APPENDIX A: EXISTING CONDITIONS MEMO

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TECHNICAL MEMORANDUM

May 22, 2025 Project # 31028

To: City of Stayton

From: Nick Gross, Max Heller, Amy Griffiths, PE, Susan Wright, PE; Kittelson & Associates, Inc.

RE: Stayton Safety Action Plan Existing Conditions Analysis

Executive Summary

The Existing Conditions analysis uses existing crash data, roadway characteristics, and public feedback to describe the current transportation safety environment within the Stayton Urban Growth Boundary (UGB). The analysis is broken into three phases: Systemic Analysis, Location Screening, and Emphasis Areas.

SYSTEMIC ANALYSIS

The Systemic Analysis reviews key crash attributes such as crash type, driver characteristics and behavior, and environmental conditions. While this analysis considers all crashes, to best align with the goals and objectives of the Safe System Approach and Vision Zero, this plan focuses on fatal and serious injury crashes. This analysis highlights that the rates of total and fatal/serious injury crashes have been increasing within the last three years of available data. Several crash types were identified as significantly contributing to fatal or serious injury crash outcomes, including head-on collisions, crashes involving bicyclists and pedestrians, and non-collision crashes (crashes involving only one vehicle that cannot be classified as a collision, such as overturned vehicles). Risky driver behaviors such as impaired, distracted, and reckless driving or failure to use a seatbelt also increase the likelihood of serious crash outcomes.

LOCATION SCREENING

The Location Screening section reviews the crash data spatially and identifies road segments with characteristics that are correlated with increased risk of crashes. A High Injury Network (HIN) was developed to identify locations that are high frequency and high severity crash locations. The HIN and the roadway risk assessment results were combined into a Composite Risk and Injury Network (CRIN).

EMPHASIS AREAS

The results of the Systemic Analysis and Location Screening were used in conjunction with key takeaways from public engagement events to-date to identify three Emphasis Areas that describe factors which significantly contribute to the existing roadway safety patterns and trends. The Emphasis Areas are vulnerable road users, risky driver behaviors, and intersections. The City of Stayton and its partner agencies can use these Emphasis Areas to target specific factors which contribute to high proportions of fatal and suspected serious injury crash outcomes.

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SYSTEMIC ANALYSIS

Kittelson reviewed crash data made available by the Oregon Department of Transportation (between January 1, 2018 and December 31, 2022)[1] to identify any trends. In total, between 2018-2022, 300 crashes occurred within the Stayton UGB. Of these, 245 were reported within the city limits and 55 crashes were reported within the UGB but outside the city limits. The crash pattern analysis evaluated crash severity, location, and type, contributing factors, weather and lighting, behavioral characteristics, and vulnerable road users.

Crash Severity

Crash severity is reported using the KABCO severity scale, which is as follows:

- K – Fatal Injury Crash
- A – Suspected[2] Serious Injury Crash
- B – Suspected[2] Minor Injury Crash
- C – Possible Injury Crash
- O – Property Damage Only Crash

To best align with the goals and objectives of the Safe System Approach and Vision Zero, this plan focuses on fatal and suspected serious injury crashes. Due to the limited number of fatal and suspected serious injury crashes within this study area and analysis period, suspected minor injury crashes are grouped with fatal and suspected serious injury crashes in many of the crash trend and pattern figures. This grouping is identified as "KAB" severity crashes. For all analytics that follow, it is important to interpret the data carefully with consideration of how the limited sample size can influence crash trends – just a few crashes can cause substantial percent variations in crash trends. For this reason, both percent values and total crash counts are included (when appropriate) in the charts in this section.

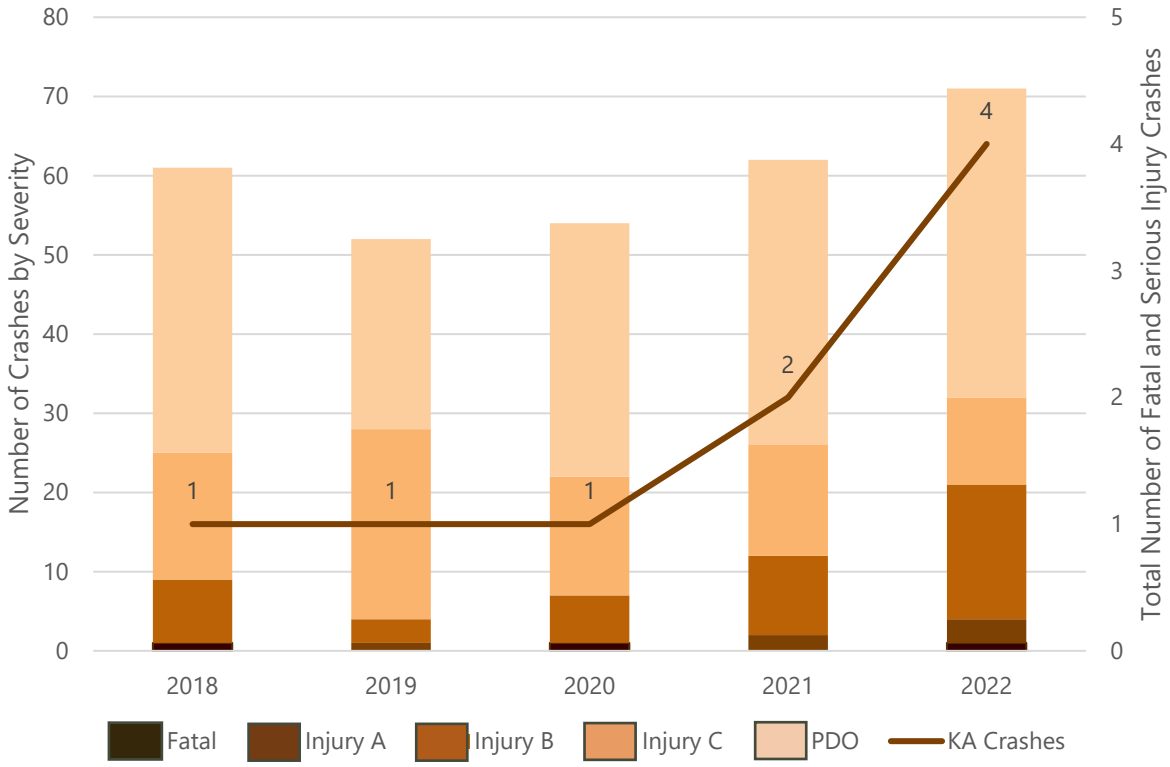
Figure 1 presents reported crashes by severity and year within the Stayton UGB. Notably, 2020 was the start of the COVID-19 pandemic; however, the number of crashes in Stayton markedly decreased in 2019, even before the pandemic started. In the years since 2019, total crashes and fatal/suspected serious injury (KA) severity crashes have increased. Between 2018-2022, three fatal crashes and six suspected serious injury crashes occurred within the study area, composing three percent of all crashes.

The distribution of the reported crash history is presented in Figure 2 by severity, along with the social equity index of the surrounding area. Social equity data comes from ODOT's Social Equity Web App, which maps the degree to which Oregonians are likely experiencing disparities in state services, access,

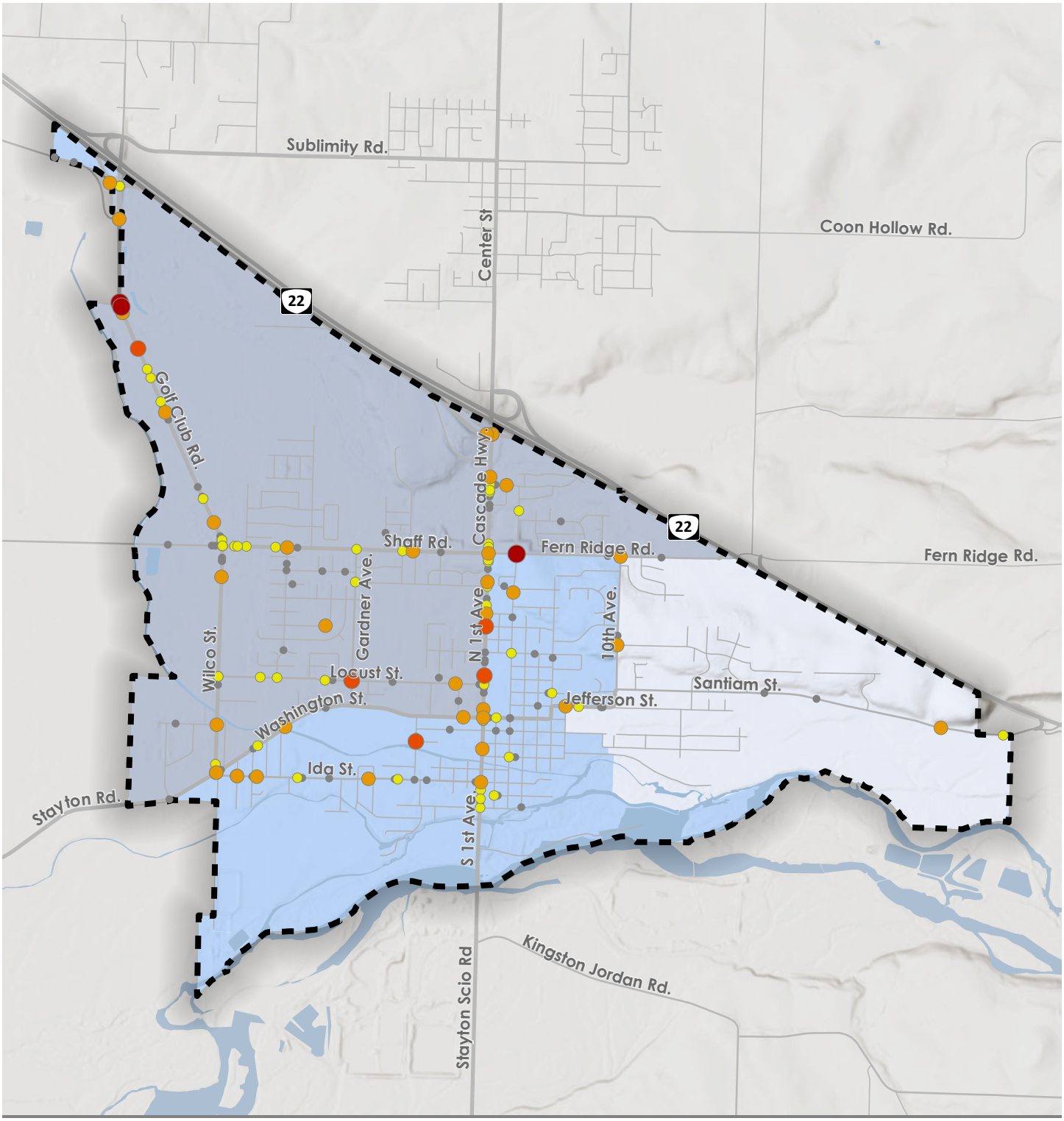
[1] ODOT crash data undergoes extensive quality control prior its release to ensure locations and crash attributes are accurate for all crashes throughout the state; this process often delays the release of crash data. 2018-2022 comprised the last five years of available data within the UGB at the time of the project analysis.
[2] Crash severity is commonly reported by the responding law enforcement officer. These first responders may not be able to perform a complete medical diagnosis on-site. To account for this uncertainty, crash severity is often reported as "suspected."

and investments.[3] This index considers populations of individuals living at or below the poverty level, aged 65 and older, with a disability, or with limited English proficiency.

Figure 1. Crashes by Severity and Year (2018-2022)



[3] Oregon Social Equity Web App. Oregon Department of Transportation, 2025. https://arcg.is/00qvmX



ODOT Social Equity

- High Disparity
- Medium Disparity
- Low Disparity
- UGB

Crash Severity

- Fatal Injury (K)
- Suspected Serious Injury (A)
- Suspected Minor Injury Crash (B)
- Possible Injury Crash (C)
- No Apparent Injury/PDO Crash (O)

0 0.5 Miles

Figure 2

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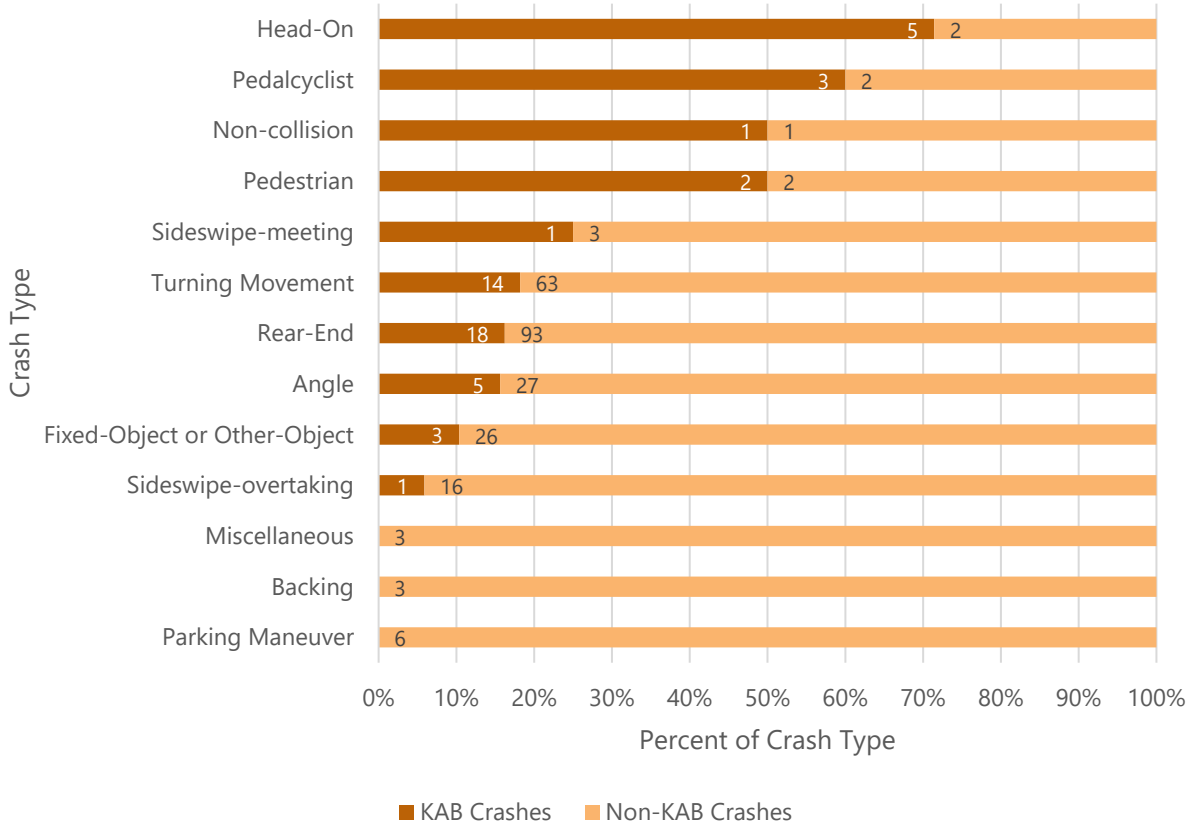
Crash Severity (2018-2022) and Social Disparities
Stayton, OR

Crash Type

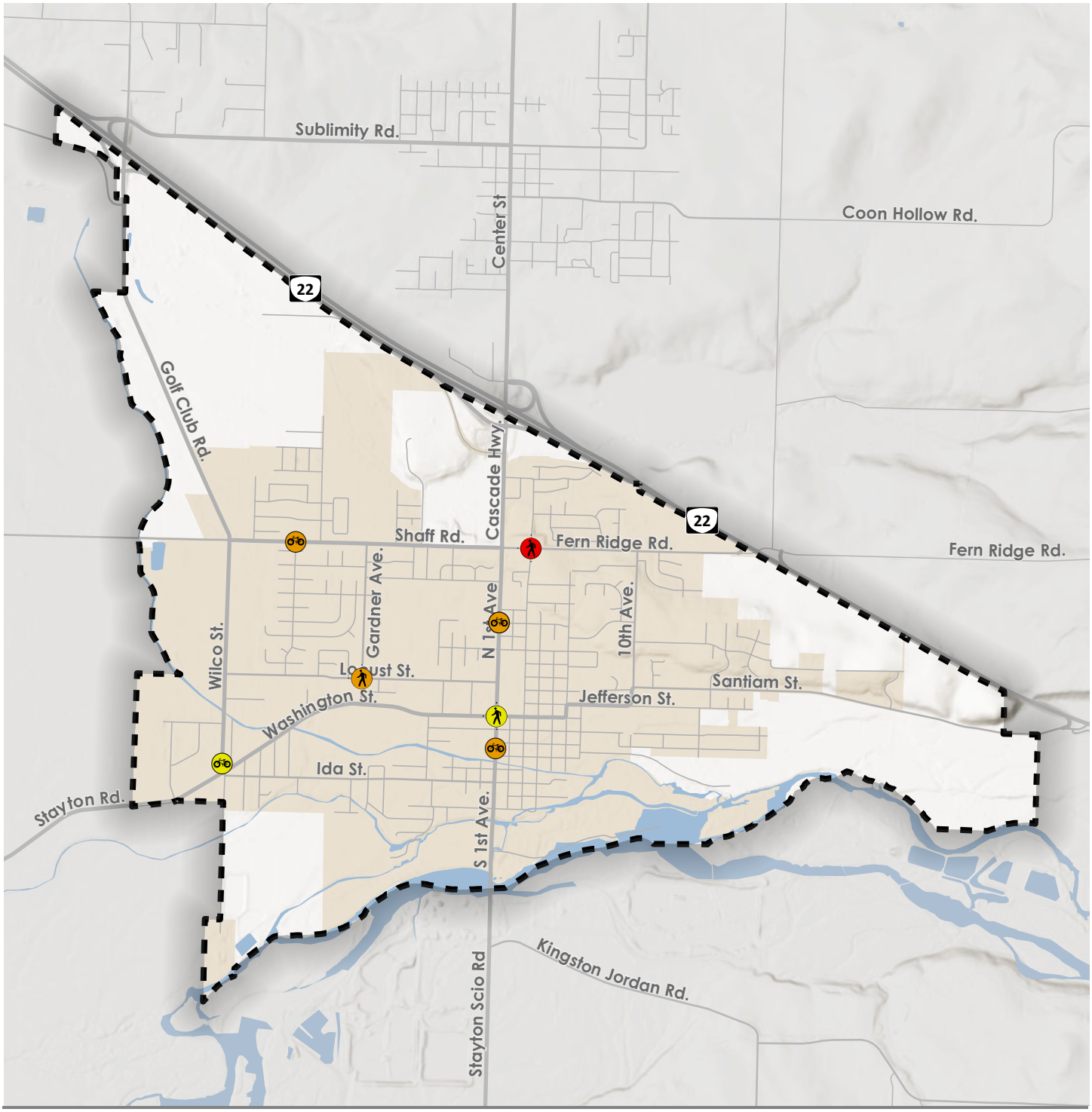
Crash type is another important consideration when assessing crash patterns. Figure 3 shows which crash types are more likely to result in a KAB severity outcome. Four crash types resulted in KAB severity outcomes greater than 50 percent of the time: head-on collisions, crashes involving bicyclists[4] and pedestrians, and non-collision crashes (e.g. overturned vehicles). Single vehicle crashes, often classified as fixed object crashes, accounted for 10 percent of all crashes, but only 6 percent of KAB crash outcomes.

To align with the Safe System Approach's emphasis on vulnerable road users, crashes involving bicyclists or pedestrians were examined in greater detail. Figure 4 shows the location and severity of fatal, suspected serious injury, and suspected minor injury crashes involving bicyclists or pedestrians within the Stayton UGB.

Figure 3. Crashes by Type and Severity (2018-2022)



[4] ODOT uses the term "pedalcyclist" as it is inclusive of tricycles or recumbent bikes. In the memo the term bicyclist is used generally.



Pedestrian Crashes

- Fatal Injury (K)
- Suspected Minor Injury Crash (B)
- Possible Injury Crash (C)

Bicyclist Crashes

- Suspected Minor Injury Crash (B)
- Possible Injury Crash (C)
- UGB
- City Limits

0 0.5 Miles

Figure 4

Fatal or Injury Crashes Involving a Bicyclist or Pedestrian 2018-2022 Stayton, OR

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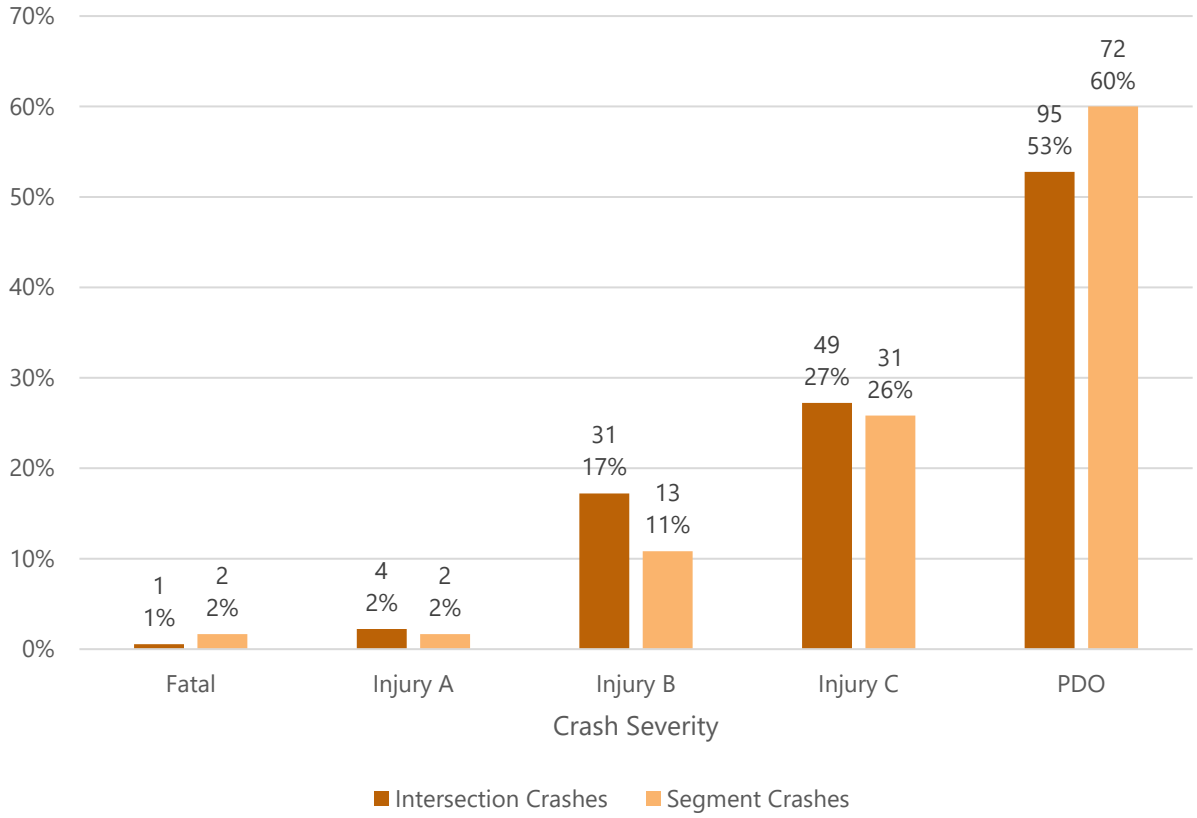
Crash Location

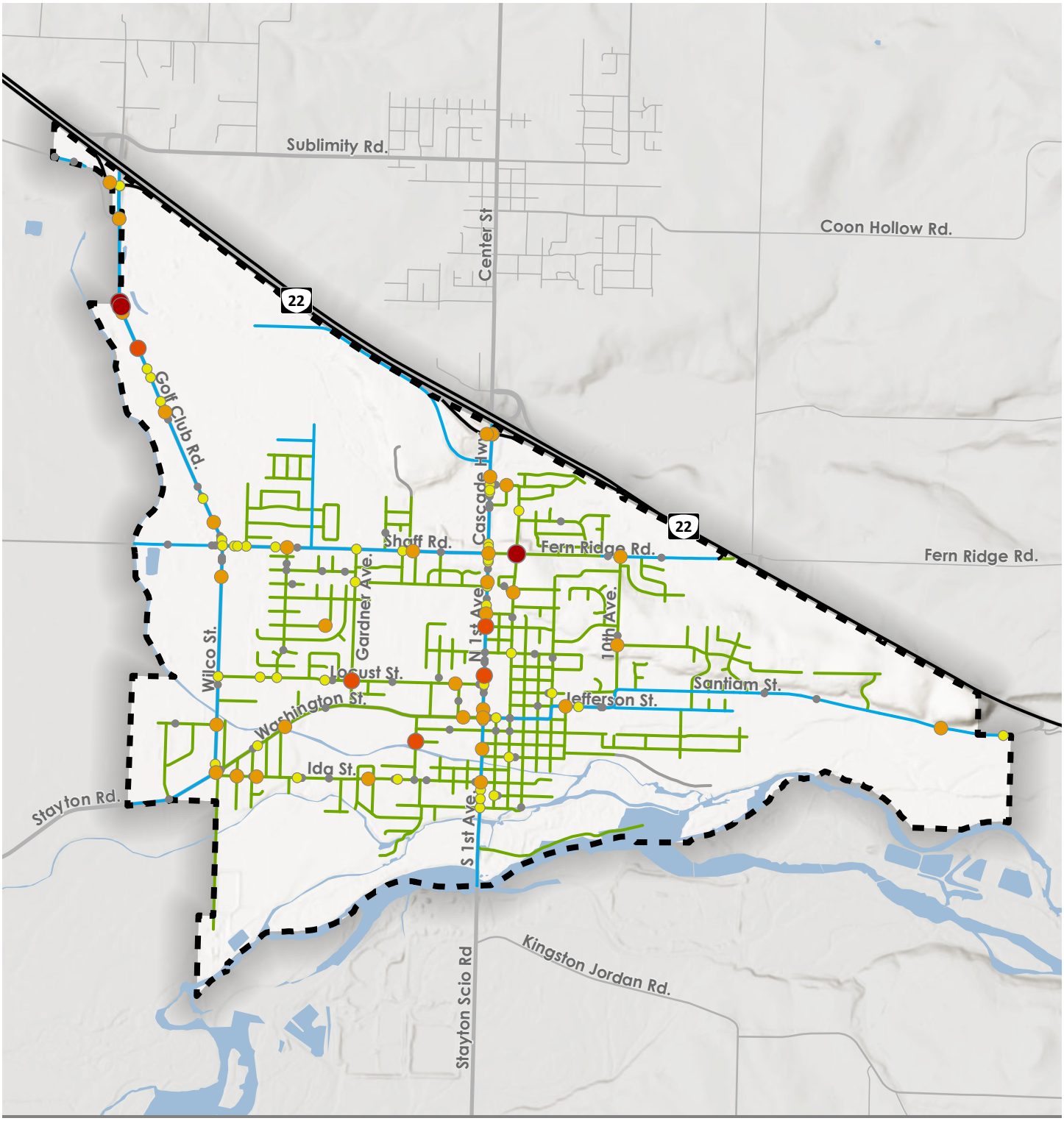
As part of this crash analysis, crashes occurring within intersections were separated from crashes occurring along roadway segments outside of the influences of an intersection. This led to more precise assessment of crash causes and contributing factors and will enable more targeted countermeasure development. Crashes occurring within 100 feet of an intersection or flagged as "Intersection-related" within the ODOT crash data were considered intersection crashes.[5] Based on this definition, approximately 180 of the 300 crashes (60 percent) within the Stayton UGB were classified as intersection crashes; remaining crashes are classified as segment crashes. Of the crashes classified as intersection crashes, 20 percent (36 crashes) were KAB severity crashes, whereas only 14 percent (17 crashes) of segment crashes were classified as KAB severity crashes. This variation in crash severity between intersection and segment crashes is shown in Figure 5. Further comparison between severity of crashes along segments or within intersections is presented in the Location Screening section of this memorandum.

