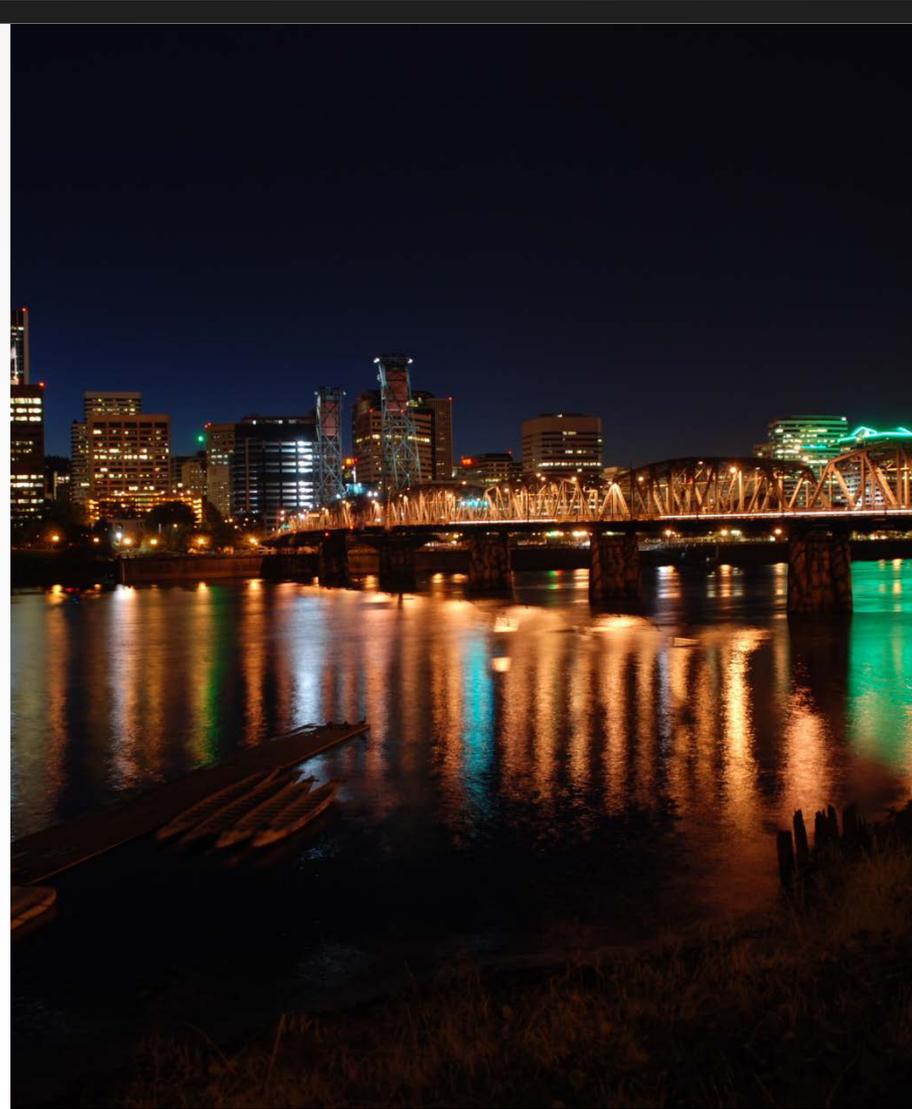


ODOT Region 1 ARTS Systemic Project Prioritization

February 10, 2015



KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Region 1 ARTS Systemic Safety Process

Inform Application Process with Data

- 300% List of Priority Locations

Support Systemic Project Applications

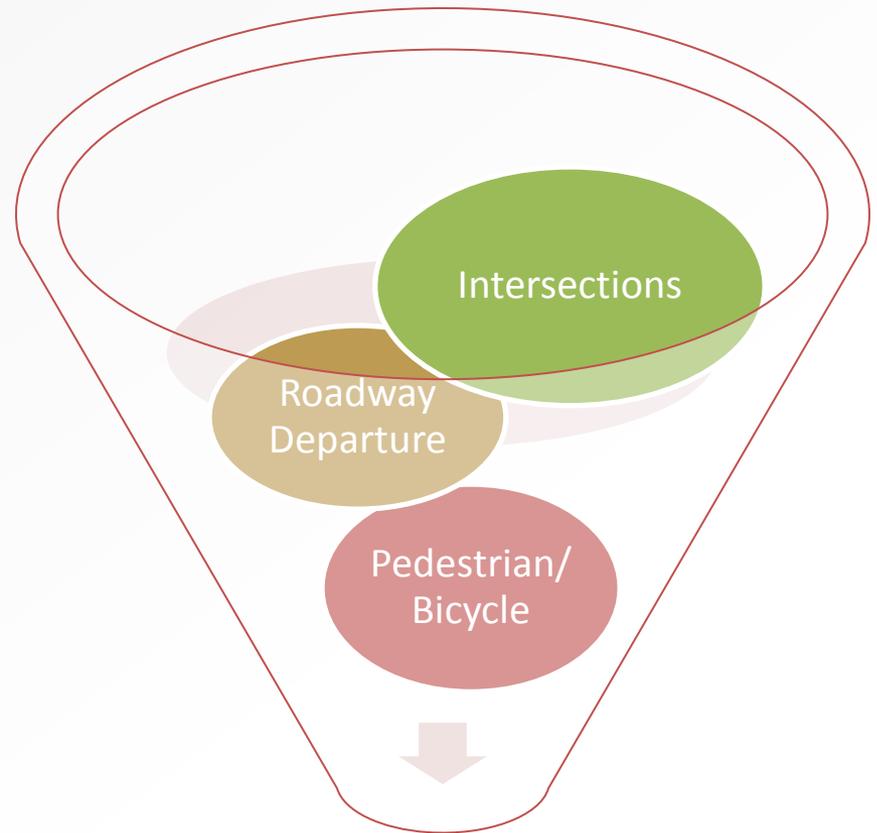
- Distribute 300% list
- Application Preparation Workshops

Review Applications

- Prioritize Projects into 150% list
- Consistency in estimating project cost and benefit

