Oregon Rail Crossing Action Plan

Stakeholder Meeting 2

September 25, 2018

Wifi Password

Network: odot-guest

Password: Swallowtail

Welcome!

- Project Management Team
- Purpose of Today's Meeting
- Agenda
- Introductions
- Parking Lot

Charter

Charter Overview

- Treat each other, staff and guests (if any) with respect
- Listen carefully, seek to understand each other
- Everyone participates
- Focus on the purpose and help stick to the agenda
- Discuss constructively
- Seek to find unity and common ground
- Minimize distractions during the meeting

Refresher

The Role of the State Action Plan

Currently

ODOT selects appropriate devices (Rail unit)

and provides crash analysis (Transportation Data)

&

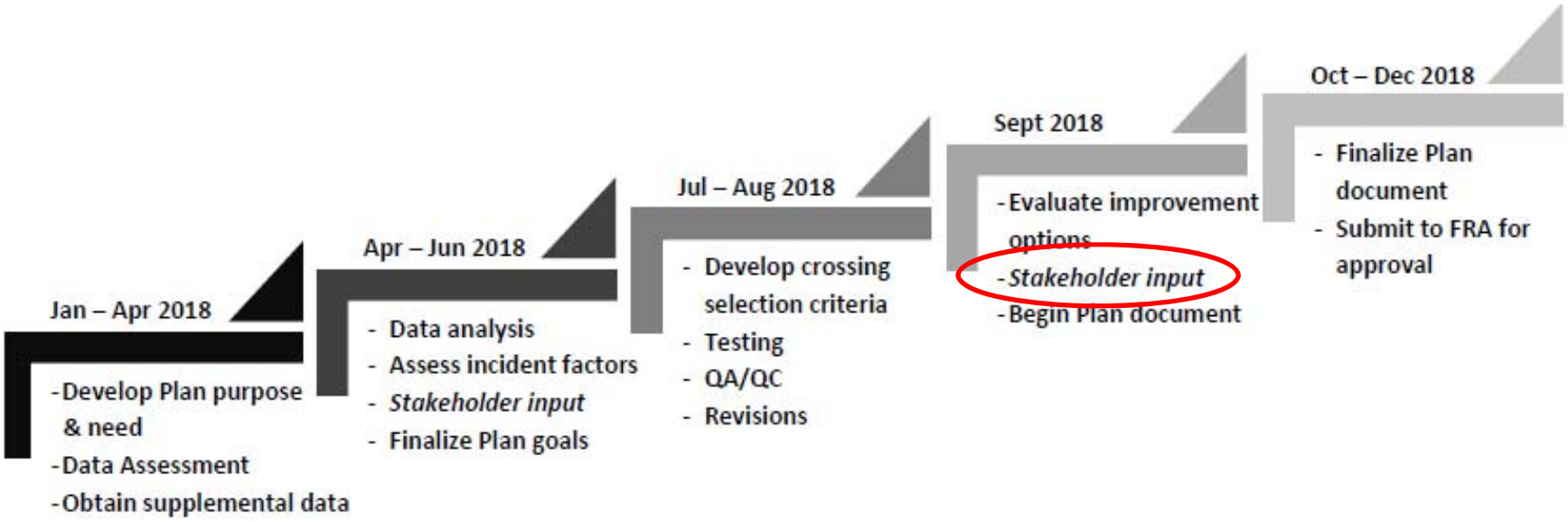
Examines licensing, training, education programs and coordinates enforcement (DMV, Safety Division)

in separate programs

- This plan seeks to bring these together
- Stakeholders play an important role in crossing safety improvements
- Your input is important for this plan

Schedule & Key Milestones

Project Schedule



Last Meeting Highlights

- Data Discussion
- Contributing Factors
- Plan Objectives

Last Meeting Highlights - Data

- Data Analysis – Incidents 2008-2017
  - Physical
  - Temporal
  - Environment
  - Behavioral

Last Meeting Highlights - Data

- Data Analysis – Incidents 2008-2017
  - Physical
    - Where
    - Railroad
    - Incident Rate
  - Temporal
  - Environment
  - Behavioral

Last Meeting Highlights - Data

- Data Analysis – Incidents 2008-2017
  - Physical
  - Temporal
    - Time of day
    - Day of the week
    - Time of year
  - Environment
  - Behavioral

Last Meeting Highlights - Data

- Data Analysis – Incidents 2008-2017
  - Physical
  - Temporal
  - Environment
    - o Weather
    - o Other factors
  - Behavioral

Last Meeting Highlights - Data

- Data Analysis – Incidents 2008-2017
  - Physical
  - Temporal
  - Environment
  - Behavioral
    - o Driver characteristics
    - o Driver behavior
    - o Situation

Last Meeting Highlights - Factors

- Contributing Factors
  - Risky behavior (15)
  - Population /Demographics: (4)
  - Distraction (12)
  - Inactive Rail—Expectations (6)
  - Changes in Traffic Volumes (11)
  - Lack of education/outreach (12)
  - Rail Operational Context (2)
  - Lack of Transportation investment (0)
  - Time of Day/Seasonal (1)
  - Crossing Configuration (# of tracks, geometry) (12)
  - Connectivity: (2)
  - Land Use/Development: (9)
  - Vehicle Type (4)

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Plan Objectives

Plan Objectives - Revised

- Balance safety with quality of life
- Apply engineering solutions for improvements
- Coordinate and collaborate with railroads, road authorities and other stakeholders to improve rail crossing safety
- Strengthen education and outreach about rail crossing safety
- Leverage opportunities for rail crossing improvements
- Reduce number of rail crossings
- Strengthen enforcement of illegal and dangerous behavior near rail crossings

Overview Rail Crossing Incidents (follow-up)

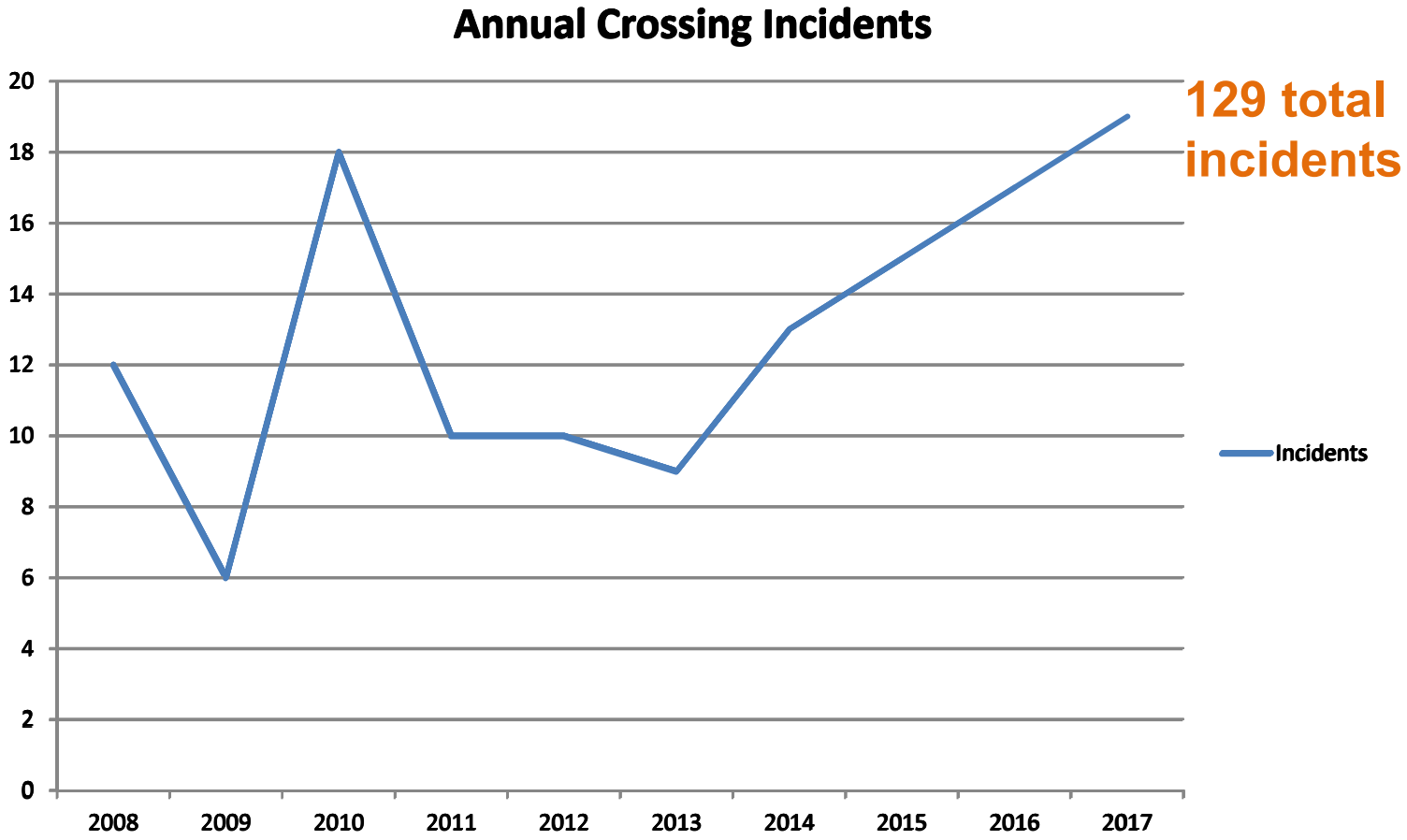
A Word About This Data

- Sources include FRA, ODOT Rail Division, ODOT Transportation Data Section, Oregon State Rail Plan
- TriMet incidents not included
- Suicides excluded
- Some information is missing

