High Injury Corridors

Proposed Analysis Methodology for Use in East County Safety Action Plan

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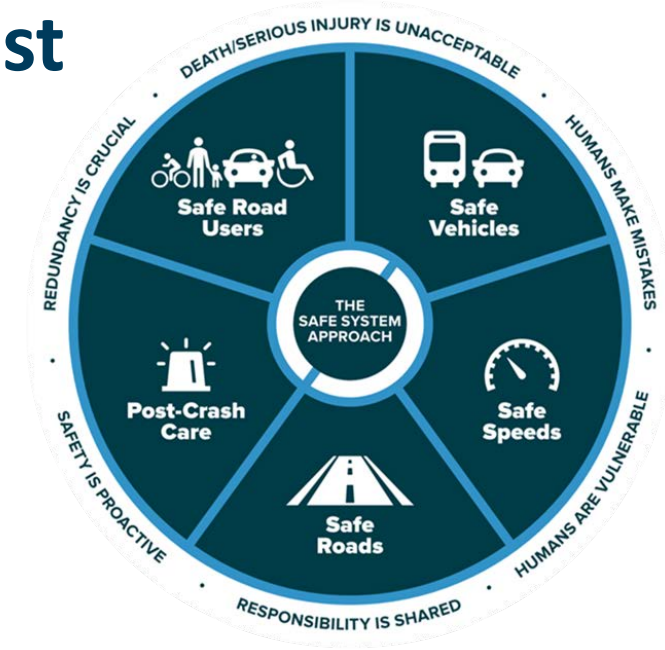
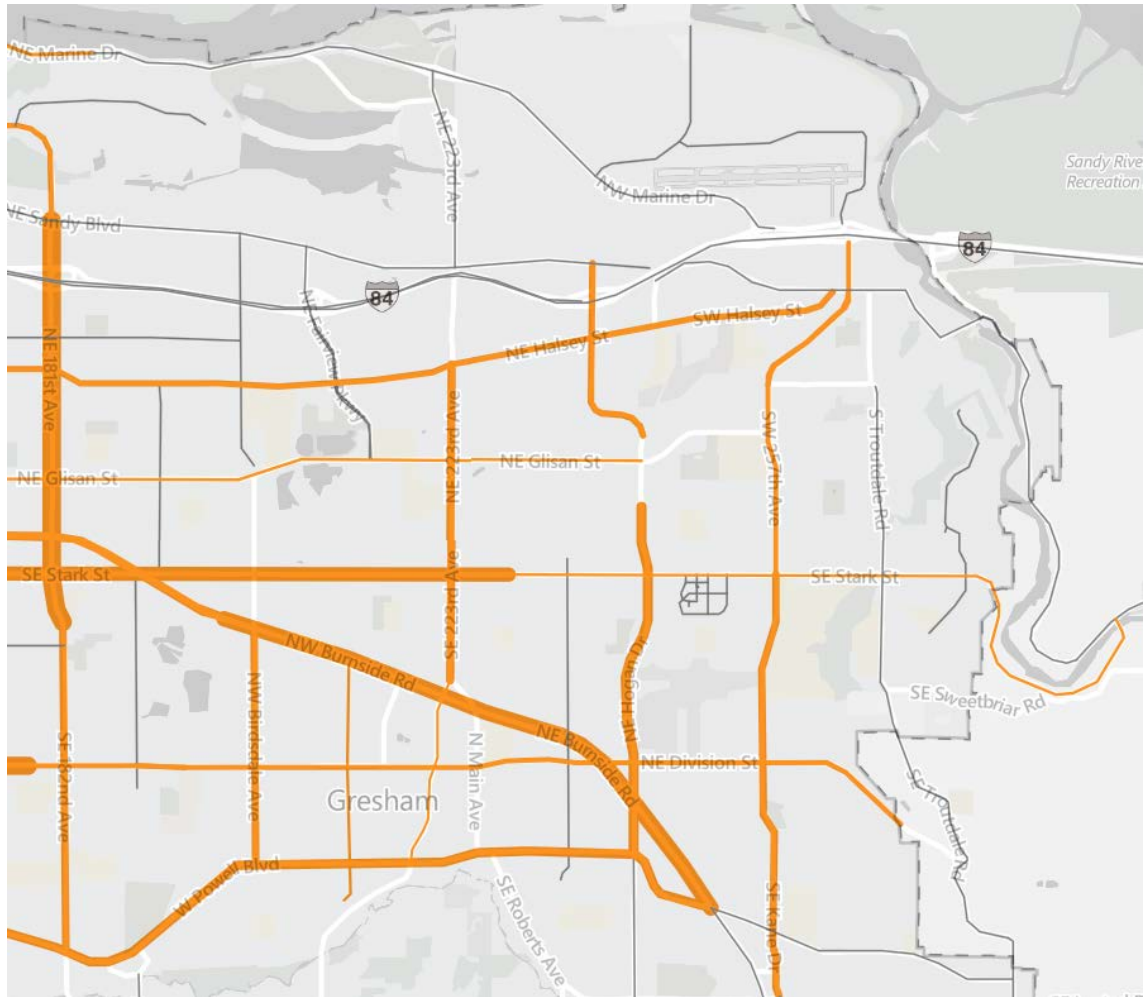