Outline

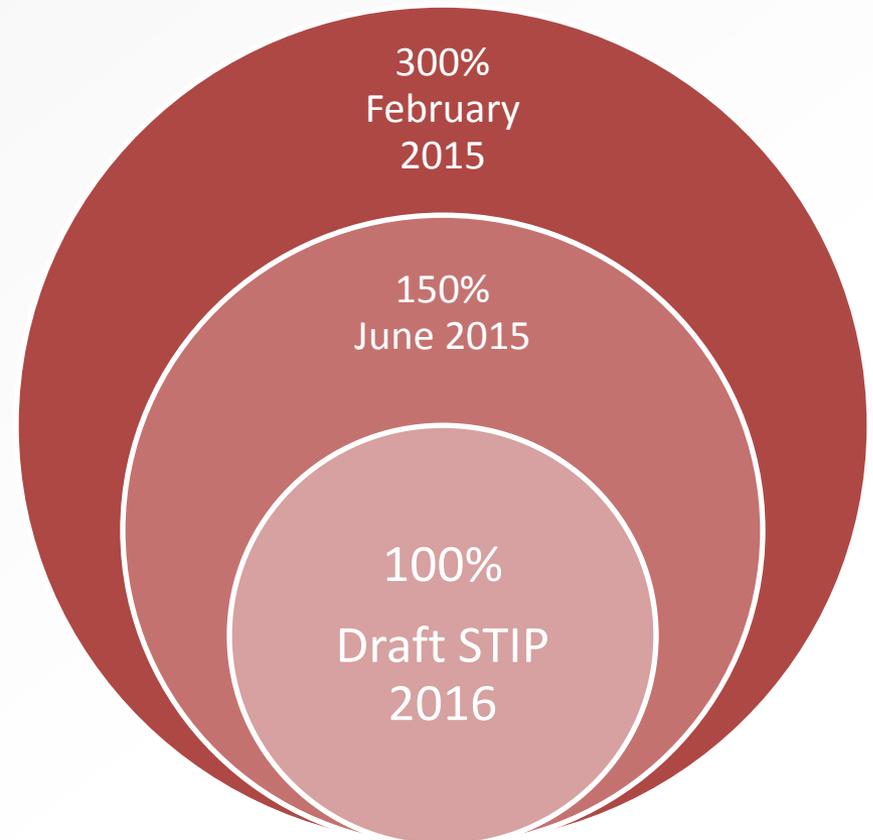
- The purpose of the 300% List?
- Regional Crash Patterns
- Prioritizing Locations
- Establishing Thresholds for 300% List



R1 Systemic 300% List of
Candidate Project Locations

What is the Purpose of the 300% List?

- Data-informed list of frequent and severe crash locations where systemic countermeasures could be applied
- 300% list = 3x100% STIP
- Reference to projects funded in the 2017-2021 STIP



Systemic vs. Hot Spot Network Screening

ARTS Element	Systemic	Hot Spot
Safety Projects	Many low-cost countermeasures at many sites = 1 project	1 site = 1 project
Network Screening	<ol style="list-style-type: none">1. Rank segments or intersections (sites)2. Combine adjacent priority sites into projects3. Rank projects	<ol style="list-style-type: none">1. Rank segments or intersections (sites)

Crash Data

- 2009-2013 from ODOT database
- All or Region 1
- Limited to focus area crash types from Oregon's Traffic Safety Action Plan
 - Pedestrian/Bicycle (including those involved)
 - Roadway Departure
 - Intersection

Region 1 Reported Crashes by Focus Area

ODOT Region 1 Crash Database (2009-2013)

Total Crashes: 116,439

All Other
Severity

Fatal & Injury A Crashes: 2,692
(14%/86%, F/A)

Bicycle/
Pedestrian
Crashes:
562 (20%)

Roadway
Departure
Crashes:
753 (28%)

Intersection
Crashes:
935 (35%)

All Others:
442 (17%)



Region 1 Reported Bicycle and Pedestrian Crashes (2009-2013, Fatal and Injury A)

Bicycle/Pedestrian Crashes: 562

Urban: 534
(95%)

Rural: 28
(5%)

Pedestrian: 375 (66%)

Bicycle: 159 (29%)

Pedestrian:
20 (3%)

Bicycle:
8 (2%)

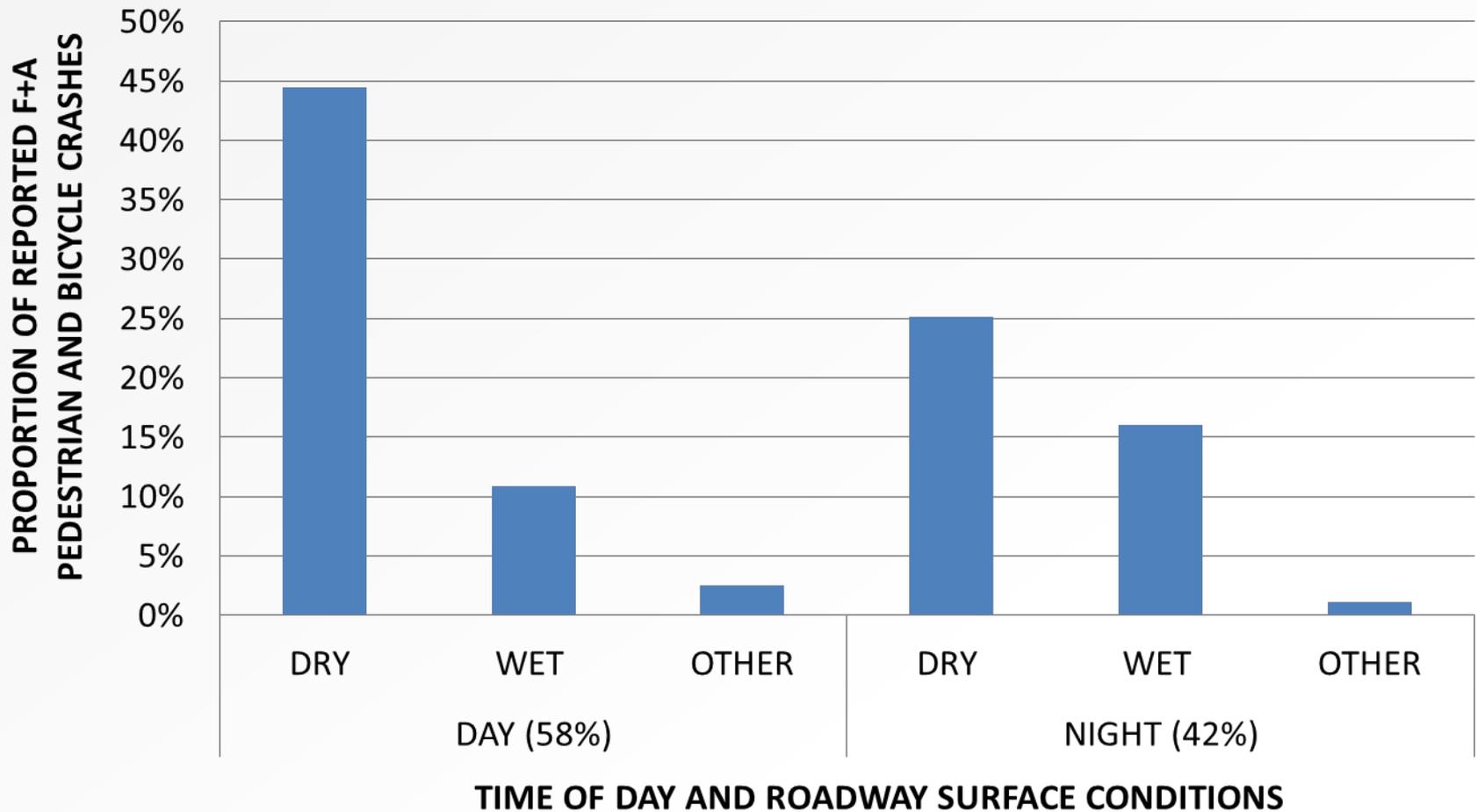
Intersection:
193 (34%)