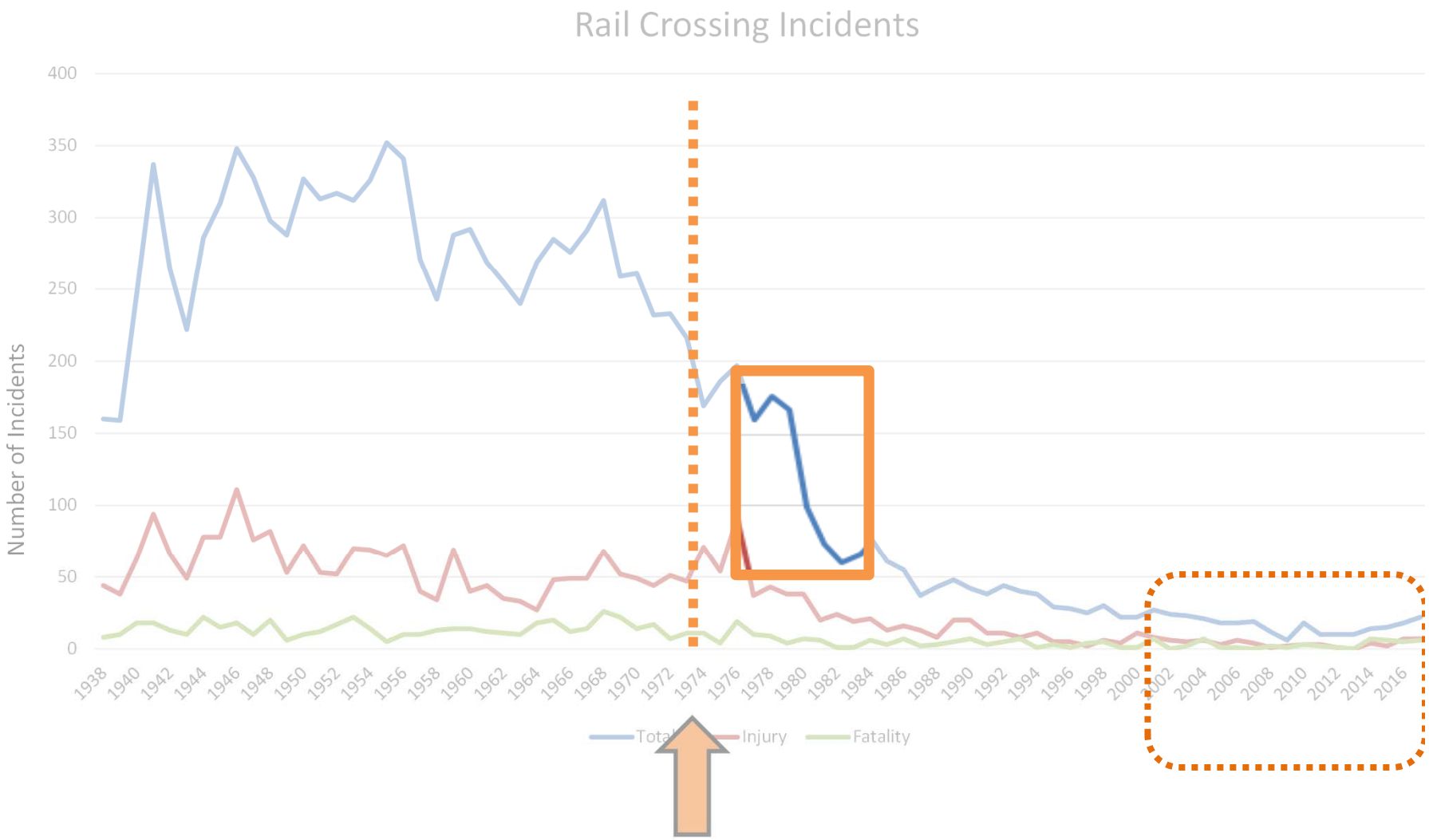
Additional Steps

- Removed confirmed suicide incidents
- Analyzed multi-incident crossings
- Other miscellaneous data cleanup

Oregon Annual Incidents



Oregon Annual Incidents

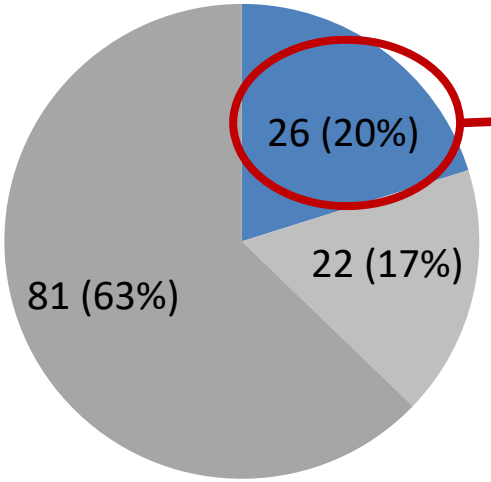


Oregon Incidents – More Info

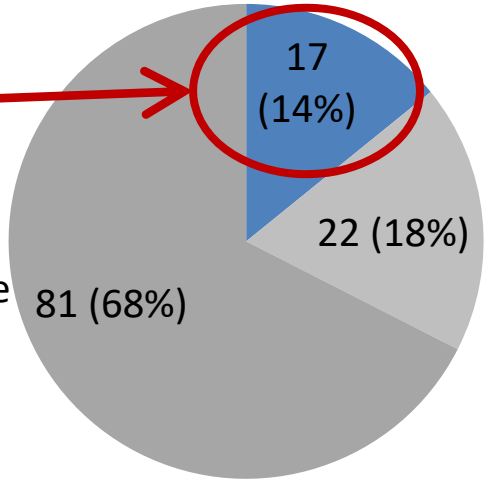
- 2 crossings since closed
- 4 crossings have seen improvements
- 11 crossings are under study or programmed for funds
- 9 suicides removed from data going forward
  - 8 categorized at “pedestrians”
  - 1 categorized as “pickup” or PV
  - 2 of our multi-incident locations

Oregon Incidents – Updated

Oregon Incidents Severity



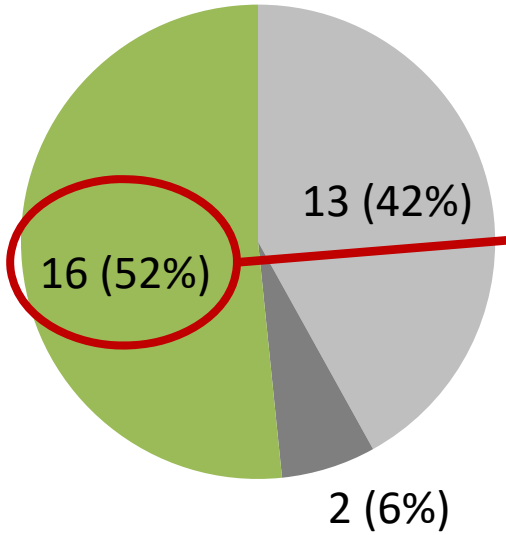
Incident Severity (suicide excluded)



Fatality
Injury only
Property or no damage

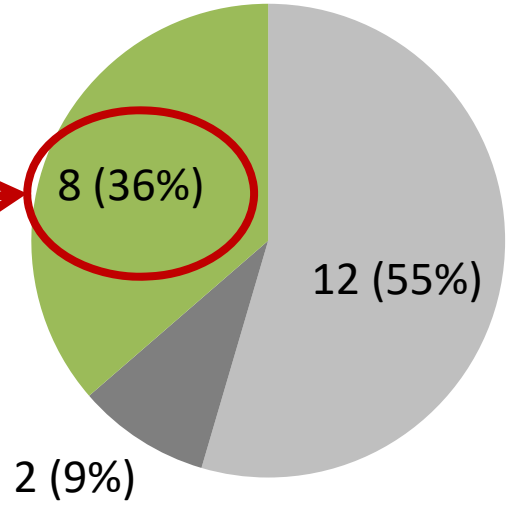
Oregon Incidents – Updated

Number of Fatalities



Vehicle
Bicycle
Pedestrian

Number of Fatalities (suicide excluded)



Incidents Analysis – Additional Info

Follow-up Info

- Crossing intersection angle
- AADT
- Road speed
- Train speed
- Number of tracks
- Number of lanes
- Sidewalk or bike lane present

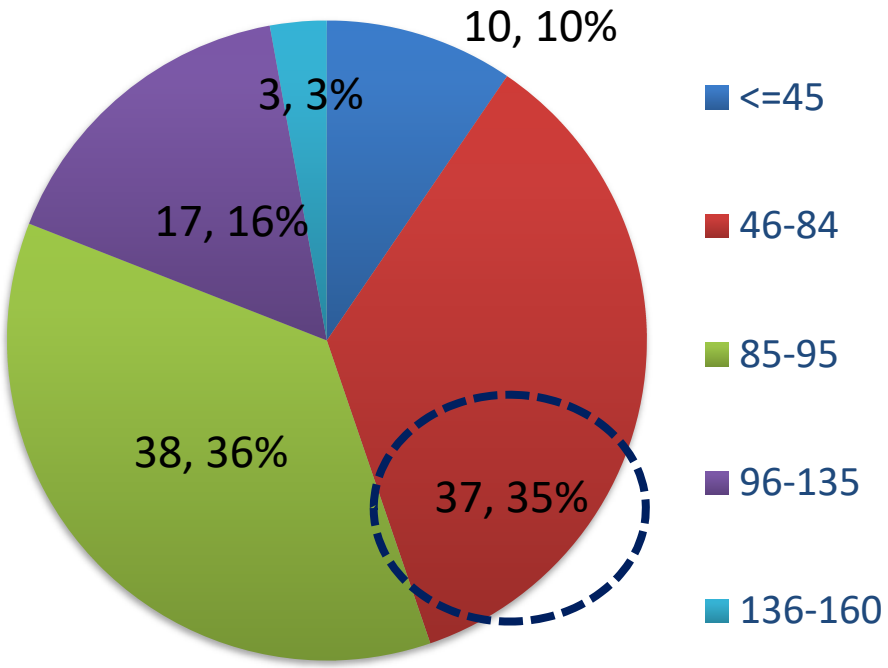
Crossing Incidents

- Years analyzed 2008-2017
- No TriMet Max (6 incidents excluded)
- Public crossings only
- Reported incidents only
- “Near Misses” not included