Source: FHWA

Purpose

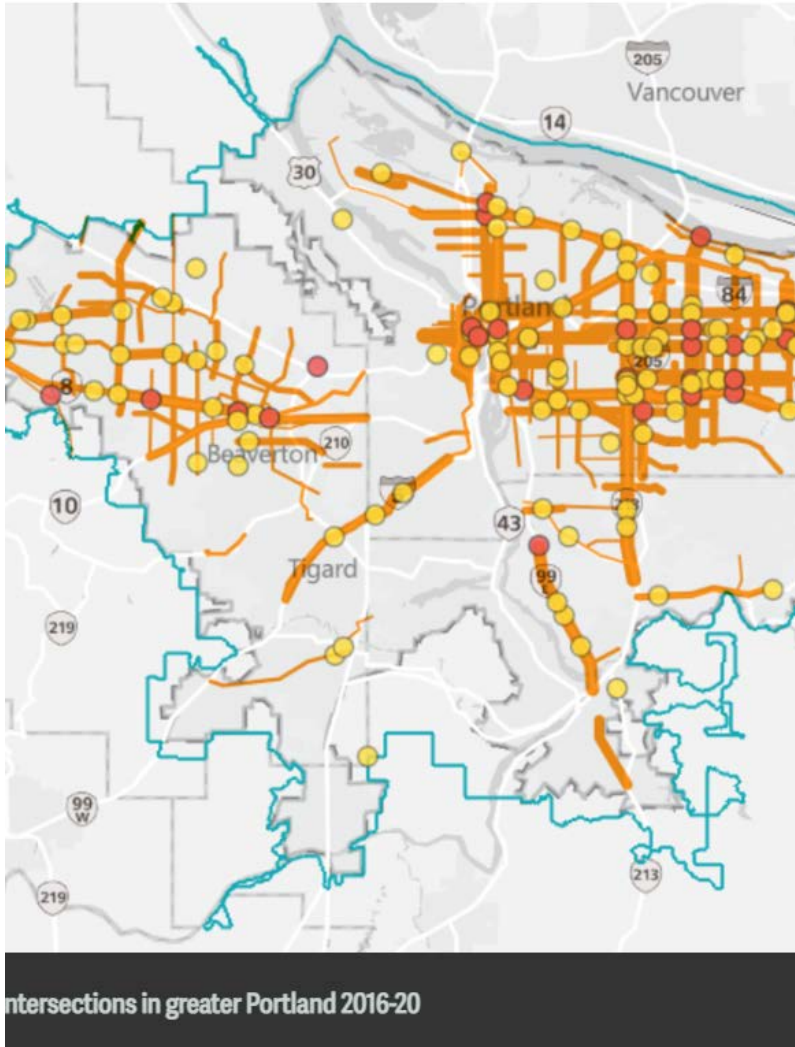
Review the analysis methodology used to develop Regional High Injury Corridors (HICs), and the proposed analysis methodology to develop HICs for use in East County Safety Action Plan.

Presentation will cover the HOW of the analysis methods, not WHY the analysis is done, or results of the analysis.



Background

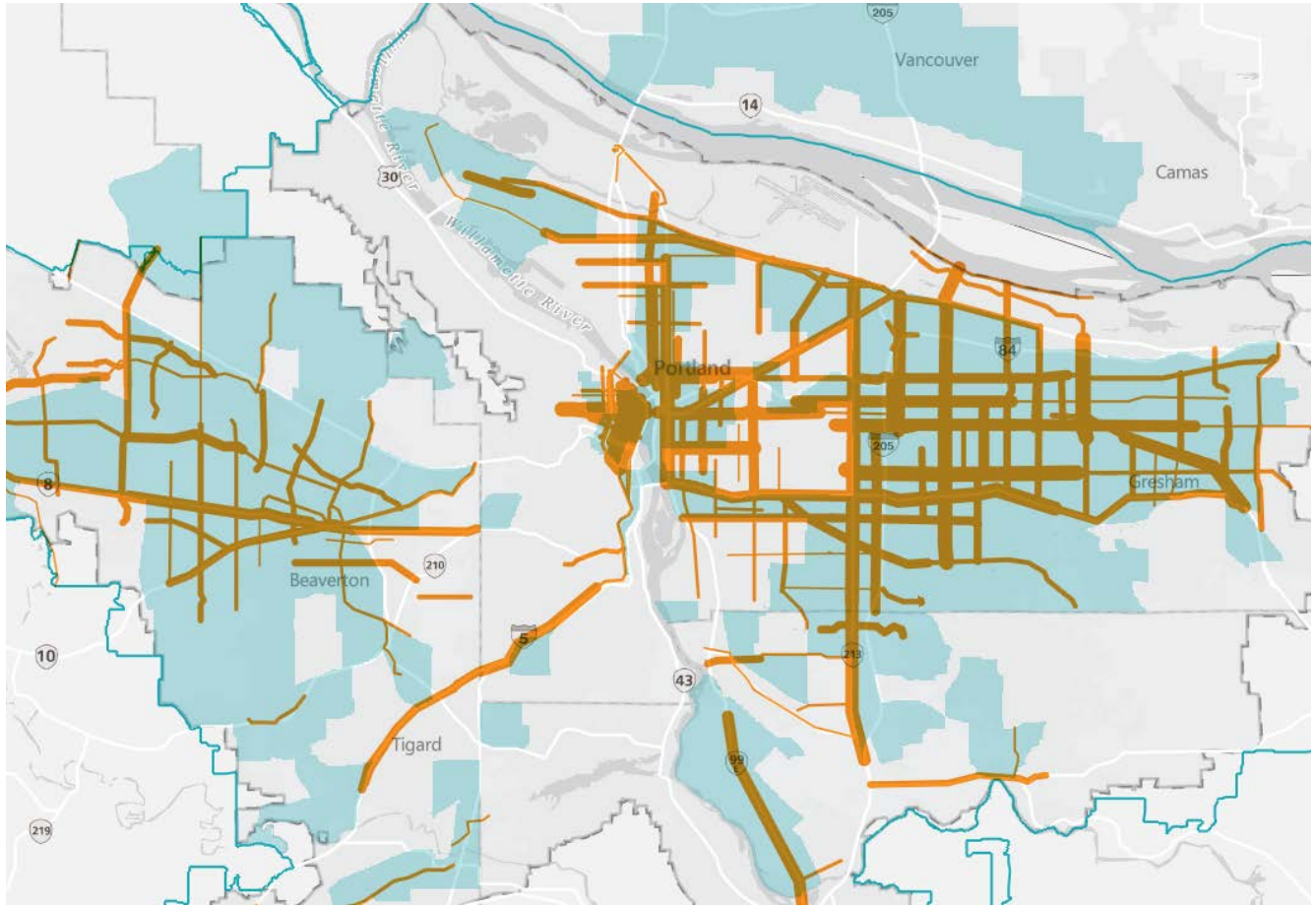
- In 2018, Metro developed regional High Injury Corridors (HICs) with a regional working group
- Metro reviewed methods used in other places like Portland, San Francisco, LA, NY, Denver, and Seattle.
- In 2022, HICs were updated with 2016-2020 data and refined methods
- In Nov 2022 and Feb 2023, Metro presented updated regional HICs to EMCTC and BPCAC
- Regional HICs are included in the Regional Transportation Plan and are used to help prioritize equitable investments in safety