Segment:
182 (32%)

Intersection:
116 (21%)

Segment:
43 (8%)

Region 1 Reported Bicycle and Pedestrian Crashes (2009-2013, Fatal and Injury A)



Region 1 Reported Roadway Departure Crashes (2009-2013, Fatal and Injury A)

Roadway Departure Crashes: 753

Urban: 444
(59%)

Rural: 309
(41%)

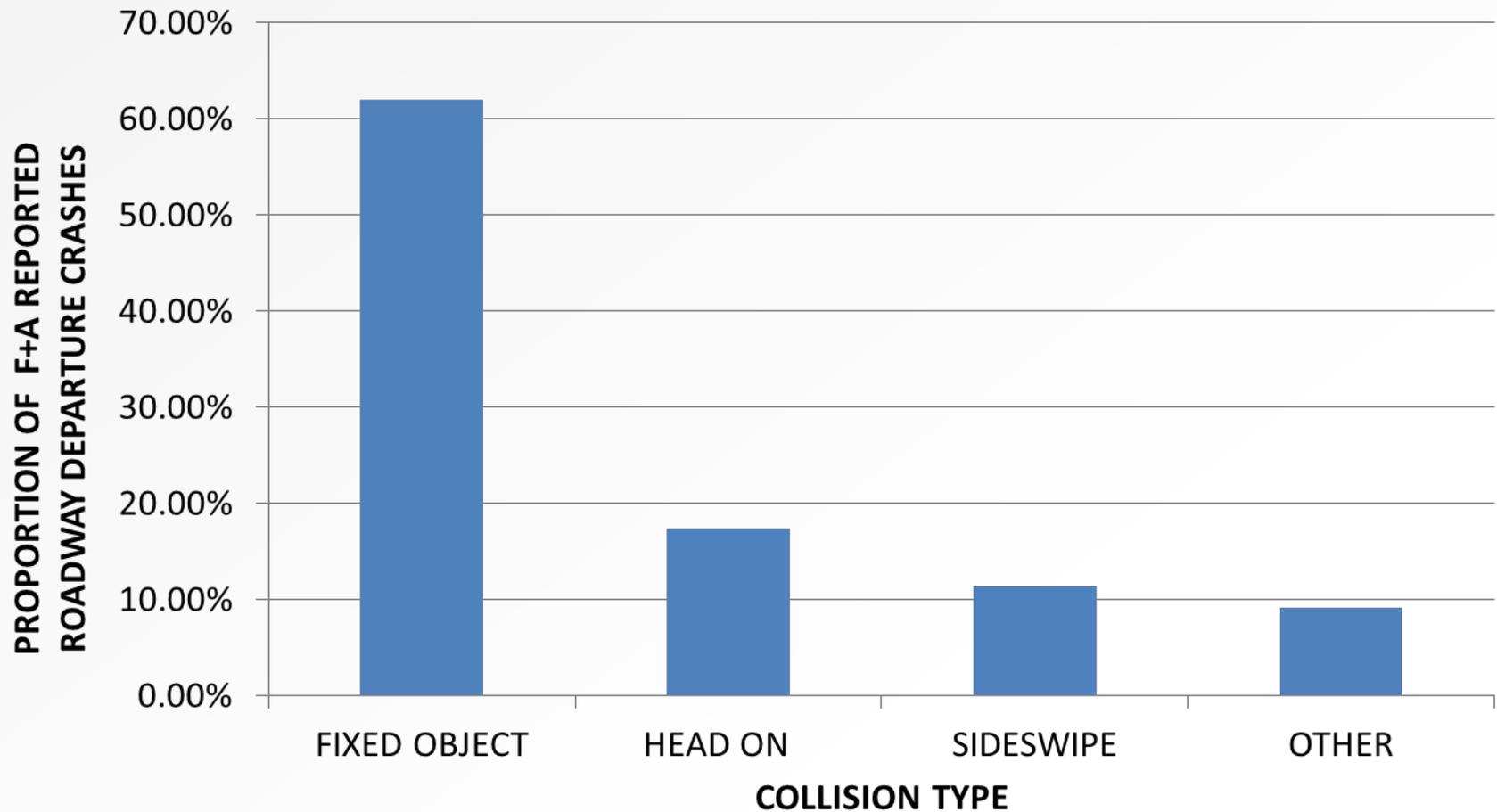
Curve
105 (14%)

Non-Curve:
339 (45%)