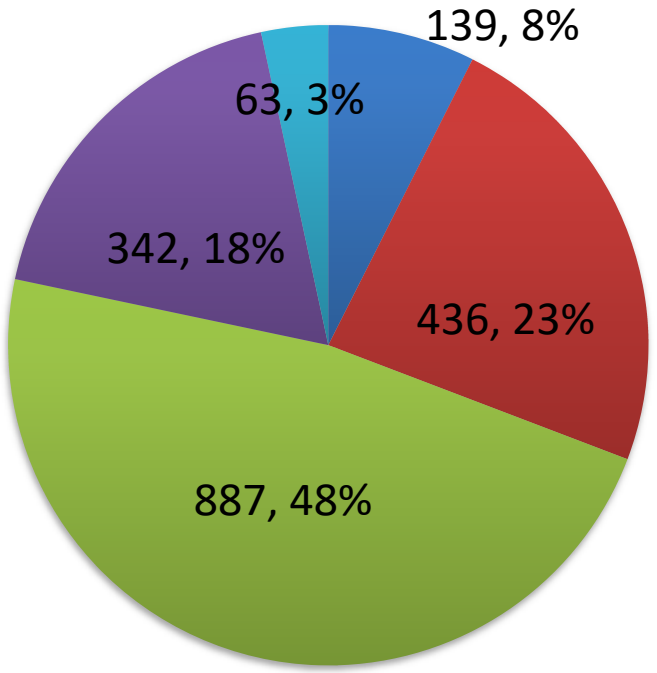
Intersection Angle

Crossing Intersection Angle

Crossing Angle at Crossings with Incidents



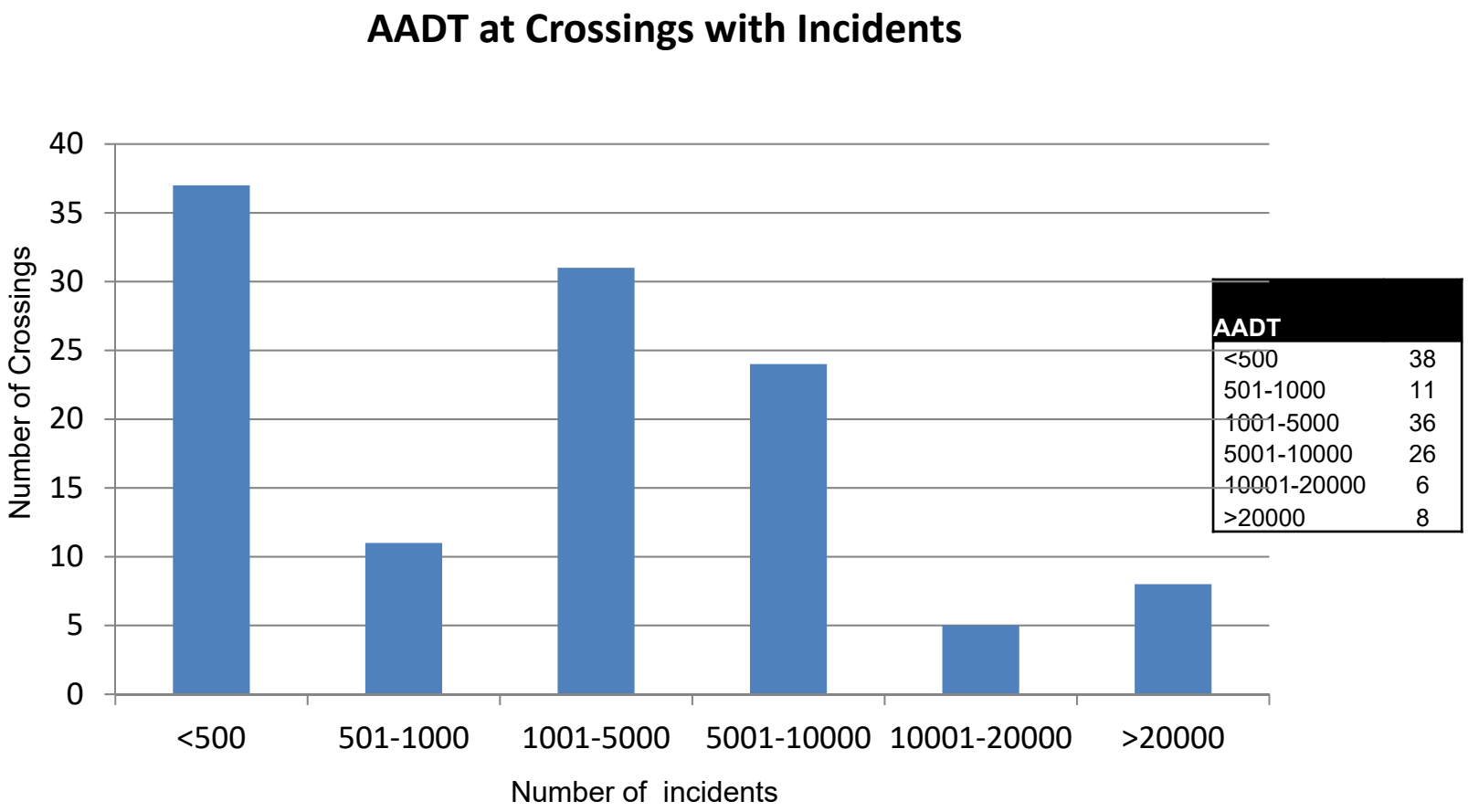
Crossing Angle at Oregon Crossings



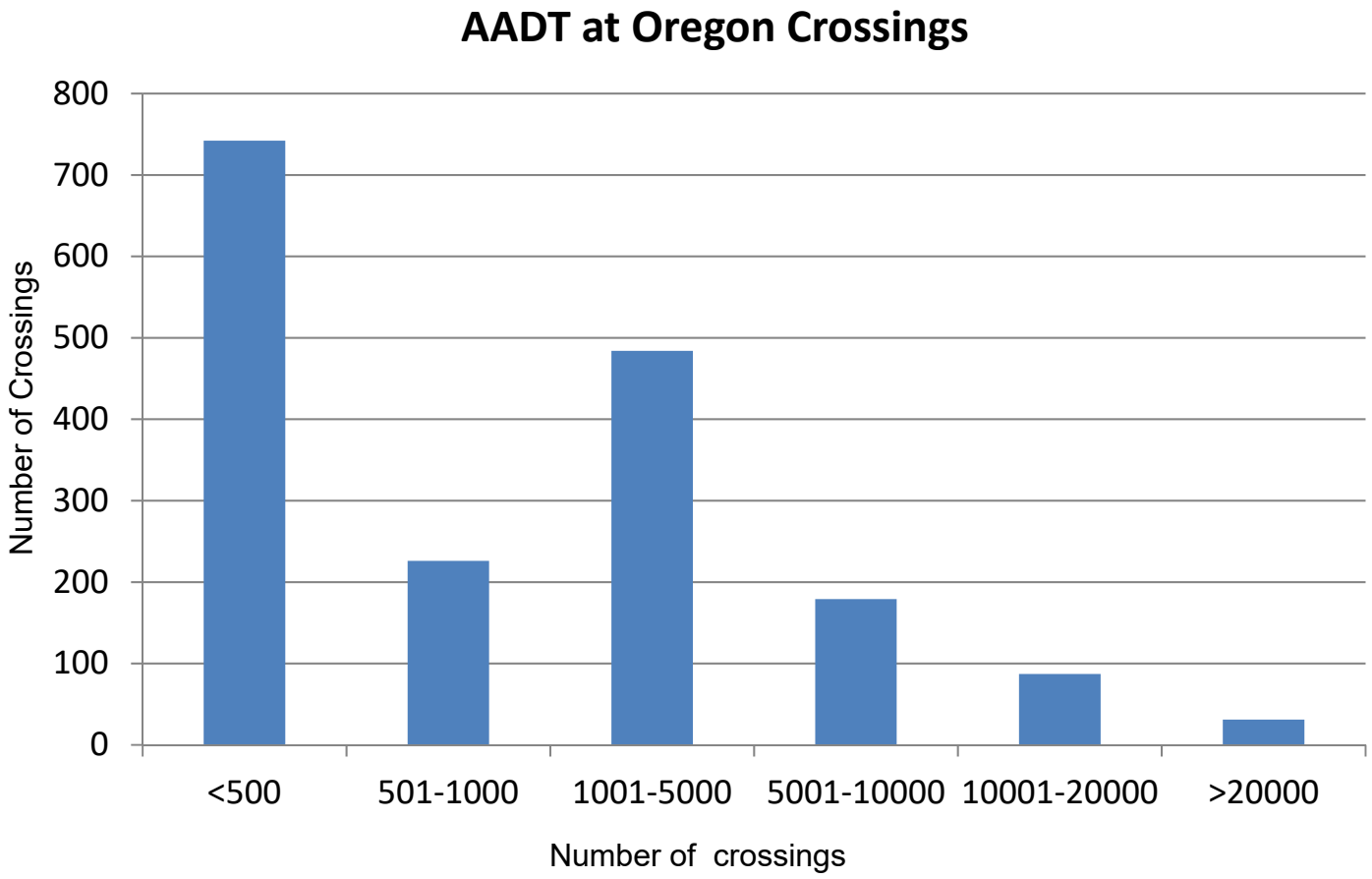
Crossing Intersection Angle – Example

Annual Average Daily Traffic

ADDT – Incident Locations



ADDT – All Crossings



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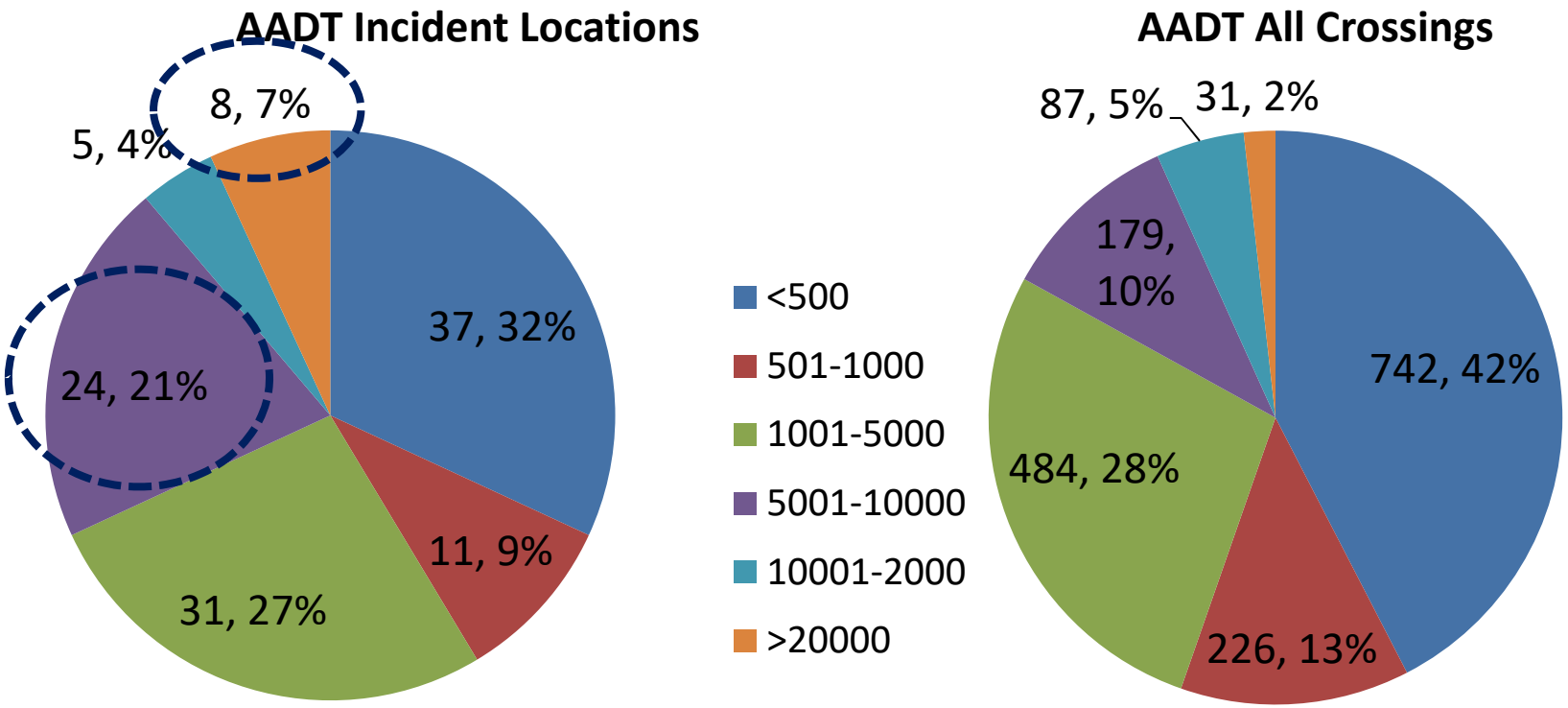
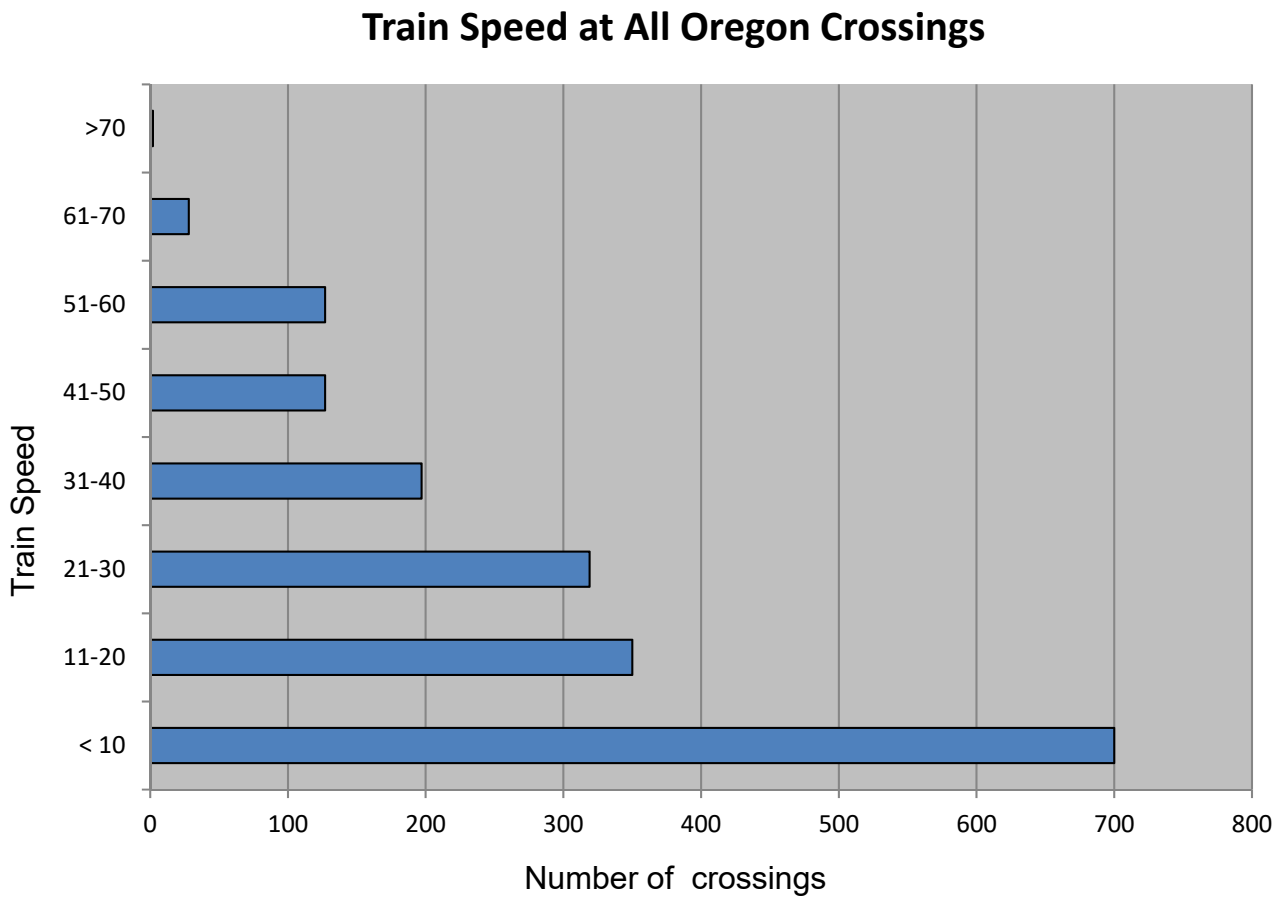