High injury corridors are roadways with the highest concentrations of serious crashes, and all injury pedestrian and bicycle crashes, that occur during a given time frame

Corridors where the top 60% of these crashes occur are shown in orange.

Regional equity focus areas are shown in blue.



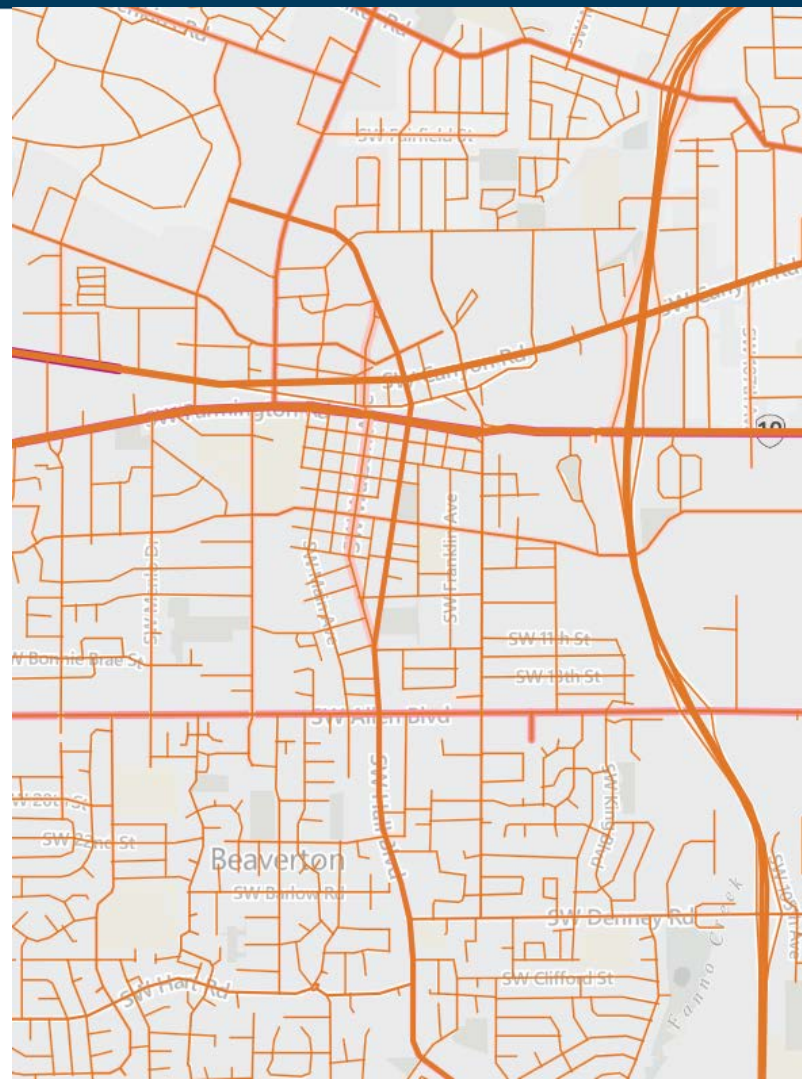
High Injury Corridors dashboard map:
https://gis.oregonmetro.gov/high-injury-corridors

Methodology Part 1: Streets
Create dissolved corridors

Start with RLIS streets layer (includes all public roads within the Metropolitan Planning Area

For the East County analysis, all roads in the East County area and each of the cities would be used.