The roadway jurisdiction where crashes occur was also mapped, as shown in Figure 6, to determine what proportion of crashes in Stayton occur on Marion County facilities versus City facilities. The majority of KAB crashes occurred on County facilities within the Stayton UGB.

Figure 5. Intersection and Segment Crash Severity (2018-2022)



[5] A sensitivity analysis was performed to ensure that 100 feet was an appropriate buffer for buffer for classification of "intersection-related" crashes in Stayton.



Roadway Jurisdiction

- ODOT
- Marion County
- City of Stayton
- Private

Crashes

- Fatal Injury (K)
- Suspected Serious Injury (A)
- Suspected Minor Injury Crash (B)
- Possible Injury Crash (C)
- No Apparent Injury/PDO Crash (O)

0 0.5 Miles

Figure 6

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Roadway Jurisdiction & Crash Severity (2018-2022)
Stayton, OR

Driver Age and Behavior

The crash patterns and trends analysis also involved an assessment of driver characteristics and behaviors. These factors were assessed for trends that are out of alignment with known crash statistics, Stayton population demographics, and expected crash patterns.

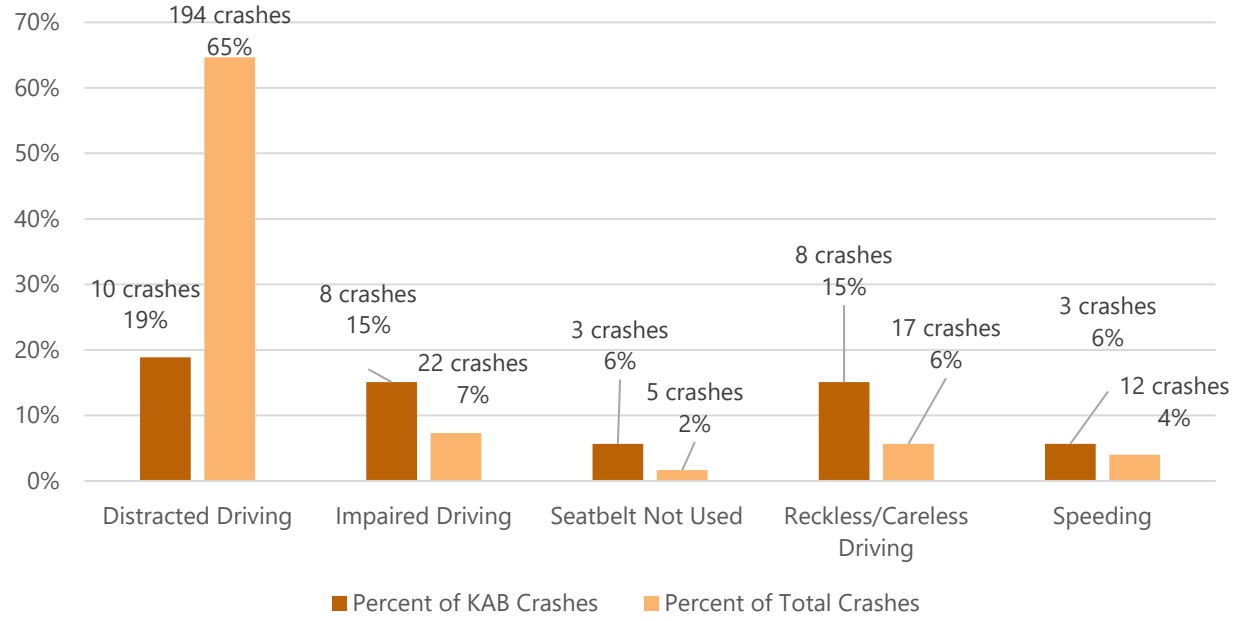
DRIVER AGE

Driver age was examined as part of this analysis. Over half (55%) of crashes did not include reported age information. Of the remaining crashes, the percentage of KAB severity crashes and percentage of total crashes generally align, which indicates that there is not a specific group overrepresented in more severe outcomes. Data regarding driver age and crash severity can be found in Appendix A.

DRIVER BEHAVIOR

Driver behavior is an important factor in crash outcome. Figure 7 shows how crash outcome is correlated with common risky driver behaviors such as distracted, impaired, and reckless driving, speeding, and failure to use safety equipment (e.g. seatbelts). Distracted driving was a factor in 65 percent of crashes within the study period. Distracted driving includes behaviors that can decrease driver attention such as cell phone usage and eating. Despite the large number of crashes involving a distracted driver, only 19 percent of those crashes resulted in a KAB severity outcome. This could be attributable to the fact that pre-crash distractions often leave no evidence for law enforcement officers or crash investigators to observe, and drivers are often reluctant to admit to having been distracted prior to a crash where there are severe outcomes.[6]

Figure 7. Risky Driver Behavior and Crash Severity (2018-2022)



[6] Countermeasures That Work: Distracted Driving. "Understanding the Problem" NHTSA. https://www.nhtsa.gov/book/countermeasures-that-work/distracted-driving/understanding-problem

Impaired and reckless driving, speeding, and failure to use safety equipment contributed to fewer crashes but resulted in a greater likelihood of serious crash outcomes. Notably, when KAB crash outcomes occurred, approximately 30 percent were at least in part attributable to impaired or reckless driving.

Roadway Conditions and Temporal Effects

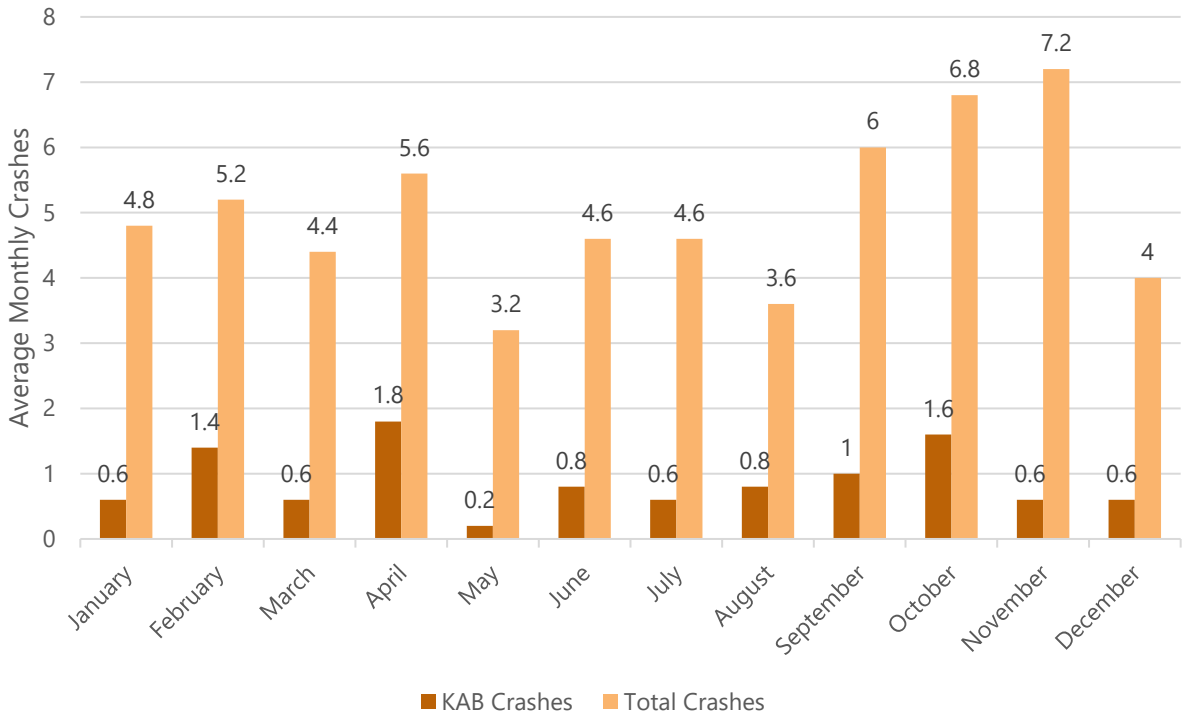
A variety of environmental conditions can affect crash outcomes. Lighting conditions, roadway surface conditions, and monthly variation in crashes were considered to determine their effects on crash trends within the study area.

Most crashes occurred during the daytime. For crashes occurring at nighttime in unlighted conditions, the likelihood of a KAB severity outcome was slightly elevated but not to a significant degree. Roadway surface conditions also did not have significant effects on crash severity, with wet road conditions being associated with marginally higher likelihoods of KAB crash outcomes.

Data showing the effects of lighting and roadway surface conditions on crash severity are included in Appendix A.

Lastly, the distribution of crashes throughout the year was examined over the five-year study period. Figure 8 shows the average monthly crash rate for each month of the year between 2018 and 2022. Notably, there is an increase in crashes during the autumn months. This may be attributable to decreased daylight hours, commencement of the academic year for K-12 students, or more variability in roadway conditions.

Figure 8. Average Monthly Crash Rate (2018-2022)



LOCATION SCREENING

The Location Screening safety analyses examined specific intersections and corridors within the Stayton roadway network. Locations with a recorded history of frequent and severe crashes or with characteristics of roadways that often experience frequent and severe crashes are identified. This analysis is used in tandem with the Systemic Analysis in the previous section to guide the development of targeted safety countermeasures.

High Injury Network

The High Injury Network (HIN) for Stayton was developed using the Equivalent Property Damage Only (EPDO) method, one of the safety network screening performance measures included in the Oregon Highway Safety Manual (HSM). The HIN is composed of intersections and roadway segments that experience both a high frequency and high severity crashes, as identified using an EPDO analysis methodology. This method places greater emphasis on crash severity compared to other common methods that only consider crash frequency, providing insight into locations that have low total crash frequency but have experienced one or more fatal or suspected serious injury crashes. The EPDO method assigns societal (weighted) costs to each crash by severity level to develop an equivalent property damage only value (i.e. each crash is scored based on their relative magnitude to a property damage only (PDO) crash.

Table 1 displays the EPDO values utilized for each severity type.

Table 1. EPDO Scaled Value[7]

Severity (KABCO)	EPDO Value
K – Fatal Crash	100
A – Suspected Serious Injury Crash	100
B – Suspected Minor Injury Crash	10
C – Possible Injury Crash	10
O – Property Damage Only Crash (No Apparent Injury)	1

Source: ODOT SPIS[8]

These values are used to evaluate and compare intersections and roadway segments by both the number of crashes and crash severity, with higher scores indicating there are greater frequencies of high severity crashes at those locations.

The total EPDO value for an intersection or roadway segment is calculated as the sum of the EPDO values of all crashes that occurred within that intersection or along that roadway segment. This value is then

[7] Note: For this analysis, fatal and suspected serious injury crashes are weighted the same based on best practices to reduce the weight of fatal crashes and better identify high crash locations, in alignment with Safe System Approach's focus on preventing fatal and serious injury crashes. It is important to note that the values for K, A, B, and C crashes align with those from SPIS, while adjustments were made to the values for O crashes, assigning a value of 1 to them.
[8] Safety Priority Index System (SPIS). Oregon Department of Transportation, 2009. https://www.oregon.gov/ODOT/Engineering/Docs_TrafficEng/SPIS-Brochure.pdf

divided by the number of years that crash data is available, producing a PDO equivalence value that can be compared to locations outside of Stayton that use the same crash weighting scheme. Annualized EPDO values can be interpreted by assuming fatal and suspected serious injury (level A) crashes are assigned 20 points, injury level B and C crashes are assigned 2 points, and PDO crashes are assigned 0.2 points.

High crash severity and high crash frequency intersections and segments were examined and combined to create a HIN for Stayton. This HIN provides insights into locations that crash data indicates are hotspots for harm on the roadway network. The top tier in the HIN includes intersections and segments with EPDO values of at least 20, indicating that there was at least one fatal or suspected serious injury crashes over the crash period. The second tier includes intersections and segments with EPDO values of at least 4, indicating that there was at least 2 injury crashes over the crash period.

Figure 9 includes a map of the HIN in Stayton. Table 1 and Table 2 list the intersections and roadway segments, respectively, along with information about their location and key characteristics, including social disparity of the surrounding vicinity. Appendix B includes the full results of the EPDO screening.

Several locations on the HIN are also on the ODOT Safety Priority Index System (SPIS) list of highest priority sites statewide. SPIS scores use crash frequency and crash severity data, similar to the EPDO analysis performed within this plan, to identify potential safety problems on state roadways. The roadway segment along Fern Ridge Road near North 3rd Avenue was within the top 15 percent of SPIS sites and the roadway segment along North 1st Avenue between East Pine Street and East Cedar Street was within the top 10 percent of SPIS sites.[9]

[9] Oregon TransGIS. Oregon Department of Transportation, 2025. https://gis.odot.state.or.us/transgis/

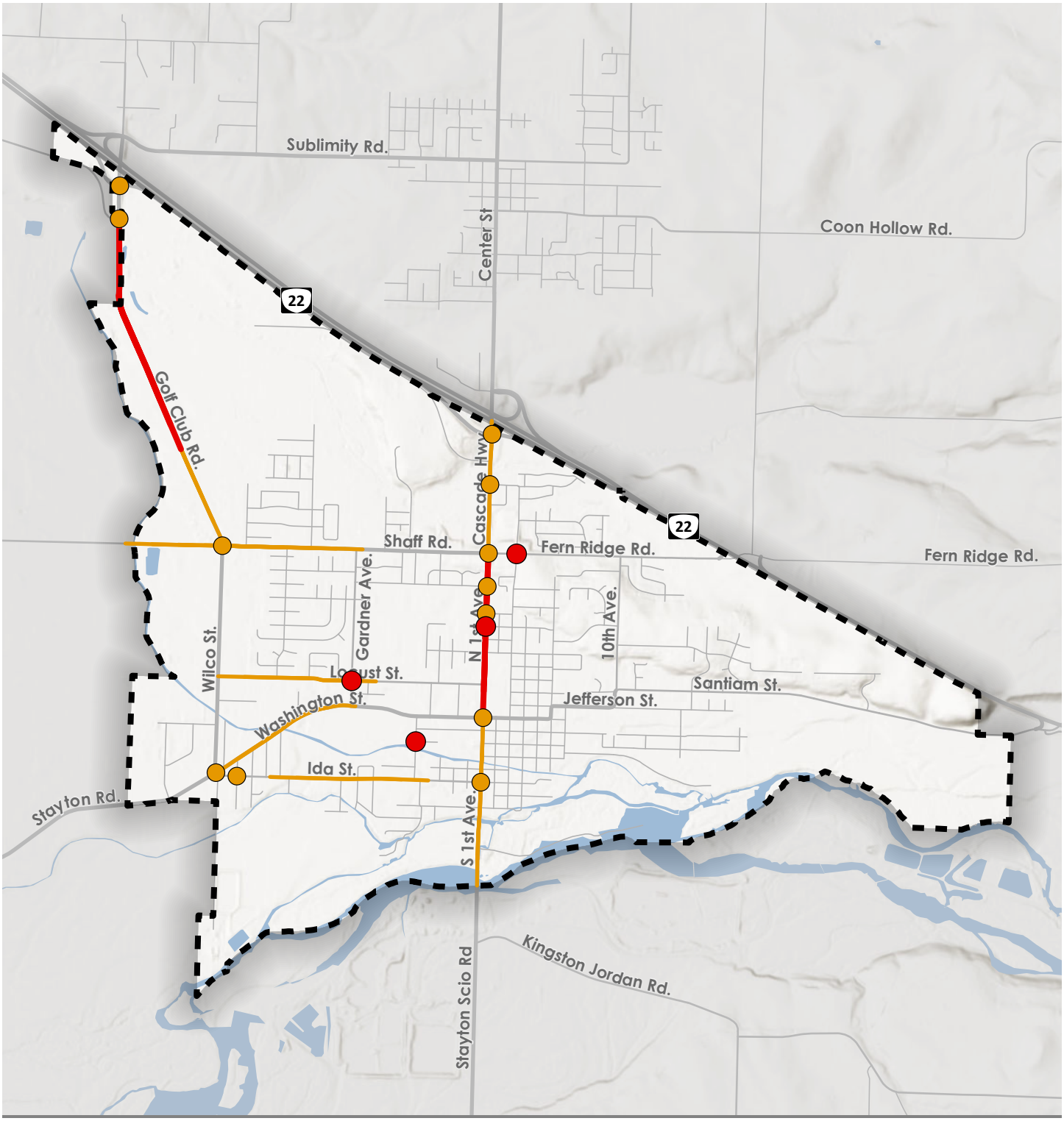


Figure 9

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High Injury Network (HIN)
Stayton, OR

Table 2. Intersections on the High Injury Network

Rank	Intersection	Jurisdiction	Traffic Control[10]	Annualized EPDO Value	Social Disparity
1	**Fern Ridge Rd / N. 3rd Ave**	Marion County, City of Stayton	TWSC[11]	40.6	High/ Medium
2	**E. Fir St / N. 1st St**	Marion County, City of Stayton	TWSC	28.4	High/ Medium
3	**W. Locust St / N. Gardner Ave**	City of Stayton	AWSC	24.2	High
4	**N. Evergreen Ave / W. Burnett St**	City of Stayton	TWSC	20.2	Medium
5	**OR 22 Eastbound ramps / Cascade Hwy**	ODOT, Marion County	Signal Control	18.8	High
6	**Washington St / N. 1st Ave**	Marion County, City of Stayton	Signal Control	14.8	High/ Medium
7	**Washington St / W. Ida St / Wilco Rd**	Marion County, City of Stayton	TWSC	10.4	High/ Medium
8	**W. Ida St / S. 1st Ave**	Marion County, City of Stayton	AWSC	9.0	Medium
9	**Shaff Rd / Golf Club Rd / Wilco Rd**	Marion County	AWSC	8.6	High
10	**Mill Creek Rd / Golf Club Rd**	Marion County	TWSC	8.4	High
11	**OR 22 Eastbound ramps / Golf Club Rd**	ODOT, Marion County	TWSC	8.2	High
12	**Shaff Rd / Fern Ridge Rd / N. 1st Ave**	Marion County, City of Stayton	Signal Control	7.6	High/ Medium
13	**Whitney St / Cascade Hwy**	Marion County, City of Stayton	TWSC[12]	4.6	High
14	**W. Regis St / N. 1st Ave**	Marion County, City of Stayton	TWSC[12]	4.4	High/ Medium
15	**E. Cedar St / N. 1st Ave**	Marion County, City of Stayton	TWSC[12]	4.2	High/ Medium
16	**W. Ida St / N. Oak Ave**	City of Stayton	TWSC	4.2	Medium

[10] AWSC = All Way Stop Control; TWSC = Two Way Stop Control
[11] While a pedestrian hybrid beacon (PHB) is planned for this intersection, the current intersection traffic control devices are side street stop signs.
[12] This intersection is three-legged and has stop control on the minor approach.

Table 3. Roadway Segments on the High Injury Network

Rank	Segment	Endpoint 1	Endpoint 2	Jurisdiction	Segment Length (miles)	Highest Annualized Half-Mile Segment EPDO Value[13]	Total Annualized Segment EPDO	Annualized EPDO per Mile	Social Disparity Score
1	**Golf Club Rd**	SE Mill Creek Road	Shaff Road	Marion County	1.0	66.4	79.6	79.6	High
2	**N. 1st Ave**	Fern Ridge Road	Washington Street	Marion County	0.6	31.4	31.8	53.0	High/ Medium
3	**Cascade Hwy**	OR 22	Fern Ridge Road	Marion County	0.5	12.8	12.8	25.6	High
4	**Shaff Rd**	Stayton UGB Boundary	N Gardner Avenue	Marion County	0.8	6.8	6.8	8.5	High
5	**S. 1st Ave**	Washington Street	Santiam River	Marion County	0.5	6.4	6.4	12.8	Medium
6	**Ida St**	N Myrtle Ave	N Evergreen Ave	City of Stayton	0.6	5.2	5.2	8.7	Medium
7	**Locust St**	Wilco St	N Fern Ave	City of Stayton	0.6	4.4	4.4	7.3	High
8	**Washington St**	Wilco St	N Gardiner Ave	City of Stayton	0.6	4.2	4.2	7	High/ Medium

[13] For roads greater than one half mile in length, EPDO values are calculated in half-mile segments, starting every 0.1 miles along the corridor. If the EPDO value for multiple half-mile segments along a given roadway are similar in value, these segments are grouped to create one larger, combined segment.

High Risk Roadway Segments

Crashes occur due to a variety of factors, such as human behavior, weather, infrastructure design, or a combination of these factors. Infrastructure characteristics that correlate with observed crash patterns may indicate the need to address a systemic safety issue. An analysis of all public roadways within Stayton was completed to identify where multiple risk factors are present at one location. The roadway characteristics were mapped to understand where multiple characteristics overlap. The roadway risk factors analyzed included:

- **Speed**: Posted speed greater than or equal to 35 mph
- **Functional Classification**: Roadways with AADT in excess of 5,000 vehicles/day[14]
- **Bicycle/Pedestrian Facilities**: Lack of designated facilities for bicyclists or pedestrians[15]
- **Activity Generators**: Within 0.25 miles of a school, park, or senior living facility

The factors listed above are generally associated with higher roadway risk; however, this is not an exhaustive list. For example, driveway/access density correlates with risk but was not included due to limited data. The risk factors listed above were selected based on data availability and applicability to the context of the Stayton SAP.

While the locations identified by this analysis may or may not have experienced a fatal or suspected serious injury crash within the 5-year study period, they share characteristics that are observed at locations that have experienced these types of crashes. These factors were used to conduct characteristic-based screening of all roadways in Stayton. A characteristic-based score was calculated based on the presence of these characteristics along segments of a roadway. The more characteristics a roadway includes, the higher the score. Each characteristic is weighted the same, with one point per roadway characteristic. The maximum risk score for a single roadway is 4 points.

Figure 10 shows the roadways in Stayton that have two or more risk factors. Appendix B includes the data used to calculate the risk scores along with the risk scores for all roadway segments in Stayton.

[14] Due to limited geospatial data availability regarding roadway volumes, functional classification is used as a proxy. Per ODOT Analysis Procedures Manual, arterials will be assumed to have volumes in excess of 5,000 vehicles per day.
[15] A gap in the bicycle network or pedestrian network for a given roadway each contributed 0.5 points towards the total risk score.

