



Oregon Intersection Safety Implementation Plan Update

Northwest Transportation Conference

3/6/2024

Agenda

- ▶ Project Background/Purpose
- ▶ City of Salem Example Application
- ▶ Next Steps

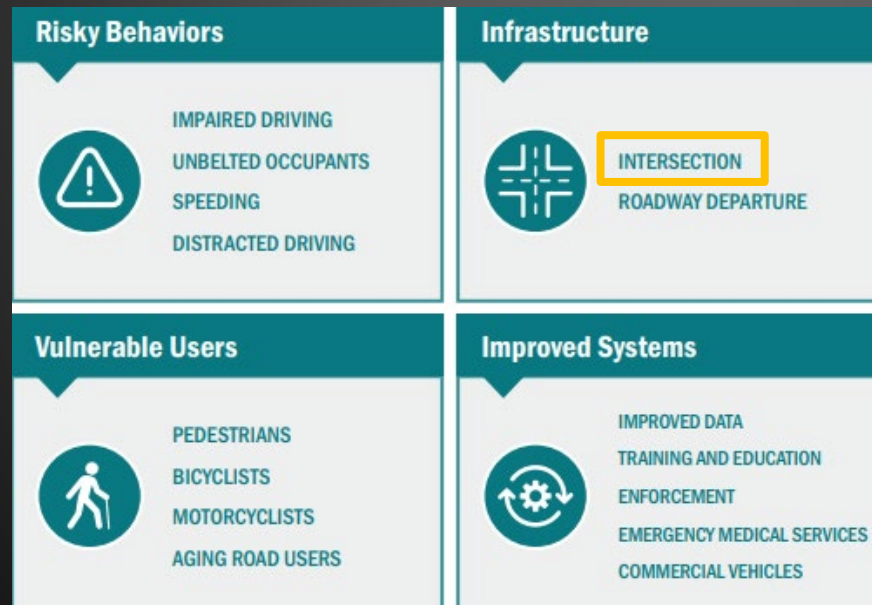
Project Background/Purpose

Project Team

- ▶ ODOT Project Managers - Christina McDaniel-Wilson & Jiguang Zhao
- ▶ Technical Advisory Committee
 - ▶ Shyam Sharma, Tiffany Slauter, Mariana Montes, Dan Serpico, Angela Kargel (ODOT)
 - ▶ Nick Fortey (FHWA)
- ▶ Local Agency Advisory Committee
- ▶ Consultants - Kittelson & Associates, Inc. & HDR