Train Speed

Train Speed

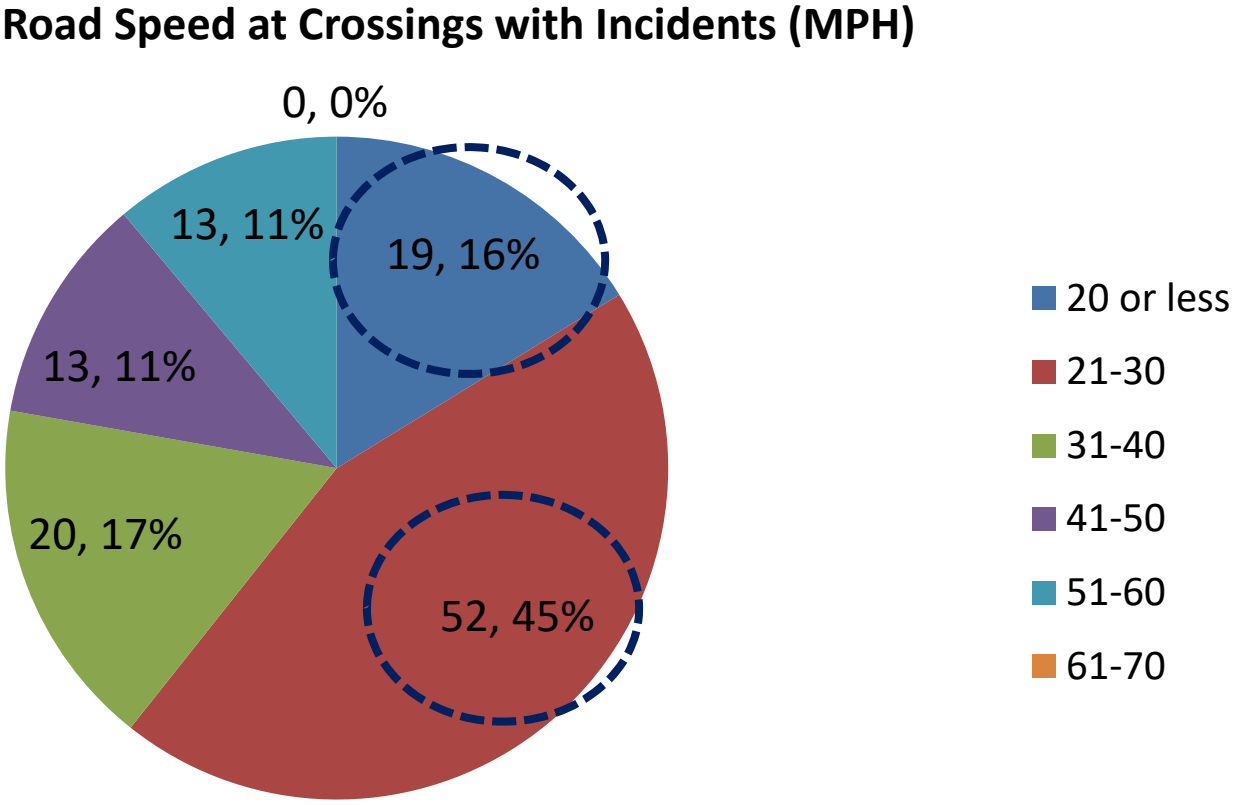

Train Speed at Crossings with Incidents
>70
61-70
51-60
41-50
31-40
21-30
11-20
< 10
Train Speed
0
5
10
15
20
25
30
35
40
Number of incidents

Train Speed

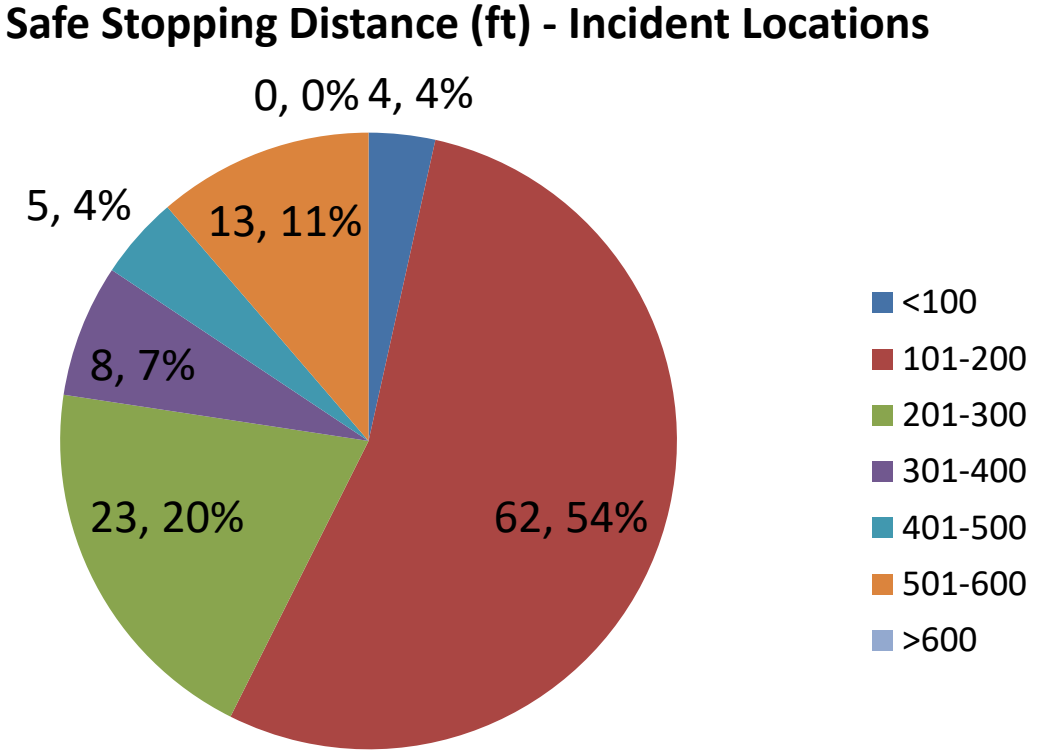

Train Speed at All Oregon Crossings
>70
61-70
51-60
41-50
31-40
21-30
11-20
< 10
Train Speed
0
100
200
300
400
500
600
700
800
Number of crossings

Roadway Speed

Posted Travel Speed

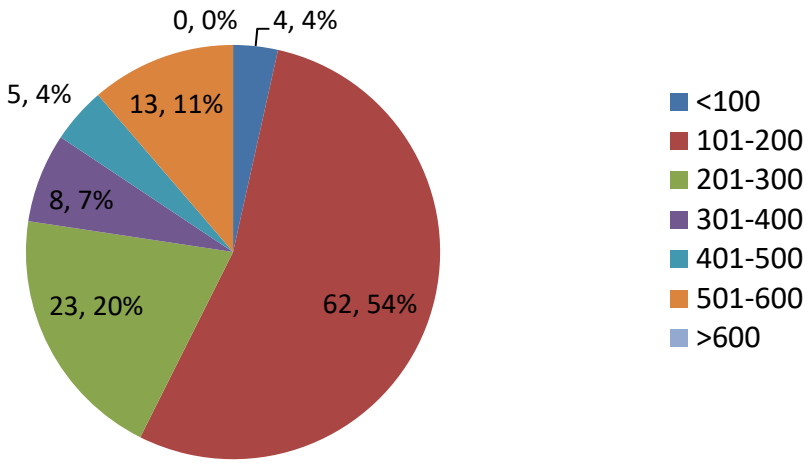


Safe Stopping Distance – Incident Crossing

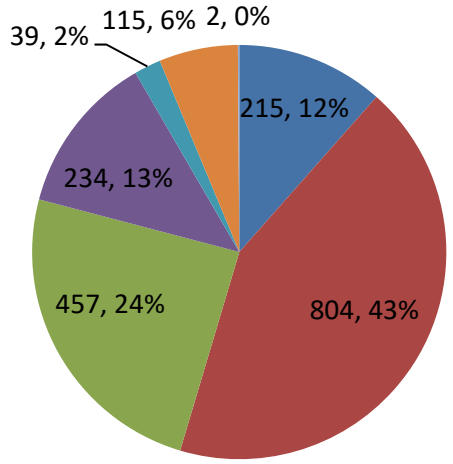


Safe Stopping Distance -

Safe Stopping Distance (ft) - Incident Locations



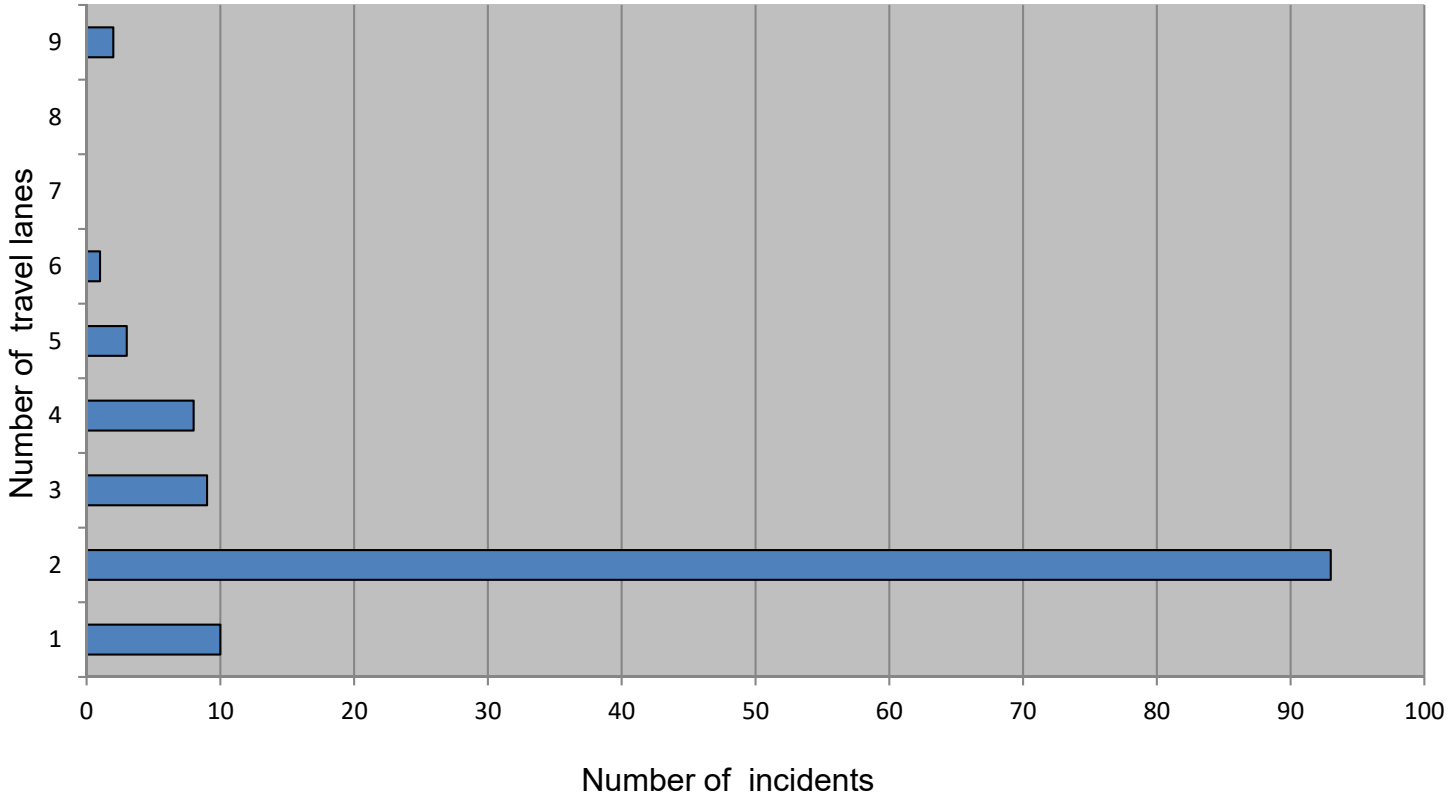
Safe Stopping Distance (ft) - All Oregon Crossings