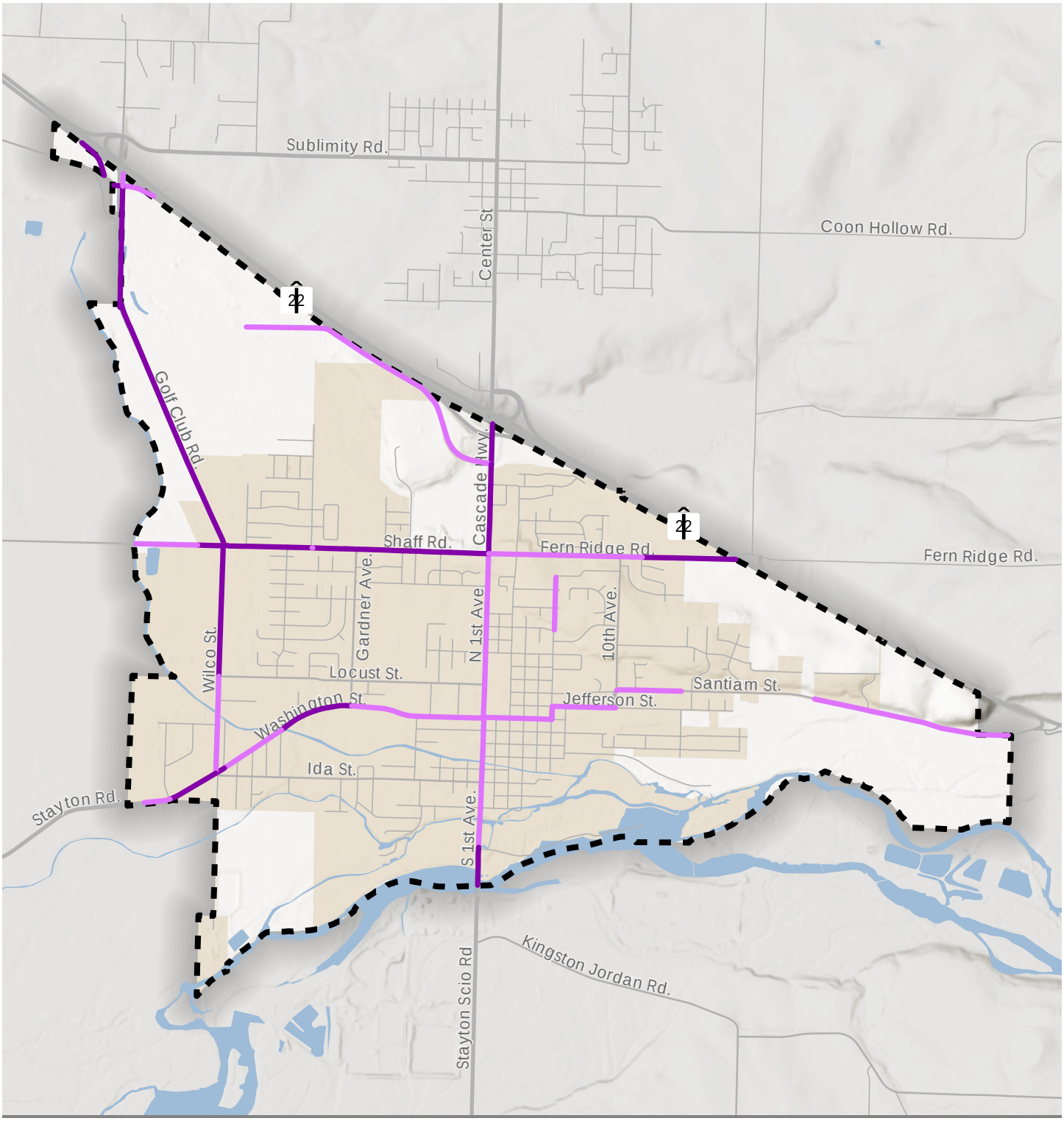

Figure 10

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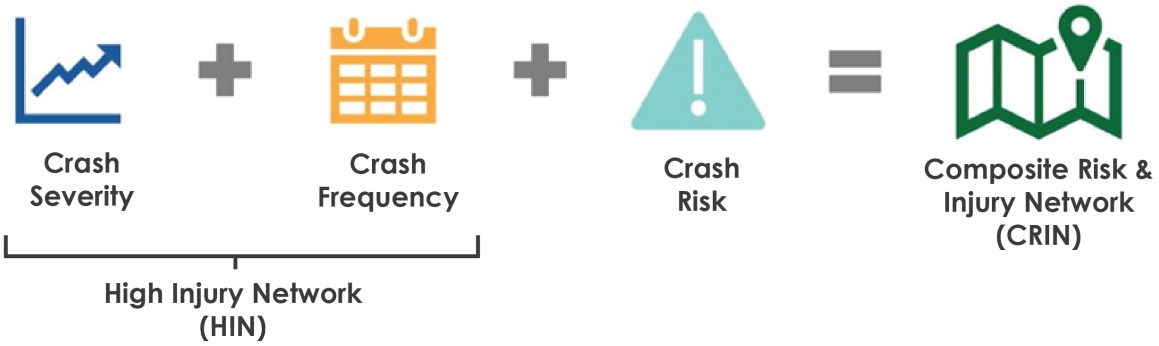
High Risk Roadways
Stayton, OR

Composite Risk and Injury Network

The Composite Risk and Injury Network (CRIN) combines the HIN with the results of the high risk roadway network analysis, as shown in Figure 11. To create the CRIN, the HIN and the high risk roadway analysis layers were overlaid on a single map. Figure 12 shows the resulting CRIN where red and orange road segments indicate that a road was on the HIN and purple roadway segments indicate that a road was on the high risk roadway analysis layer. A CRIN figure containing only locations under the City of Stayton's jurisdiction is included in Appendix B.

Figure 11. Components of the Composite Risk & Injury Network



The Stayton SAP Open House #1 provided an opportunity for Stayton residents to express their opinions on transportation safety in Stayton. Comparing the locations where Stayton residents identify transportation safety related issues to the locations identified on the CRIN can deepen understanding of how historic crash data and roadway risk information align and support the lived experience of Stayton residents. While Open House participants gave feedback spanning a large number of city intersections and roadway segments, several key overlaps were identified. Notable segments and intersections which appear on the CRIN and were brought up in the Open House include:

- Segment along North 1st Avenue from Washington Street to Shaff Road
- Segment along South 1st Avenue from the Stayton UGB boundary to Washington Street
- Segment along Shaff Road from Golf Club Road to North 1st Avenue
- Segment along Fern Ridge Road from North 1st Avenue to the Stayton UGB boundary
- Intersection of Golf Club Road, Wilco Street, and Shaff Road
- Intersection of South 1st Avenue and Ida Street
- Intersection of North 1st Avenue and Washington Street
- Intersection of Cascade Highway and Whitney Street

Open House attendees also identified other locations not captured by the CRIN. Locations with multiple (2+) comments that were not captured by the CRIN include:

- Segment along East Santiam Street from North 10th Avenue to the Stayton UGB boundary
- Intersection of North 10th Avenue and East Santiam Street

The complete Open House #1 summary document is included in Appendix C.

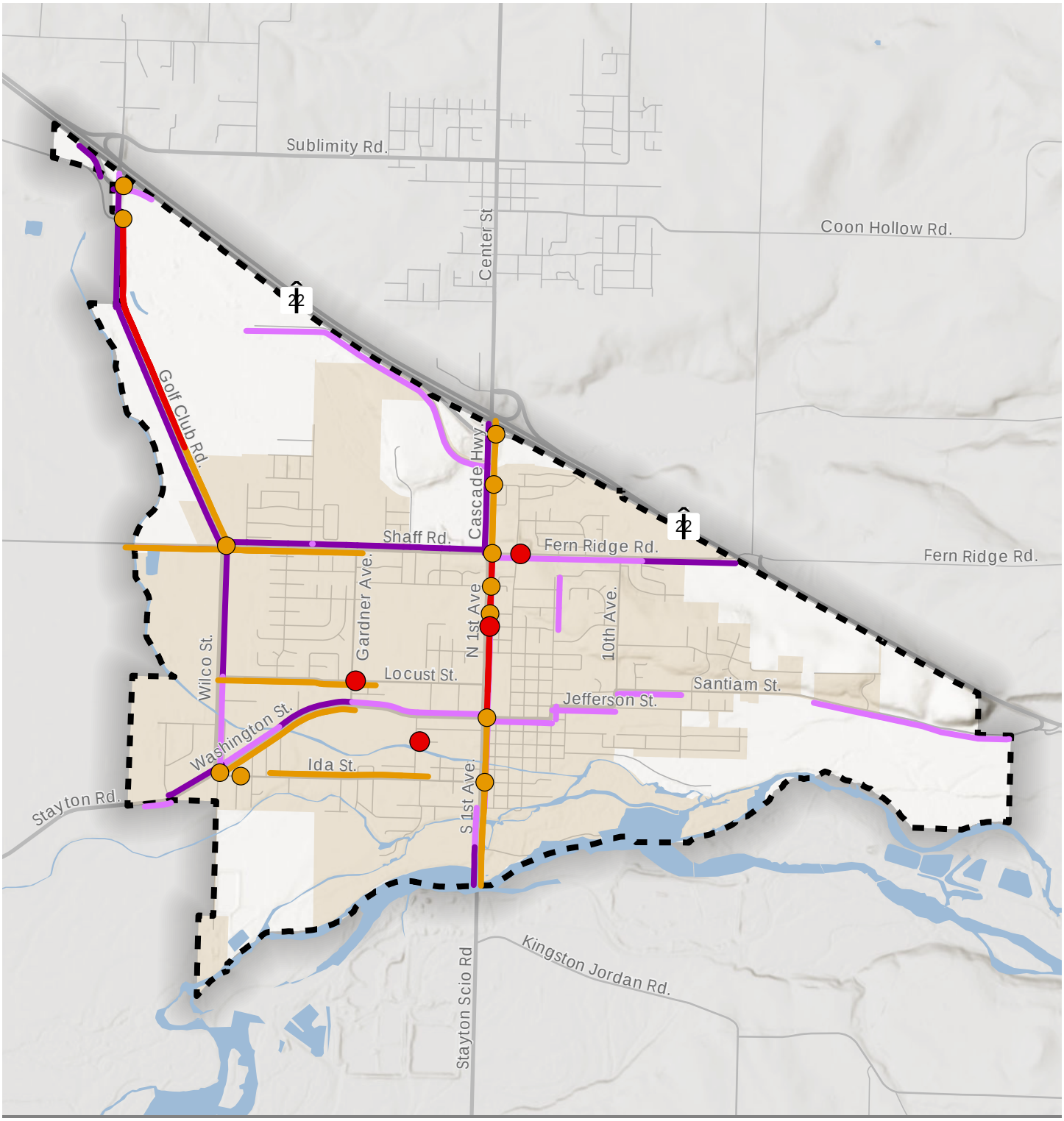


Figure 12

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Composite Risk & Injury Network (CRIN)
Stayton, OR

EMPHASIS AREAS

The purpose of this section is to distill the findings from the safety evaluation section into key safety Emphasis Areas that will enable more targeted countermeasure development. These Emphasis Areas include engineering, behavioral, and environmental factors that significantly contribute to the existing roadway safety patterns and trends. The following Emphasis Areas are elements that the City of Stayton and its partner agencies could focus on through the Safety Action Plan: vulnerable road users, risky driver behaviors, and intersections. Alignment between the Stayton Transportation System Plan (TSP), Marion County Transportation Safety Action Plan (TSAP), and Oregon TSAP is summarized in Table 4 and discussed in greater detail below.

Table 4. Alignment between Stayton SAP Emphasis Areas and Other Relevant Plans

Emphasis Area	Stayton TSP	Marion County TSAP	Oregon TSAP
Vulnerable Road Users	✓	✓	✓
Risky Driver Behaviors	✗	✓	✓
Intersections	Included within plan objectives focusing on crossings and high crash locations	✓	Included within the plan's Infrastructure Emphasis Area

Vulnerable Road Users

Vulnerable road users is a term used to describe a variety of users of the Stayton roadway system who are more likely to be injured should they be involved in a crash. These users include pedestrians, bicyclists, and motorcyclists. Vulnerable road users experienced significantly higher rates of KAB crash severity outcomes compared to road users in a car or truck, with over half of crashes involving a pedestrian or bicyclist resulting in a KAB severity outcome.

This Emphasis Area aligns with the Marion County TSAP and the Oregon TSAP. Ensuring synergy between transportation safety efforts at the county and state level can improve funding opportunities and lead to more effective transportation safety improvement efforts. The Stayton TSP includes the goal of improving safety for all modes, including pedestrians and bicyclists. Furthermore, improving safety for vulnerable road users was a key priority area for attendees at the Open House #1.

Risky Driver Behaviors

Risky driver behaviors include a variety of driver actions which significantly contribute to KAB severity outcomes. These behaviors include impaired, distracted, and reckless driving, along with failure to use safety equipment and speeding. These behaviors increase the likelihood of a crash occurring and increase the probability of a fatal or serious crash outcome when a crash does occur.

The Marion County TSAP and the Oregon TSAP identify impairment and risky behaviors as Emphasis Areas.

Intersections

Not only did the majority of total crashes within the study area occur within an intersection, but crashes occurring within an intersection are also 6 percentage points more likely to result in a KAB severity outcome than segment crashes.

Stop-controlled intersections should be locations of particular emphasis within Stayton. Of the 16 intersections identified on the HIN, 13 intersections are stop-controlled. The top four intersections on the HIN are stop-controlled and all have been the location of a traffic-related fatality or suspected serious injury; no fatal or suspected serious injuries occurred at signal-controlled intersections on the HIN. Additionally, safety concerns related to stop-controlled intersections were highlighted at the Open House, with numerous attendees describing motorists hitting stop signs with their vehicle or failing to stop or slow down at stop signs. Appendix D contains a map of signal locations in Stayton.

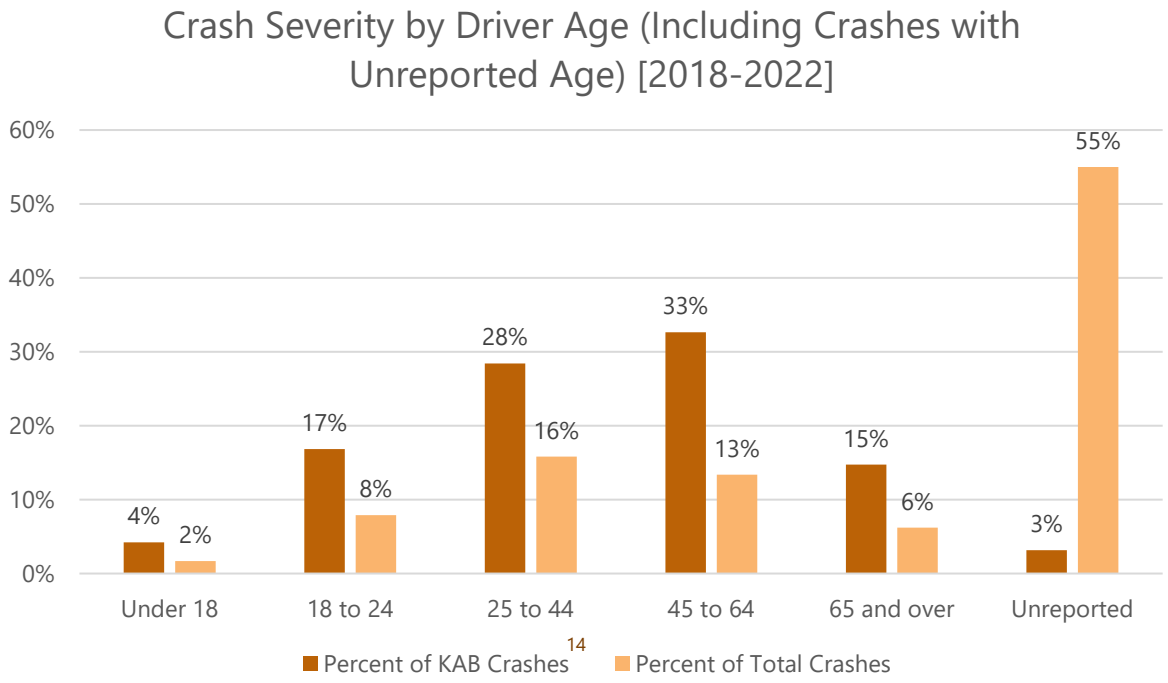
The Marion County TSAP includes intersections as an Emphasis Area and the Oregon TSAP includes intersection considerations within its infrastructure Emphasis Area. Stayton's TSP contains objectives to address existing safety issues at high collision intersections and crossings.

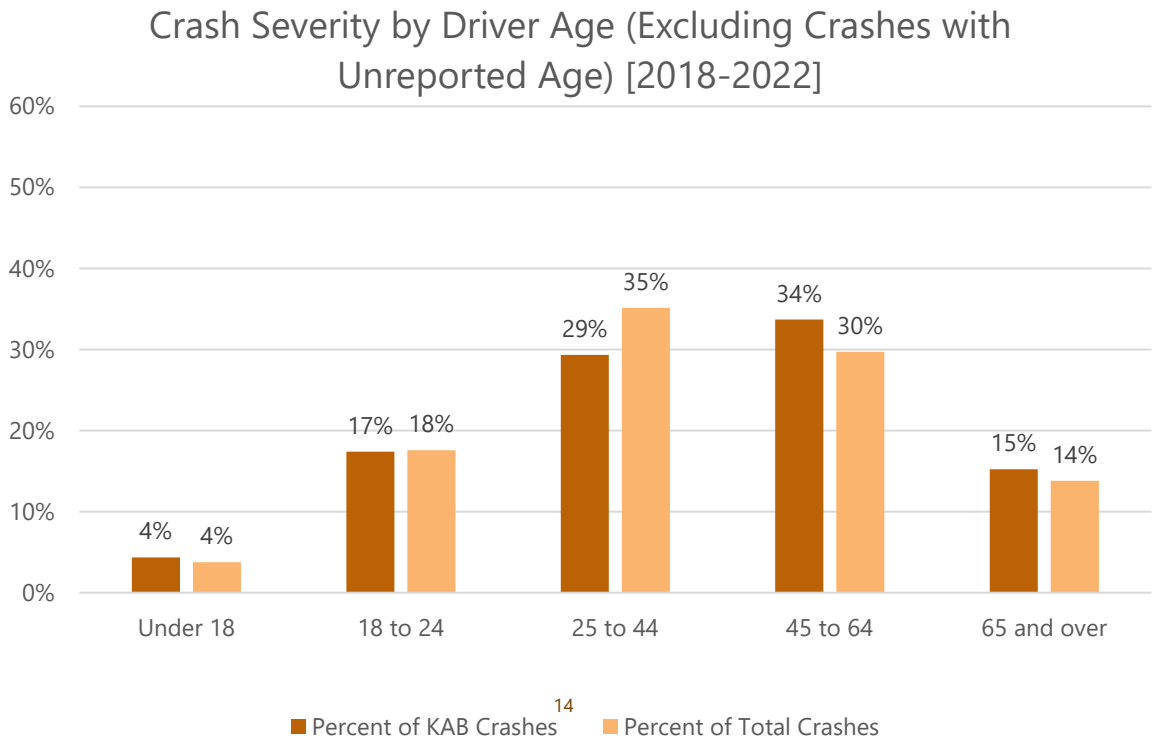
Next Steps

Building upon the findings from the Existing Conditions analysis, the next steps involve using targeted approaches to address the Emphasis Areas identified in the previous section. Additional analyses will move to identify appropriate transportation safety countermeasures and priority locations within the Stayton UGB for countermeasure implementation.

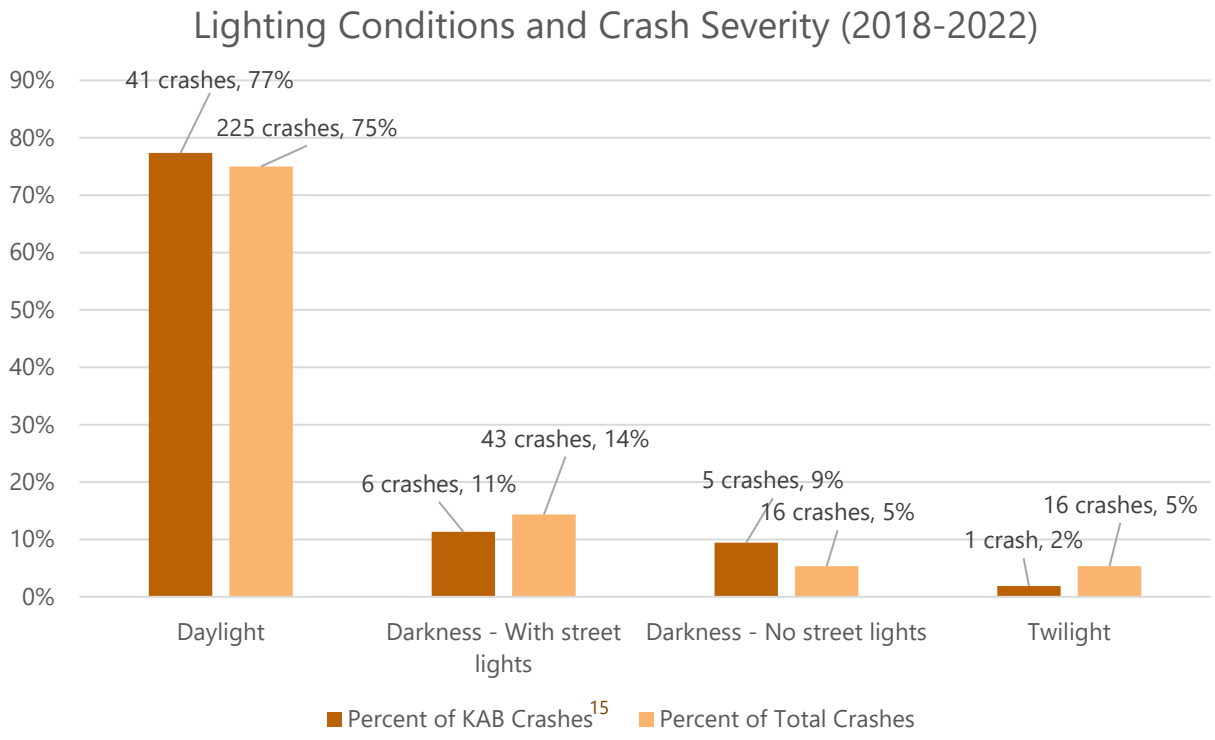
KITTELSON & ASSOCIATES

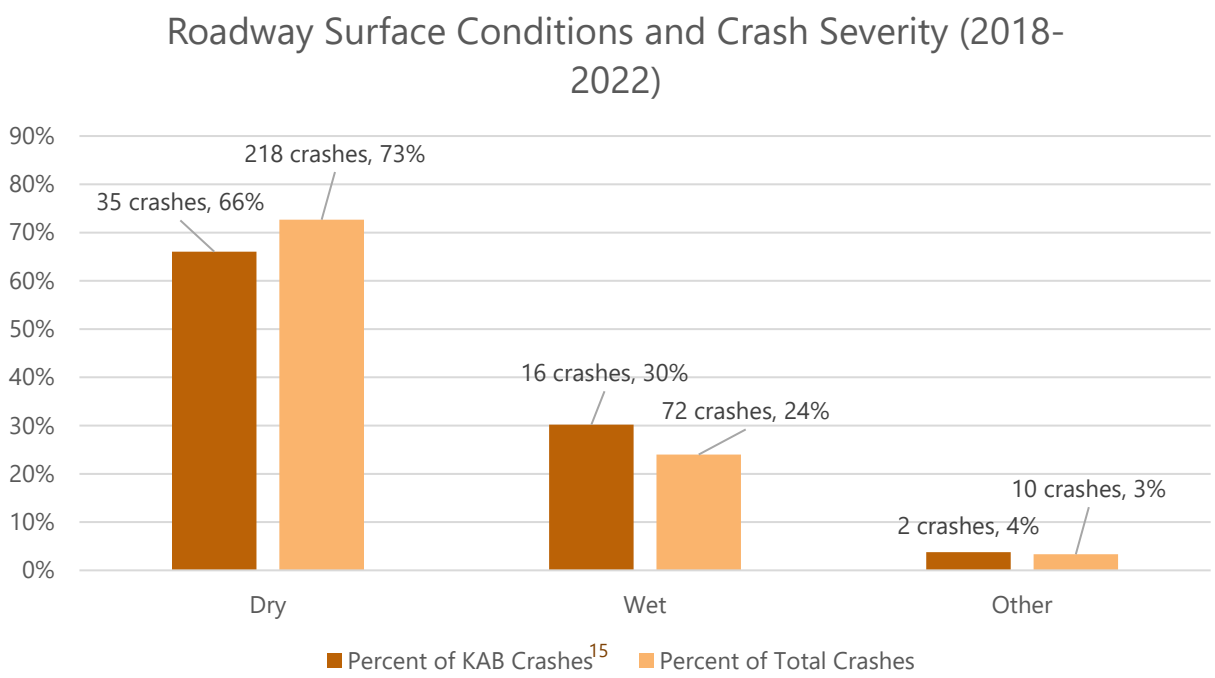
Appendix A. Further Crash Patterns and Trends





[16] KAB crashes include fatal, suspected serious injury, and suspected minor injury outcomes.





[17] KAB crashes include fatal, suspected serious injury, and suspected minor injury outcomes.