Project Background

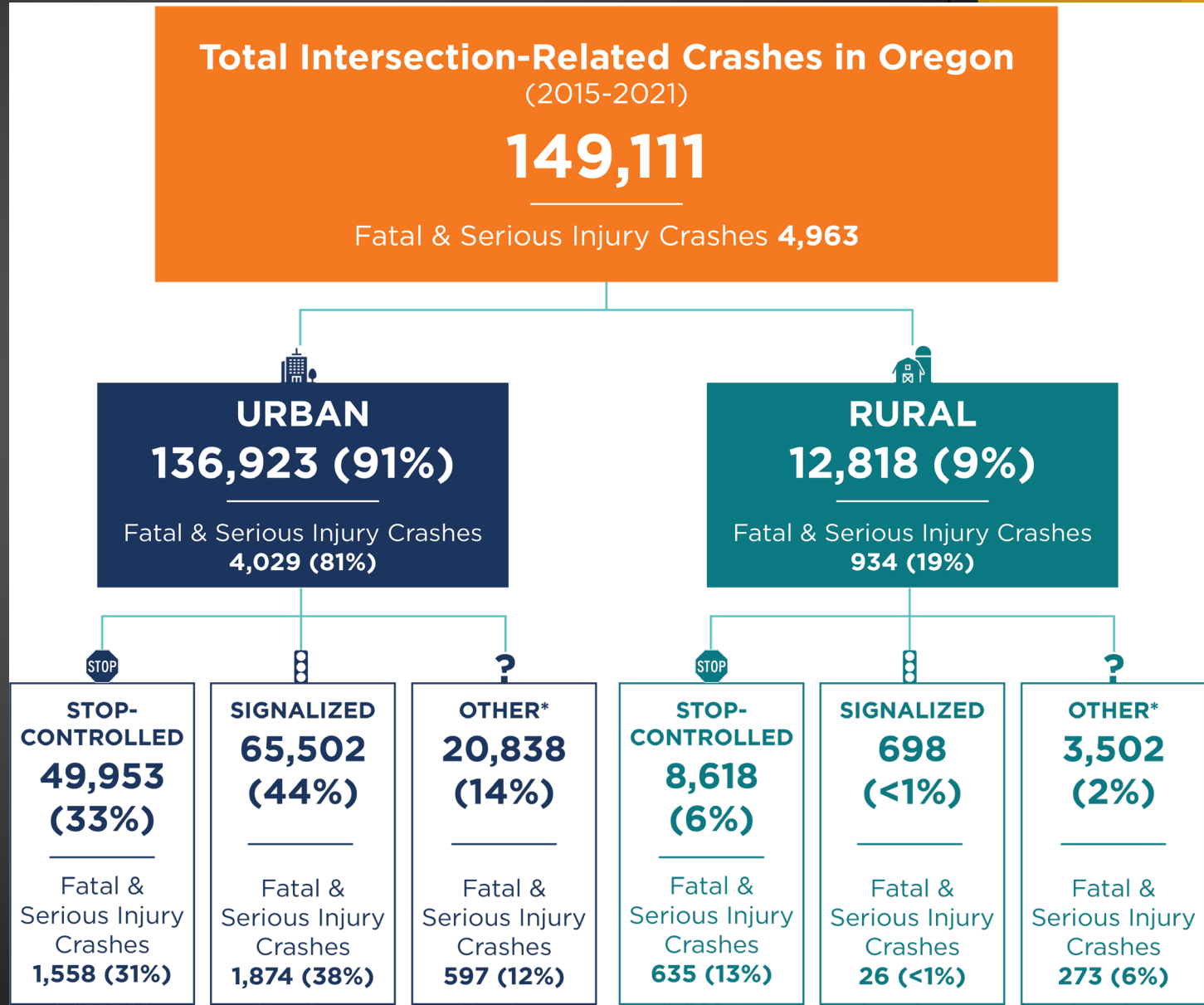
- ▶ Previous plan - 2012
- ▶ Emphasis area from 2021 TSAP



Oregon Intersection Safety Implementation Plan
June 2012



Intersection Crash Data



Project Objectives

- ▶ This Plan Provides:
 - ▶ Framework for Conducting Systemic Intersection Safety Analyses
 - ▶ Characteristics to Identify Locations for Treatments
 - ▶ Example Applications and Treatment Options
- ▶ This Plan *Does Not* Provide:
 - ▶ A Project List

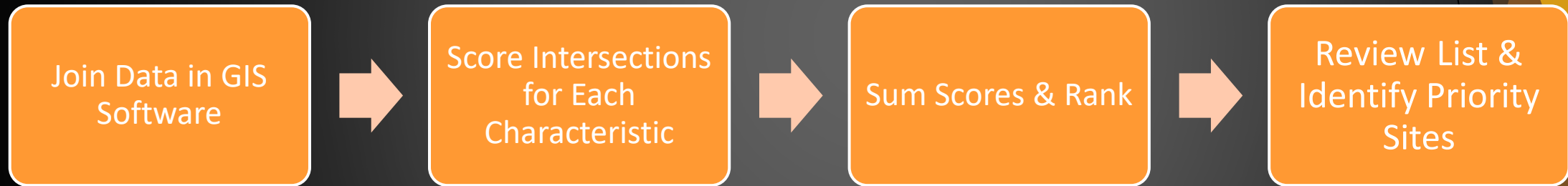
This Plan's Process



Step 1 – *Study Scope*

- ▶ Study Area – *Statewide*
- ▶ Target Facility/Location Types – *State Highway Intersections*
- ▶ Target Crash Types
 - ▶ *Fatal and Suspected Serious Injuries*