Lanes

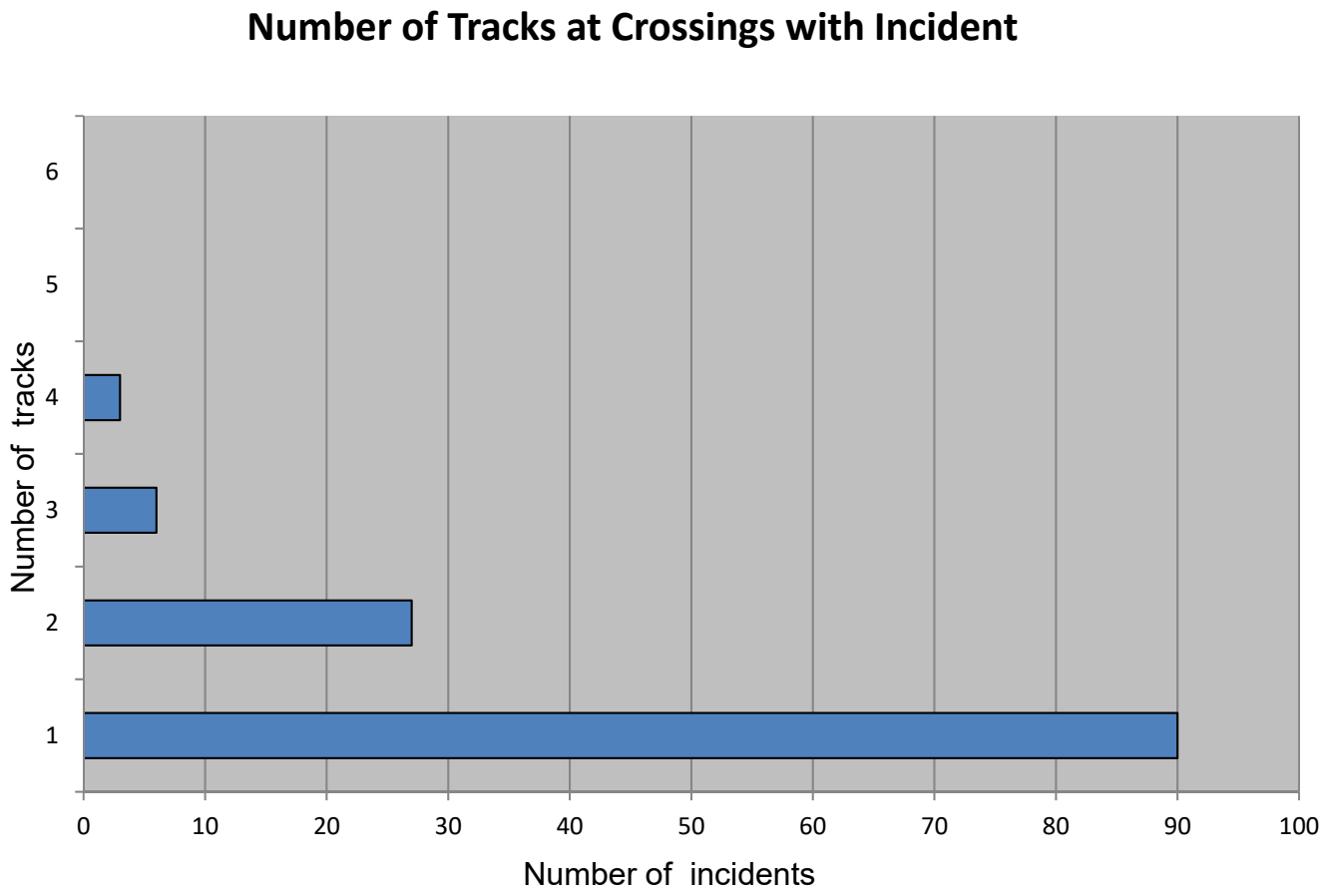
Travel Lanes

Number of Travel lanes at Crossings with Incidents

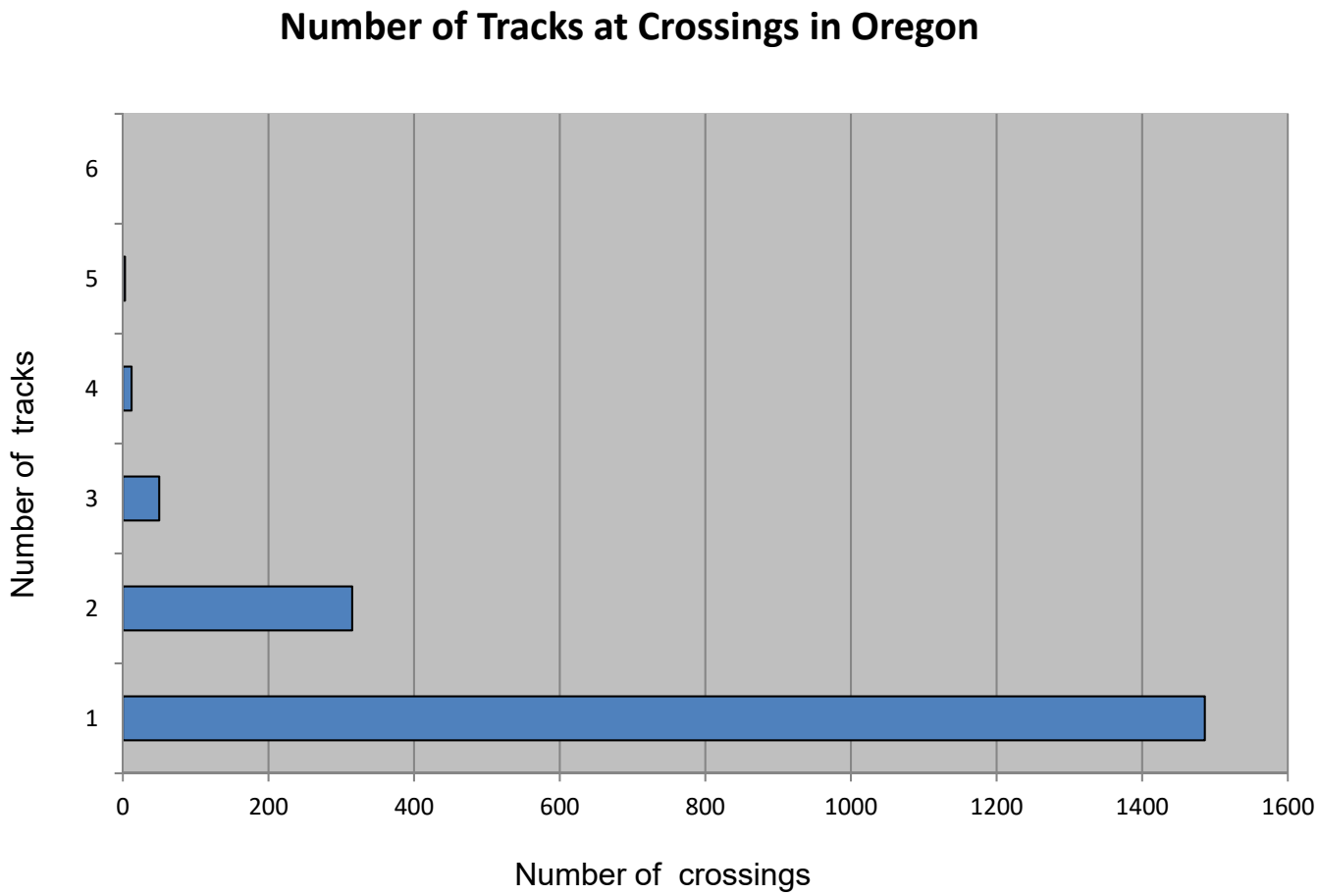


Tracks

Number of Tracks



Number of Tracks



Multiple Incident Locations

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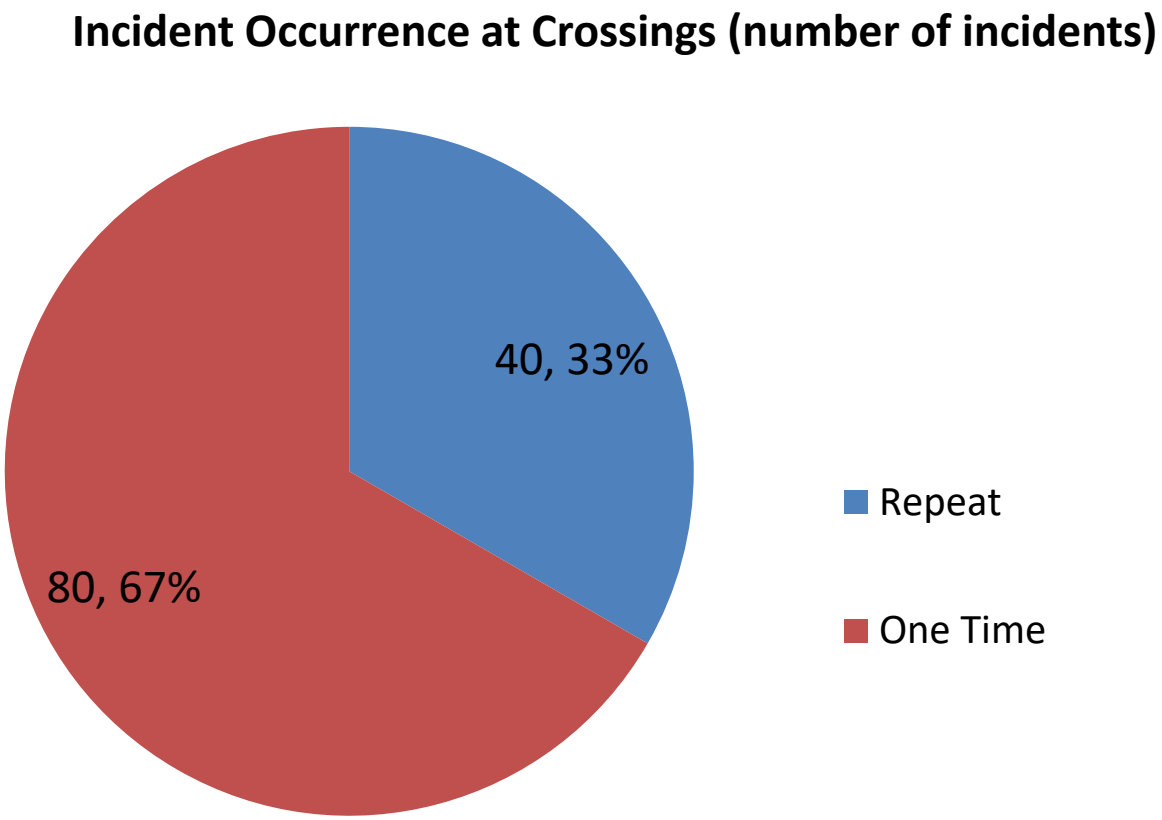