KITTELSON & ASSOCIATES

Appendix B. Location Screening Maps

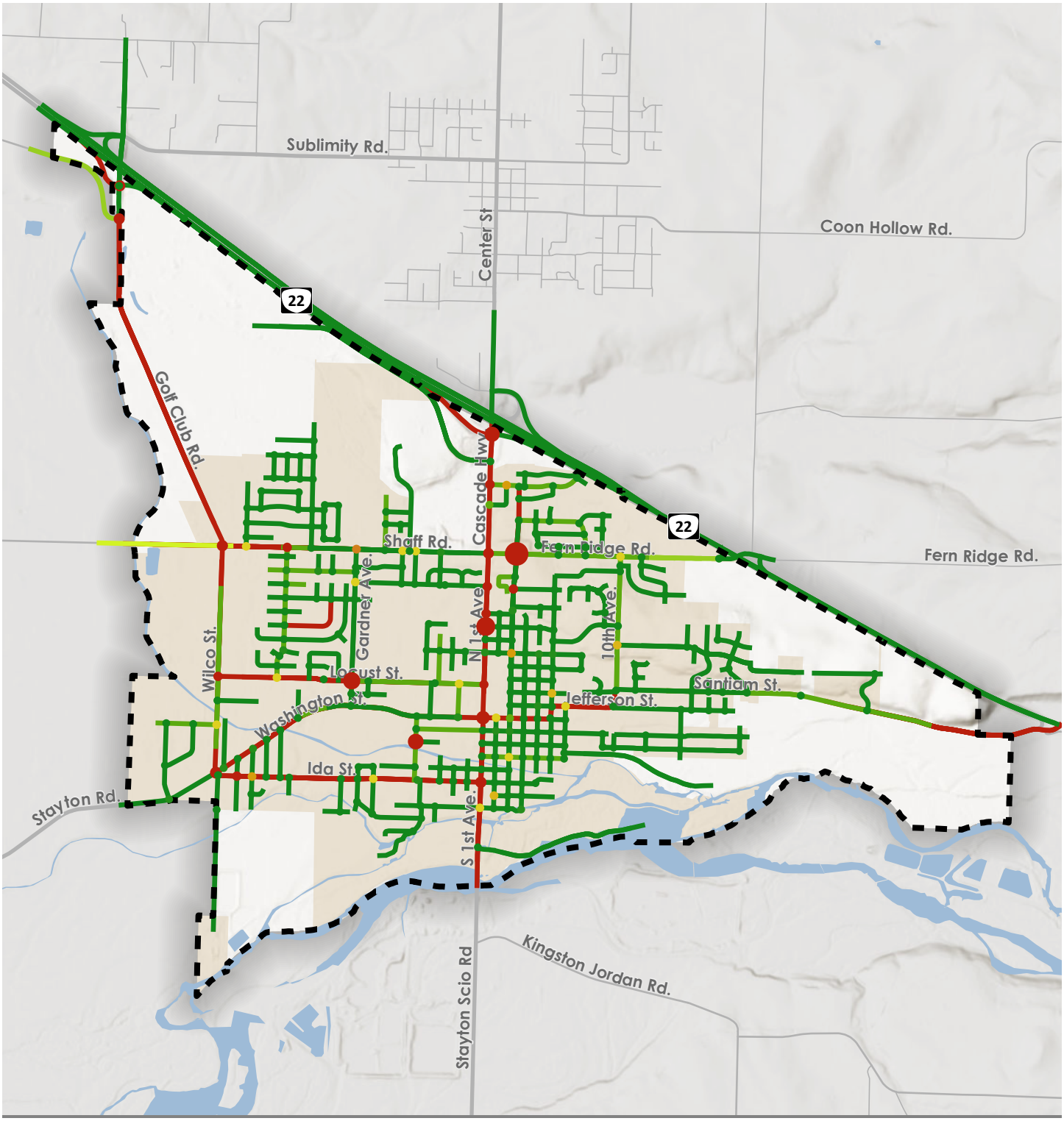


Figure B-1

KITTELSON & ASSOCIATES

Segment and Intersection EPDO* (All Locations) Stayton, OR

*Equivalent Property Damage Only

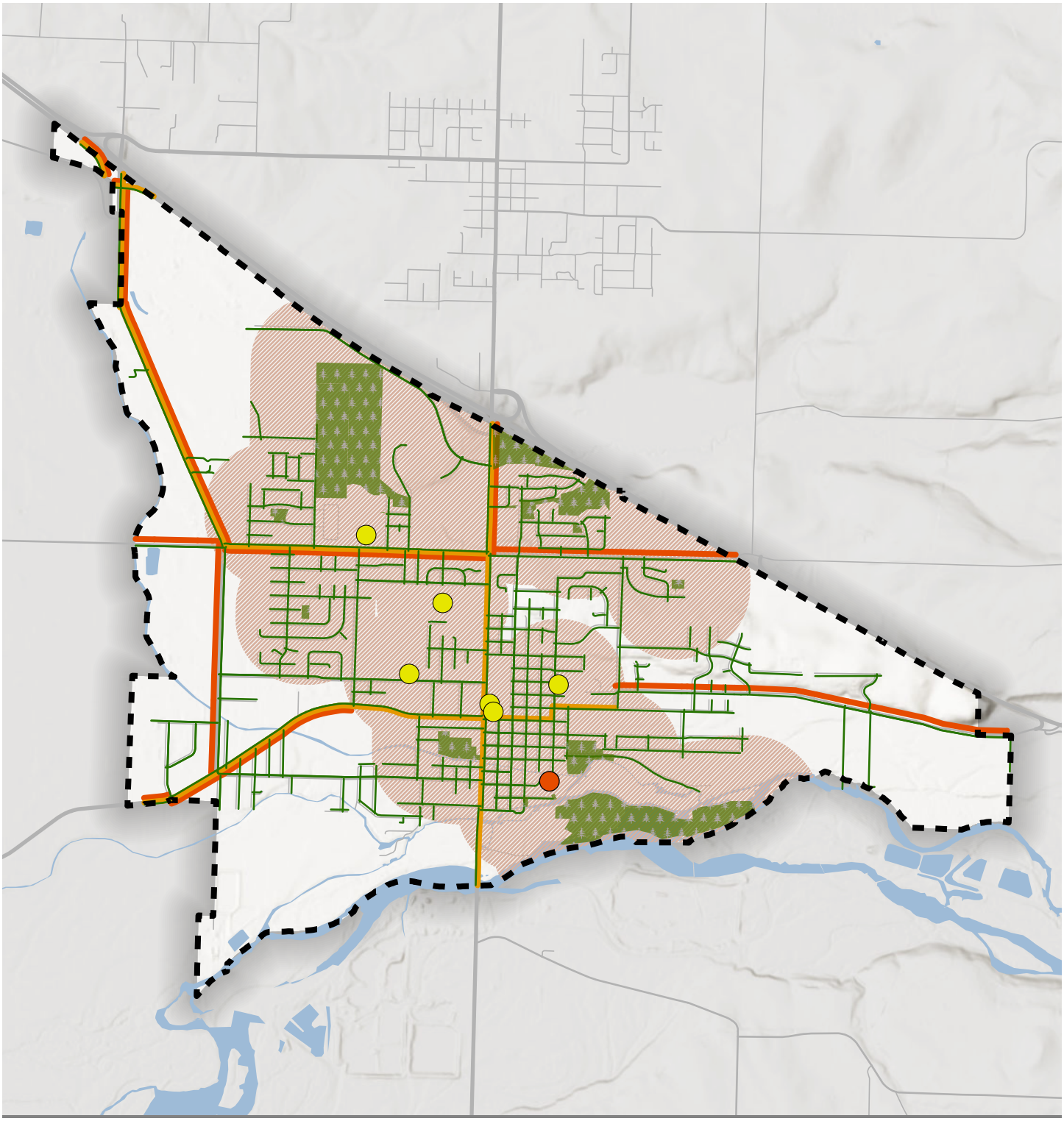


Figure B-2

KITTELSON & ASSOCIATES

Roadway Risk Factors
Stayton, OR

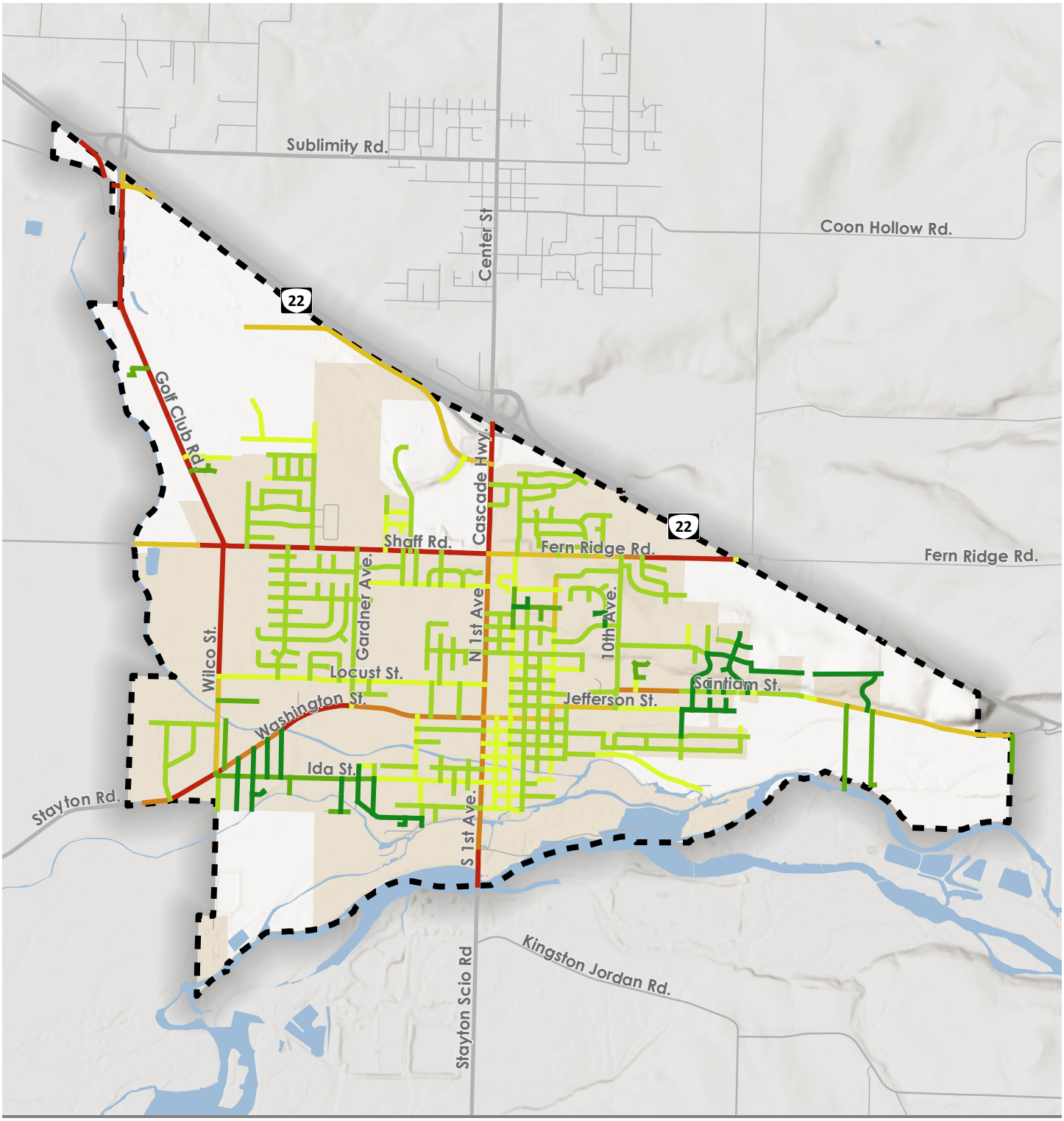


Figure B-3

Roadway Risk (All Segments)
Stayton, OR

KITTELSON & ASSOCIATES

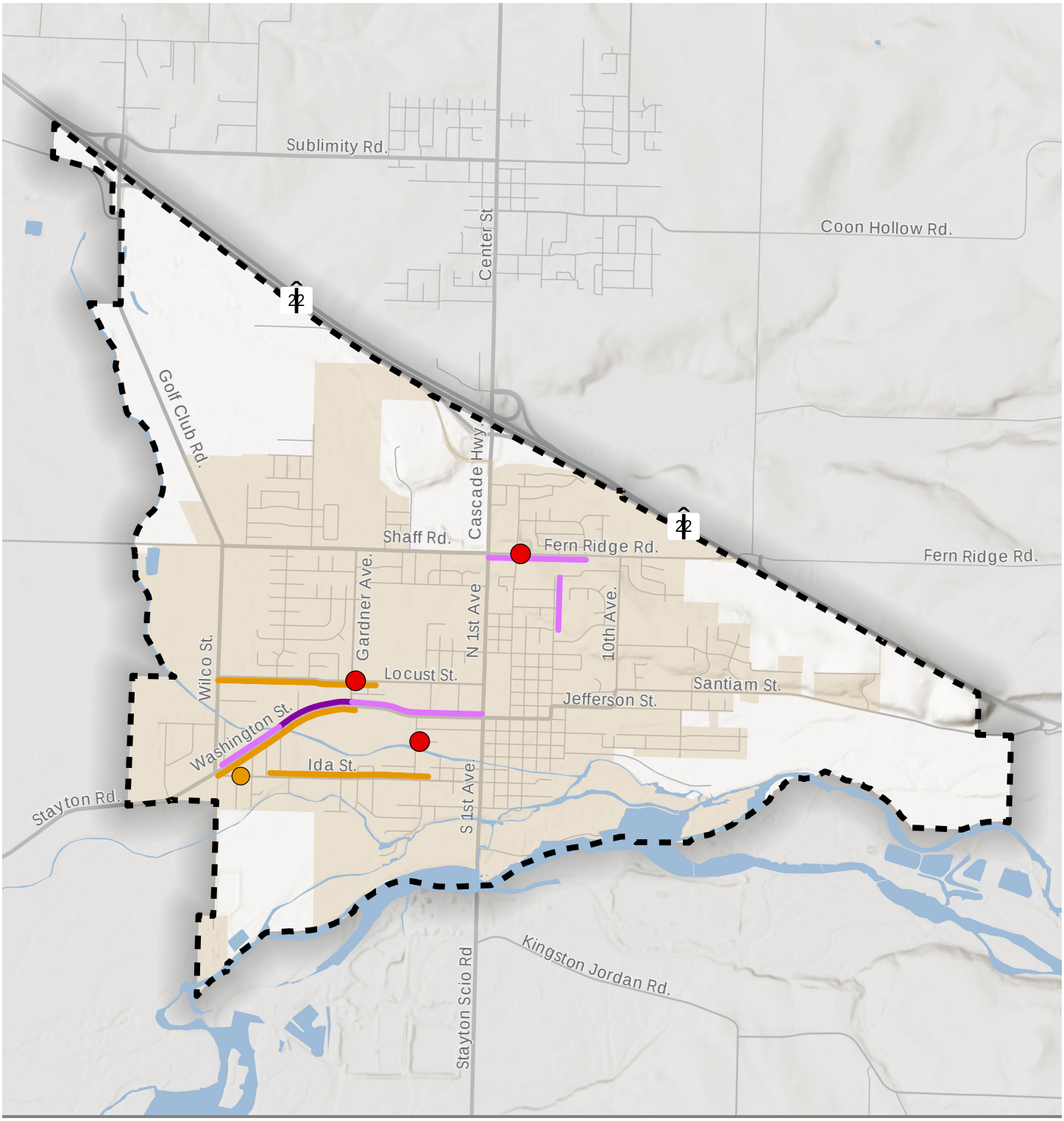


Figure B-4

KITTELSON & ASSOCIATES

Composite Risk & Injury Network (CRIN) - City Facilities
Stayton, OR

Appendix C. Open House #1 Summary

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

OPEN HOUSE #1 SUMMARY

April 8, 2025 Project# 31028

To: City of Stayton

From: Nick Gross, Max Heller, Amy Griffiths; Kittelson & Associates, Inc.

RE: Stayton Safety Action Plan

Overview

The City of Stayton held the first public Open House for the Stayton Safety Action Plan (SAP) on Thursday April 3, 2025, from 5:00pm-8:00pm at the Stayton Community Center. The goal of this engagement event was to educate community members about the project and provide an opportunity for the community to share their transportation safety related concerns within City staff. The City provided several display boards where people were able to directly add comments regarding places where they feel unsafe, their transportation safety priorities, and how they move around Stayton. The event attracted approximately 15 to 20 participants who provided dozens of comments. This document summarizes key takeaways from the feedback received through this Open House.

Open House #1

Open House #1 was the first of two in-person public engagement events as part of the Stayton SAP project. This event was advertised on the City of Stayton website and attracted a range of local residents, business owners and City employees. The Open House was additionally attended by members of the SAP project team, including both City staff and the consultant team. The event included several displays, including:

- A board presenting a project background, including an introduction to the Safe System Approach
- A board provided a high-level overview of crash history within the study area
- Displays where community members could add comments to a map of Stayton and describe their concerns or transportation safety related priorities
- A board providing additional opportunities for community members to get involved, including a QR code to the project website

Photos of the comment boards are located at the end of this document.

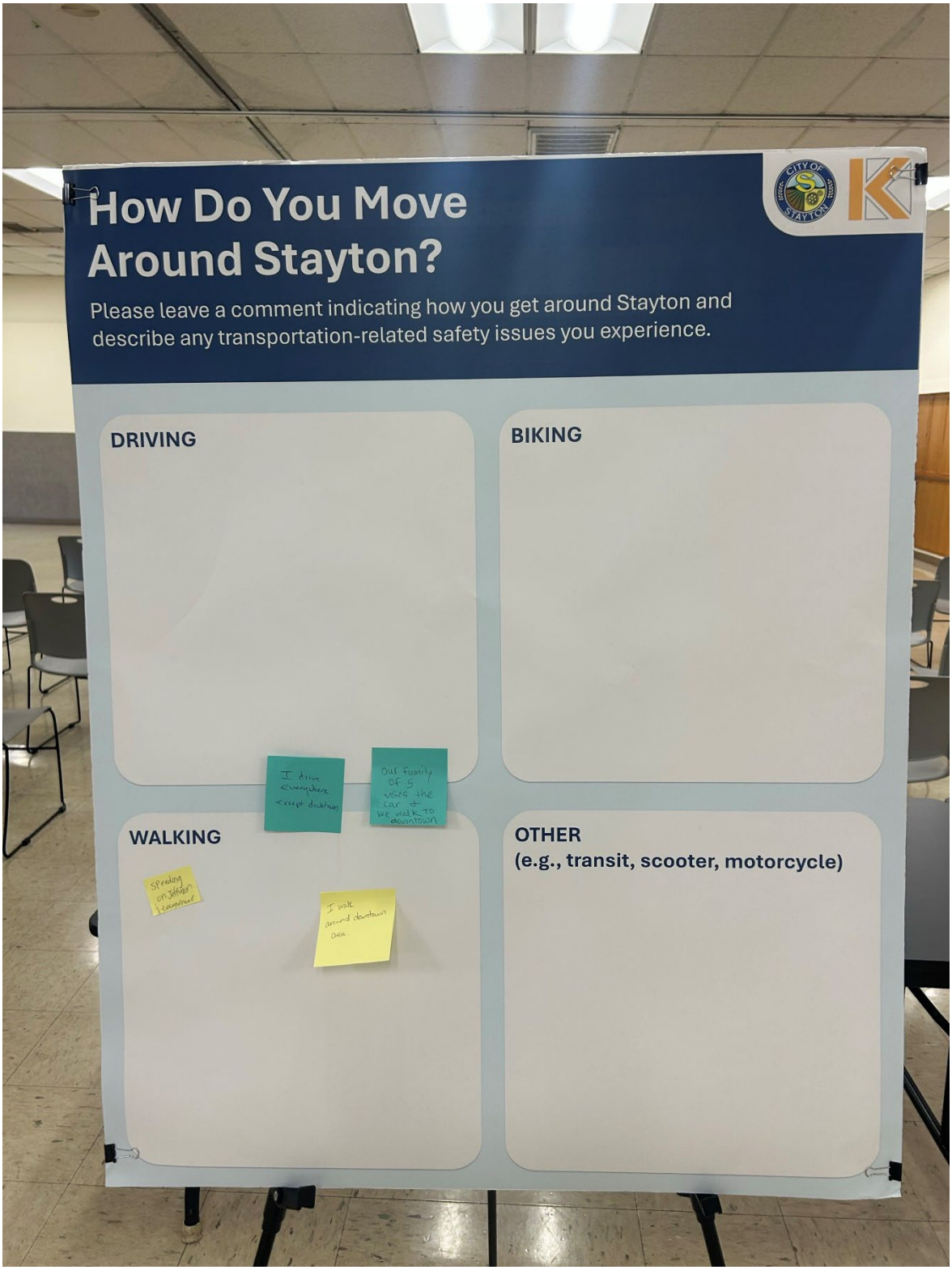
KEY TAKEAWAYS

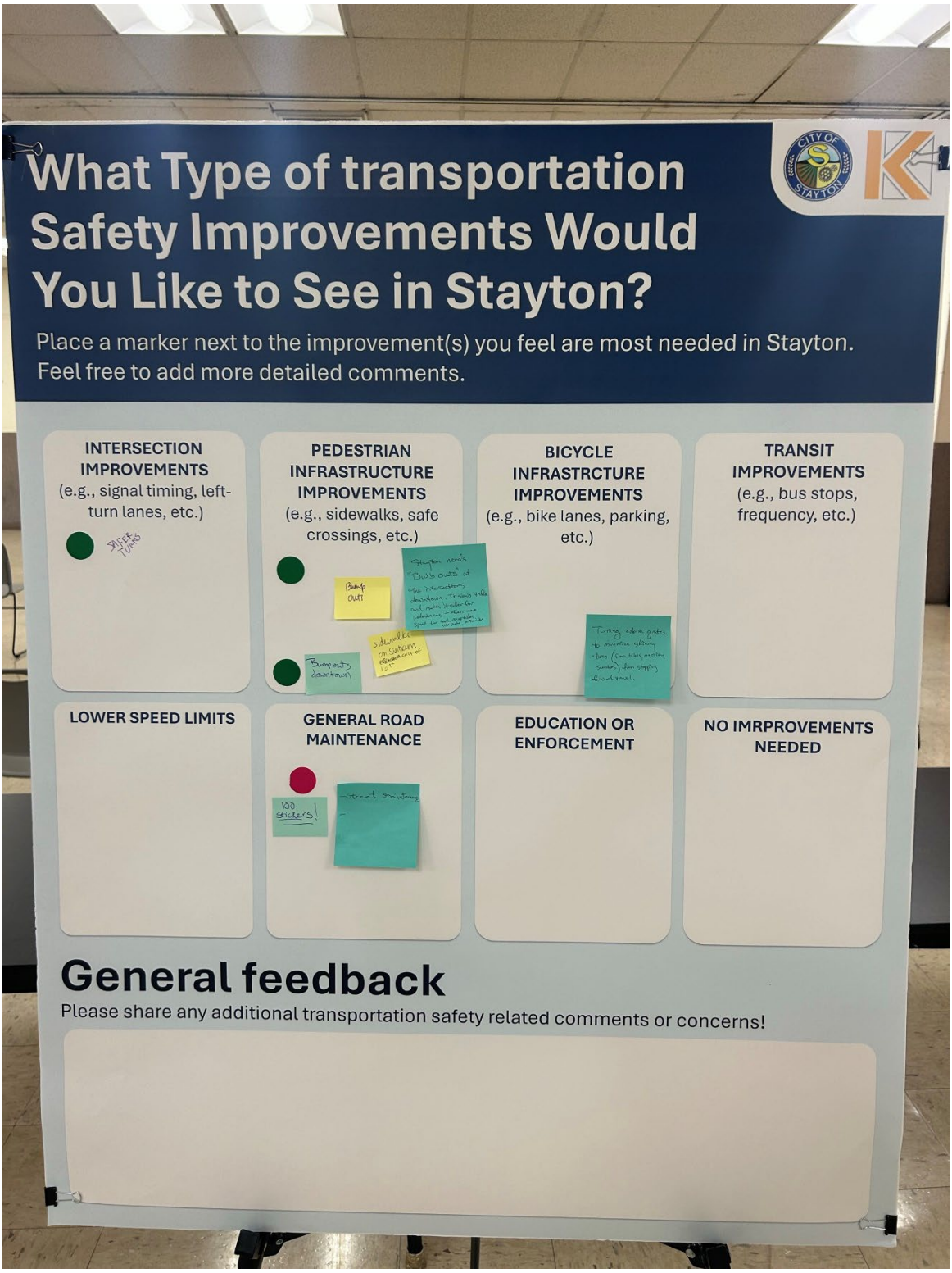
Feedback received from this Open House event was consolidated and analyzed to identify key themes and takeaways. This section summarizes this feedback.