Step 2 – *Characteristics Screening Process*



Step 2 – Weighted Screening Characteristics

Screening Characteristic	Signalized		Stop Controlled	
	Urban	Rural	Urban	Rural
Functional Classification				
Arterial (Principal + Minor)	1.03	-	1.25	-
Arterial (Principal)	-	1.29		1.61
Posted Speed				
35 mph	1.01	-	1.00	-
40 – 45 mph	1.09	-	1.49	-
45 – 50 mph	-	1.00	-	1.06
≥ 50 mph	1.11	-	2.04	-
≥ 55 mph	-	1.13	-	2.03
Volume (AADT)				
AADT ≥ 10,000	-	-	1.27	1.80
AADT ≥ 25,000	1.00	1.24	-	-
Approach Characteristics				
Right Turn Lane Present	-	-	1.81	2.10
Left Turn Lane Present	1.70	1.10	1.09	1.95
Number of Through Lanes ≥ 3	-	-	1.33	1.51
Number of Through Lanes ≥ 4	1.04	1.46	-	-
Equity				
Medium High or High Equity Disparity	1.16	1.20	1.05	1.65
Active Transportation				
Bicycle Volumes	1.03	1.27	1.31	1.00
Pedestrian Volumes	1.01	1.44	1.03	1.13

Step 3 - ARTS Countermeasures Categories (Applicable to Intersections)

Hotspot
(Single Site Projects)



SPIS or other Crash-
Based Screening



Hotspot Countermeasures (H#)

Hotspot or Systemic Application Type	Countermeasure Number	Countermeasure
Hotspot	H14	Left Turn Lane on Single Major Road Approach: Rural, Signalized Intersection (3-leg)

Systemic Projects
(Multiple Sites)



Characteristics-Based Screening



Systemic Intersection
Countermeasures (I#)

Systemic Bike & Ped
Countermeasures (BP#)

Hotspot or Systemic Application Type	Countermeasure Number	Countermeasure
Intersection Systemic	I3	Add 3-inch yellow retroreflective sheeting to signal backplates

Step 4 – Prioritize & Implement Projects

- ▶ Additional community priorities/programming needs
- ▶ Additional diagnostics
- ▶ Economic assessments
 - ▶ BCA vs. CEI
- ▶ Allocate funding/apply for funding

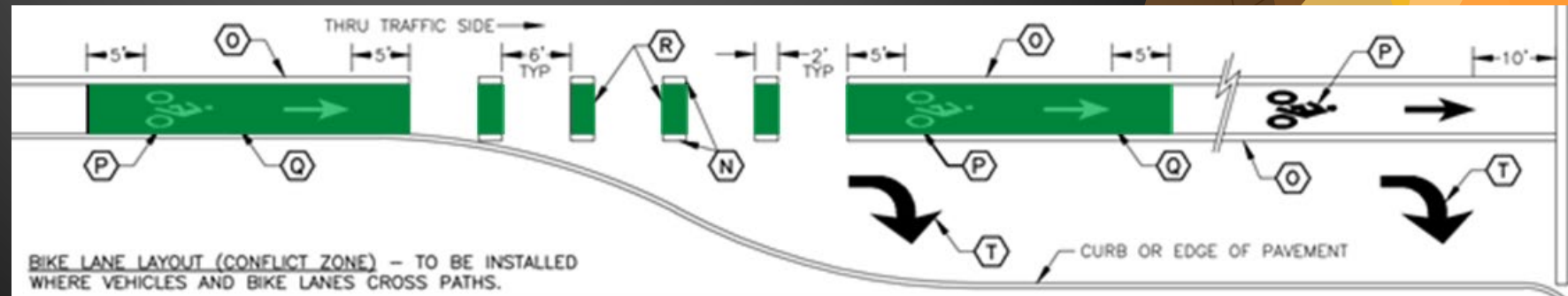
Step 5 – Evaluate Program and Project Impacts