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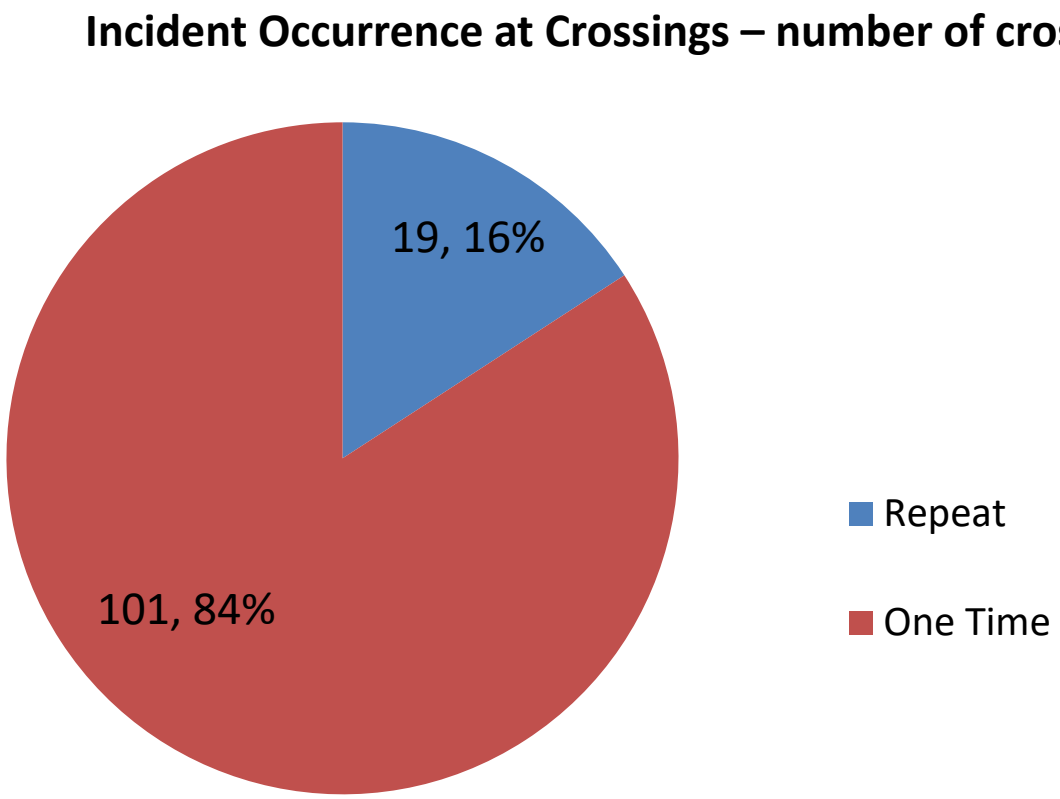

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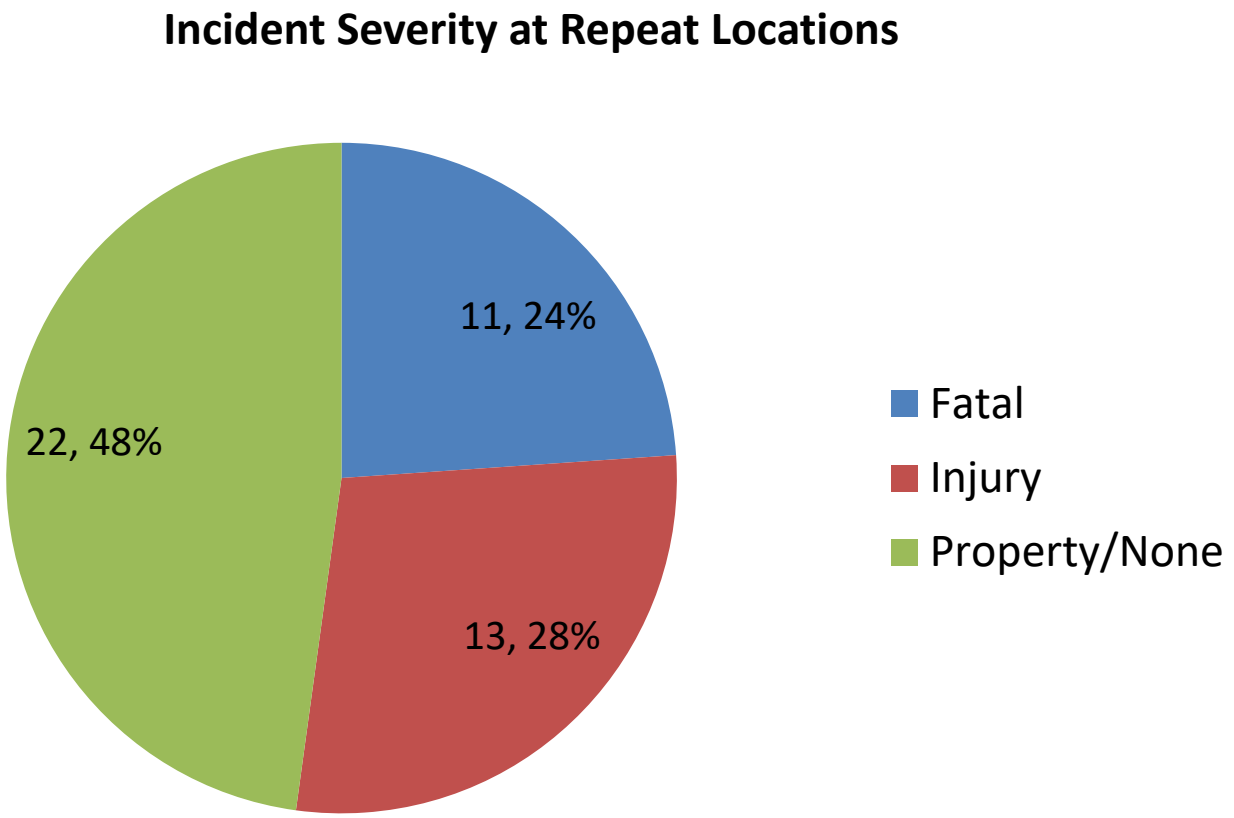

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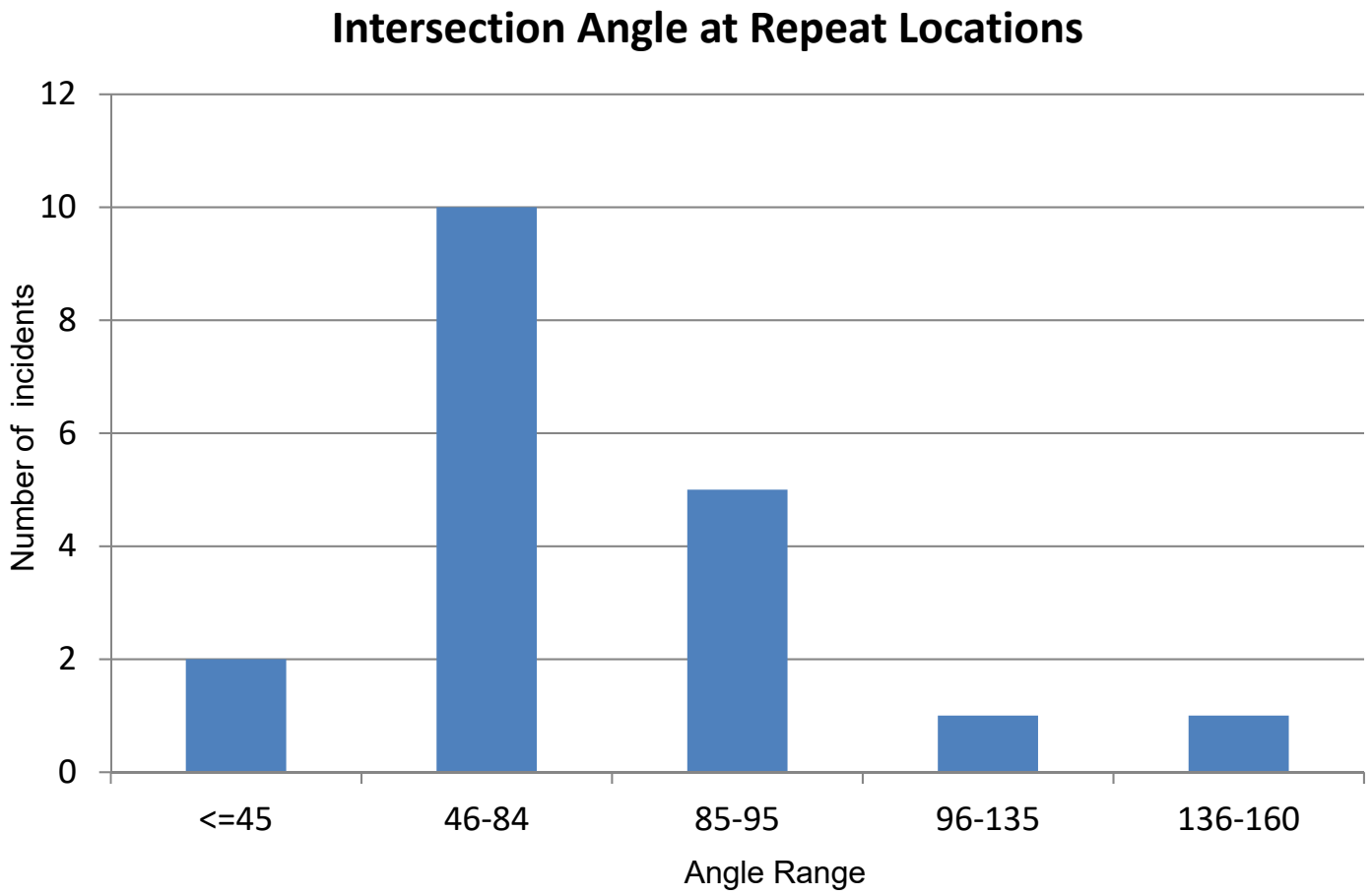