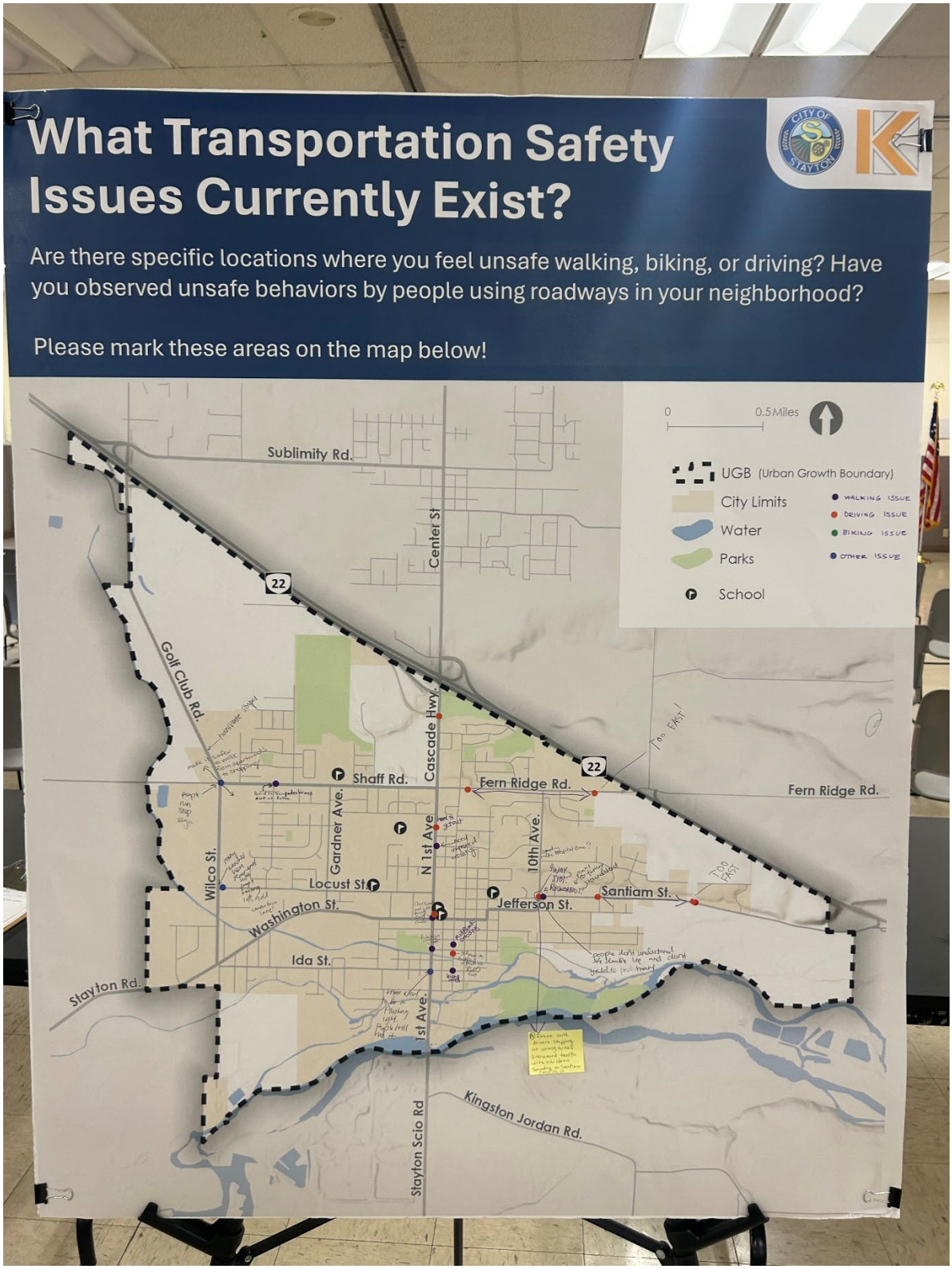
- The community identified the following safety concerns:
  - Poor crosswalk and pedestrian visibility creates safety concerns at crossings
  - Poor motorist yield rates to pedestrians at crossings
  - Excessive accesses/driveways along arterial roadways (especially along First Avenue)
  - Drivers running stop signs, often due to poor visibility of the sign
  - School zone flashing beacons do not align with school arrival/release periods
  - Turning conflicts with pedestrians and vehicles, particularly in two-way left-turn lanes and at driveways
  - Parked cars reduce the visibility of pedestrians at crossings and block sidewalks
- The community identified the following desired safety improvements:
  - Curb extensions at pedestrian crossings
  - Enhanced pedestrian crossing signage (e.g. RRFBs) especially at City Hall and the library
  - Improved sidewalk connectivity, filling gaps in the network (especially at the Cannery)
  - Reduced speed limits, especially on Fern Ridge Road and Santiam Street
  - Access management to driveways and businesses on busy roads
  - Improve pavement conditions (e.g. fill potholes)
  - Transverse stripes to increase awareness of stop-controlled intersections
  - Ensure manhole grates do not pose hazards to cyclists
  - Enforcement of Right Turn on Red restriction at Fern Ridge Road & Shaff Road
  - Leading pedestrian intervals
  - Ensure school zone signage and flashing beacons are functioning and visible
  - Street lighting, especially at First Avenue & Washington Street
  - Adequate sight distance (especially at W. Town Drive & Shaff Road)

ATTACHMENTS

This section includes photographs of each of the three comment boards displayed at the Open House along with community member feedback.




What Type of transportation Safety Improvements Would You Like to See in Stayton?
Place a marker next to the improvement(s) you feel are most needed in Stayton. Feel free to add more detailed comments.
INTERSECTION IMPROVEMENTS (e.g., signal timing, left-turn lanes, etc.)
PEDESTRIAN INFRASTRUCTURE IMPROVEMENTS (e.g., sidewalks, safe crossings, etc.)
BICYCLE INFRASTRCTURE IMPROVEMENTS (e.g., bike lanes, parking, etc.)
TRANSIT IMPROVEMENTS (e.g., bus stops, frequency, etc.)
LOWER SPEED LIMITS
GENERAL ROAD MAINTENANCE
EDUCATION OR ENFORCEMENT
NO IMRPROVEMENTS NEEDED
General feedback
Please share any additional transportation safety related comments or concerns!


What Transportation Safety Issues Currently Exist?
Are there specific locations where you feel unsafe walking, biking, or driving? Have you observed unsafe behaviors by people using roadways in your neighborhood?
Please mark these areas on the map below!
0
0.5 Miles
UGB (Urban Growth Boundary)
City Limits
Water
Parks
School
WALKING ISSUE
DRIVING ISSUE
BIKING ISSUE
OTHER ISSUE
Too fast!
Sublimity Rd.
Center St
22
Golf Club Rd.
Cascade Hwy.
Shaff Rd.
Fern Ridge Rd.
Fern Ridge Rd.
Too fast!
Gardner Ave.
N 1st Ave
10th Ave.
Wilco St.
Locust St
Jefferson St.
Santiam St.
Too fast
Washington St.
Ida St.
Stayton Rd.
1st Ave.
Stayton Scio Rd
Kingston Jordan Rd.

Appendix D. Signal Locations

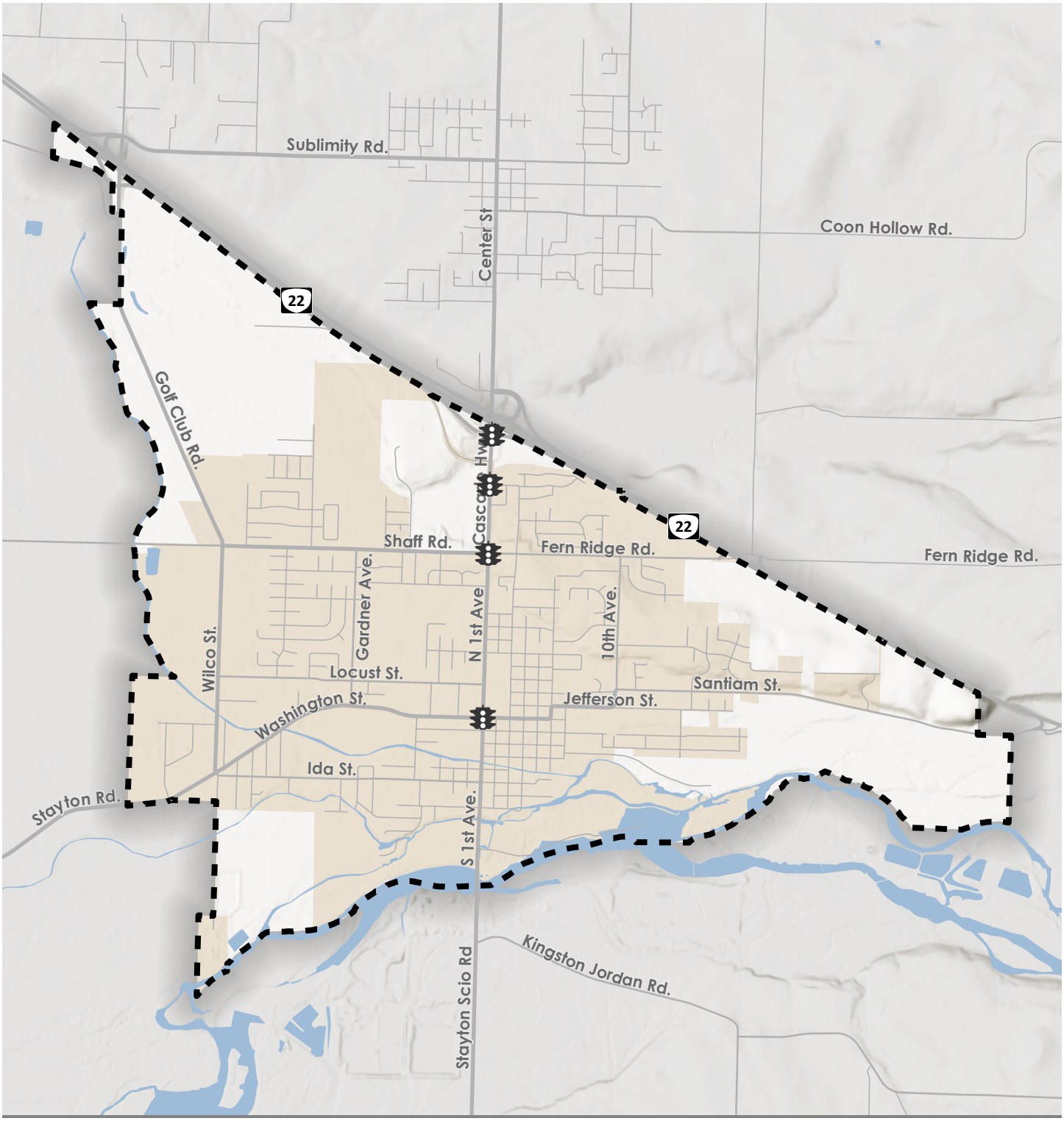


Figure D

KITTELSON & ASSOCIATES

Traffic Signal Locations
Stayton, OR

APPENDIX B: PUBLIC INVOLVEMENT SUMMARY

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

PUBLIC INVOLVEMENT SUMMARY

October 22, 2025 Project# 31028

To: City of Stayton

From: Nick Gross, Max Heller, Amy Griffiths; Kittelson & Associates, Inc.

RE: Stayton Safety Action Plan

Introduction

The Stayton Safety Action Plan included three rounds of public involvement. The first round occurred in April and focused on gathering input on existing conditions and transportation safety related concerns. The second round occurred in July and focused on gathering input on draft strategies and treatments. The final round will occur in December and will include a committee meeting and Planning Commission and City Council Hearings on the plan document.

Public Involvement Round 1: Safety Data Collection and Analysis

The first round of public involvement included an in-person open house. The goal of this engagement event was to educate community members about the project and provide an opportunity for the community to share their transportation safety related concerns within City staff.

OPEN HOUSE #1

The City of Stayton held the first public Open House for the Stayton Safety Action Plan (SAP) on Thursday April 3, 2025, from 5:00pm-8:00pm at the Stayton Community Center. This event was advertised on the City of Stayton website and attracted a range of local residents, business owners and City employees. The event attracted approximately 15 to 20 participants who provided dozens of comments. The Open House was attended by members of the SAP project team, including both City staff and the consultant team. The event included several displays, including:

- A board presenting a project background, including an introduction to the Safe System Approach
- A board provided a high-level overview of crash history within the study area
- Displays where community members could add comments to a map of Stayton and describe their concerns or transportation safety related priorities
- A board providing additional opportunities for community members to get involved, including a QR code to the project website.

Attachment A includes images of the comment boards.

KEY TAKEAWAYS

Feedback received from this open house event was consolidated and analyzed to identify key themes and takeaways. This section summarizes this feedback.

- The community identified the following safety concerns:
  - Poor crosswalk and pedestrian visibility creates safety concerns at crossings
  - Poor motorist yield rates to pedestrians at crossings
  - Excessive accesses/driveways along arterial roadways (especially along First Avenue)
  - Drivers running stop signs, often due to poor visibility of the sign
  - School zone flashing beacons do not align with school arrival/release periods
  - Turning conflicts with pedestrians and vehicles, particularly in two-way left-turn lanes and at driveways
  - Parked cars reduce the visibility of pedestrians at crossings and block sidewalks
- The community identified the following desired safety improvements:
  - Curb extensions at pedestrian crossings
  - Enhanced pedestrian crossing signage (e.g. RRFBs) especially at City Hall and the library
  - Improved sidewalk connectivity, filling gaps in the network (especially at the Cannery)
  - Reduced speed limits, especially on Fern Ridge Road and Santiam Street
  - Access management to driveways and businesses on busy roads
  - Improve pavement conditions (e.g. fill potholes)
  - Transverse stripes to increase awareness of stop-controlled intersections
  - Ensure manhole grates do not pose hazards to cyclists
  - Enforcement of Right Turn on Red restriction at Fern Ridge Road & Shaff Road
  - Leading pedestrian intervals
  - Ensure school zone signage and flashing beacons are functioning and visible
  - Street lighting, especially at First Avenue & Washington Street
  - Adequate sight distance (especially at W. Town Drive & Shaff Road)

Public Involvement Round 2: Document Needs and Develop Solutions

The second round of public involvement included an in-person open house and an in-person committee meeting. The feedback received through these events will inform the development of the *Strategies and Recommendations Memorandum*, including the proposed systemic and location-specific treatments and policies.

OPEN HOUSE #2

The Open House was held from 5:30-7:30pm on July 23, 2025 and had approximately 20 attendees, including Kittelson and City staff, along with local residents, business owners, and Marion County staff. The event was advertised on the City's website and through posters placed around Stayton. The event included several displays, including:

- A board presenting Vision Zero and the Safe System Approach
- A board summarizing the existing conditions analyses and presenting the SAP Emphasis Areas
- A board where community members could add comments to a list of draft systemic strategies and recommendations
- Boards where community members could add comments to vicinity maps of the five location-specific treatments
- A board summarizing next steps with a QR code for the project website

Attachment B includes images of the comment boards.

PUBLIC ADVISORY COMMITTEE MEETING #1

The Public Advisory Committee ("committee") meeting was held from 3:30-5:00 pm on July 23, 2025 and had eight participants, including Kittelson and City staff. The following people attended the meeting, arranged alphabetically by last name:

- Erin Cramer – Stayton School Board member
- Amy Griffiths – Kittelson & Associates
- Max Heller – Kittelson & Associates
- Larry McKinley – Stayton Planning Commission Chair
- Jonathan Penrice – Stayton resident
- Jennifer Siciliano – Community and Economic Development Director
- Steve Sims – Stayton City Council member
- Howard Tsang – Stayton Community Engagement Coordinator

Kittelson staff provided a background on the project, including a summary of the existing conditions analysis. Kittelson overviewed the systemic strategies and high-priority location treatments and provided committee members with opportunities to express feedback and ask questions.

KEY TAKEAWAYS

The feedback received from open house and committee meeting was consolidated and analyzed to identify key themes and takeaways. Takeaways are organized below based on their relevance to the systemic recommendations or the location-specific treatments.

Systemic Strategies

The following table summarizes the feedback received on the draft systemic treatments and strategies that were presented at the committee meeting and open house. Open house attendees also identified interest in systemic lighting improvements, especially along First Avenue and Third Avenue.

Treatment or Strategy	Feedback
Low-Cost Countermeasures at Stop Controlled Intersections	One open house attendee marked this as a "not as urgent" priority. Several other attendees discussed the importance of increasing driver awareness at stop-controlled intersections, particularly those along Golf Club Road, First Avenue, and Third Avenue.
Update Land Use and Development Code to Incorporate the SSA	Feedback on this strategy was neutral, but some committee attendees sought greater clarification on what this would entail and how this would compare to other cities' codes.
Crossing Enhancements	Attendees of the committee meeting and open house were very supportive of crossing enhancements as an "urgent" priority. They identified interest in crossing improvements along First Avenue at Cedar Street and Hollister Street. Other intersections were identified as priorities locations including the intersection of Third Avenue & Fern Ridge Road.
Traffic Calming	Feedback on this strategy was mixed. Some open house attendees expressed interest in curb extensions, chicanes, and other "narrowing" treatments. Other attendees expressed a disinterest in speed humps, indicating that humps might inhibit emergency response vehicles or distract drivers. A committee member specifically recommended a curb extension at Third Avenue & Marion Street, citing poor visibility due to park cars.
Fill Sidewalk Gaps	Filling sidewalk gaps was widely supported as a "urgent" priority by open house attendees. Some key gaps identified include the area surrounding the Shaff Road and Golf Club Road intersection and local streets east of First Avenue.
Fill Bicycle Gaps	Open house attendees identified this as a "not as urgent" or "not urgent" improvement. Committee members discussed the importance of maintaining separation between bicyclists and pedestrians in shared facilities.

Treatment or Strategy	Feedback
Update Roadway Design Standards to Incorporate the SSA	Feedback on this strategy was neutral.
Appropriate Posted Speeds for All Road Users	Open house attendees identified speeding as prevailing issue on Stayton roads. This strategy received neutral to positive feedback.
20 Is Plenty	Committee attendees were supportive of this strategy and were confident in the City's ability to implement the program. This strategy received neutral to positive feedback at the open house. A committee member especially emphasized that adopting 20 is Plenty would help pedestrians and drivers share the road more comfortably on local streets without dedicated sidewalk facilities.
Dynamic Speed Feedback Signs	This strategy was widely supported by committee and open house attendees. Existing signs were described as being effective and the attendees of the events were supportive of expanding the program. Some people expressed concern for the long-term efficacy of these signs, pointing out that drivers get accustomed to their presence and that drivers might resume speeding once signs are removed. A couple of open house attendees identified this as an "urgent" improvement.
Hardened Centerlines and Turn Wedges	Feedback on this strategy was neutral to positive, with on open house attendee identifying this as an "urgent" improvement.
Education Campaigns	While education campaigns were supported by committee and open house attendees, they were identified as a lower priority compared to other treatments and strategies.
Targeted and High-Visibility Enforcement	Feedback on this strategy was neutral.
Develop Automatic Traffic Enforcement Policy and Program	Committee attendees indicated that automated enforcement would likely not be well received by Stayton residents and indicated preference for targeted and high-visibility enforcement instead.

Location-Specific Treatments

The following table summarizes the feedback received on the location-specific treatments that were presented at the committee meeting and open house. Open house attendees highlighted the importance of traffic calming and improvements along Third Avenue, in addition to the locations described below. Another open house attendee suggested implementing temporary curb extensions at Third Avenue/Ida Street.

Location	Feedback
First Avenue Segment	– Enhanced crossings were highly supported along this corridor, particularly at the school crossing at Cedar Street, Hollister Street, and in front of Safeway. Event attendees indicated poor driver yield rates at existing marked crosswalks along First Avenue. – Committee attendees raised concerns about traffic being diverted onto Third Avenue if site access is blocked or restricted. – Open house attendees expressed desires for new or improved left-turn lanes along the corridor.
First Avenue & Marion Street Intersection	– Open house attendees expressed crosswalk visibility concerns for southbound vehicles approaching this intersection and requested enhanced crossing treatments. – Open house attendees expressed a desire for a crosswalk on the south leg of the intersection, stressing the importance of pedestrian connections in the area. – Open House attendees also indicated that the intersection is very busy, with interest in consolidating library exit lanes. – A committee member supported the proposal to realign the intersection and implement an RRFB.
Locust Street Segment	– Committee members were skeptical about the effectiveness of curb extensions along Locust Street, stating that there are generally few parked on-street vehicles; however, both committee and open house attendees agreed that some traffic calming would be beneficial.
Washington Street Segment	– While some open house attendees claimed that there was little need for safety improvements along this corridor, others said that speeding was a major issue. – Committee members were supportive of traffic calming. – The intersection at Evergreen Avenue was mentioned as a frequent pedestrian crossing location for children where additional traffic calming or crossing enhancements would be beneficial. – Open house attendees felt the importance of safety improvements along this corridor would increase with upcoming development. – Open house attendees felt that passing should not be allowed on Washington Street.
Ida Street Segment	– Committee members indicated a need to fill in sidewalk gaps along this corridor and improve existing pedestrian facilities. – Committee members were supportive of removing the skip striping and striping with double yellow centerlines to prohibit passing. – Committee members were hesitant regarding mini-roundabouts, stating there might not be sufficient volumes on the minor approaches to warrant them. – Open house attendees agreed that traffic calming would be beneficial and did not see a need for a dashed centerline for passing.

Public Involvement Round 3: Public Advisory Committee Meeting #2 and Public Hearings

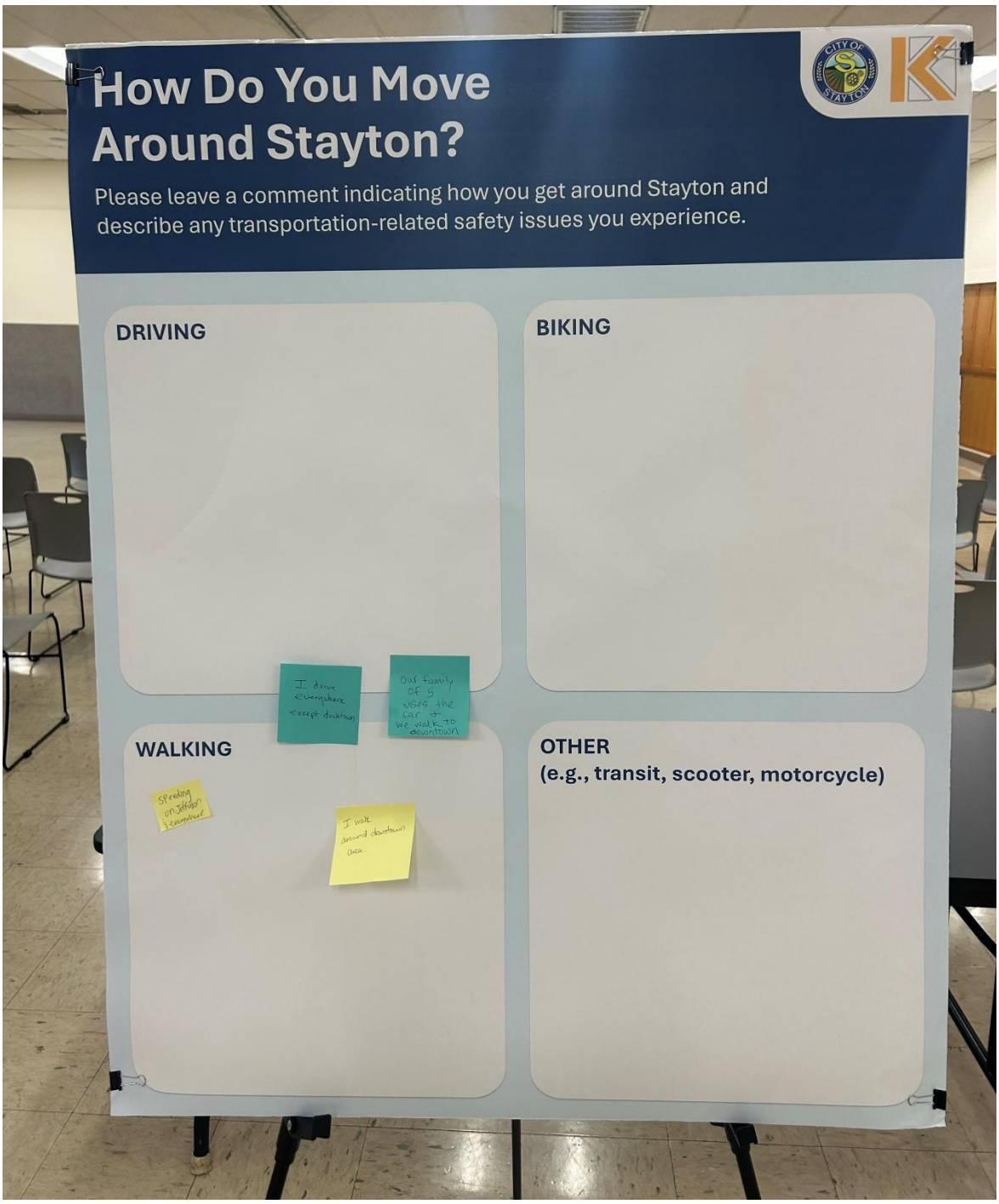
Kittelson staff overviewed the draft plan with the Public Advisory Committee during the second Public Advisory Committee meeting on September 29, 2025. The meeting focused on the aspects of the plan that were refined and updated based on the committee's input at the first Public Advisory Committee meeting and the input received during the second open house on July 23. The Public Advisory Committee expressed support for the draft plan.