- ▶ Before-after study
 - ▶ Group systemic/similar projects
 - ▶ Use ODOT-calibrated safety performance functions (SPFs), if possible
- ▶ Implementation Monitoring
 - ▶ Is the program being implemented?
- ▶ Outcomes
 - ▶ Crashes by focus area(s)

City of Salem Example

Push to Install Green Markings at Conflict Points

- ▶ Updated Standard Plans
- ▶ How to retrofit?
 - ▶ Approximately 100 locations where right turn lane crosses bike lane
 - ▶ With current budget, can do about 10 per year



Screening for Systemic Countermeasures

- ▶ Filter intersections by:
 - ▶ Signals
 - ▶ Bike lane
 - ▶ Right-turn lane
- ▶ Screen using characteristics-based analysis

BP6: Install Urban Green Bike Lanes at Conflict Points

Description: Green bike lanes are green-colored pavement placed on the roadway to enhance visibility of a bicycle lane.



ODOT CRF Value:

39%

Reduction in **Bicycle Crashes at All Severities** (Including PDO's)

Range of Effectiveness:

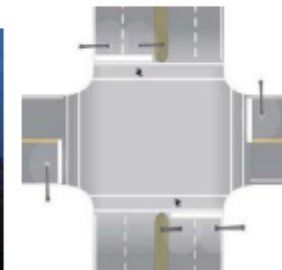
39%

Safety Effects:

It helps to bring awareness of the presence of potential bicyclists in locations where drivers may not be expecting them.

BP2: Provide Intersection Illumination (Bike & Ped)

Description: A permanent source of artificial light installed at an intersection that provides greater visibility of the intersection and its potential multi-modal users.



Images from FHWA

ODOT CRF Value:

42%

Reduction in **Nighttime Pedestrian and Bicycle Crashes at All Injury Severities** (Excluding PDO's)

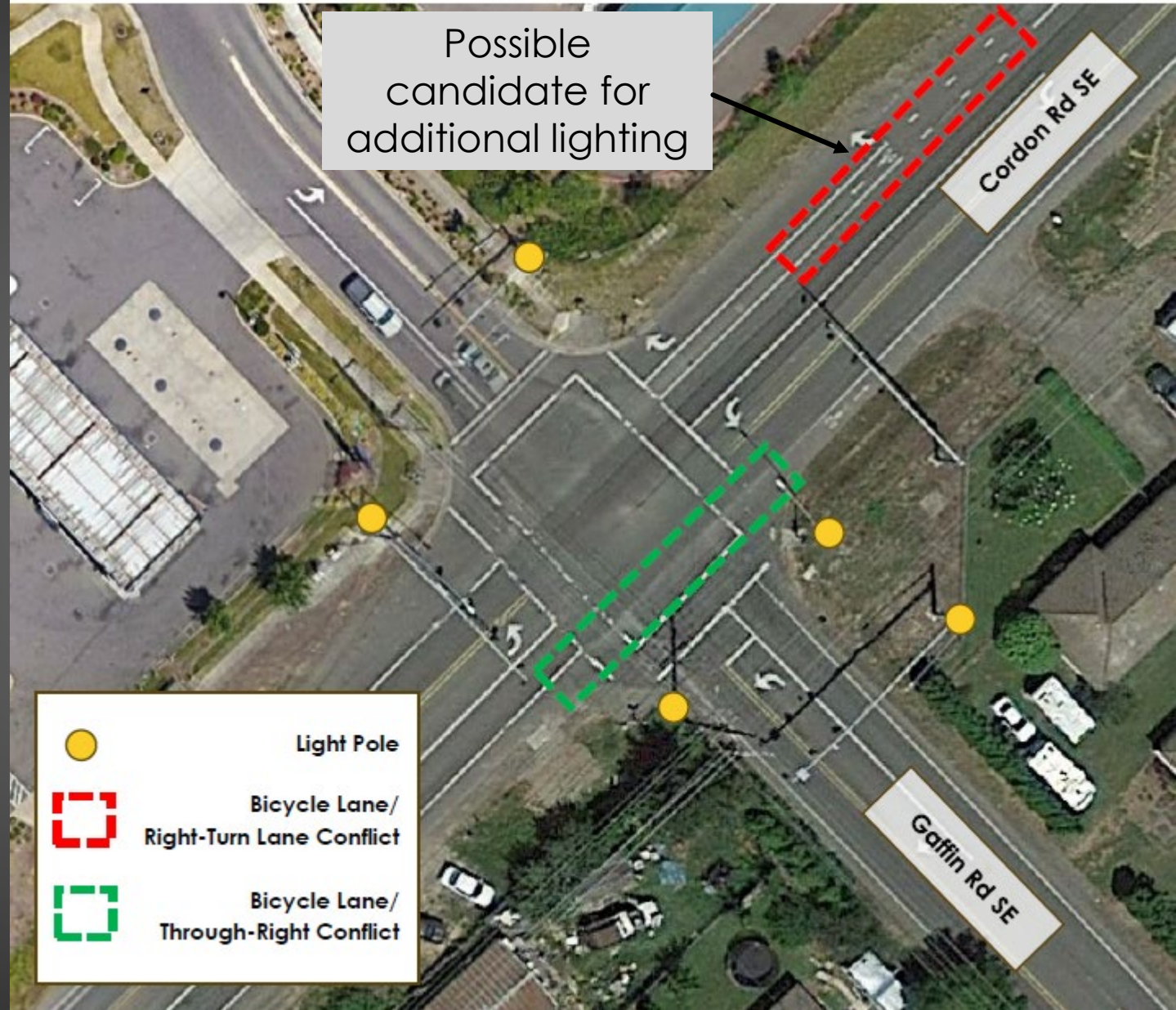
Range of Effectiveness:

42%

Site Review

- ▶ Review top 50% for applicability
 - ▶ Aerial and street-level imagery
- ▶ Used lighting GIS data, but could use photos/field visit

Figure 3. Cordon Road SE & Gaffin Rd SE in Salem, OR

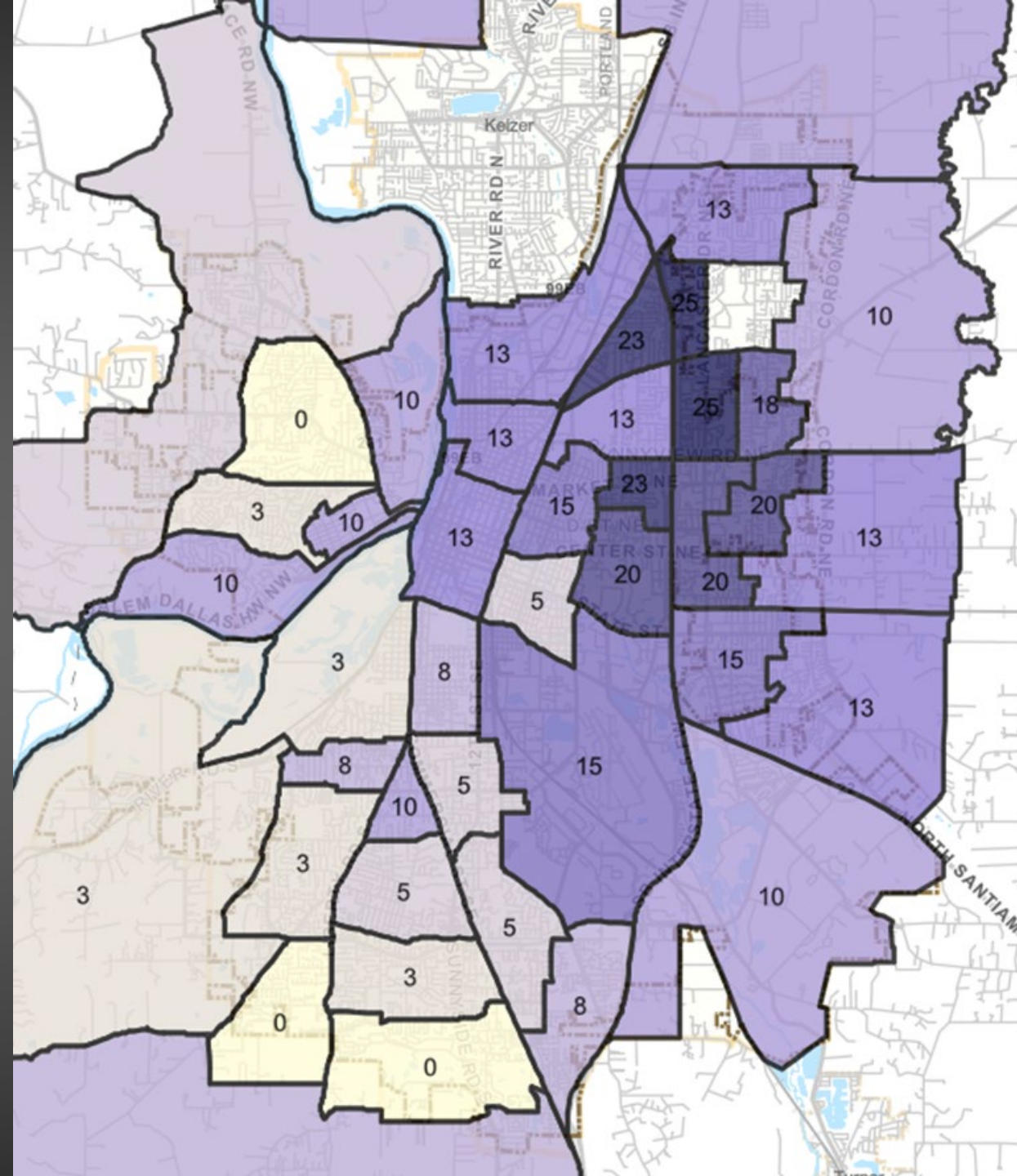


Key Takeaways (Data)

- ▶ Some GIS capabilities required
- ▶ Considerations/Potential Challenges
 - ▶ Intersection control
 - ▶ Missing information – omission vs. surrogates
 - ▶ Can create an intersection dataset if one does not exist
- ▶ Reach out to ODOT for assistance