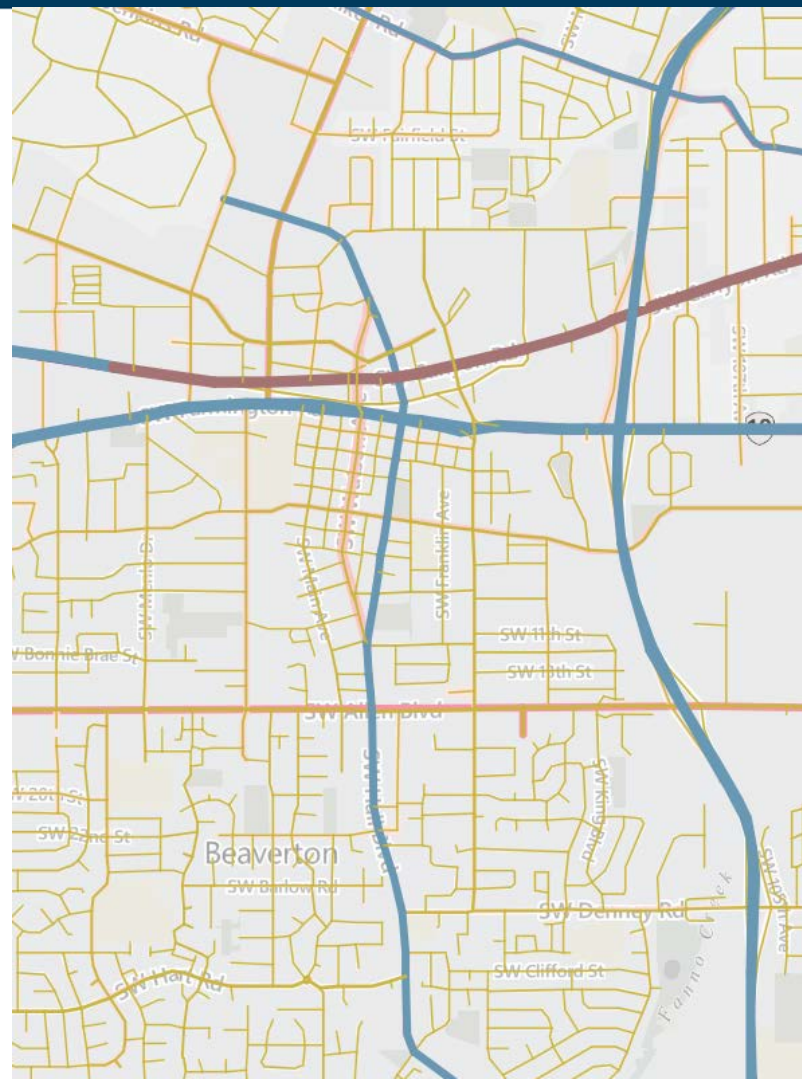
Purpose: to create a standard name for the whole corridor, e.g. Hwy 8 (the dissolved corridor).



Methodology Part 1: Streets
Break "dissolved corridors" into 1-5 mile corridors

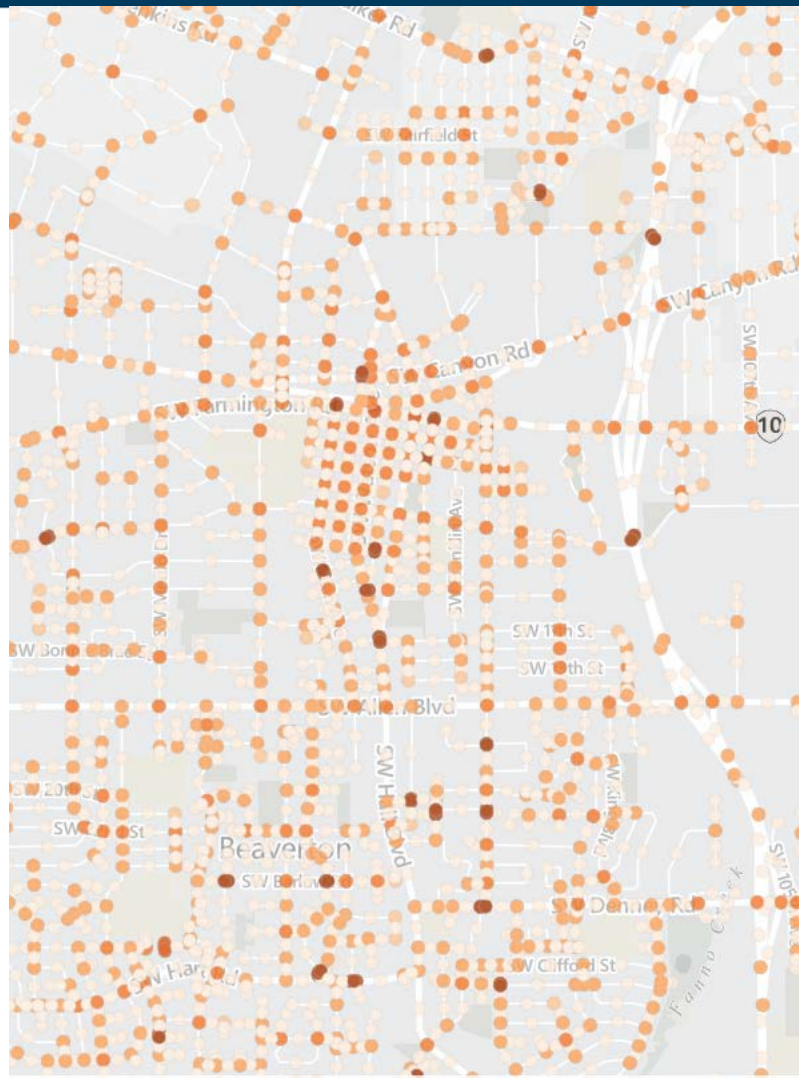
Break the "dissolved corridors", which are of varying lengths, into corridors no shorter than 1 mile, no longer than 5 miles. This leaves off any roads shorter than a mile.

Purpose: Create corridors for scoring. Corridors are not defined by crashes, so that may be compared over time.



Methodology Part 1: Streets
Create intersections and segment midpoints

Purpose: Create intersections and midpoints in each corridor to ‘snap’ the crashes to.