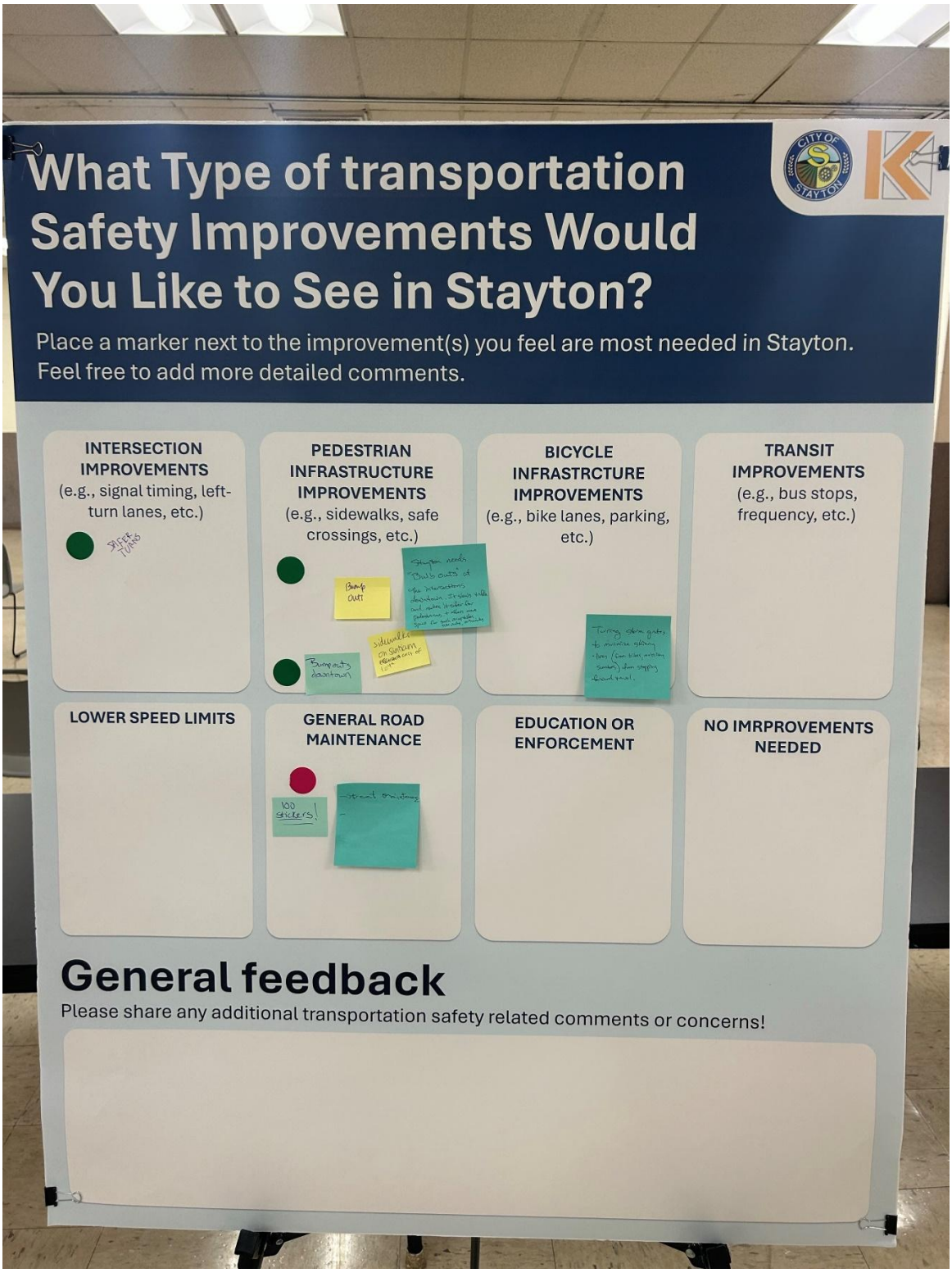
Immediately following the Public Advisory Committee Meeting, the plan was presented to the Planning Commission. Planning Commission requested further exploration of tradeoffs of the recommendations, such as the impact of curb extensions on school buses. The figures in the Safety Action Plan with potential cross section and safety treatments indicate "*Conceptual Design Only: Final roadway design and the balance between roadway elements and right-of-way (ROW) will be subject to change based on further engineering analysis and public engagement*." Additionally, *Appendix C: Strategies and Performance Measures* highlights the key considerations identified by the Public Advisory Committee, Planning Commission, and prior engineering experience.

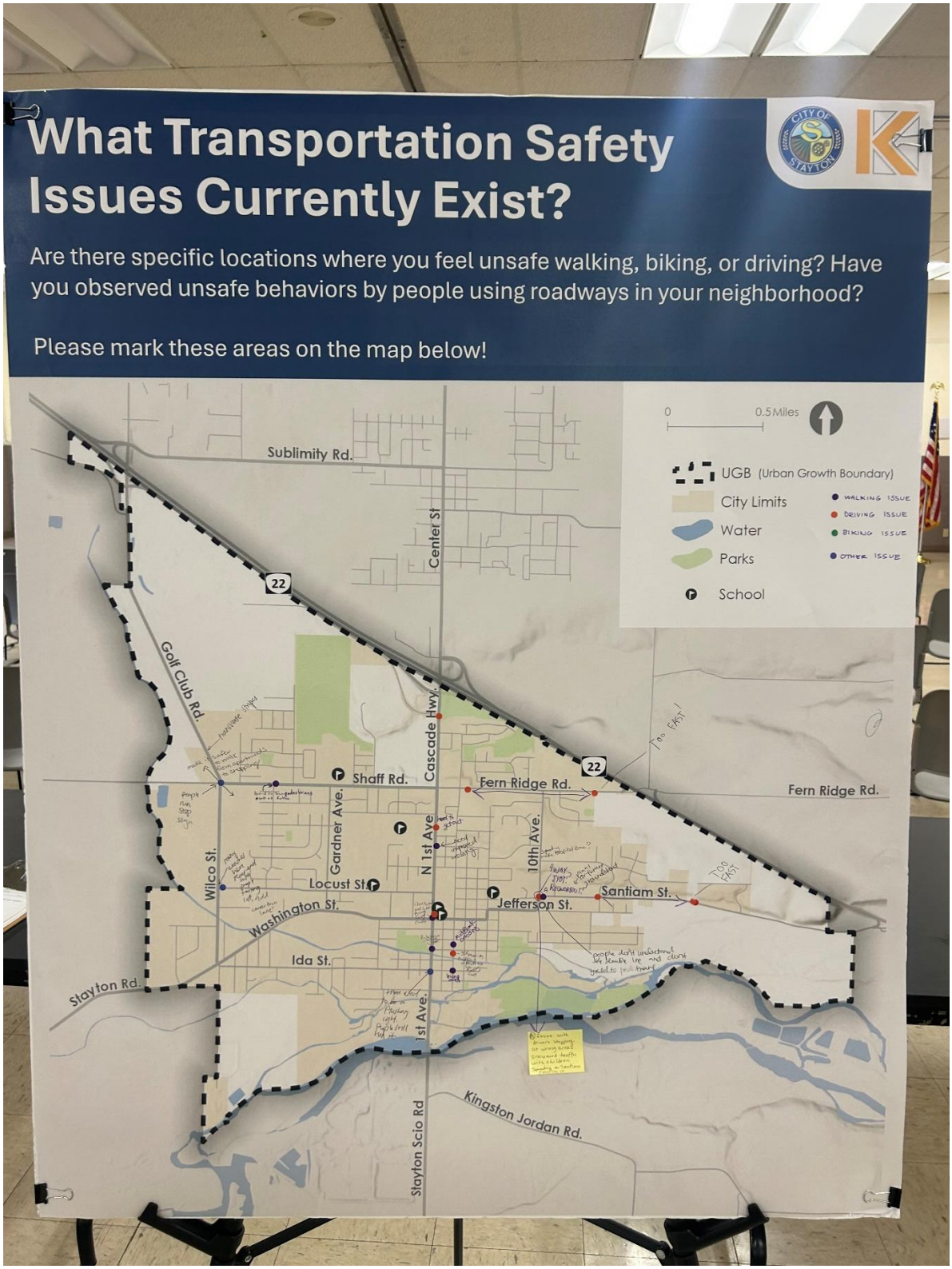
The revised draft plan was presented to City Council during a work session on October 20, 2025. The plan was updated to incorporate feedback about the inclusion of Tenth Avenue in the "Fill Sidewalk Gaps" cutsheet in *Appendix C: Strategies and Performance Measures*. The Safety Action Plan is expected to be adopted by City Council at a public hearing on November 3.

Attachment A: Open House #1 Feedback

This section includes photographs of each of the three comment boards displayed at the open house along with community member feedback.

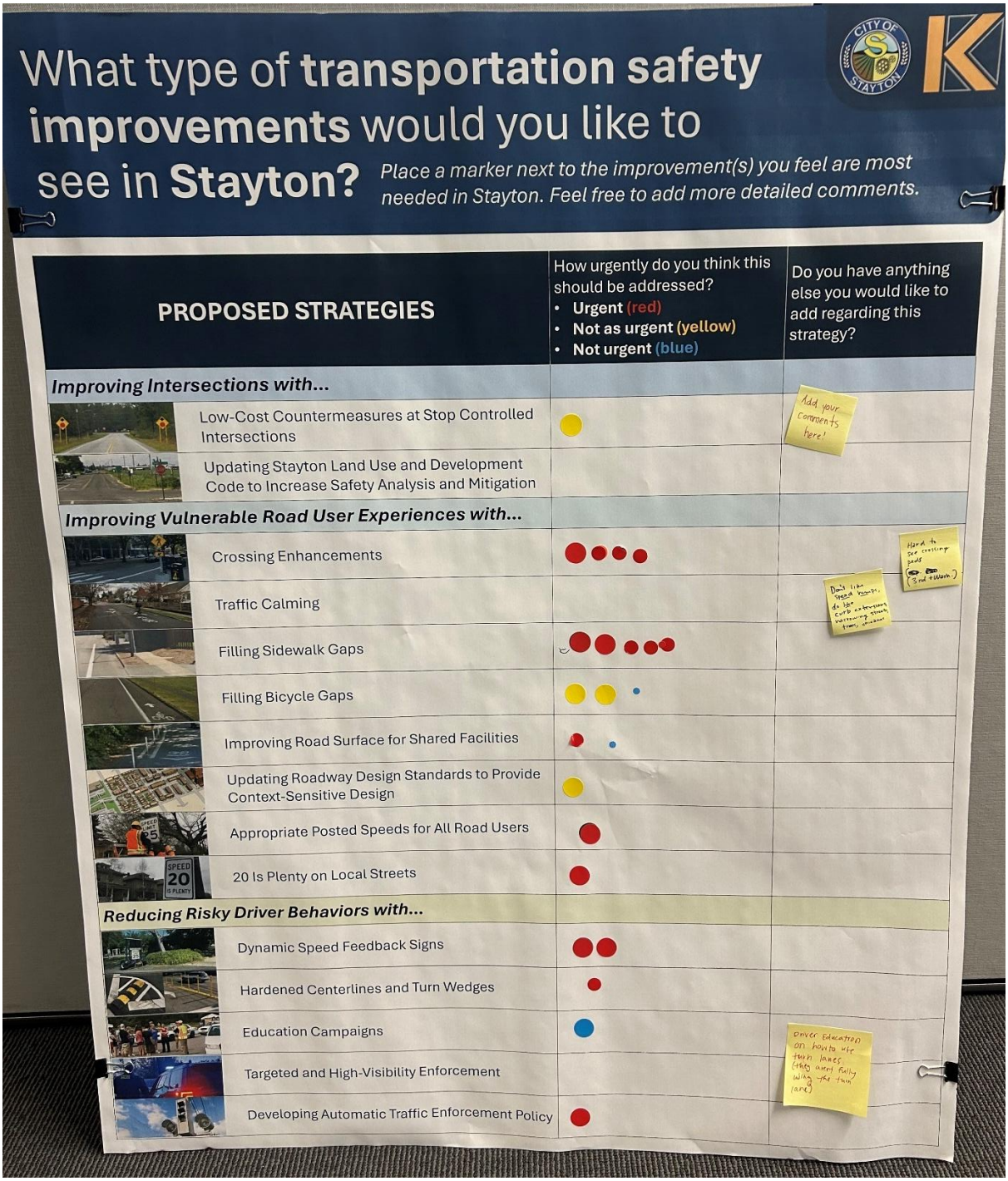



What Type of transportation Safety Improvements Would You Like to See in Stayton?
Place a marker next to the improvement(s) you feel are most needed in Stayton. Feel free to add more detailed comments.
INTERSECTION IMPROVEMENTS (e.g., signal timing, left-turn lanes, etc.)
PEDESTRIAN INFRASTRUCTURE IMPROVEMENTS (e.g., sidewalks, safe crossings, etc.)
BICYCLE INFRASTRCTURE IMPROVEMENTS (e.g., bike lanes, parking, etc.)
TRANSIT IMPROVEMENTS (e.g., bus stops, frequency, etc.)
LOWER SPEED LIMITS
GENERAL ROAD MAINTENANCE
EDUCATION OR ENFORCEMENT
NO IMRPROVEMENTS NEEDED
Bump Outs
100 stickers!
General feedback
Please share any additional transportation safety related comments or concerns!


What Transportation Safety Issues Currently Exist?
Are there specific locations where you feel unsafe walking, biking, or driving? Have you observed unsafe behaviors by people using roadways in your neighborhood?
Please mark these areas on the map below!
0
0.5 Miles
UGB (Urban Growth Boundary)
City Limits
Water
Parks
School
WALKING ISSUE
DRIVING ISSUE
BIKING ISSUE
OTHER ISSUE
Sublimity Rd.
Center St
22
Golf Club Rd.
Cascade Hwy.
Shaff Rd.
Fern Ridge Rd.
Gardner Ave.
N 1st Ave
10th Ave.
Wilco St.
Locust St
Jefferson St.
Santiam St.
Washington St.
Ida St.
Stayton Rd.
1st Ave.
Stayton Scio Rd
Kingston Jordan Rd.

Attachment B: Open House #2 Feedback

This section includes photographs of each of the comment boards displayed at the open house along with community feedback.




Where would you like to see safety improvements along the priority segments?
The priority segments are highlighted in green.
Place a marker near the location(s) you feel are most in need of improvements.
Feel free to add more detailed comments in the sticky notes.
SHAFF RD SE
FERN RIDGE RD
W REGIS ST
Regis St. Mary Catholic School
Safeway
W HOLLISTER ST
W LOCUST ST
N FIRST AVENUE
W LOCUST ST
Stayton Plaza
Stayton Elementary School
E WASHINGTON ST
Stayton Community Center
W BURNERTT ST
W MARION ST
W IDA ST
Safety issues at Regis. There is a constant flow of traffic creating long queues and delay. Hard to make turns
Currently cars here!
mark left turn lanes on south leg of intersection better.
Relocate to south side for the next 10 years. Add flashing lights
hard to see crosswalk southbound because topography
Cars often have trouble crossing on Hollister
Stickers
Enhanced Crossing
Fill Pedestrian and Bicycle Facility Gap
Access Management
Traffic Calming
Lighting
Other Intersection Improvement
General feedback
Please share any additional transportation safety related comments or concerns!
Add your comments here!
Very poor lighting except on First and Third
3rd or 1st used as parallel routes for walking


Where would you like to see safety improvements along the priority segments?
The priority segments are highlighted in green. Place a marker near the location(s) you feel are most in need of improvements.
Feel free to add more detailed comments in the sticky notes.
Stayton Elementary School
Stayton Plaza
Stayton Community Center
Stayton Public Library
Stayton Family Memorial Pool
Stayton High School
Santiam Industrial Center
Stayton Fire District Stayton Station
FIRST AVE
N EVERGREEN AVE
N GARDNER AVE
LOCUST STREET
WASHINGTON STREET
IDA STREET
WILCO RD
N
Stickers
Enhanced Crossing
Access Management
Lighting
Fill Pedestrian and Bicycle Facility Gap
Traffic Calming
Other Intersection Improvement
General feedback
Please share any additional transportation safety related comments or concerns!

APPENDIX C: STRATEGIES AND PERFORMANCE MEASURES MEMO

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TECHNICAL MEMORANDUM

August 21, 2025 Project #: 31028

To: City of Stayton

From: Max Heller, Amy Griffiths, PE, Susan Wright, PE; Kittelson & Associates, Inc.

RE: Stayton Safety Action Plan Crash Reduction Strategies and Performance Measures Memorandum

Strategies and Performance Measures

Introduction

This memorandum describes safety treatments and strategies that can be applied systemically to address the emphasis areas identified in the *Existing Conditions Memorandum*. Treatments refer to infrastructure improvements at locations, with systemic or location-specific applications. Strategies refer to non-infrastructure improvements, such as policy updates and educational programs.

The memorandum also identifies site-specific treatments at five high-priority locations with a relatively high history of crashes and presence of roadway risk characteristics. Lastly, this memorandum documents implementation timeframes, potential funding sources, and performance metrics for tracking progress towards achieving the City's safety goals.

Safe System Approach

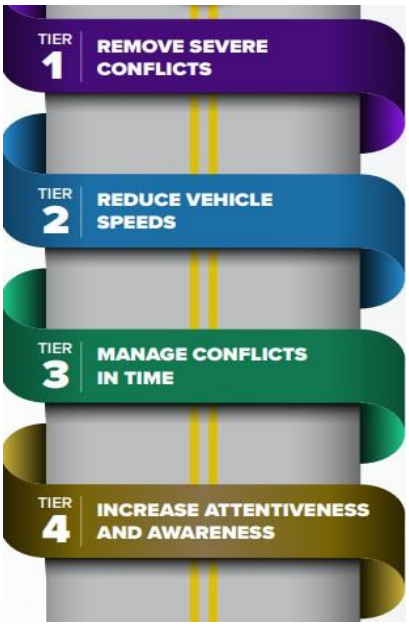
The U.S. Department of Transportation (USDOT) has adopted the Safe System Approach (SSA) to guide its roadway safety efforts. This approach acknowledges that reducing fatal and serious injury (FSI) crashes is a multidisciplinary endeavor, requiring improvements to policy, planning and programming, and infrastructure to be successful. Figure 1 summarizes the key principles and objectives of this strategy. Importantly, the SSA builds multiple layers of protection to both prevent crashes and minimize harm when they occur. It achieves this through five complementary objectives: safer people, safer vehicles, safer speeds, safer roads, and post-crash care. To best identify and prioritize safety improvements in Stayton that are within the control and authority of the City, the treatments and strategies documented herein focus on safer people, safer speeds, and safer roads.

The Safe System Roadway Design Hierarchy characterizes treatments and strategies relative to their alignment with the SSA. The Safe System Roadway Design Hierarchy includes four tiers that are arranged from most to least aligned with the SSA principles: (1) remove severe conflicts, (2) reduce vehicle speeds, (3) manage conflicts in time, and (4) increase attentiveness and awareness. This hierarchy is visualized in

Figure 2. The tiered rating within the Safe System Roadway Design Hierarchy is an additional metric that guided the selection and prioritization of safety treatments within the Stayton SAP.

Figure 1. Safe System Approach

Figure 2. Roadway Design Hierarchy



Emphasis Areas

This section summarizes the emphasis areas identified based on the crash data analysis performed in the *Existing Conditions Memorandum* and feedback from the Technical Advisory Committee and the public. These emphasis areas include engineering, behavioral, and environmental factors that contribute to the existing roadway safety patterns and trends. They are elements that the City of Stayton and its partner agencies should focus on through the Safety Action Plan in efforts to reduce the number of fatal and serious injury crashes.

VULNERABLE ROAD USERS

Vulnerable road users is a term used to describe a variety of users of the Stayton roadway system who are more likely to be injured if they are involved in a crash. These users include people walking, biking, using mobility devices, or driving motorcycles. Vulnerable road users experienced significantly higher rates of fatal, serious injury, and minor injury (KAB[1]) crash outcomes compared to road users in a car or truck, with over half of crashes involving a pedestrian or bicyclist resulting in a KAB severity outcome.

[1] Oregon Department of Transportation reports injuries on a five-point scale often referred to as KABCO. Injuries are defined as fatal injury (K), suspected serious injury (A), suspected minor injury (B), possible injury (C), and property damage only (O).

RISKY DRIVER BEHAVIORS

Risky driver behaviors include a variety of driver actions which significantly contribute to KAB severity outcomes. These behaviors include impaired, distracted, and reckless driving, along with failure to use safety equipment and speeding. These behaviors increase the likelihood of a crash occurring and increase the probability of a fatal or serious crash outcome when a crash does occur.

INTERSECTIONS

The majority of total crashes within the study area occurred within an intersection (rather than along the segment). Crashes occurring within an intersection are also more likely to result in a KAB severity outcome than segment crashes.

Stop-controlled intersections should be locations of particular emphasis within Stayton. Of the 16 intersections identified on the High Injury Network (HIN), 13 intersections are stop-controlled. The top four intersections on the HIN are stop-controlled and all have been the location of a traffic-related fatality or suspected serious injury; no fatal or suspected serious injuries occurred at signal-controlled intersections on the HIN.

COMPOSITE RISK AND INJURY NETWORK

The Composite Risk and Injury Network (CRIN) integrates the High Injury Network (HIN)—developed using an Equivalent Property Damage Only (EPDO) screening—with the results of a high-risk roadway network analysis. The analysis considered roadway risk factors based on data availability and their relevance to the Stayton context, including:

- **Speed**: Posted speed greater than or equal to 35 mph
- **Functional Classification**: Roadways with AADT in excess of 5,000 vehicles/day[2]
- **Bicycle/Pedestrian Facilities**: Lack of designated facilities for bicyclists or pedestrians[3]
- **Activity Generators**: Within 0.25 miles of a school, park, or senior living facility

Figure 3 shows the resulting CRIN where red and orange road segments indicate that a road was on the HIN and purple roadway segments indicate that a road had a higher number of risk factors.

[2] Due to limited geospatial data availability regarding roadway volumes, functional classification is used as a proxy. Per ODOT Analysis Procedures Manual, arterials will be assumed to have volumes in excess of 5,000 vehicles per day.
[3] A gap in the bicycle network or pedestrian network for a given roadway each contributed 0.5 points towards the total risk score.

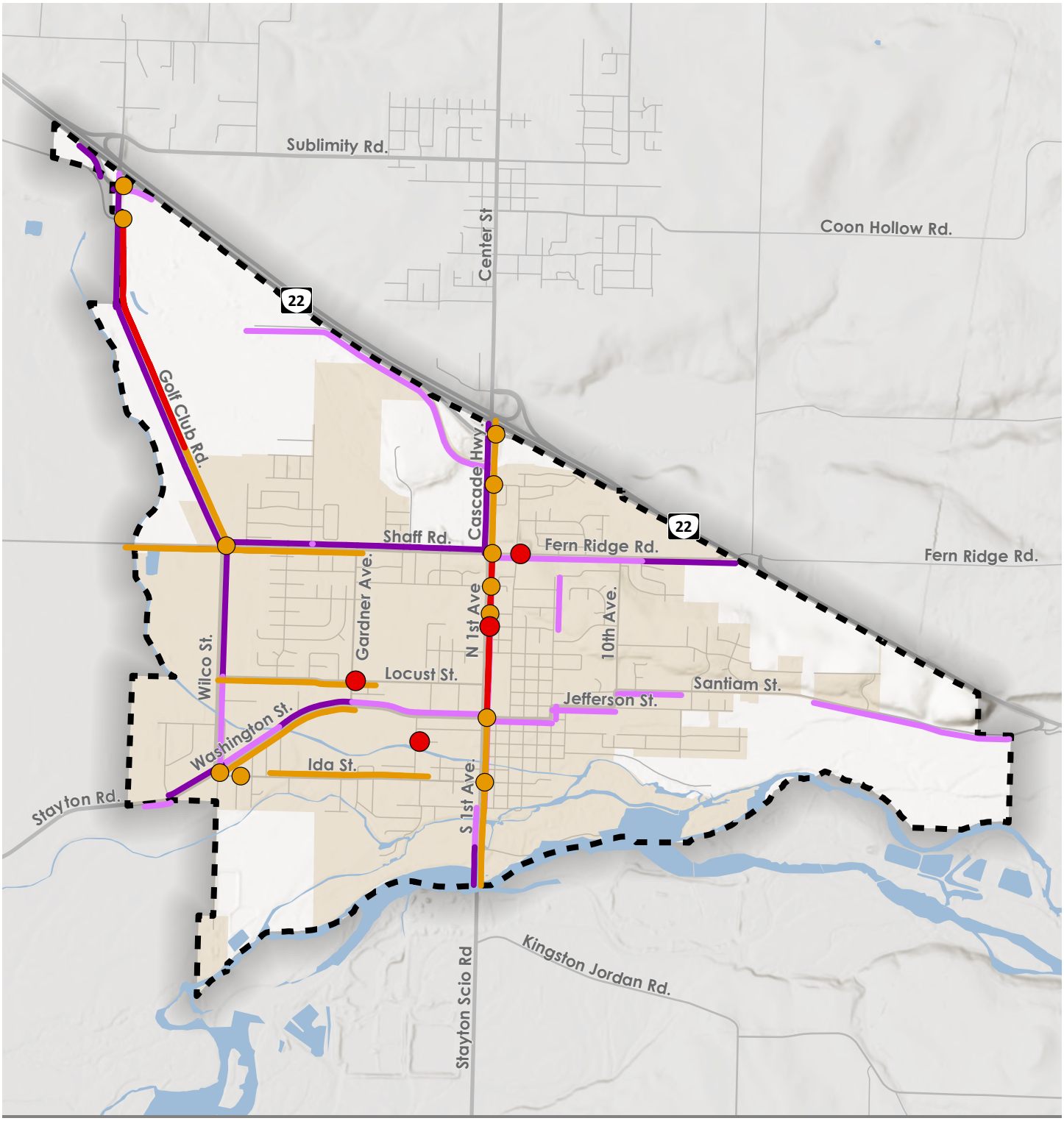


Figure 3

KITTELSON & ASSOCIATES

Composite Risk & Injury Network (CRIN)
Stayton, OR

Treatment and Strategy Development

Kittelson reviewed the results of the network screening and emphasis areas assessments to identify system-wide treatments and strategies. These include both infrastructure treatments and non-infrastructure strategies that could be implemented throughout Stayton.

The following resources were reviewed to identify potential treatments and strategies:

- The Federal Highway Administration list of Proven Safety Countermeasures[4]
- The Oregon Department of Transportation (ODOT) All Roads Transportation Safety (ARTS) program Crash Reduction Factor Manual[5]
- The National Highway Transportation Safety Administration's Countermeasures That Work manual[6]
- County and City policy and design standards

For infrastructure treatments, contributing crash factors were analyzed to narrow the range of possible options and identify preferred options with proven effectiveness (supported through empirical study) in reducing the specific crash types or contributing factors highlighted in the emphasis areas. Non-infrastructure strategies were identified that include education, enforcement, engagement, and policy updates.