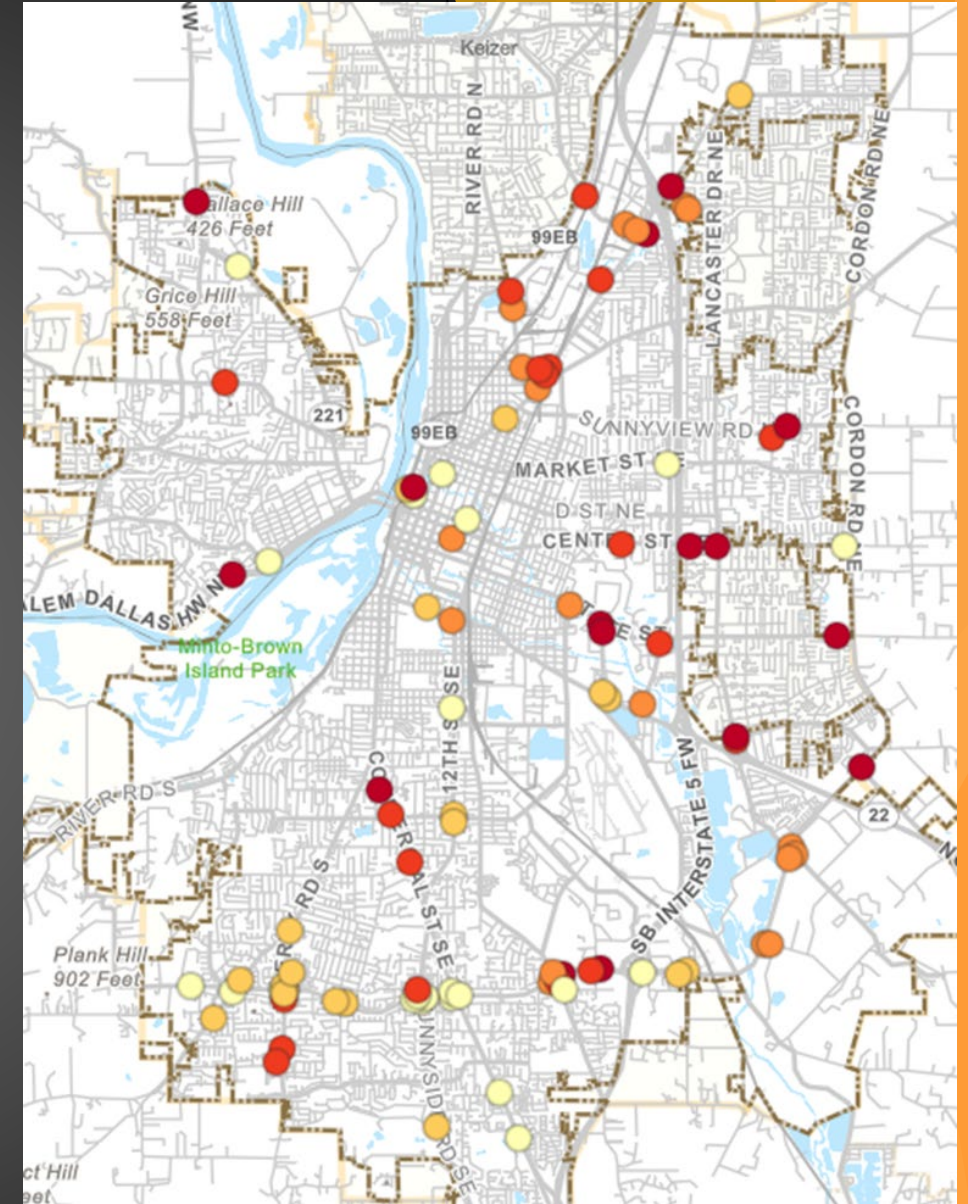
How is Salem using results?

- ▶ Extra emphasis on equity
- ▶ Combined Kittelson score (75%) with City equity score (25%)
- ▶ Focus on right-turn lane conflict zone



How is Salem using results?