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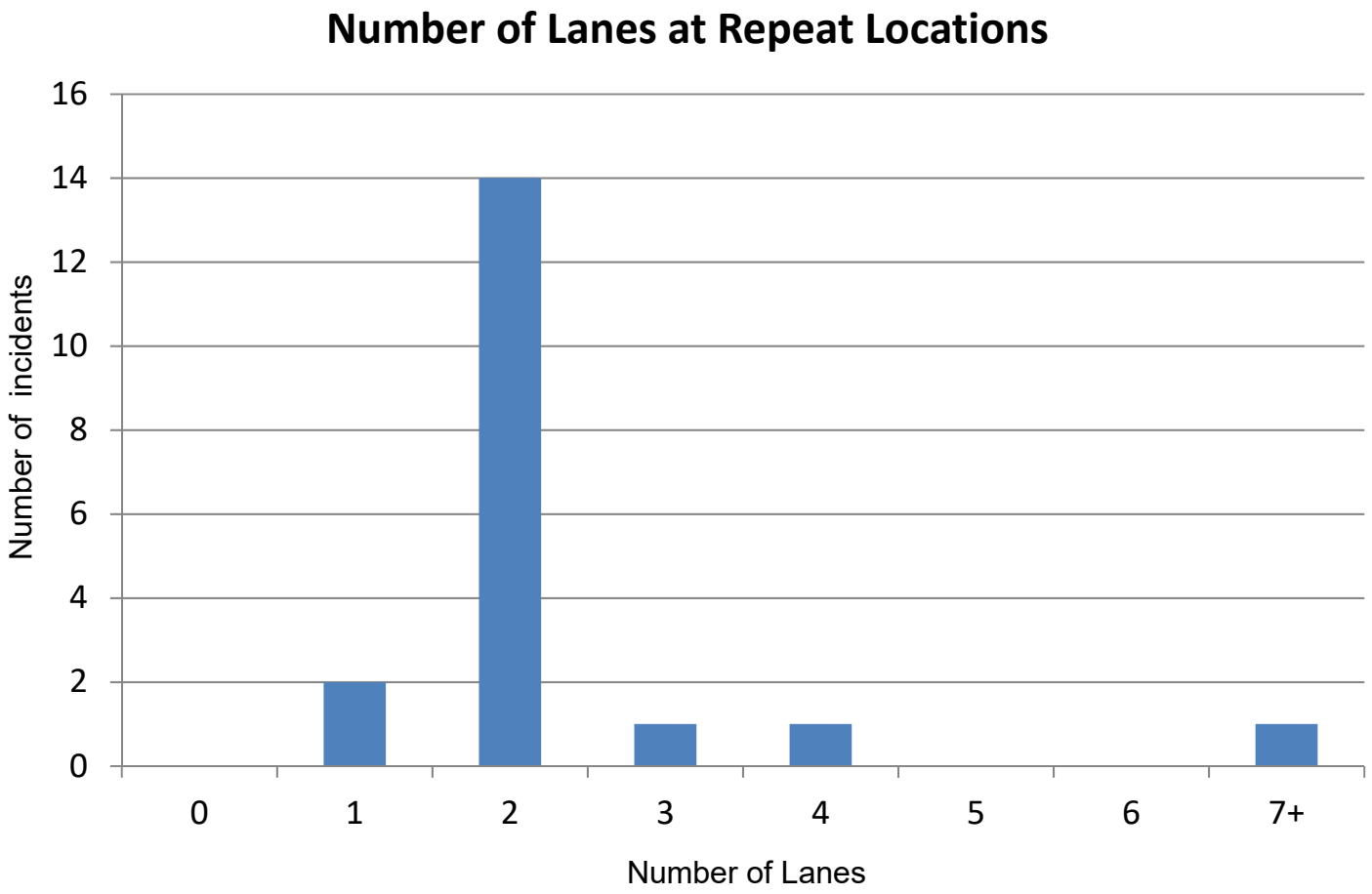

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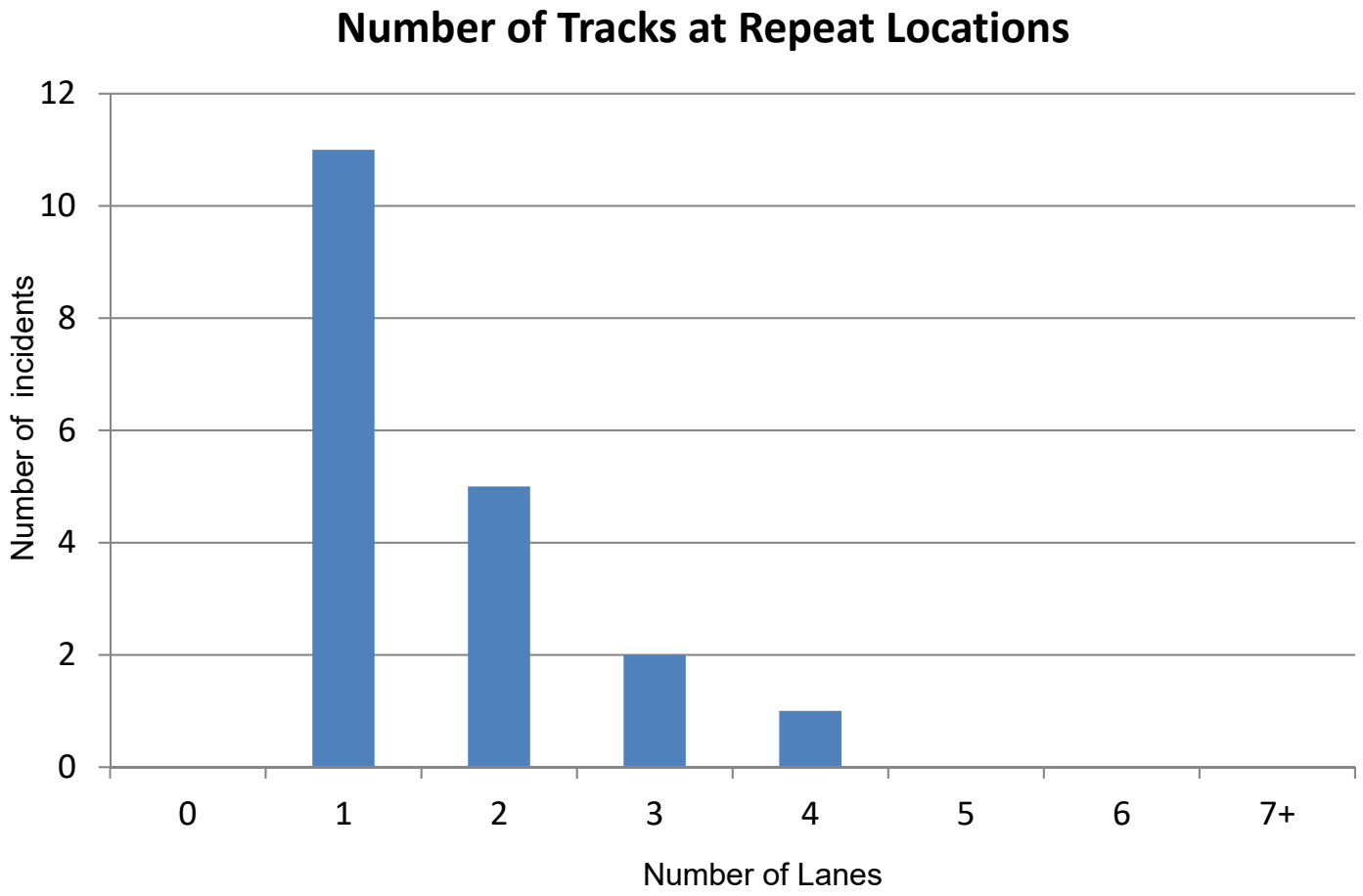

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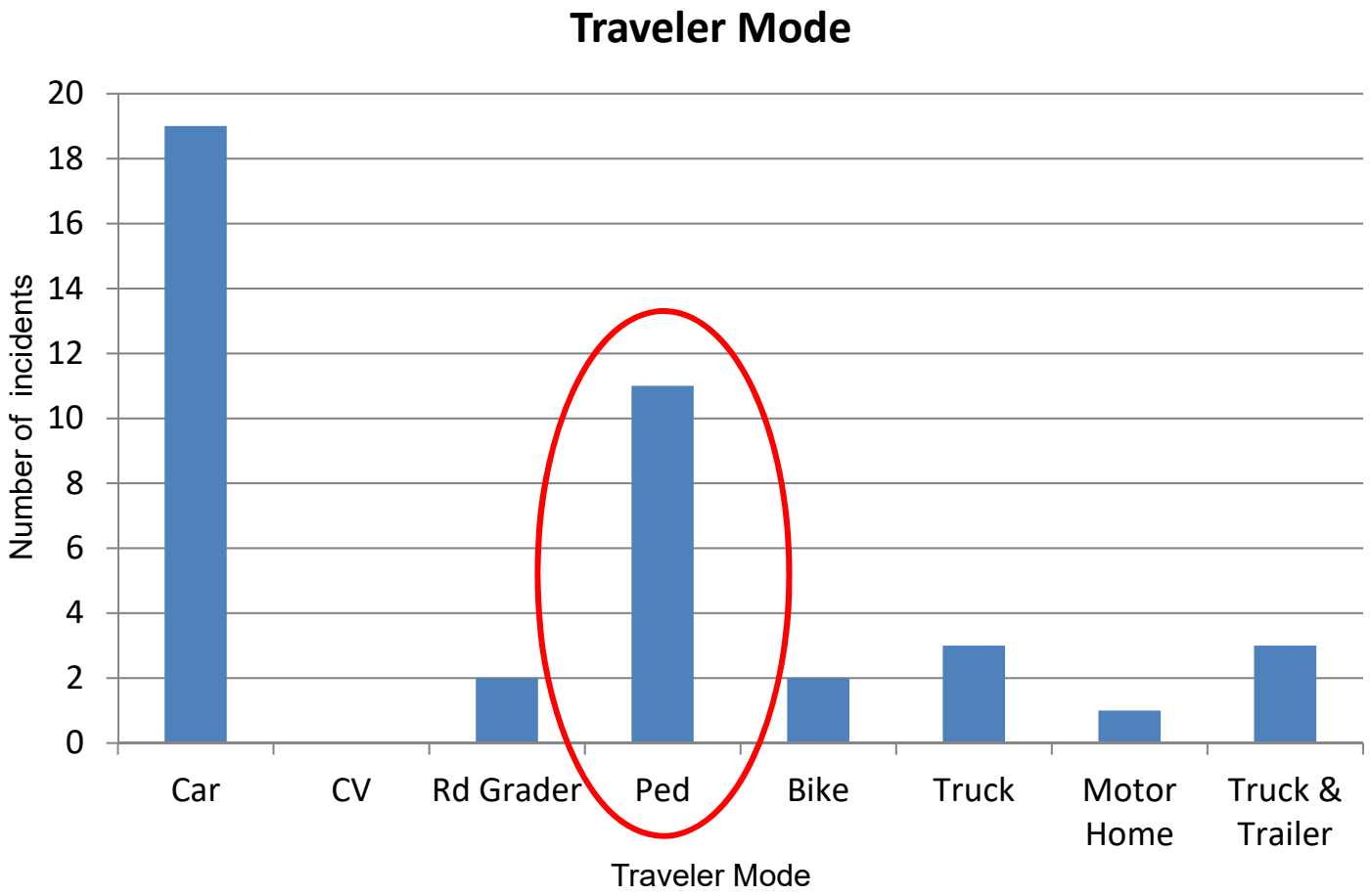

Multiple Incident Locations

- 20 locations had 2 or more incidents
  - 2 had 3 reported incidents: Pendleton and Umatilla
  - 1 has been closed; 4 have been upgraded
  - 3 had “severe” angles
  - 1 is documented with 9 travel lanes (Beaverton)

Oregon Rail Crossing Incidents – Conclusions about Multi-incident Locations

- Activity – 2 suicides, 2 stalled vehicles, went around gates
- Conditions – 2 weather related
- Locations
- Upgrades / closures since
  - 1 Closure
  - 4 crossing upgraded (Donald, Woodburn, Pendleton, Umatilla)

Oregon Rail Crossing Incidents – Conclusions from Additional Data

- Correlation between angle and incidents
- Pedestrian fatalities large portion
- Posted speed – lower speeds stronger correlation
- AADT – correlation with higher AADT

Oregon Rail Crossing Incidents – Overall Conclusions

- What are the key issues in Oregon impacting crossing safety

Putting the Pieces Together

- Report Outline
  - Current system
  - Rail Incidents – history and last 10 year
  - Key Trends and Analysis
  - Objectives
  - Strategies
  - Examples and Tools