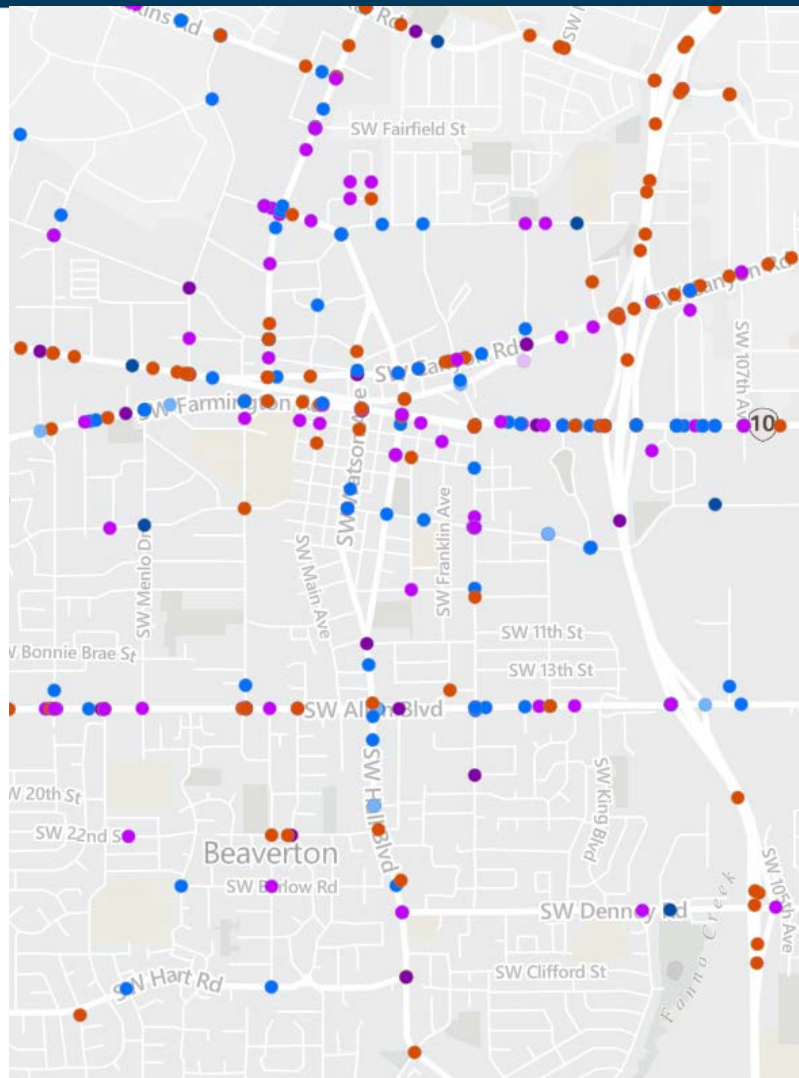


Methodology Part 2: Crashes
Add fields to crashes and calculate

Purpose: Using ODOT crash data characteristics, assign a crash type and weight to each crash. Each crash can only have one weighted crash type, so the highest level of injury will define the crash. Number of crashes are counted, not number of injuries.

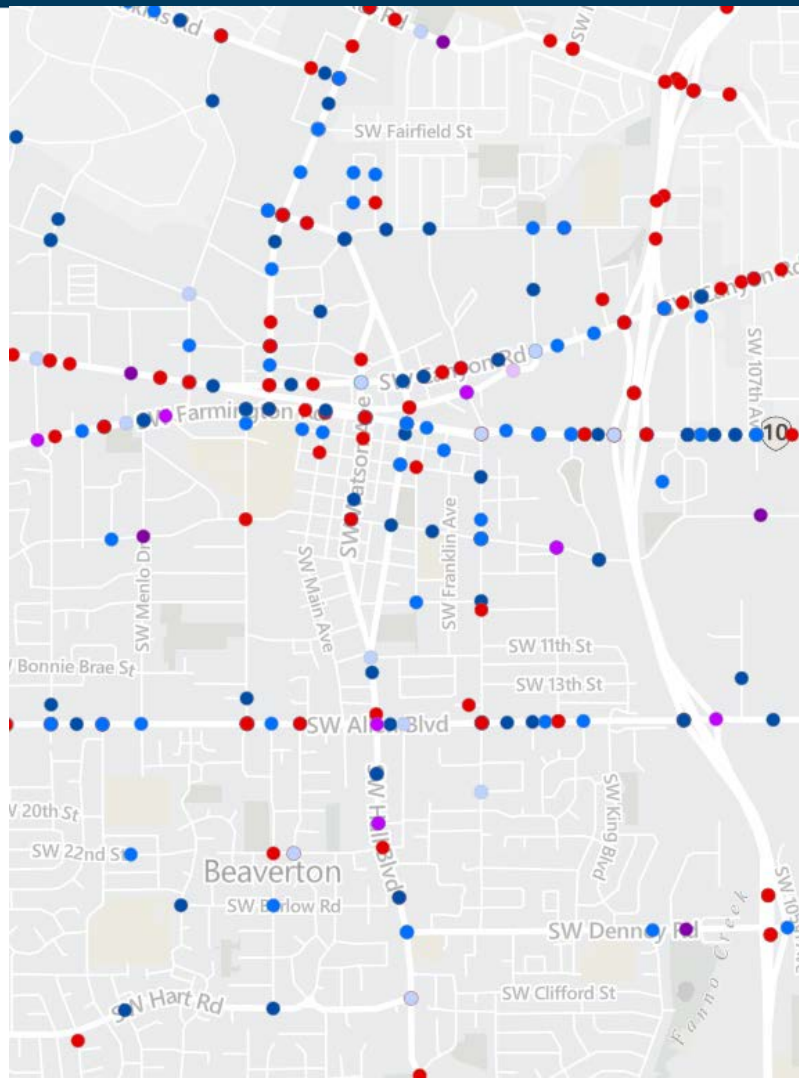
Crash	Crash type	Weight
Auto Fatal or Injury A (includes truck and motorcycle)	Auto_FA	10
Pedestrian Fatal or Injury A	Ped_FA	10
Bicycle Fatal or Injury A	Bike_FA	10
Pedestrian Injury B or C	Ped_BC	3
Bicycle Injury B or C	Bike_BC	3