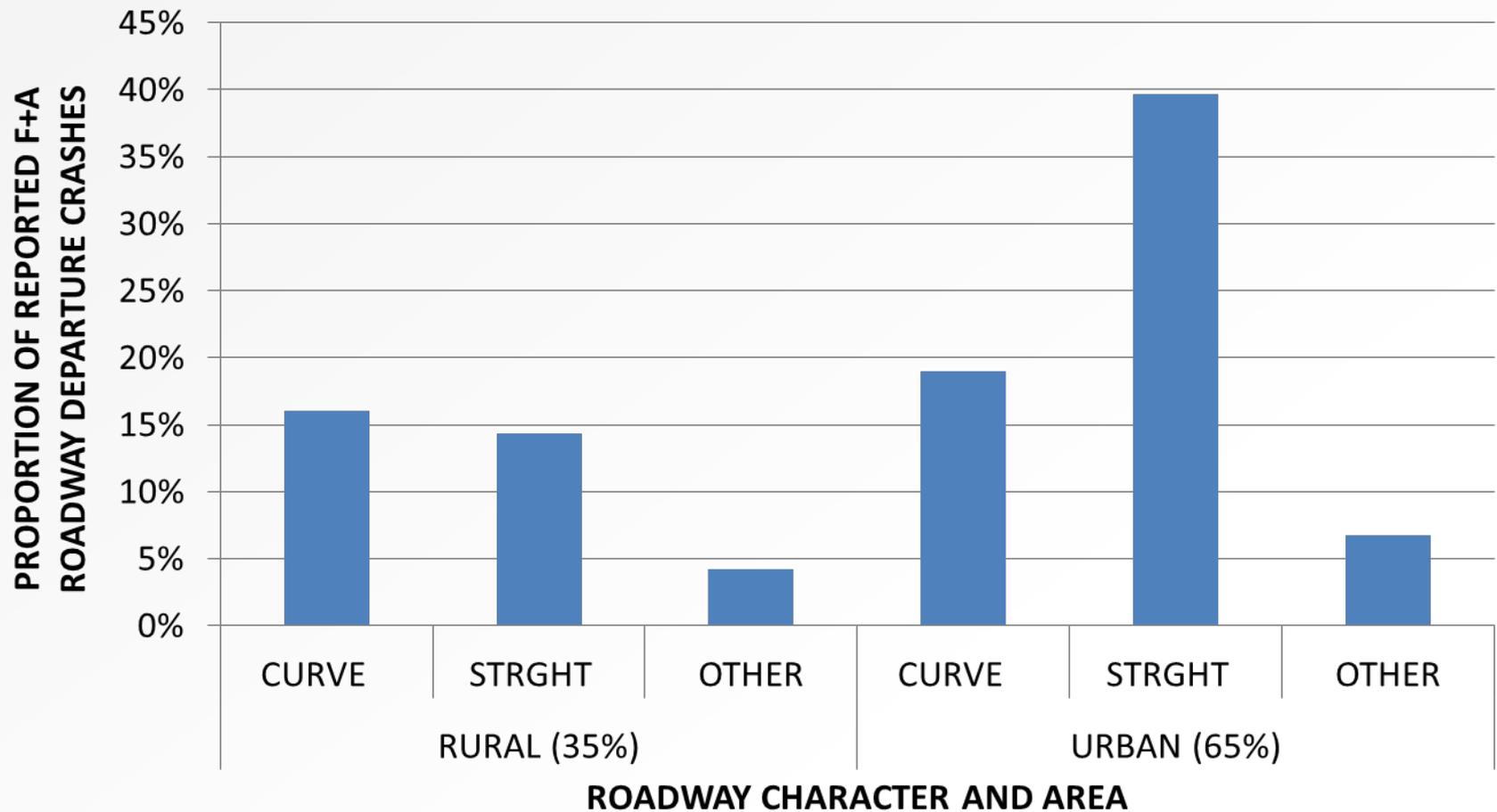
Curve:
152 (20%)

Non-Curve:
157 (21%)

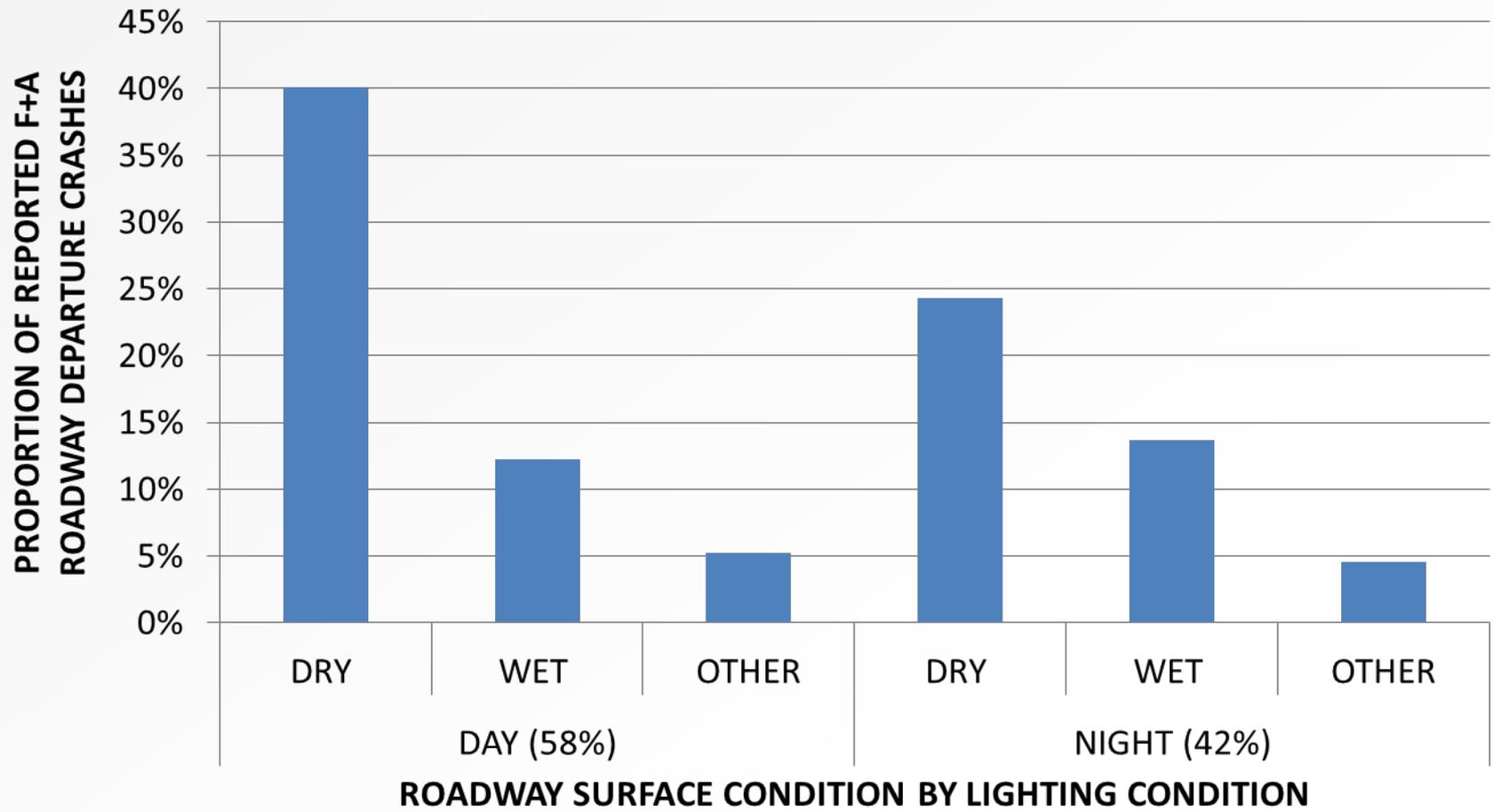
Region 1 Reported Roadway Departure Crashes (2009-2013, Fatal and Injury A)



