128. There are 174 intersections in the top 5%, with weighted crash scores higher than 80.

Why are all bike and pedestrian crashes weighted?

All bike and pedestrian crashes are included in the HIC analysis for several reasons. While the crash rate for walking and bicycling are higher than auto only crashes, there are fewer bike and pedestrian crashes, resulting in fewer data. Including all of the bike and pedestrian crashes provides much more robust data for the analysis. Additionally, severity in bike and pedestrian crashes can depend on just a few inches or travel speed. Finally, the bike and pedestrian HICs are what we would expect to see, indicating that weighting is not skewing results

Why aren't crashes normalized by vehicle miles traveled or by population?

Normalizing by VMT and population is helpful to understand crash rates, and the Metro State of Safety Report provides crash rates at various levels of geography. The HIC weighted crash scores are purposefully not normalized by VMT or population because the intent was to identify corridors and intersections with the highest concentrations of severe crashes, compared to the rest of the region, no matter the number of VMT or population. This intent is tied directly to achieving a Vision Zero

How do the regional HICs relate to high crash locations identified by other jurisdictions?

In the Portland metropolitan area several jurisdictions have identified high crash locations, including Portland, Washington County, Clackamas County, and Hillsboro. Additionally, ODOT and many jurisdictions use Safety Priority Index System (SPIS) and All Roads Transportation Safety (ARTS) program high crash locations. The Regional HICs do not replace state or locally identified high crash locations and consistently overlap with them.

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What is the difference between the regional HICs and the Oregon Department of Transportation's SPIS and ARTS high crash areas?

Both ARTS and SPIS focus on specific locations, while the HICs identify corridors. HICs and ARTS focus on severe crashes. SPIS captures locations where there are also high frequency and rate of crashes, in addition to severe crashes; a roadway segment becomes a SPIS site if a location has three or more crashes or one or more fatal crashes over the three year period. The ARTS program identifies hotspot locations, defined as a location that has at least one fatal or serious injury crash within the last five years. SPIS sites and ARTS hotspots overlap with the HICs and the regional high crash intersections identify high crash locations that are not necessarily on a high injury corridor.

Do the HICs ignore areas that are high risk but with fewer severe crashes?

Identifying areas that have high crash risk factors (posted speed, signalized intersections, unlit streets, number of liquor establishments, lack of medians, driveway density, etc.) but do not have high concentrations of severe crashes provides a useful for further prioritizing safety efforts. Metro is exploring availability of data, resources, possibility of developing high risk corridors, however most corridors with identified high risk factors will overlap with the HICs.[4] Part of the reason the 2012 RTSP recommended identifying HICs, as opposed to high crash locations, is that a corridor approach highlights the roadways that have high risk factors. Metro reviewed the "Risk Based Pedestrian and Bicycle Project Corridors" identified in ODOT's Pedestrian and Bicycle Safety Implementation Plan (2014) and found that every risk based corridor in that plan overlapped with a regional HIC.[5]

Will the HICs be used in the Regional Transportation Plan project evaluation?

Project evaluation criteria and evaluation processes for the RTP have not yet been decided on. Projects submitted to the RTP will identify if they are on a high injury corridor and whether they are a safety project.[6] This information will be used to help assess the level of investment in the plan specifically directed towards safety and specifically addressing safety issued on a high injury corridor. This information may also possibly be used in the RTP project evaluation.

[4] The San Francisco analysis noted that "corridor-level and area-level analysis is necessary for efficient and effective injury prevention." http://www.sfhealthequity.org/images/Merged_HIC_Methods_2015.pdf

[5] https://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/docs/pdf/13452_report_final_partsA+B.pdf

[6] In the RTP, regional safety projects are defined as infrastructure projects with the primary intent to address a safety issue, and allocate a majority of the project cost to a documented safety countermeasure(s) to address a specific documented risk, or improve safety for vulnerable users, including people walking and bicycling, older adults and youth. Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.