Injury A=Serious injury; Injury B and C= moderate, minor injury



Methodology Part 2: Crashes
Snap crashes to intersections or midpoints

Purpose: Join the weighted crash types to the corridors; snap to either an intersection (for calculating high injury intersections) or a midpoint, depending on distance from intersection.



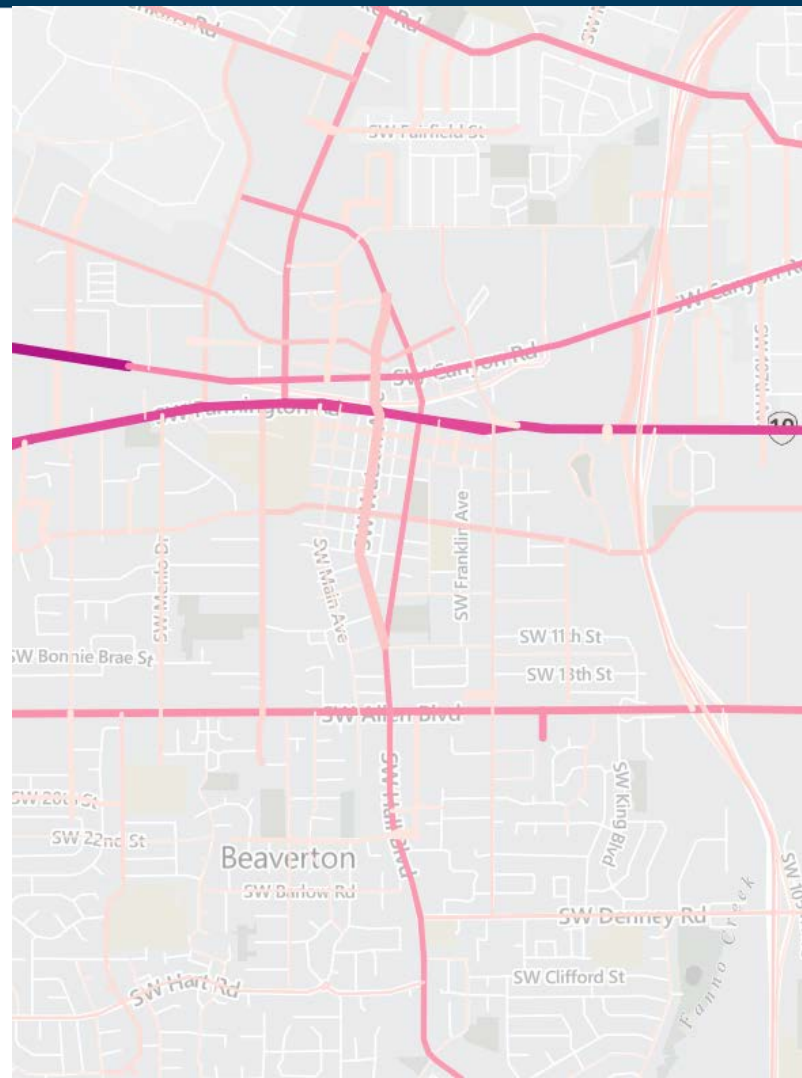
Methodology Part 3: Score Corridors
Calculate corridor scores

Purpose: Calculate nScore for each corridor as sum of crash types (frequency * weight)

nScore = (# FAx10) + (# Ped/Bike BCx3)

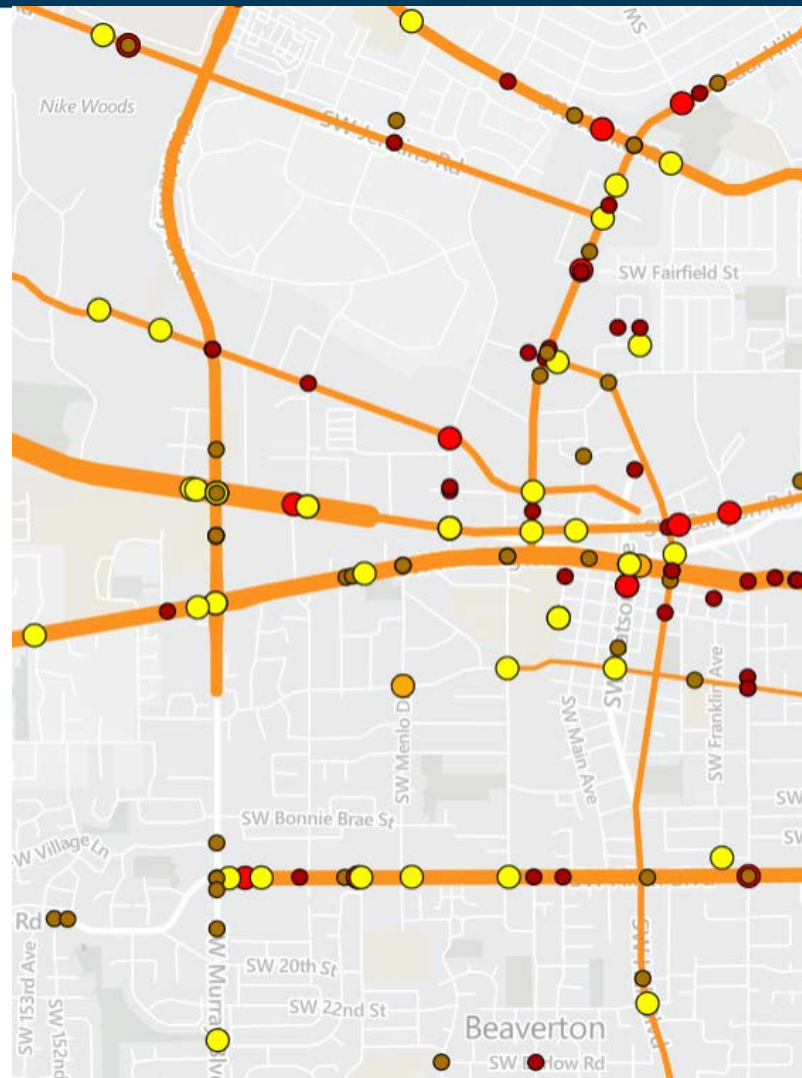
Calculate severity score for each corridor (score normalized by length of corridor)