Region 1 Reported Roadway Departure Crashes (2009-2013, Fatal and Injury A)



Region 1 Reported Roadway Departure Crashes (2009-2013, Fatal and Injury A)



Region 1 Reported Intersection Crashes (2009-2013, Fatal and Injury A)

Intersection Crashes: 935

Urban: 840
(90%)

Rural: 95
(10%)

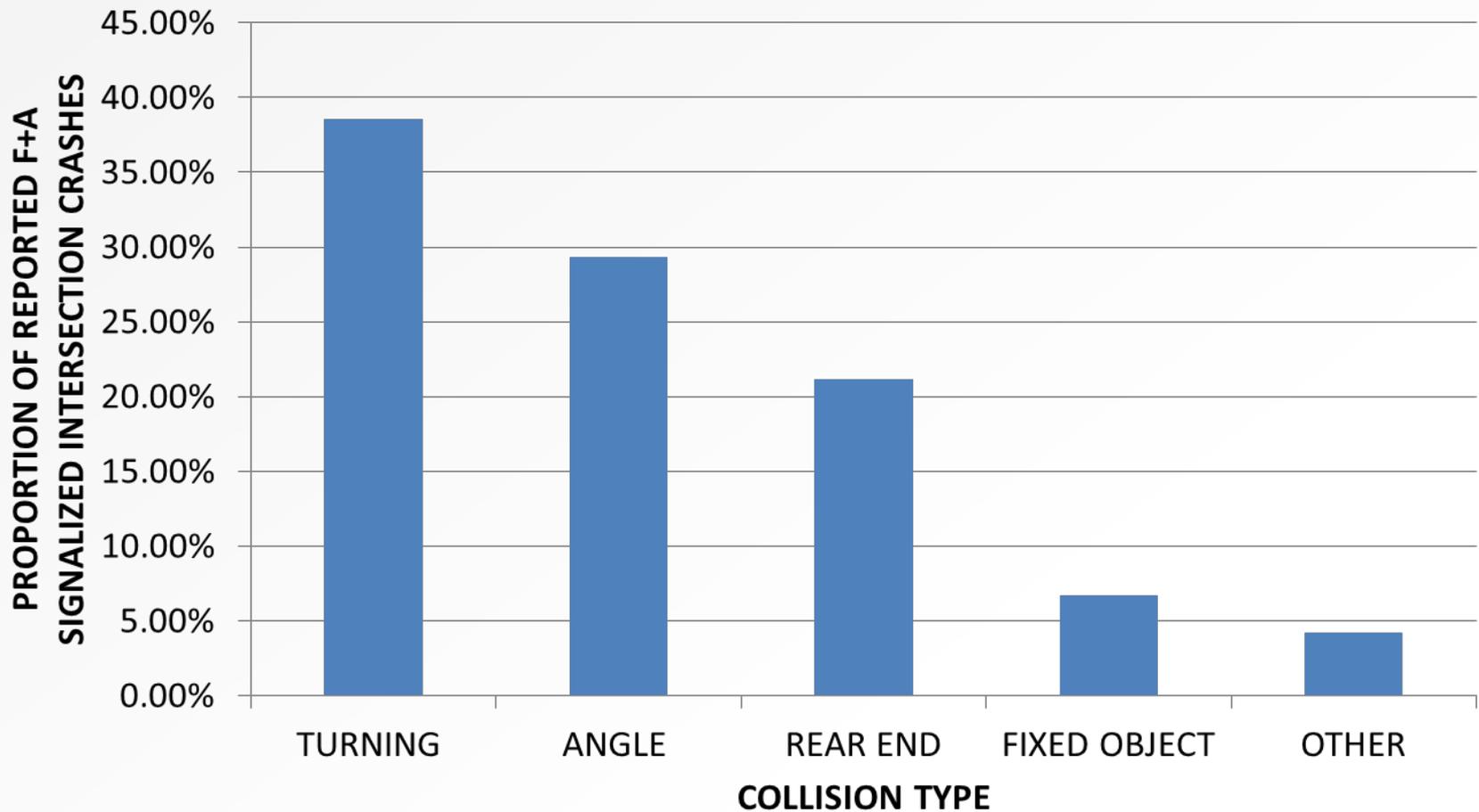
Signal:
402 (43%)

Other TCD:
438 (47%)

Signal: 3
(<1%)

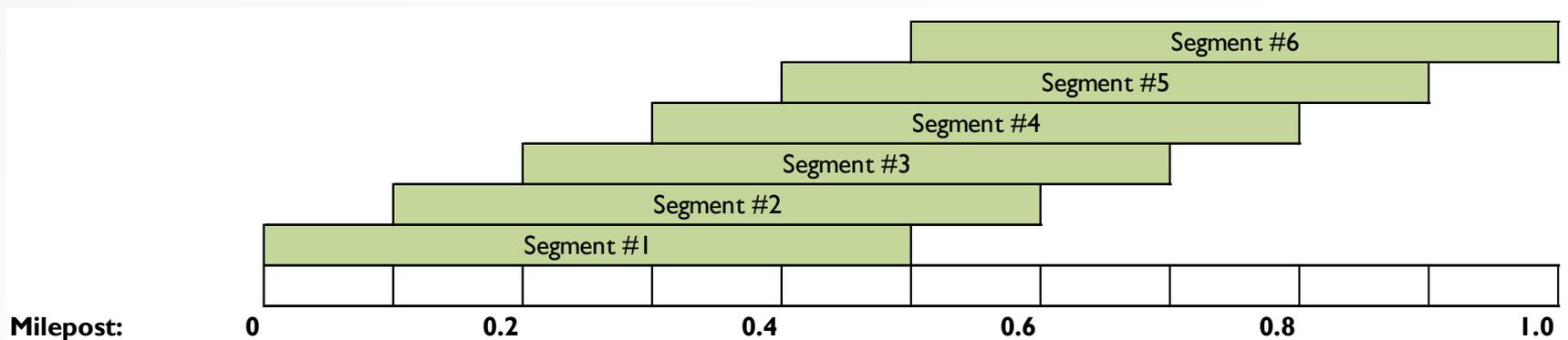
Other TCD:
92 (10%)

Region 1 Reported Intersection Crashes (2009-2013, Fatal and Injury A)



300% List Methodology

- Network Screening Using Sliding Window
 - Roadway Departure Segments:
 - 1 mile segment at 0.5 mile interval
 - Bicycle and Pedestrian Segments
 - 0.5 mile segment at 0.25 mile interval