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Regional High Injury Corridors – GIS Analysis Methodology

Corridors (percent severe injuries)	Miles	RTP Network (1,739 miles)	All Streets (6,565 miles)
Regional HIC (60%)	398	23%	6%
RHIC – auto (50%)	282	16%	4%
RHIC – bike (50%)	177	10%	3%
RHIC – ped. (50%)	133	8%	2%

>= 5280 feet
60% severe crashes

Part 1:

1. Prepare streets and crashes for analysis
    - Streets:
        - Combine RTP networks and save a copy of those within the study area
        - Recalculate empty "STREETNAME" and "DIRECTION" fields as NULL
        - Create a dataset of only the freeways/highways dissolved by "STREETNAME" and "DIRECTION"
        - Create a dataset of streets other than freeways/highways dissolved by "STREETNAME", where the name is not NULL
        - Merge the freeways and non-freeways datasets
        - Break the streets at each intersection
    - Crashes:
        - Select crashes within the study area that occurred during or after a specified year
        - Save a copy of the selected crashes that intersect the RTP Network
2. Select and merge streets where crashes occurred
    - Create a layer of the crashes where the injury severity is Fatal/A or B/C for modes pedestrian or bicycle
    - Flag RTP cross-streets that intersect the crashes layer
    - Combine street segments with the same "STREETNAME", "DIRECTION", and crash flag (1/yes or 0/no)
    - Add adjacent street segments that are equal or less than ¼ mile
3. Separate multi-part streets that are more than 75 feet apart
4. Combine streets by name, direction, and buffer location to get crash corridors

Part 2:

1. Join crashes to corridors and calculate weighted sum by mode and normalized by street length

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Metro | *Meeting Summary*

Safety Work Group Meeting Summary
(Draft until approved by work group)
July 26, 2016, 8:30 to 10:30 AM | Metro Regional Center, Room 401

ATTENDED (Work Group):
Becky Bodoyni, Multnomah County Health
Anthony Buczek, Metro
Tegan Enloe, Hillsboro
Nick Fortey, FHWA
Tom Kloster, Metro
Lake McTighe, Metro
Jeff Owen, TriMet
Amanda Owings, Lake Oswego
Lidwien Rahman, (alternate for ODOT/Oregon Walks)
Katherine Burns, ODOT
Kari Schlosshauer, SRTS National Partnership
Chris Strong, Gresham
Aszita Mansor, Multnomah County
Dyami Valentine, Washington County
Clay Veka, Portland
Stacy Revay, Beaverton
Noel Mickelberry, Oregon Walks

ATTENDED (Interested Persons/Metro Staff/ Invited Guests):
Robin Ness (ODOT, presenting on crash data)
Clint Chiavarini, Metro
Alexa Todd, Metro
Kim Ellis, Metro
Beth Wemple, Cambridge Systematics
Cindy Pederson, Metro

UNABLE TO ATTEND:
Joe Marek, Clackamas County
Stacy Shetler, Washington County
Mike Ward, Wilsonville

Follow-up actions

- ✓ Provide work group with Robin Ness' presentation (**included with Oct. 20 mtg materials)**
- ✓ Set up presentation on Regional High Injury Corridors (**held on August 23)**
- ✓ Refine regional safety target based on input, including revisiting how target dates are set (**to be reviewed at Oct 20 mtg)**

- ✓ Develop interim safety targets **(included in safety target for 2025)**
- ✓ Test crash exposure methods, bring results to work group (**tested, VMT and crash correlation determined)**
- ✓ Investigate whether posted speed data can be relatively easily available for regional model (**data is not mapped not easily accessible for the measure)**
- ✓ Add reference to 23 United States Code 409 (liability code) to Safety Policy Framework Report (**done)**
- ✓ Investigate metro developing a safety crash model **(Metro is pursuing this but it will not be available for the 2018 update)**
- ✓ Develop annual rolling targets for bikes and peds (**will be discussed at Mtg. #4)**

Welcome & Overview
Tom Kloster, meeting chair, welcomed the workgroup.

Lake McTighe, safety work group lead, recapped what was covered at the first meeting in May:

- Safety work group purpose
- Overview of safety trends
- Status of recommended actions in 2012 RTSP
- Policy context overview – what's changed
- Vision Zero/Towards Zero Deaths discussion and activity

Lake went over the agenda, materials and desired outcomes.

- Answer 3 questions in "Safety Performance Measures and Targets" Memo
- Preview of development of Regional High Injury Network & Discussion
- Information on ODOT's process for analyzing data & Discussion

Safety Performance Measures and Targets Discussion
Tom Kloster reviewed three questions for the work group to answer:

1. Does the Work Group support the proposed RTP Safety Performance Target for the 2018 RTP?
2. Does the Work Group support exploring potential RTP System Evaluation Measures for infrastructure disparities and exposure to crashes?
3. Does the Work Group have input or comments on the proposed method for setting annual targets for the Federal safety performance measures?