Normalization (Severity score) = nScore * 10,000 / Length of corridor (feet)



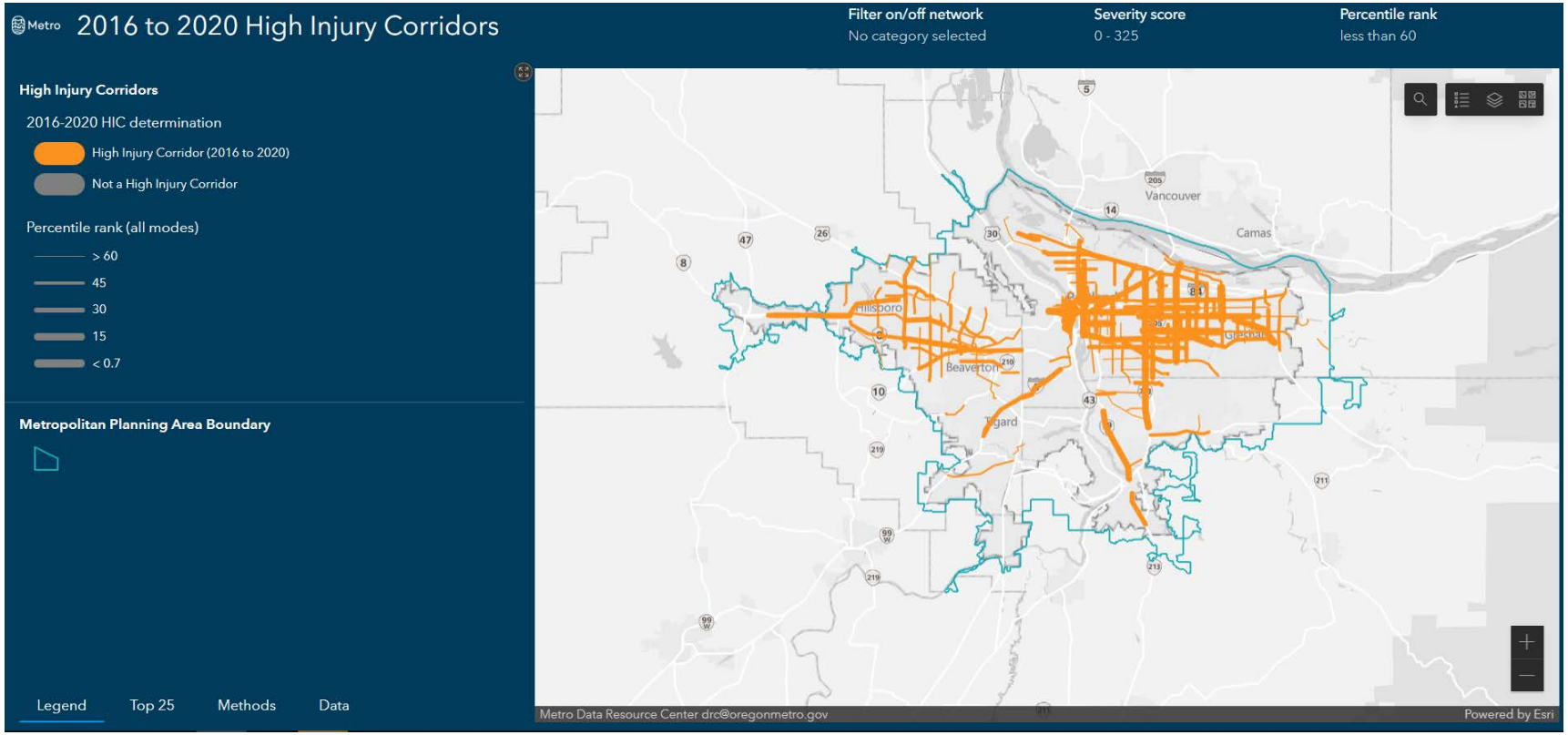
Methodology Part 3: Score Corridors
Calculate percentiles and rank corridors

Purpose: Identify the corridors where 60% of fatal and serious injury crashes are occurring; identify the corridors with the highest severity scores and lowest percentile rank.



2016-2020 Regional High Injury Corridors dashboard

Similar outputs would be created for East County, all of Multnomah County, and each of the cities in the County. The analysis will result in more HICs for each area because the area of analysis is smaller and does not include Portland.