Performance Measure

- Equivalent Property Damage Only (EPDO) Average Crash Frequency
 - One of 13 performance measures from the HSM
 - Selected to reflect the severity of reported crashes

- Applied independently to intersections and segments

$$EPDO_Index = W_K K + W_A A + W_B B + W_C C + P$$

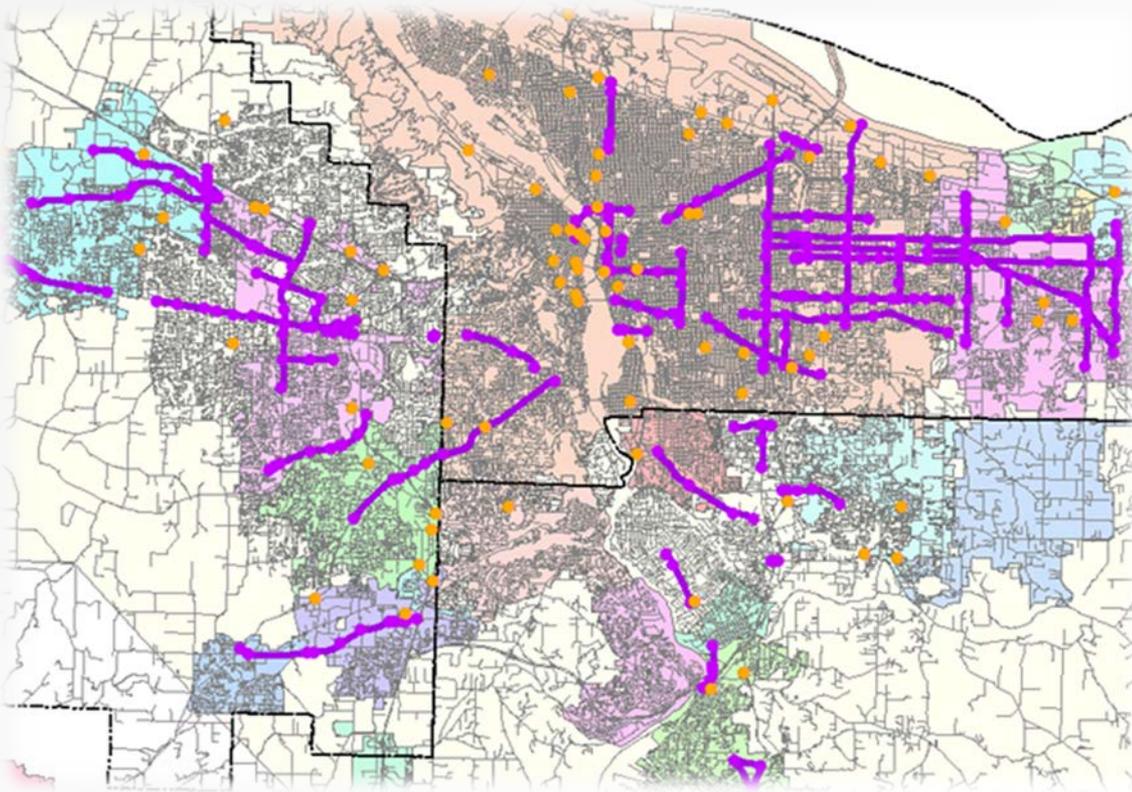
- Weighting Factors (consistent with SPIS):
 - 100 for Fatal or Injury A
 - 10 for Injury B or C
 - 1 for PDO

300% List Thresholds

Focus Area	Anticipated R1 Systemic Safety Funding (2017-2021 STIP)	Focus Area Allocation	ODOT Region 1 2017-2021 STIP	Average Project Cost	Estimated Number of Projects on 100% list	Target Number of Projects on 300% list
Roadway Departure	\$25 M	30.0%	\$7.5M	\$750,000	10	30
Intersection		49.0%	\$12.25M	\$200,000	60	180
Pedestrian/ Bicycle		21.0%	\$5.25M	\$300,000	20	60

- Assumptions:
 - Average roadway departure project includes 1.5 miles
 - Average intersection project includes 8 intersections
 - Average ped/bike project includes 4 intersections or 0.5 miles

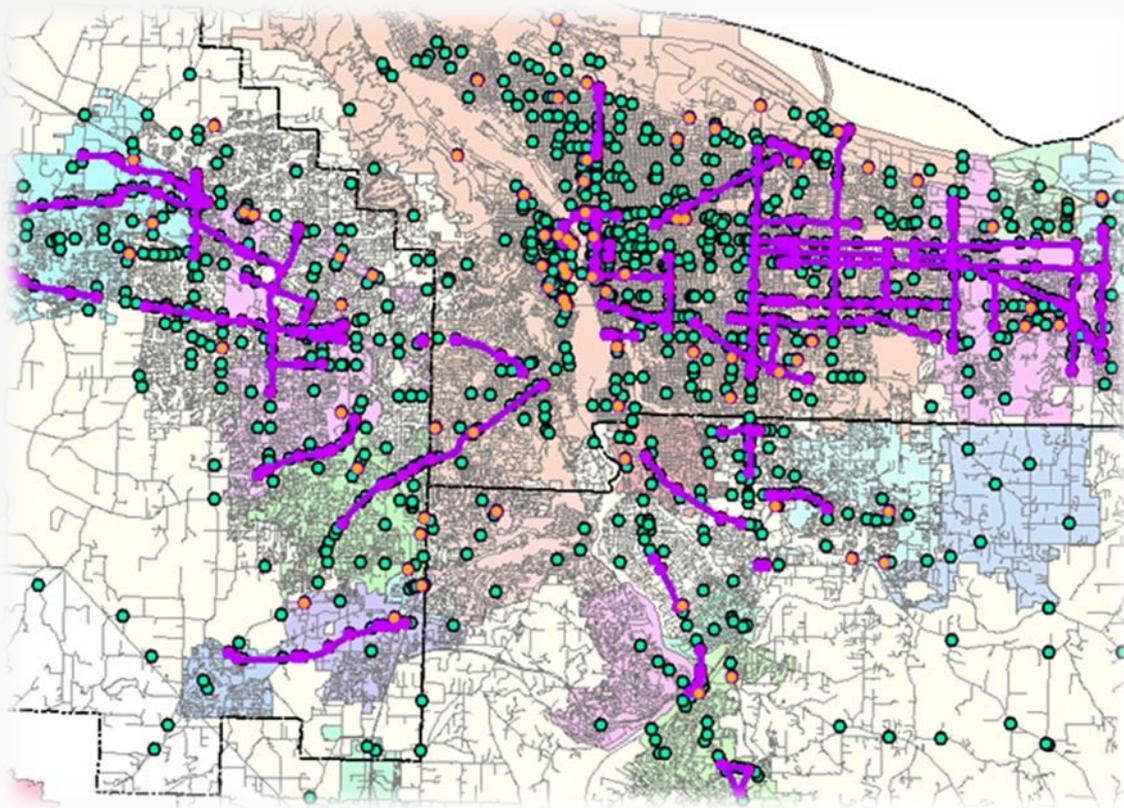
Grouping Priority Intersections into Project Corridors