SYSTEMIC TREATMENTS AND STRATEGIES

The systemic treatments and strategies identified in this section are summarized in Table 1. They are organized based on the emphasis area they address. If a treatment or strategy addresses multiple emphasis areas, then it is grouped with the emphasis area that it most closely aligns with. In the following sections, each treatment is described in further depth, including an overview of the proposed treatment, additional details such as crash reduction factors, cost, implementation timeline, potential project partners, and candidate locations for implementation. Information is organized as shown in the example table below.

The relative cost is considered based on the cost to implement the strategy or treatment once. Implementation timeline considers the timeframe for starting to implement that strategy or treatment.

[4] Kirley, B. B., Robison, K. L., Goodwin, A. H., Harmon, K. J. O'Brien, N. P., West, A., Harrell, S. S., Thomas, L., & Brookshire, K. (2023, November). Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, 11th edition, 2023 (Report No. DOT HS 813 490). National Highway Traffic Safety Administration. https://www.nhtsa.gov/sites/nhtsa.gov/files/2023-12/countermeasures-that-work-11th-2023-tag_0.pdf

[5] Federal Highway Administration. (n.d.). *Proven safety countermeasures*. U.S. Department of Transportation, *https://highways.dot.gov/safety/proven-safety-countermeasures*

[6] Oregon Department of Transportation. (2024, November). Crash reduction factor manual (2024 ed.). Engineering & Technical Service Branch, Traffic-Roadway Section. https://www.oregon.gov/odot/Engineering/ARTS/CRF-Manual.pdf

Within the strategy/treatment table, relative cost and implementation timeline are defined as follows:

- Relative Cost:
  - "Low" is less than $10,000
  - "Medium" is between $10,000 and $50,000
  - "High" is more than $50,000
- Implementation Timeline:
  - "Near-term" is less than 2 years
  - "Medium-term" is between 2 and 5 years
  - "Long-term" is more than 5 years

Example Strategy or Treatment Table

Example Strategy or Treatment Table

Partners: Agencies or groups that would be involved in implementation are listed here.

Description: The strategy or treatment is described here, including a description of how it improves safety.

An example image will be provided here

CRASH REDUCTION FACTORS

This section provides key statistics illustrating the empirical benefit that the strategy or treatment provides.

LOCATIONS

This section identifies specific location or certain location types that would be good candidates for this strategy or treatment. Alternatively, this section provides additional considerations for the highlighted strategy.

SSA ELEMENT

Element of the SSA that is addressed by this strategy or treatment

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

Table 1. Systemic Treatments and Strategies Summary

Name	Type	Roadway Design Hierarchy	Partners	Cost
Intersections				
Low-Cost Countermeasures at Stop Controlled Intersections	Infrastructure	Tier 4 - Increase Awareness	Stayton Public Works, Marion County Public Works	$
Update Stayton Land Use and Development Code to Increase Safety Analysis and Mitigation	Policy	Tier 1 - Remove Severe Conflicts	Stayton City Council, Stayton Public Works	$
Vulnerable Road Users				
Crossing Enhancements	Infrastructure	Tier 4 - Increase Awareness	Stayton Public Works, Marion County Public Works	$-$$
Traffic Calming	Infrastructure	Tier 2 - Reduce Vehicle Speeds	Stayton Public Works	$-$$
Fill Gaps in the Sidewalk Network	Infrastructure	Tier 1 - Remove Severe Conflicts	Stayton Public Works, Marion County Public Works	$$$
Fill Gaps in the Bicycle Network	Infrastructure	Tier 1 - Remove Severe Conflicts	Stayton Public Works	$$-$$$
Update Roadway Design Standards to Promote Context-Sensitive Design	Policy	Tier 2 - Reduce Vehicle Speeds	Stayton Public Works	$
Appropriate Posted Speeds for All Road Users	Policy	Tier 2 - Reduce Vehicle Speeds	Stayton and Marion County Public Works	$$
20 Is Plenty	Policy	Tier 2 - Reduce Vehicle Speeds	Stayton Public Works	$$
Risky Driver Behaviors				
Dynamic Speed Feedback Signs	Infrastructure	Tier 2 - Reduce Vehicle Speeds	Stayton Public Works and Police Department	$-$$
Hardened Centerlines and Turn Wedges	Infrastructure	Tier 2 - Reduce Vehicle Speeds	Stayton Public Works	$
Education Campaigns	Policy	Tier 4 - Increase Awareness	Stayton Schools, Stayton Police Department, Community Based Organizations	$
Targeted and High-Visibility Enforcement	Policy	Tier 2 – Reduce Vehicle Speeds Tier 4 - Increase Awareness	Stayton Police Department, Marion County Sheriff's Office, Oregon State Police	$$$
Develop Automatic Traffic Enforcement Policy and Program	Policy	Tier 2 – Reduce Vehicle Speeds	Stayton City Council, Stayton Police Department	$$$

Intersections

The following sections present the strategies and treatments identified to address intersection safety. They improve awareness of stop-controlled intersections and provide potential updates to development code.

INFRASTRUCTURE TREATMENTS

Low-Cost Countermeasures at Stop-Controlled Intersections

Partners: Stayton Public Works, Marion County Public Works

Description: Low-cost stop-controlled intersection treatments like oversized stop signs, flashing beacons, and transverse stripes enhance safety by increasing driver awareness and compliance. These simple, affordable measures improve visibility and help reduce crash rates, especially at rural or low-volume intersections. By drawing more attention to stop conditions, they create a safer environment for all road users.

Source: FHWA

CRASH REDUCTION FACTORS

10% reduction *in FSI crashes at all location types.*[1]

27% reduction *in FSI crashes at rural intersections.*[1]

LOCATIONS

Intersections in suburban fringe areas, especially with immovable vegetation, skewed alignment, and/or unexpected stop signs.

For example: the intersections of Ida Street/ Washington Street/Wilco Road and Shaff Road/Golf Club Road/Wilco Road.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

1 *Le, T., Srinivasan, R., Persaud, B., Lyon, C., & Eccles, K. (2017, January). Safety effects of low-cost systemic safety improvements at signalized and stop-controlled intersections (Paper No. 17-05379). Presented at the 96th Annual Meeting of the Transportation Research Board.*

NON-INFRASTRUCTURE STRATEGIES

Update Stayton Land Use and Development Code to Increase Safety Analysis and Mitigation

Partners: Stayton City Council, Stayton Public Works

Description: Stayton's Land Use and Development Code establishes transportation-related requirements for new developments. Stayton could consider opportunities to update its code to address the emphasis areas and risk factors documented in the SAP.

A Transportation Impact Assessment (TIA) is a tool described in the city code that is used to determine the extent to which new developments will affect the transportation network. To better consider safety, the City could consider the following updates to the Land Use and Development Code:

- The City could consider adopting performance standards related to traffic safety and pedestrian and bicycle connectivity when updating the Transportation System Plan (TSP).
- Strengthen the requirement or revisit the trigger thresholds to verify compliance with the Access Spacing Standard to consider opportunities to consolidate accesses or restrict accesses to limited movements.
- Require that developers conduct the NCHRP Research Report 938 when considering intersection mitigations to reduce pedestrian and/or bicycle safety risks as part of intersection improvements.
- Include proportionate sharing provisions such as multimodal facility changes, intersection safety mitigation measures, intersection geometric and traffic control changes, and/or proportionate share contributions toward a previously identified deficiency.
- Provide specific guidance on how signals versus roundabouts are to be evaluated.

1 *Cost assumes that updates are performed in-house.*

Source: Google Maps

PROGRAM EFFICACY

The safety benefits of updates to the Stayton Land Use and Development Code will depend on the context and consistency of implementation. Nonetheless, strengthening the City's policy focus on multimodal safety will reinforce and enhance the broader strategies outlined in the SAP.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST[1]

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

Vulnerable Road Users

The following sections present the strategies and treatments identified to address vulnerable road user safety. They provide dedicated pedestrian and bicycle facilities and slow speeds.

INFRASTRUCTURE TREATMENTS

Crossing Enhancements

Partners: Stayton Public Works, Marion County Public Works

Description: There are many potential improvements that can increase pedestrian safety at crossings. The simplest treatments can increase driver awareness at crossing locations; these include additional streetlights and high-visibility crosswalk markings and crossing signage. Where driver yield rates are poor, curb extensions and/or a Rapid Rectangular Flashing Beacon (RRFB) could be strategic options to further increase visibility of pedestrians at the crossing.

Note, quick-build installations can be used in instances of limited funding or when temporary installments would be desirable to raise public awareness about transportation safety and build public support for permanent installations.

CRASH REDUCTION FACTORS

Additional streetlights and high-visibility markings and signage can reduce pedestrian crashes by up to **40% each.**[1]

RRFBs can reduce pedestrian crashes by up to **47%** *and increase driver yield rates by up to* **98%.**[2]

LOCATIONS

Pedestrian crossings on the CRIN such as arterials, locations with posted speeds of 35+ mph or in proximity to activity generators like schools, and/or locations where driver yield rate and pedestrian visibility is poor. For example, consider crossing improvements along First Avenue or Washington Street.

SUPPLEMENTAL GUIDANCE

FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.

Source: Google Maps

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 Remove Severe Conflicts
2 Reduce Vehicle Speeds
3 Manage Conflicts in Time
4 Increase Awareness

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term | Medium-Term | Long-Term

1 *Elvik, R., & Vaa, T. (2004). Handbook of road safety measures. Elsevier.*
2 *Fitzpatrick, K., Park, E., & Turner, S. (2016). Will you stop for me? Roadway design and traffic control device influences on drivers yielding to pedestrians in a crosswalk with a rectangular rapid-flashing beacon (Report No. TTI-CTS-0010). Texas A&M Transportation Institute.*

Traffic Calming

Partners: Stayton Public Works

Description: Traffic calming is important for slowing vehicle speeds and discouraging cut-through traffic on lower volume roadways in Stayton. By reducing vehicle speeds, traffic calming treatments increase drivers' ability to avoid a crash with another road user. Traffic calming can also encourage additional pedestrian and bicyclist activity along the roadway.

The 2019 Stayton Transportation System Plan (TSP) includes the following traffic calming techniques:

- Mini roundabouts
- Narrowed travel lanes
- Curb extensions

To advance safety and comfort on neighborhood and collector streets, the City could evaluate opportunities to expand the use of these measures beyond the locations identified in the TSP. Where narrowed travels are proposed, the City could consider repaving the roadway surface to remove residual lane markings and improve comfort for bicyclists.

Stayton could also consider implementing additional traffic calming interventions, such as speed humps, raised or painted intersections or crossings, chicanes, and traffic diverters where appropriate to further discourage speeding and improve safety and comfort for all road users.

Quick-build installations can be used in instances of limited funding or when temporary installments would be desirable to raise public awareness about transportation safety and build public support for permanent installations.

1 ODOT ARTS. (November 2024). 5.30 BP30-Install Speed Hump or Table for Non-state Highways. https://www.oregon.gov/odot/Engineering/ARTS/CRF-Manual.pdf


Source: PBOT

CRASH REDUCTION FACTORS

Speed humps can reduce crashes of all severities by up to **40%.**[1]

LOCATIONS

Roadways on the CRIN and other local streets where speeding or cut-through traffic is a concern, such as Locust St, Washington St, Third Ave, and Hollister St.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

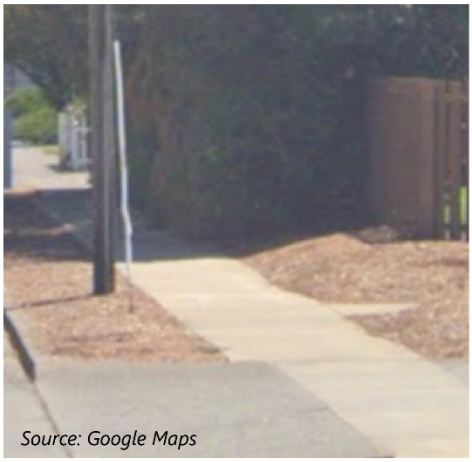
IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

Fill Gaps in the Sidewalk Network

Partners: Stayton Public Works, Marion County Public Works

Description: Adequate pedestrian facilities are essential for separating pedestrians from moving traffic. While sidewalks are one means of separating pedestrians from vehicles, other strategies exist, including paved shoulders and multi-use paths. Where the City is considering delineating a multi-use path with bollards on the roadway, roadway repaving may be needed to improve road condition and ensure smooth pedestrian facilities free of tripping hazards.



Source: Google Maps

CRASH REDUCTION FACTORS

Sidewalks can reduce crashes involving a pedestrian by up to **89%** *along roadways.*[1]

LOCATIONS

Any roadway segments on the CRIN that have pedestrian infrastructure gaps or are located in proximity to activity generators, such as Shaff Road, Ida Street, Tenth Avenue, and local streets east of First Avenue.

Priority pedestrian project locations as identified within the Stayton TSP.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ **$$$**

IMPLEMENTATION TIMELINE

Near-Term — Medium-Term — Long-Term

1 *Gan, A., Khattak, A. J., & Council, F. M. (2005). Update of Florida crash reduction factors and countermeasures to improve the development of district safety improvement projects. Florida Department of Transportation.*

Fill Gaps in the Bicycle Network

Partners: Stayton Public Works

Description: Many different bicycle facilities are available, from striped bike lanes to separated shared use paths. Filling gaps in Stayton's bicycle network with appropriate facility types is essential to creating a more connected, accessible, and safe multimodal network. Roadway repaving may be needed as part of these projects to improve road condition to provide comfortable facilities for people biking. Regardless of facility selection, maintaining separation between bicyclists and pedestrians should be prioritized.

Source: Google Maps

CRASH REDUCTION FACTORS

Adding bicycle lanes can reduce crashes by ***30%*** *on urban two-lane undivided collectors and local streets.*[1]

Adding buffered bicycle lanes can reduce crashes of all severities by ***47%****.*[2]

Adding a protected cycle track with a physical barrier such as a curb or parking spaces between the bike and motor vehicle lanes can reduce crashes of all severities by ***59%****.*[3]

LOCATIONS

Any roadway segments on the CRIN with posted speeds over 25 mph that have bicyclist infrastructure gaps, such as Wilco Street and Washington Street.

Priority bicycle project locations as identified within the Stayton TSP.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 Remove Severe Conflicts — 2 Reduce Vehicle Speeds — 3 Manage Conflicts in Time — 4 Increase Awareness

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — Medium-Term — Long-Term

1 *1FHWA-HRT-21-012, (2021). Development of Crash Modification Factors for Bicycle Lane Additions While Reducing Lane and Shoulder Widths.*
2 *ODOT ARTS. (November 2024). 5.24 BP24-Install Bufferd Bike Lanes. https://www.oregon.gov/odot/Engineering/ARTS/CRFManual.pdf*
3 *ODOT ARTS. (November 2024). 5.23 BP23-Install Cycle Tracks. https://www.oregon.gov/odot/Engineering/ARTS/CRF-Manual.pdf*

NON-INFRASTRUCTURE STRATEGIES

Update Roadway Design Standards to Promote Context-Sensitive Design

Partners: Stayton Public Works

Description: Stayton's Roadway Design Standards are intended to set minimum standards and provide a uniform set of guidelines for public works improvements within the City of Stayton. The City could review and update these standards to reflect the goals and objectives of the SSA. For example, they could update their design standards to include the following:


Source: Kittelson

- Develop a Stayton-specific methodology for using local context to classify roadways and select appropriate performance-based design elements.
- Incorporate target speed into design speed.

EFFICACY

Context classification is an emerging practice in the transportation sector. It provides roadway designers with better tools for developing multimodal roadway networks that address the needs of all roadway users, not just motorists.[1]

SUPPLEMENTAL GUIDANCE

See ODOT's Highway Design Manual.

SSA ELEMENT

Safer Roads

ROADWAY DESIGN HIERARCHY TIER

1 Remove Severe Conflicts
2 Reduce Vehicle Speeds
3 Manage Conflicts in Time
4 Increase Awareness

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — **Medium-Term** — Long-Term

1 *Stamatiadis, N., Kirk, A., & Wright, L. (2023). Context classification: A new approach for improving highway design. Transportation Research Procedia, 69, 45–52. https://doi.org/10.1016/j.trpro.2023.02.143*
2 *Cost assumes that updates are performed in-house.*

Appropriate Posted Speeds for All Road Users

Partners: Stayton and Marion County Public Works, Stayton City Council

Description: Higher speeds increase the risk of a crash occurring, and the severity of a crash if it does occur. Lower speeds improve safety for all road users, especially vulnerable road users.

Stayton could explore opportunities to setting speed limits that balance mobility needs with safety under the SSA.

Source:

CRASH REDUCTION FACTORS

While safety benefits vary depending on how widespread and to what extent appropriate speed limits are implemented, in one case study, comprehensive city-wide traffic calming and speed limit adjustments reduced traffic fatalities by **26%**.[1]

SUPPLEMENTAL GUIDANCE

See ODOT's 2025 Speed Zone Manual.

SSA ELEMENT

Safer Speeds

ROADWAY DESIGN HIERARCHY TIER

1	2	3	4
Remove Severe Conflicts	Reduce Vehicle Speeds	Manage Conflicts in Time	Increase Awareness

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — Medium-Term — Long-Term

1 *FHWA. (n.d.). Case Study 7: Noteworthy Speed Management Practices. https://highways.dot.gov/safety/speed-management/noteworthy-practice-booklet-speed-management/case-study-7-noteworthy-speed.*

20 Is Plenty

Partners: Stayton Public Works, Stayton City Council

Description: Higher speeds increase the risk of a crash occurring, and the severity of a crash if it does occur. Lower speeds improve safety for all road users, especially vulnerable road users.

Stayton could explore opportunities to setting speed limits that balance mobility needs with safety under the SSA.

Source: Bike Portland

CRASH REDUCTION FACTORS

Because local streets present the greatest level of road user mixing, it is unlikely that any level of roadway engineering will entirely eliminate conflicts and collisions. However, reducing speeds reduces the likelihood of crashes from occurring and the severity of crashes when they occur.

At 20 mph the likelihood of a pedestrian dying in a crash is ***10%****; that likelihood is* ***60%*** *at 30 mph.*[1]

SSA ELEMENT

Safer Speeds

ROADWAY DESIGN HIERARCHY TIER

1 — 2 — 3 — 4

1 *Remove Severe Conflicts*
2 *Reduce Vehicle Speeds*
3 *Manage Conflicts in Time*
4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

1 *US Department of Transportation. (March, 2000). Literature Reviewed on Vehicle Travel Speeds and Pedestrian Injuries.*

Risky Driver Behaviors

The following sections present the strategies and treatments for addressing risky driver behaviors. They include increasing driver awareness, education, and enforcement.

INFRASTRUCTURE TREATMENTS

Dynamic Speed Feedback Signs

Partners: Stayton Public Works and Police Department

Description: Dynamic speed feedback signs provide motorists with information about their speed in real time. When feedback displays are presented along with the posted speed, motorists can assess their own speed and adjust as needed. Using permanent installments paired with automated speed camera enforcement can enhance efficacy.

Source: Kittelson

CRASH REDUCTION FACTORS

This countermeasure treatment can reduce crashes of all severities by up to **10%**.[1]

LOCATIONS

Roadway segments with a history of speed-related crashes or public feedback about concerns with traffic speeds, such as Third Street, Fern Ridge Road, or Santiam Street.

SSA ELEMENT

Safer Speeds

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

1 *ODOT ARTS. (November 2024). 6.12 RD12-Speed Feedback Signs. https://www.oregon.gov/odot/Engineering/ARTS/CRF-Manual.pdf*

Hardened Centerlines and Turn Wedges

Partners: Stayton Public Works

Description: Hardened centerlines and turn wedges can reduce speeds at intersection and prevent corner cutting; these outcomes lead to increased crosswalk visibility and ultimately reduce conflicts between vehicles and pedestrians.


Source: ODOT

CRASH REDUCTION FACTORS

These countermeasure treatments can lead to a reduction in crashes of all severities by ***10%*** *at intersections.*[1]

LOCATIONS

Intersections where turning drivers frequently fail to yield to pedestrians or intersections with wide turns, such as the intersection of Santiam Street/Jefferson Street/Tenth Avenue.

SSA ELEMENT

Safer Speeds

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — 2 *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — *Medium-Term* — *Long-Term*

1 *ODOT ARTS. (November 2024). 6.12 RD12-Speed Feedback Signs. https://www.oregon.gov/odot/Engineering/ARTS/CRF-Manual.pdf*

NON-INFRASTRUCTURE STRATEGIES

Education Campaigns

Partners: Stayton Schools, Stayton Police Department, Community Based Organizations

Description: There are three main components of a safety-related education campaign: staff education, public education, and building a culture of responsibility. Education campaigns can focus on providing specific groups with relevant transportation safety training or providing public education regarding safe behaviors to all road users.


Source:

Stayton could consider the following programming options to address the Emphasis Areas described in the SAP:

- Enhance "Safety Town." a program to teach young children different safety concepts including bike, pedestrian, and motor vehicle safety.
- Conduct bike clinics for all ages.
- Expand "Stop for pedestrians" campaign, focusing on the Guide to Oregon Crosswalk Laws.
- Conduct "Slow Down Stayton" campaign, focusing on the risks of speeding.
- Train law enforcement on the SSA.

Together, these approaches can cultivate a shared culture of responsibility amongst Stayton residents.

PROGRAM EFFICACY

The effectiveness of education campaigns can vary significantly based on their design and implementation. While education on safe road user behavior is crucial, it's most impactful when integrated with other safety measures like safer infrastructure and vehicle technology, rather than as a standalone solution.

SSA ELEMENT

Safer People

ROADWAY DESIGN HIERARCHY TIER

1 Remove Severe Conflicts — 2 Reduce Vehicle Speeds — 3 Manage Conflicts in Time — 4 Increase Awareness

ESTIMATED RELATIVE COST[1]

$ $$ $$$

IMPLEMENTATION TIMELINE

Near-Term — Medium-Term — Long-Term

Targeted and High-Visibility Enforcement

Partners: Stayton Police Department, Marion County Sheriff's Office, Oregon State Police

Description: Targeted and high-visibility enforcement campaigns can support engineering treatments to achieve Vision Zero. Enforcement efforts can focus on speeding, distracted and impaired driving, and other risky driver behaviors. Additionally, enforcement can target driver behavior at intersections and pedestrian crossings.


Source: City of Stayton

The City already has increased enforcement through grant funds, and can continue to expand this program. The CRIN can be a useful starting point for expanding target locations.

To ensure fairness and community trust, enforcement strategies should be developed with a strong emphasis on equity, minimizing disproportionate impacts on vulnerable populations while promoting safety for all road users. Developing a program where revenue from tickets is used to fund additional safety improvements can increase public acceptance of enforcement campaigns.

PROGRAM EFFICACY

During a high-visibility speed enforcement effort in San Franciso, CA, mean speeds were reduced by **5%**.[1]

During a high-visibility distracted driving enforcement effort in Hartford, CT, handheld phone use by drivers decreased **57%**.[2]

SSA ELEMENT

Safer People

ROADWAY DESIGN HIERARCHY TIER

1 Remove Severe Conflicts — 2 Reduce Vehicle Speeds — 3 Manage Conflicts in Time — 4 Increase Awareness

ESTIMATED RELATIVE COST[1]

$ $$ **$$$**

IMPLEMENTATION TIMELINE

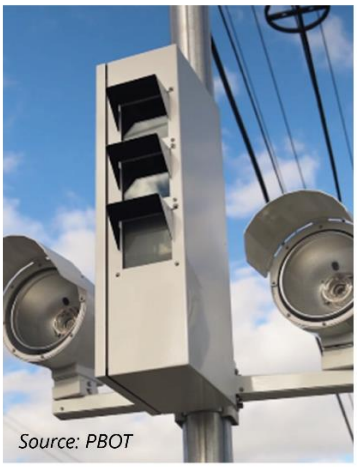
Near-Term — **Medium-Term** — Long-Term

1 *Vision Zero SF. (2020).*
2 *Chaudhary, N. K., Casanova-Powell, T. D., Cosgrove, L., Reagan, I., & Williams, A. (2014). Evaluation of NHTSA distracted driving demonstration projects in Connecticut and New York (Report No. DOT HS 811 635). National Highway Traffic Safety Administration. https://www.nhtsa.gov/staticfiles/nti/pdf/811635.pdf.*

Develop Automated Traffic Enforcement Policy and Program

Partners: Stayton City Council, Stayton Police Department

Description: Automated traffic enforcement can be used to encourage compliance with posted speeds and prevent red-light running. Stayton could adopt a policy that will enable to City to develop and implement an automated traffic enforcement program. The program should be designed and implemented with equity in mind, ensuring that enforcement practices do not disproportionately impact marginalized or low-income communities. Developing a program that aligns with current best practices and reinvests revenue directly in safety projects can support public acceptance.[1]



Source: PBOT

PROGRAM EFFICACY

Speed safety cameras reduce total crashes of all severities by up to ***49%*** *and FSI crashes by up to* ***44%****.*[1]

While red light cameras are effective at reducing FSI crashes at intersections, they may lead to an increase in rear-end collisions.