Break

Strategy Development

Defining the Key Terms

- Vision – The future we want to arrive at (defined in the OTP, Rail Plan and TSAP)
- Goal – Refines the vision, provides more description of the future
- Objectives – Describe how we can arrive at the goal (we did this last time)
- Strategy – Specific things to do to implement the objectives
- Action – Sub-level of strategies - provide the most explicit detail of what to do to achieve the objectives – not likely to be in this Plan

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Plan Strategies Development

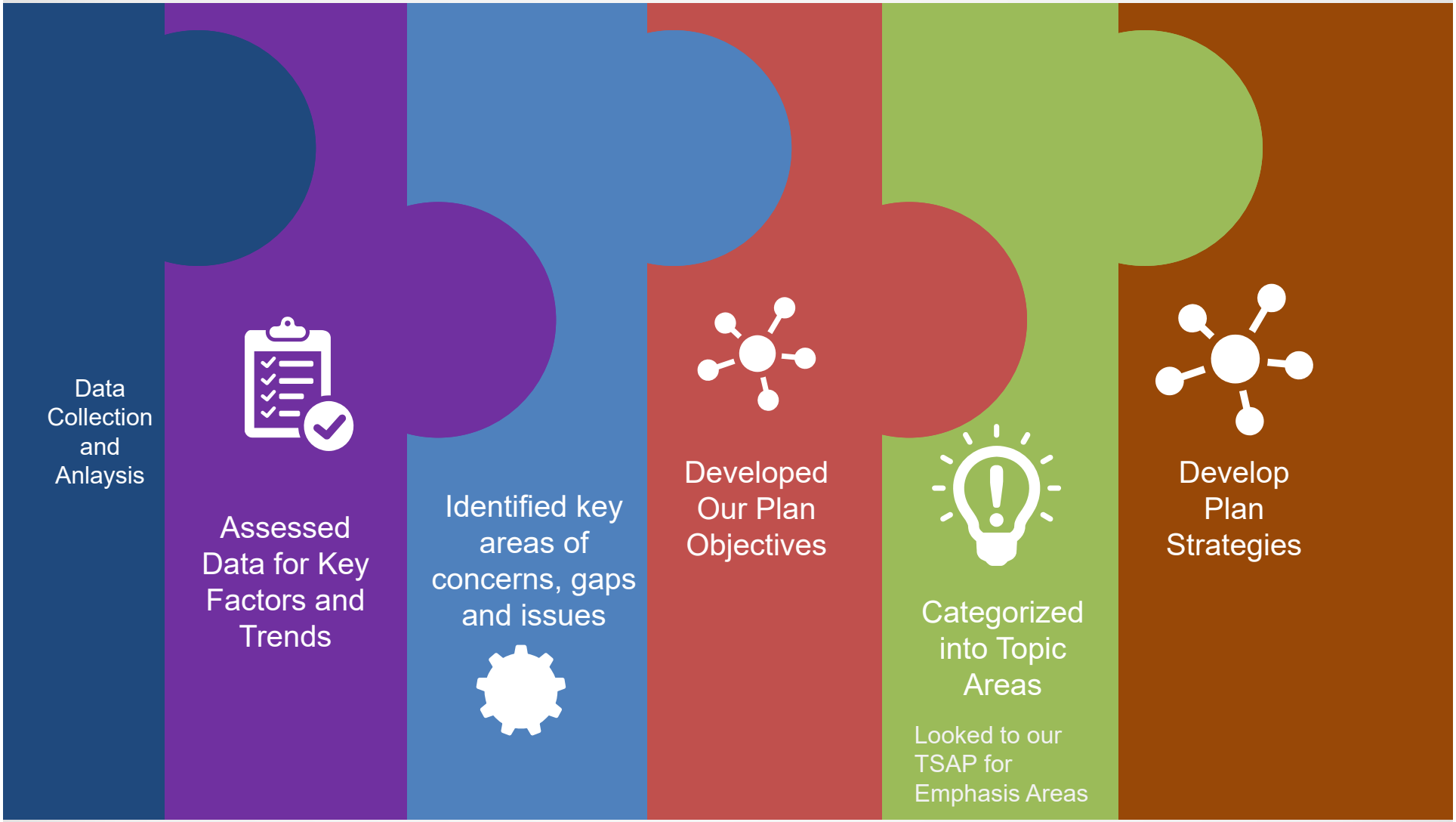
Strategies – Highlights from Other States

- Utah –
  - Risk based assessment
  - Developed pedestrian crossing guidance
- Minnesota –
  - Crude oil routes prioritization
  - Established an expert panel for funding process
  - Used a factor that coupled AADT and devices (a vs p) and established thresholds

Strategies – Highlights from Other States

- Nevada -
  - Factor for truck volumes due to the nature of crashes
- California
  - Improved funding prioritization with near miss info
- Georgia
  - Coordinates with school district for crossing usage reporting and prioritization

Strategy Development Process



Oregon Department of Transportation

Rail Crossing Action Plan

Focus Area	Plan Objective	TSAP EA	*Issue*	Strategies	Notes/Actions	RS Comments	9/20/18 focused on Training and Outreach
Driver Behavior	**Apply engineering solutions for improvements**	Risky Behavior	*Risky behavior of driving around activated gates results in incidents*	Develop a toolkit of countermeasures and device options such as extended gate times, additional gates, etc.			
Driver Behavior	**Apply engineering solutions for improvements**	Improved System	*Drivers are not aware of second train*	Evaluate current signage and visibility for high risk crossings with multiple tracks	Explore effective options beyond number of tracks signage;		
Engineering	**Apply engineering solutions for improvements**	Infrastructure	*Interconnected signals are expensive and require local jurisdictional involvement therefore may be lacking*	Prioritize crossings with related incidents or near misses for interconnection updates		There is no data indicating interconnection is an issue. The standards for interconnected crossing	Rewrite and broaden
Engineering	**Apply engineering solutions for improvements**	Infrastructure	*Crossings with passive warning signage may be challenging to see in inclement conditions*	Explore options for improvement	Options may include improving reflective materials on signage, additional advance warning signs, etc.		refine this strategy
Engineering	**Apply engineering solutions for improvements**	Infrastructure	*Queueing at areas near crossings results in drivers getting stopped on tracks*	Work with local road authorities to install signal interconnections where appropriate	• Determine queueing criteria to identify impacted crossings • Investigate improvement options (e.g. lengthen warning time, etc.)	Need to discuss this one more.	
Engineering	**Apply engineering solutions for improvements**	Infrastructure	*Signal lights may not be adequate or the latest technology*	Explore options for improved illumination	Consider LED upgrades and other options		
Engineering	**Apply engineering solutions for improvements**	Infrastructure	*Humped crossings present ongoing engineering challenges and poses dangers for travelers, including those with trailers*	Establish crossing condition criteria that when applied warrant further investigation	• Examine crossings with humped crossing related incidents • Identify crossings with profile change greater than 3 for engineering improvement considerations • Develop list of treatment options including improved advance signage, crossing improvements, etc.		
Engineering (change to Funding?)	**Apply engineering solutions for improvements**	Infrastructure	*Poor, irregular and inconsistent crossing surface and approaches present operation difficulties for road users, often resulting in sudden braking or difficult crossings*	Develop an identification process for rough crossings and prioritize for improvements	•Identify crossings with poor, irregular or inconsistent crossings surfaces for improvements through a process that includes established rough crossing criteria • Investigate crossing surface innovations and solutions to develop slate of improvement options to employ at priority crossings • Add prioritization weight for these crossings in project selection process	Need to first develop a funding source for crossing surface projects. Our current funding is not available for surfacing projects.	Crossing surface is important but difficult to improve and maintain due to funding constaints and jurisdiction
Funding Allocation	**Apply engineering solutions for improvements**	Infrastructure	*Grade separations are cost prohibitive*	Establish an "Immediate Opportunity" program to match opportunity funds for grade separation projects	**Ha Work with RAC to evaluate system needs and priority projects**		
Multimodal Users	**Apply engineering solutions for**	Infrastructure	*Crossing surfaces may be dangerous for pedestrians and*	Review and prioritize multimodal surfaces for improvement techniques	Investigate best practices for options	Need to first develop a funding source for	

Page 1

Strategies – Oregon

Influencing Driver Behavior

- Decisions
- Physical design
- Safety crossing

ODOT Process and Sharing

- Training
- Data Sharing
- Coordination with jurisdictions

Strategies – Oregon

Influencing Driver Behavior

- Decisions
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ODOT Process and Sharing

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Strategies – Influencing Driver Behavior

- Topic Areas
  - Multimodal Users
  - Driver Behavior
  - Physical Characteristics

Strategies – Oregon

Influencing Driver Behavior

- Decisions
- Physical design
- Safety crossing

ODOT Process and Sharing

- Training
- Data Sharing
- Coordination with jurisdictions

Strategies – Process and Sharing

- Topic Areas
  - Coordination and Collaboration
  - Funding
  - Training and Outreach

Strategies – Oregon

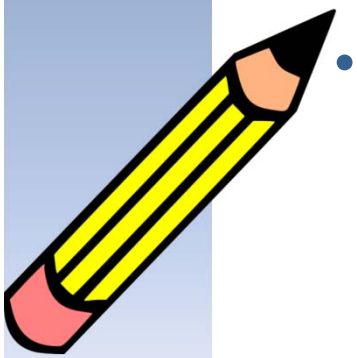
- Handout discussion – Questions to Consider
  - Do the strategies mirror the themes we've discussed?
  - Are there any broad themes missing?

  - Goal – make sure strategies capture important needs and ideas

Strategy Review and Discussion

For Consideration and Discussion

- Do the draft strategies adequately set the stage for addressing crossing safety issues?
- Are you aware of successful or unsuccessful strategy efforts?
- -
- -
- -



Crossing Improvement Prioritization

Funding

- ODOT Rail Crossing Funding
  - 3 Primary Categories
    - Dedicated Funding for Crossing Upgrades
      - State Highway Funds - $300,000 annually
      - Section 130 funds - $3,000,000 annually
        - » 50% required to be used for warning devices
        - » 10% non-fed match required
      - Grant Opportunity
        - » FHWA/FRA
        - » requires ODOT state match

Funding Prioritization – Dedicated Funds

- Current Process
  - JAQUE – creates a 200% list
  - Regional staff input and local jurisdiction coordination
  - 150% list established
  - On-site diagnostics with stakeholders
  - Consideration of other factors
    - Region / local request
  - Final Decision: Rail Crossing Safety Manager

Funding Prioritization – Draft Recommendations

Identifying critical crossings for improvements

HI (AADT, angle, multimodal crossing, crash history & severity etc)

+

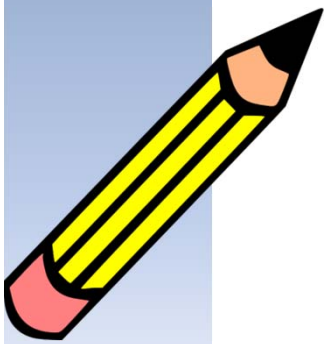
RP (population, bus, hazmat, freight, etc)

+

MI (leverage, prior upgrades, etc)

Funding Prioritization

- JAQUE – which considerations should supplement the formula?
- RI- which route types are important?
- MI – other factors to consider?



Next Steps

- Parking Lot

- Synthesize what we heard today
- Final Plan Early 2019

For More Information

- FHWA Rail Crossing Program Overview
https://safety.fhwa.dot.gov/hsip/xings/

- FRA Highway-Rail Grade Crossings Overview
https://www.fra.dot.gov/Page/P0156

- ODOT Rail and Public Transit Division
https://www.oregon.gov/ODOT/RPTD

- ODOT Planning Unit
https://www.oregon.gov/ODOT/Planning/Pages/SPR.aspx

Thank you!

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