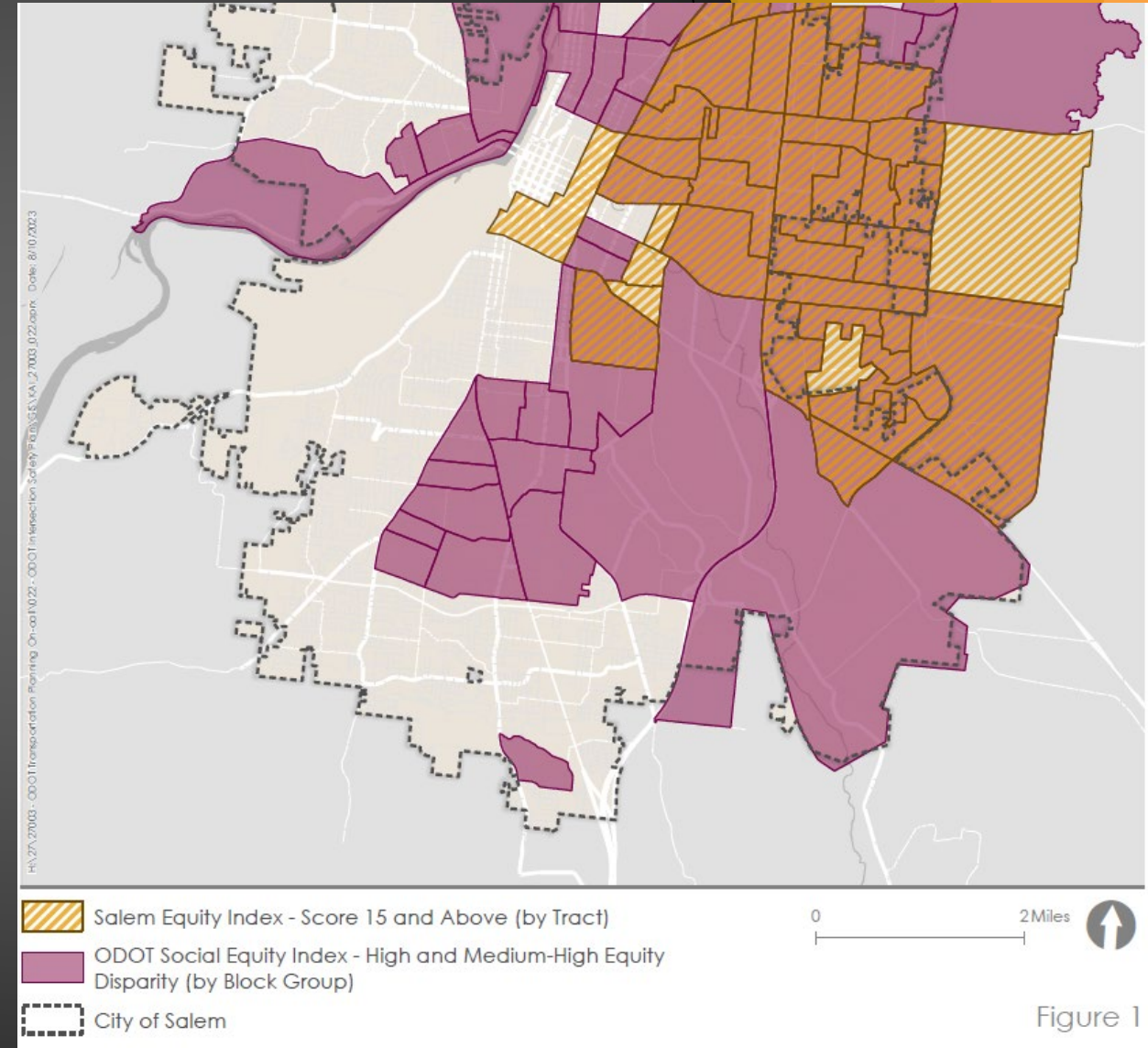
- ▶ Supported ARTS application ('27-'30)
 - ▶ Did not choose top locations
- ▶ City implementation
 - ▶ Sorted by quartiles
 - ▶ Geographic dispersion
 - ▶ Pavement condition
 - ▶ Upcoming projects
- ▶ Budgeting for ~ 10 per year (~100 total)
- ▶ Looking to use budget savings to do bigger push next year



Discussion & Questions

Data Availability – Differences from ODOT

- ▶ Bicycle network
- ▶ Traffic volume coverage
 - ▶ Used ODOT data
- ▶ Intersections – some cleaning
- ▶ Ramp terminals excluded
- ▶ Equity index



Next Steps

- ▶ Confirm assessments
- ▶ Cost estimates
- ▶ Draft set of sites
- ▶ Calculate CEI & adjust sites as needed
- ▶ ARTS application



Print Form Reset Form Save As

OREGON DEPARTMENT OF TRANSPORTATION Highway Safety Improvement Program (HSIP) COST ESTIMATION WORKSHEET

See [Instructions](#)

All costs related to the proposed project must be accounted for on this worksheet, including costs covered by other types of funding. List funding amounts from other sources in the "Non-Eligible Costs" section.

List estimated costs for the various activities listed below, as applicable to proposed project. Round all costs up to the nearest hundred dollars. For each activity listed below, write a description of the items included. Please list the items separated by a comma (,) as space is limited.

Project Name:

Project Description:

Key Takeaways (Application)

- ▶ Characteristics-based screening useful for systemic treatments
 - ▶ Can identify countermeasure first or screen first and then identify countermeasure
 - ▶ Crash history still important for Systemic Intersection ARTS applications