Thank you

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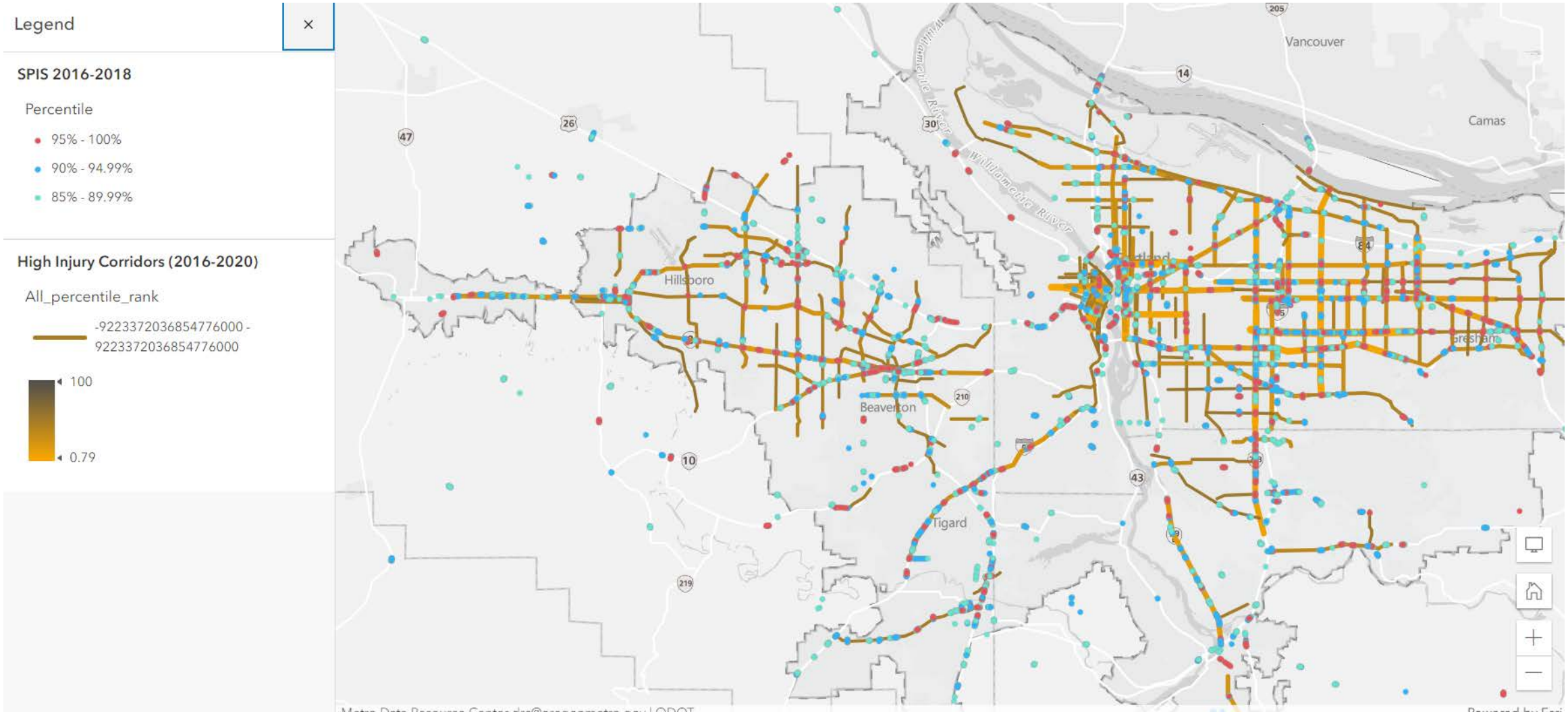
www.oregonmetro.gov/regional-transportation-safety-plan

Comparison of HICs and SPIS sites

Two different approaches to help prioritize investments in safety



Metro Regional High Injury Corridors (HICs)	Oregon Safety Priority Index System (SPIS)
Purpose: Identify roadway corridors where **60%** of fatal and serious injury crashes are occurring	Purpose: Identify potential locations that have exhibited high instances of crash activity; SPIS sites are those with at least one fatal crash or three injury crashes
Data: ODOT crash data, Metro RLIS streets	Data: ODOT crash data, ODOT roadway
Time-period: 5-year window of data (e.g. 2016-2020)	Time-period: 3-year window of data (e.g. 2017-2019)
Type: Corridor	Type: Intersection
Compares all roadways within the Metropolitan Planning Area	Compares all roadways within the state (or county)
Segments analyzed: at least 1 mile, no longer than 5 miles	Segments analyzed: 0.10 mile segments “sliding window” (crashes may be assigned to more than one segment)
Crashes analyzed: All fatal and serious (Injury A) and all injury pedestrian and bicycle crashes (Injury B &C)	Crashes analyzed: All injury crashes
Weights applied to crashes (severity): • Fatal & serious injury (Injury A): 10 • Pedestrian/bicycle moderate injury (B & C): 3	Weights applied to crashes (severity) (50% of SPIS score): • Fatal and serious injury (injury A): 100 • Moderate injury (Injury B & C): 10 • Property Damage Only were included up until the 2018 SPIS with a weight of 1; they are no longer included
Frequency: Number of serious injury crashes per corridor segment during 5-year window	Frequency: Number of crashes per 0.10 mile segment during 3-year window (25% of SPIS score)
Normalization: Number of fatal/serious crashes per mile	Normalization: Number of crashes per 1 million ADT (25% of SPIS score)
HIC severity score = ((# FAx10) + (# Ped/Bike BCx3)(10,000 / Length (feet)); highest score is the highest score	SPIS score = (IV Freq + IV Rate + IV Severity); highest score is 100