Lake provided an overview of the policy framework report and walked through the Safety Performance Measures and Targets Memo.

Members of the work group discussed each of the questions.

1. Does the Work Group support the proposed RTP Safety Performance Target for the 2018 RTP?

Proposed 2018 RTP safety target: "By 2040, eliminate fatal and severe crashes for all motor vehicle occupants, pedestrians, and bicycle riders."

- Remove reference to specific modes. Referring to specific modes leaves out motorcyclists, etc. Change wording to "all users."

- Discussion on 2040 date in the target; it matches the "plan year" of the RTP. Shouldn't it match the ODOT state target of 2035? It is confusing to have different years (Portland has 2025). Also, it is a problem to have the target date change (pushed forward) each time the RTP is updated. The target date should not move. Also, 2040 is so far away it is easy to not take action; would prefer smaller target sooner (e.g. 25% reduction by 2025). On the other hand, a far out goal allows for flexibility for smaller jurisdictions. Safety goals/target year need to be consistent with other targets/goals. Metro needs to look at the target year for all targets, not just safety.
- Instead of "plan year" target, use interim target years (e.g. 2025, 2035) along with annual targets required by FHWA.
- What happens if the target is not reached? Is Metro, jurisdictions liable if targets are not reached? Title 23 United States Code 409 (https://www.fhwa.dot.gov/map21/docs/title23usc.pdf) protects agencies from liability for planning work, using data to set targets, etc. Setting targets does not make agencies liable. FHWA discussion on the topic: http://safety.fhwa.dot.gov/rsa/legal.cfm
- Support for target of zero deaths and serious injuries.

2. Does the Work Group support exploring potential RTP System Evaluation Measures for infrastructure disparities and exposure to crashes?

- Do not like language "investments being made evenly" – doesn't identify where there are disparities, doesn't identify whether that means dollars or number of projects
- Define "certain communities"
- Need to define "high injury facility" – need clearer definition, such as whether it includes drunk driving
- Issue with the VMT exposure as a safety evaluation measure; a project could increase VMT and increase safety; or, some projects may reduce VMT but may not be the most important safety project
- Support for exposure in some way or another, just not sure how
- Look at including speed in the measure; land use, population, etc are important
- Measuring exposure from a public health perspective is important
- Important that they focus safety projects on the number of fatal/severe injury crashes happening
- Like the "infrastructure disparity" measure – like being able to take credit for a "safety project"
- Not sure what the VMT number will tell us
- There are so many other factors besides VMT: population, land use, speed. Need to look at those to. Should include speed.
- From health perspective exposure to VMT is a helpful measure
- Huntsville MPO developed analysis using several factors, including speed, male population, intersection density

3. Does the Work Group have input or comments on the proposed method for setting annual targets for the Federal safety performance measures?

- Trend line of crashes is up for the region, state is down; mostly due to pedestrian severe crashes
- Would be good to know how many fatalities are happening in transit stops, as well as the role of age in fatal/severe injury crashes – how are we targeting different age groups?
- Set targets for bikes and peds
- Important to consider which group is bearing the brunt of these crashes, ie. Pedestrians
- Need for adaptive methodology for when/if Metro implements a policy that isn't as effective as they'd hoped
- All investments have a safety component – "need to hone in on that" – which is how Metro is creating a safer system. Focusing solely on safety projects is too narrow.
- Focus on number of people for targets

Overview of ODOT Crash Data Analysis Process
Robin Ness, Manager of ODOT's Crash Data Analysis Unit provided an overview of the how crash data is processed and analyzed. She also shared ways the department is trying to make crash data available sooner.

Next steps
There was not enough time to review the Regional High Crash Corridors. Metro staff will set up a time before the next Work Group meeting to go over this topic.

Lake outlined next steps:

- Share input on safety performance measures and target with
  -Equity Work Group (July 28)
  -RTP Performance Measures Work Group (Sept 12 & Oct14)
  -MTAC (Sept 21)
  -TPAC (Sept 30)
- Work Group members provide additional input by Aug 1
- Next meeting is Thursday, Oct 20