Example from
Intersection Focus
Area

1. Mapped top 400 intersections
2. Grouped into 62 project corridors
3. ~100 isolated intersections remain

Grouping Priority Intersections into Project Corridors

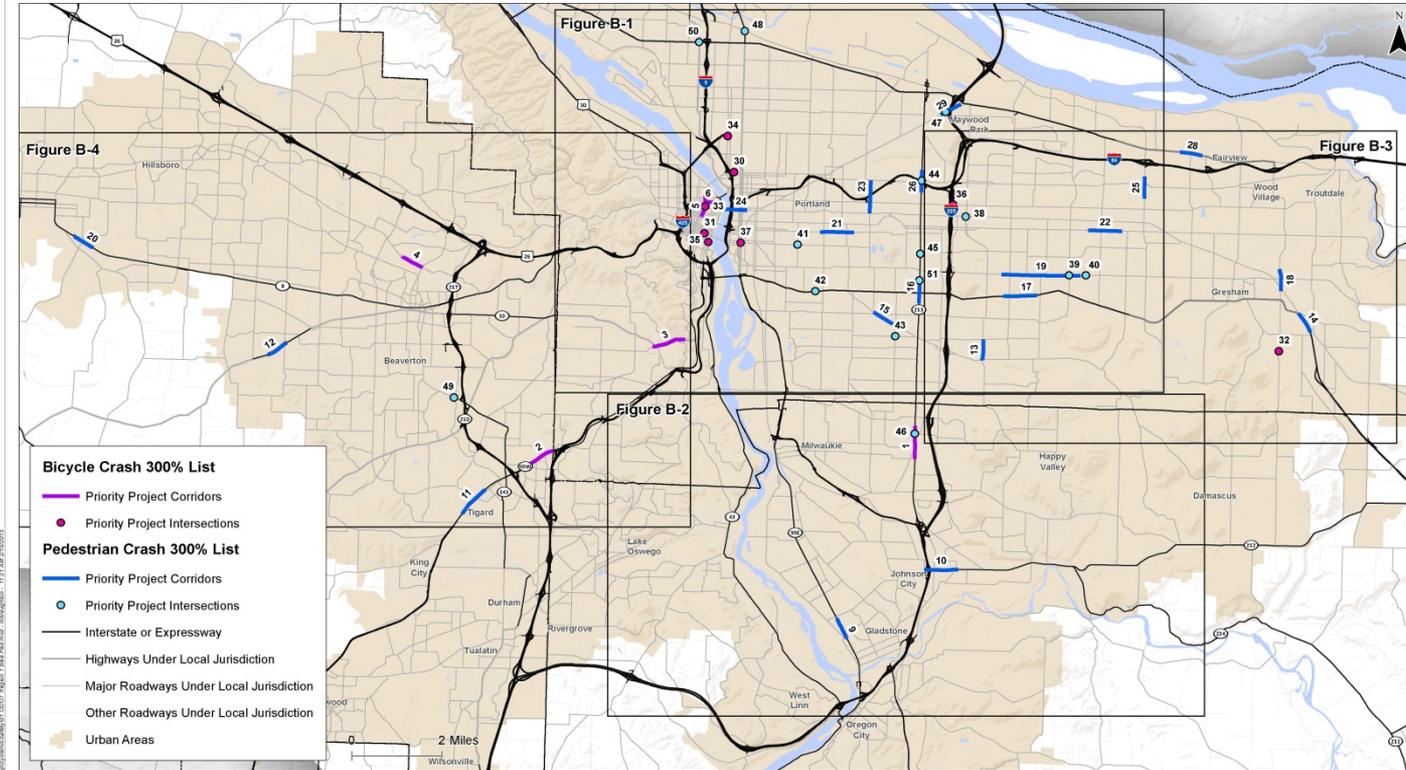


4. Identify additional priority sites (green)
5. Extend project corridors or create new project corridors

Bicycle and Pedestrian 300% Map

ODOT Reg 1 ARTS Systemic Safety Project Prioritization

February 2015



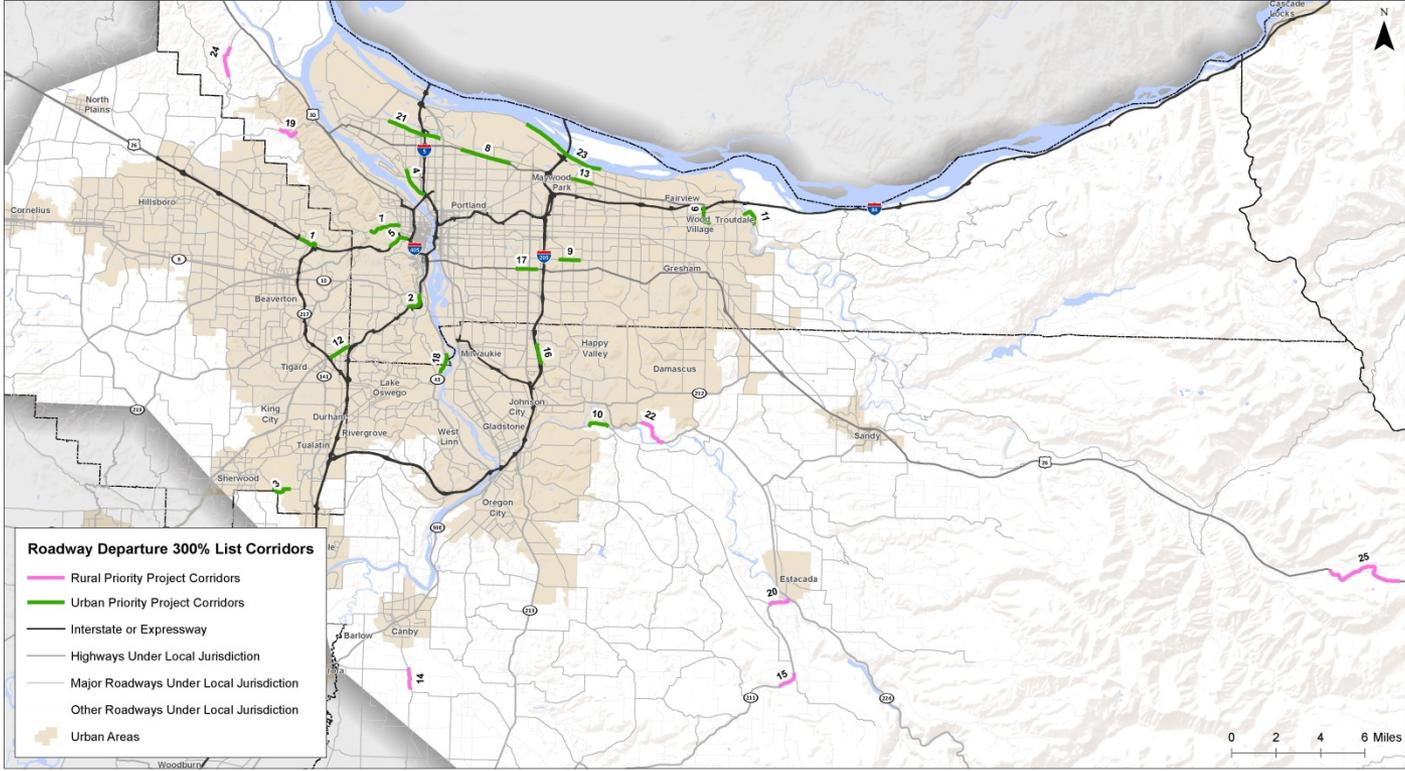
ODOT Region 1 Bicycle and Pedestrian 300% List Priority Project Corridors and Intersections

Figure B

Roadway Departure 300% Map

ODOT Reg 1 ARTS Systemic Safety Project Prioritization

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ODOT Region 1 Roadway Departure 300% List Priority Project Corridors

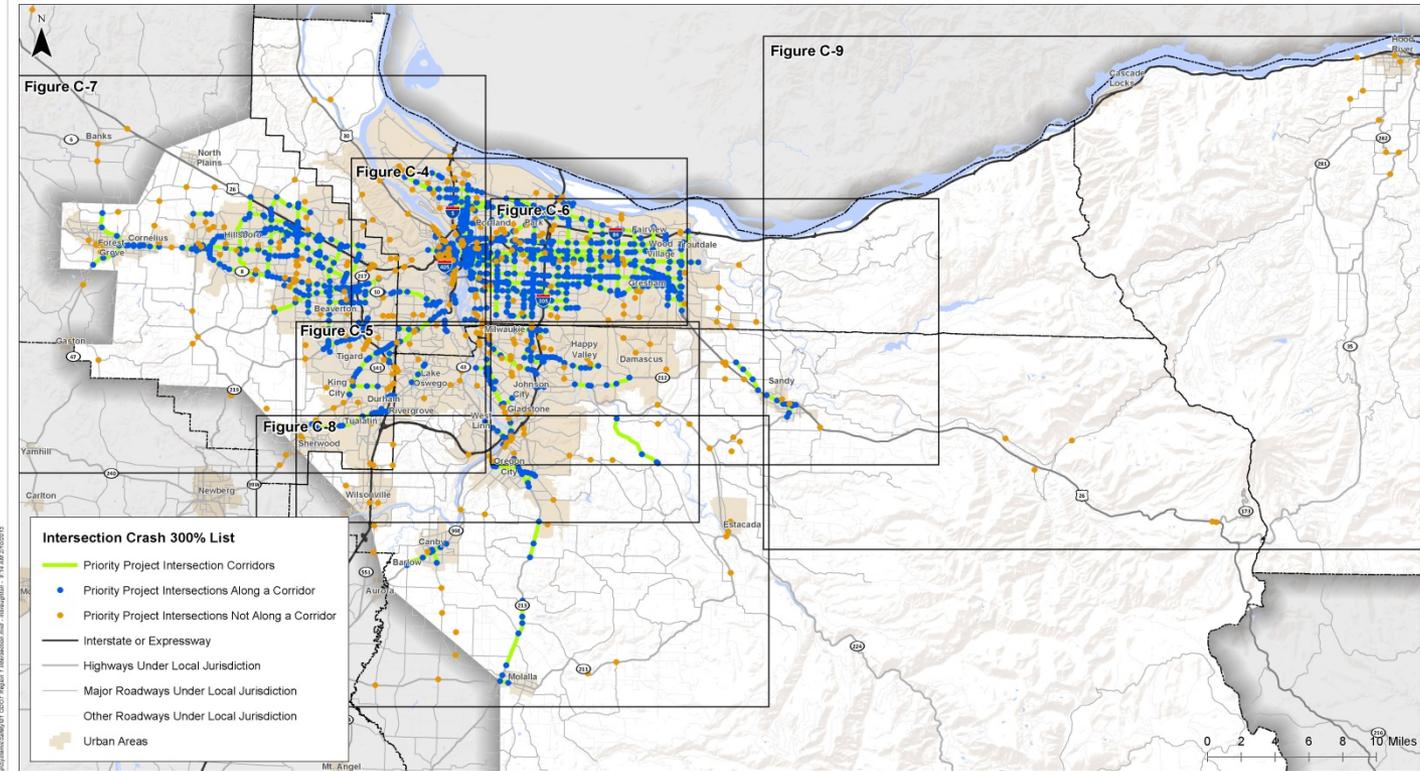
Figure A

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Intersection 300% Map

ODOT Reg 1 ARTS Systemic Safety Project Prioritization

February 2015



ODOT Region 1 Intersection Crash 300% List Priority Project Intersections and Intersection Corridors

Figure C

Intersection 300% List – Summary Statistics

- 193 Priority Project Corridors
 - 394 intersections not included in corridors

300% List Methodology Questions

- Contact Information
 - Casey Bergh, Kittelson & Associates, Inc.
 - cbergh@kittelson.com
 - Katherine Burns, ODOT
Katherine.s.burns@odot.state.or.us

Open House (3 to 4 PM)

- Stations
 - Clackamas County and Cities
 - Multnomah County and Cities
 - City of Portland
 - Washington County and Cities
- Handouts provided at each station
 - Maps referencing project locations
 - Summary of crashes by priority project location

Application Process Support

- Crash data for priority project locations available online at: www.kittelson.com/ftp
 - Login: SystemicSafety
 - Password: Region1
- Hands-on workshops at Region 1 HQ and via web-enabled meeting
 - February 26: 9:30 to 11:30 a.m.
 - March 5: 9:30 to 11:30 a.m.