SSA ELEMENT

Safer People

ROADWAY DESIGN HIERARCHY TIER

1 *Remove Severe Conflicts* — **2** *Reduce Vehicle Speeds* — 3 *Manage Conflicts in Time* — 4 *Increase Awareness*

ESTIMATED RELATIVE COST[1]

$ $$ **$$$**

IMPLEMENTATION TIMELINE

Near-Term — **Medium-Term** — *Long-Term*

1 *GHSA & State Farm (December 2023). Automated Enforcement in a New Era, https://www.ghsa.org/resource-hub/automated-enforcement-new-era.*
2 *Wilson C, et al. (November 2010). Do speed cameras reduce road traffic crashes, injuries and deaths? https://www.cochrane.org/evidence/CD004607_do-speed-cameras-reduce-road-traffic-crashes-injuries-and-deaths.*

LOCATION-SPECIFIC TREATMENTS

In addition to the systemic treatments, Kittelson and City staff identified five high priority sites to develop conceptual figures illustrating specific traffic safety treatments that could be implemented. Sites were selected based upon the findings from the Existing Conditions analysis and included the following factors:

- Equivalent Property Damage Only (EPDO)
- Presence of Risk Factors[7]
- Community concerns
- Roadway jurisdiction[8]

The five sites selected for further concept development are listed in Table 2 and mapped in Figure 4.

Table 2. Priority Sites

Type	Site	Extents
Segment	First Avenue	Shaff Road to Washington Street
Intersection	First Avenue & Marion Street	N/A
Segment	Locust Street	Wilco Street to First Avenue
Segment	Washington Street	Wilco Road to First Avenue
Segment	Ida Street	Washington Street to First Avenue

Note that each of these sites is located along First Avenue or west of First Avenue, where a greater percentage of roadways is included in the CRIN. The limited connectivity west of First Avenue makes it challenging for road users to identify parallel routes, therefore improving these corridors is critical for the development of a complete multimodal network. The City should also consider implementing systemic treatments to locations on the CRIN east of First Avenue to provide safety treatments throughout the Stayton.

A comprehensive review was conducted for each site that included the following information:

- Functional classification
- Existing roadway facilities
- Roadway condition
- Posted speed and observed speed (as data is available)
- Land use and context
- Community feedback
- Existing safety countermeasures
- Planned and in-process capital safety improvements
- Field conditions using aerial imagery
- Additional considerations and constraints
- Crash history

[7] Risk Factors include roadways with the following characteristics: gap in bicycle or pedestrian infrastructure, “arterial” functional classification, posted speed limit greater than or equal to 35 mph, or proximity to schools, parks, or the senior center.
[8] The City indicated a preference to select sites under the City’s jurisdiction. First Avenue is an exception as there are upcoming County projects that provide opportunity to coordinate additional improvements.

Upon reviewing these contributing factors, Kittelson identified the potential safety treatments to address the specific crash factors at each priority site.

Figure 5 through Figure 19 document the review of crash history and risk factors present at each site. The figures also identify potential safety treatments to address the crash history. After gathering input from the City, the advisory committees, and the public, preferred treatments will be illustrated and documented with crash reduction factors and planning-level cost opinions.

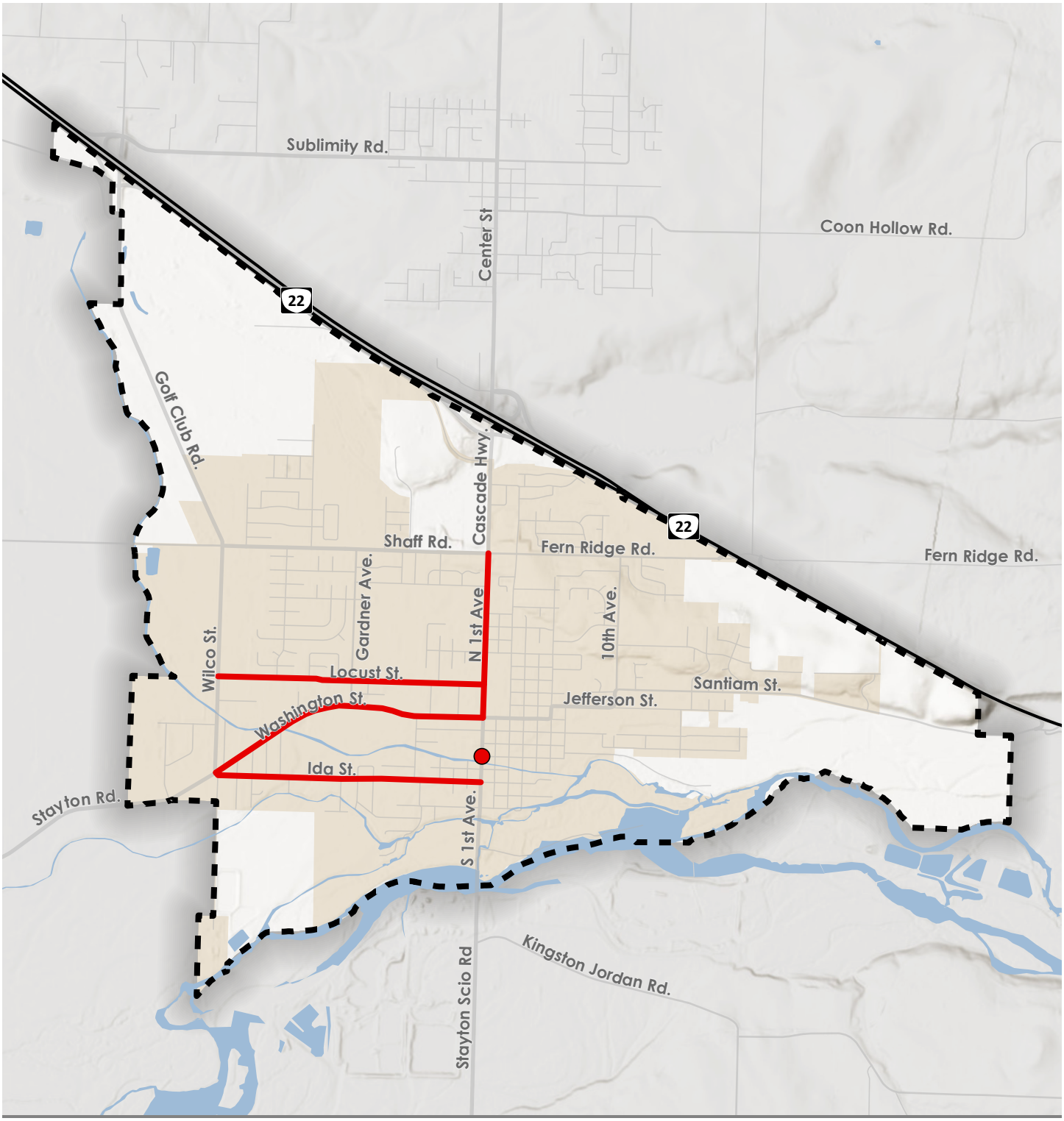


Figure 4

KITTELSON & ASSOCIATES

Priority Locations
Stayton, OR

Pedestrian Crossing Treatment Assessment

The majority of the priority sites include pedestrian crossing enhancements in their list of proposed treatments. This section documents the pedestrian crossing evaluation conducted at the priority sites.

The FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* was produced as part of the Safe Transportation for Every Pedestrian (STEP) program and provides guidance on selecting appropriate countermeasures to help improve pedestrian safety at uncontrolled crossing locations. This guide includes a matrix of countermeasure options for evaluating appropriate levels of crosswalk protection based on roadway configurations, posted speed limit, and average annual daily traffic (AADT). Table 3 shows candidate crossing treatments based on the roadway characteristics present within the five high priority sites. The **blue** box indicates candidate crossing treatments for the Locust Street, Washington Street, and Ida Street locations. The **red** box indicates candidate crossing treatments for the two locations along First Avenue.

Table 3. Application of Pedestrian Crash Countermeasures by Roadway Feature (Source: FHWA)

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	❶ 2 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6 7 9	① 5 6 7 9	① 5 6 ❾
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	❶ 2 3 4 5 6 7 9	❶ ❸ 5 6 7 9	① ❸ 5 6 ❾	① 3 4 5 6 7 9	① ❸ 5 6 ❼ ❾	① ❸ 5 6 ❾	① ❸ 4 5 6 7 9	① ❸ 5 6 ❾	① ❸ 5 6 ❾

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- ● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- ○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
2 Raised crosswalk
3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4 In-Street Pedestrian Crossing sign
5 Curb extension
6 Pedestrian refuge island
7 Rectangular Rapid-Flashing Beacon (RRFB)**
8 Road Diet
9 Pedestrian Hybrid Beacon (PHB)**

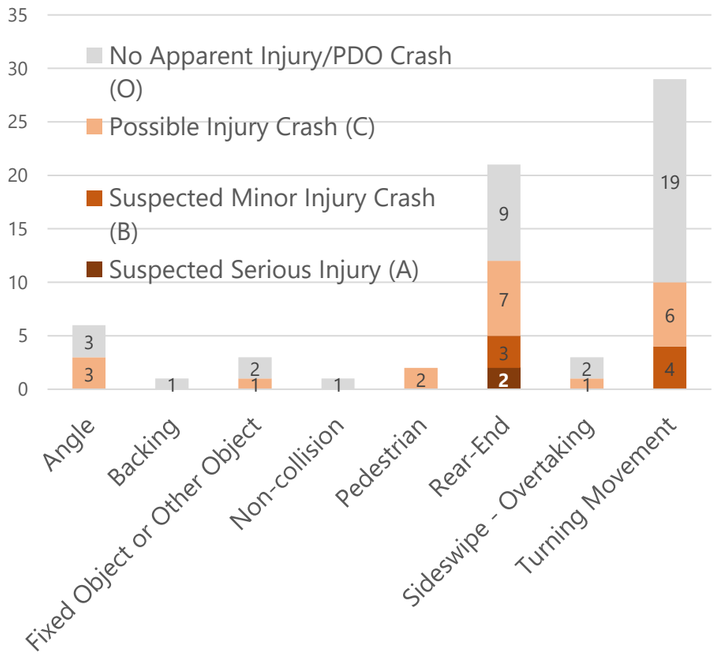
Additional public outreach and analysis can be used to refine the selection and placement of enhanced pedestrian crossings in Stayton. National Cooperative Highway Research Program (NCHRP) Report 562: *Improving Pedestrian Safety at Unsignalized Crossings* is another resource the City can use to consider the appropriate level of crosswalk treatments considering pedestrian crossing volumes.

Functional Classification	• Major Arterial
Roadway Jurisdiction	• Marion County
Roadway Facilities	• Three Lanes (Two through lanes and a two-way left turn lane) • Minor-Street Stop-Controlled; Signals at intersections with Shaff Road/Fern Ridge Road and Washington Street
Roadway Condition	• Good (Category II and Category III)
Posted Speed	• 30 MPH (20 MPH school zone in the vicinity of Locust Street)
Observed Speed	• NB 85th Percentile Speed at Hollister Street: 33 MPH • SB 85th Percentile Speed at Locust Street: 30 MPH
Pedestrian Facilities	• Curb-tight sidewalks, width varies from 5-8 feet • Marked pedestrian crossings at Cedar St (flashing beacon) and Locust Street (continental markings)
Bicycle Facilities	• None
Transit Facilities	• Cherriots Route 30x runs along First Ave, with stops south of Regis Street
Land Use	• Commercial Retail Zoning • Several schools are located in the vicinity of First Avenue, including Stayton High School, Regis St. Mary Catholic School, and Stayton Elementary School
Community Feedback	• Difficult to cross the street and difficult to exit some driveways • Pedestrian crossings are especially needed at Locust Street; other suggested locations include Regis Street, Hollister Street, and Cedar Street • Concerns about access management diverting traffic to Third Avenue
Existing Safety Countermeasures	• High-visibility backplates at signalized intersections • Advanced warning signage (signal ahead, pedestrian crossing ahead, school crossing)
Planned Projects	TSP • P52: Study and implement crosswalk enhancements (Shaff Road to Water Street) • P21&22: Install 8-foot sidewalk on curb line (Regis Street to Water Street/Ida Street) • B2: Plans for parallel bicycle facilities along Third Avenue • M6: Install permissive/protected left turns at First Avenue/Washington Street County Project • Stayton Elementary ADA and Crosswalk Visibility Enhancements: Update curb ramps along First Avenue, implement RRFB with pedestrian refuge island at First Avenue/Locust Street
Considerations	• Access spacing does not meet City Access Spacing Standards • Freight route per TSP
Constraints	• Limited right-of-way and utilities at back of sidewalk

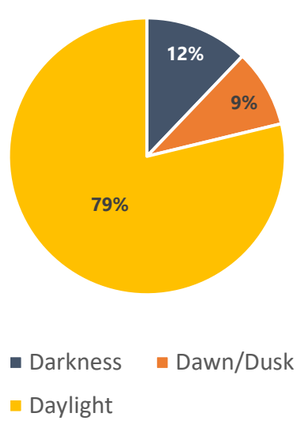
Crash History (January 1, 2018-December 31, 2022)

Nearest Intersection Street	Collision Type							Total
	Angle	Turn	Rear-End	Fixed Object	Ped	Sideswipe	Other	
Shaff Road/ Fern Ridge Road	3	3	10	1	-	1	1	**19**
Regis Street	-	2	3	-	-	-	-	**5**
Cedar Street	-	-	3	-	-	1	-	**4**
Fir Street	1	7	1	-	-	-	-	**9**
Hollister Street	-	2	-	1	-	-	-	**3**
Locust Street	1	6	2	1	-	1	-	**11**
Washington Street	1	9	2	-	2	-	1	**15**

Crash Severity by Type



Lighting Conditions



Potential Countermeasures

Countermeasure	Description

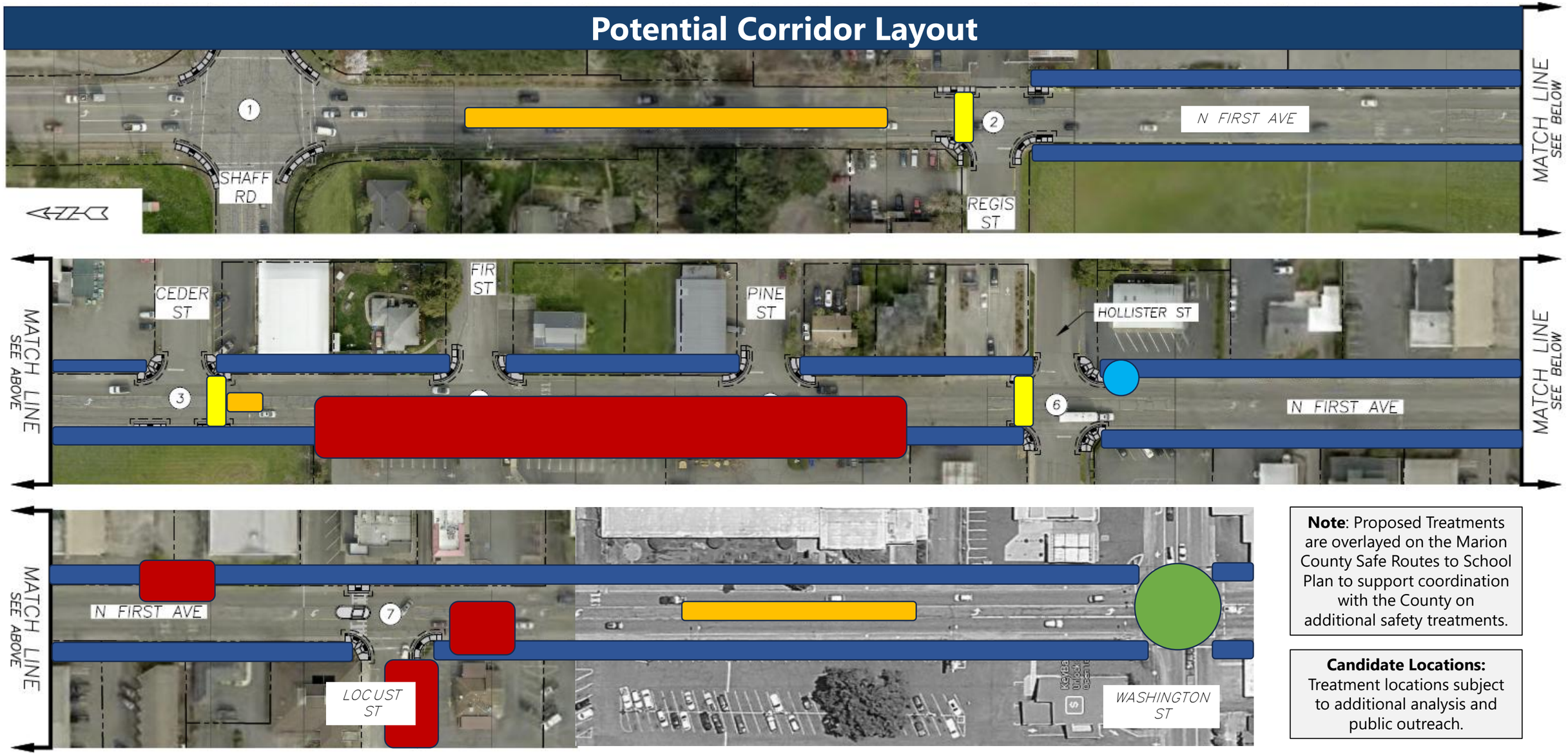
Crossing Enhancements	• Candidate treatments (as described in the FHWA STEP Guide):
	  • Advance Stop Here for Pedestrians sign and stop line
	  • In-Street Pedestrian Crossing Sign
	  • Curb Extension
	  • Pedestrian Refuge Island
	  • Rectangular Rapid-Flashing Beacon
	  • Pedestrian Hybrid Beacon
	• With plans for a parallel bicycle facility on Third Avenue, the importance of improved crossings will continue to increase. Note that there is insufficient space for curb extensions along First Avenue without a lane reduction.
	• Implement TSP Project P52: Study and implement crosswalk enhancements as part of the upcoming County Project.

Access Management	• Consolidate accesses and driveways • Limit businesses to a singular full access on First Avenue; if a secondary access is needed, consider right-in right-out options. • Encourage shared access points. • Shorten driveways to limit exposure.
Traffic Calming	• Install center median with landscaping.
Fill Gaps in the Sidewalk Network	Complete TSP Projects • P21&22: Install 8-foot sidewalk on curb line (Regis Street to Water Street/Ida Street)
Intersection Modifications	• Complete TSP Projects • M6: Install permissive/protected left turns at First Avenue/Washington Street • Install Leading Pedestrian Intervals (LPI), prohibit right-turn on red at signalized intersections, and update TSP project to install protected-only left turn phasing. • Access management along Locust Street approaching intersection.

Additional Considerations

- **Crossing Enhancements:** Additional public outreach and pedestrian crossing volumes could be used to refine priority enhanced crossing locations along First Avenue.
- **Access Management**: Traffic operations and turning movement analyses typically occurs with development or as part of a full roadway reconstruction project. Additional public outreach should be conducted when reducing access points. Any limitations on high-volume access points should be further evaluated for their potential impact on overall traffic circulation.
- **Traffic Calming:** Medians can only be installed where there are gaps between driveways or where turning movements can be restricted. AutoTurn movement analyses should accompany the design of any center medians. Coordinate with maintenance staff and emergency response services on any traffic calming treatments.

Potential Corridor Layout



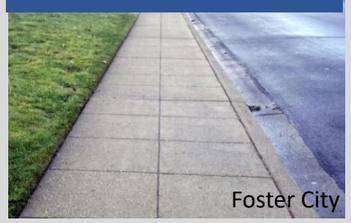
Note: Proposed Treatments are overlayed on the Marion County Safe Routes to School Plan to support coordination with the County on additional safety treatments.

Candidate Locations: Treatment locations subject to additional analysis and public outreach.

Legend

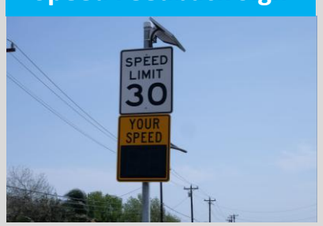
Colored image headers match symbols on map above

Widened Sidewalks



Protected Turn Phasing

Speed Feedback Sign



Access Management

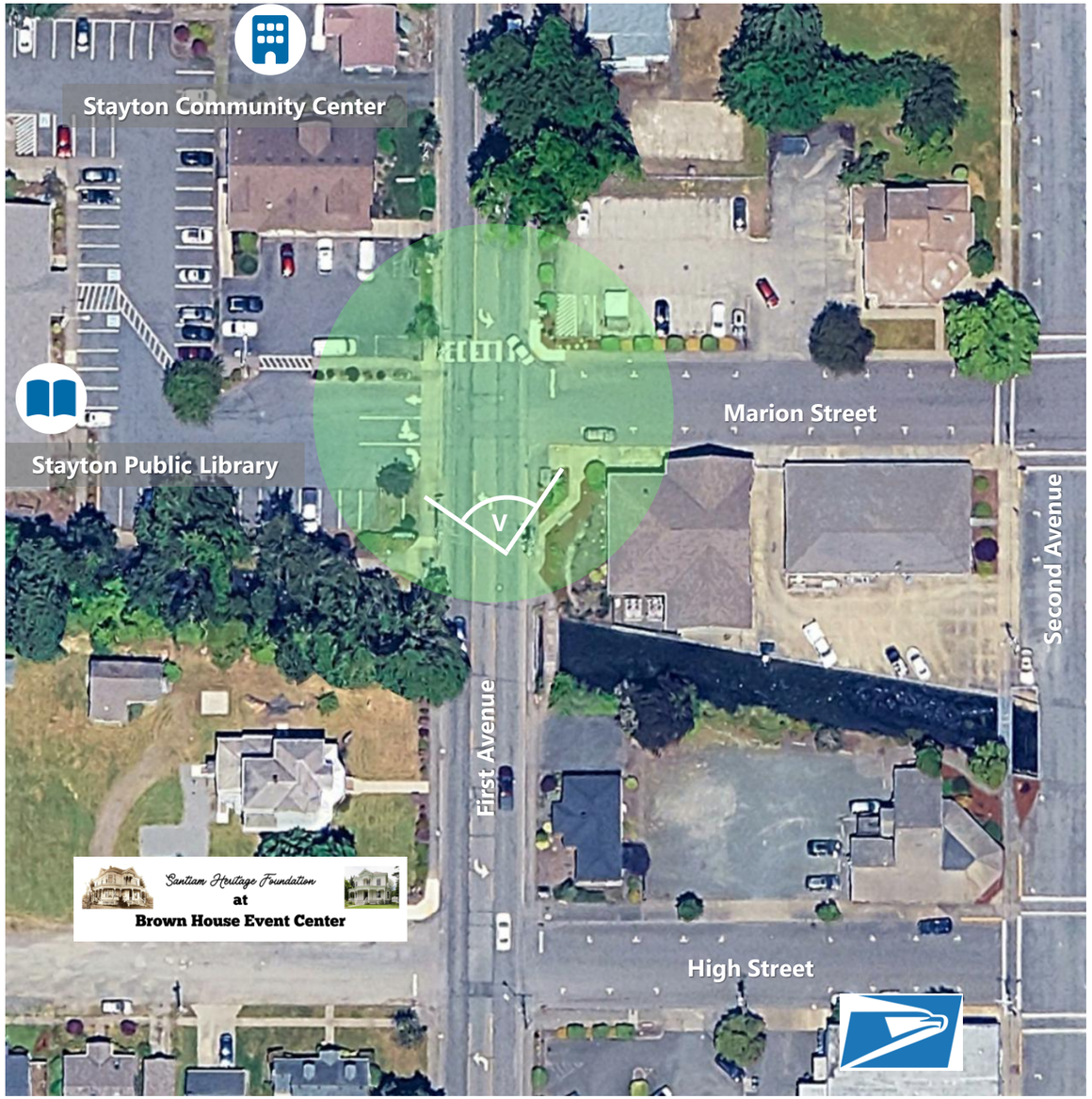
Enhanced Crossing

Landscaped Median

KITTELSON & ASSOCIATES

First Avenue (Shaff Road/Fern Ridge Road to Washington Street)
Conceptual Corridor Layout
Stayton, Oregon

Figure 7



Functional Classification	• First Avenue: Major Arterial / Marion Street: Local Street
Roadway Jurisdiction	• First Avenue: Marion County / Marion Street: City of Stayton
Roadway Facilities	• First Avenue: Three Lanes (Two through lanes and a two-way left turn lane) • Marion Street: Unstriped two-way traffic, marked street parking • Community Center Parking Lot: Shared through-left turn lane and dedicated left turn lane
Roadway Condition	• First Avenue: Good (Category II and Category III), Marion St: Category I (Very Good)
Posted Speed	• First Avenue: 30 MPH, Marion St: 25 MPH
Pedestrian Facilities	• Curb-tight sidewalks, width varies from 5-8 feet • Marked crosswalk on north leg
Bicycle Facilities	• None
Transit Facilities	• None
Land Use	• Commercial Retail and Public Zoning • Surrounding zoning is Residential Mixed Use and Medium Density Residential • Community center and public library accessed via driveway
Community Feedback	• Many pedestrian connections in the area combined with the busyness of the intersection increase the importance of additional crossing enhancements • Challenging to see the crosswalk when traveling southbound due to the vertical curvature of the roadway. This challenge is especially present in dark conditions.
Existing Safety Countermeasures	• Pedestrian crossing signage on First Avenue • Marked crosswalk
Planned Projects (TSP)	• P52: Study and implement crosswalk enhancements (Shaff Road to Water Street)
Considerations	• Proximity to significant public buildings
Constraints	• Limited connectivity west of First Avenue makes this intersection and the primary access point for several community services • Existing development limits abilities to update the circulation between parking facilities for the library and community center

Crash History (January 1, 2018-December 31, 2022)

No reported crashes were identified at this location between January 1, 2018 and December 31, 2022.

Potential Countermeasures

Countermeasure	Description

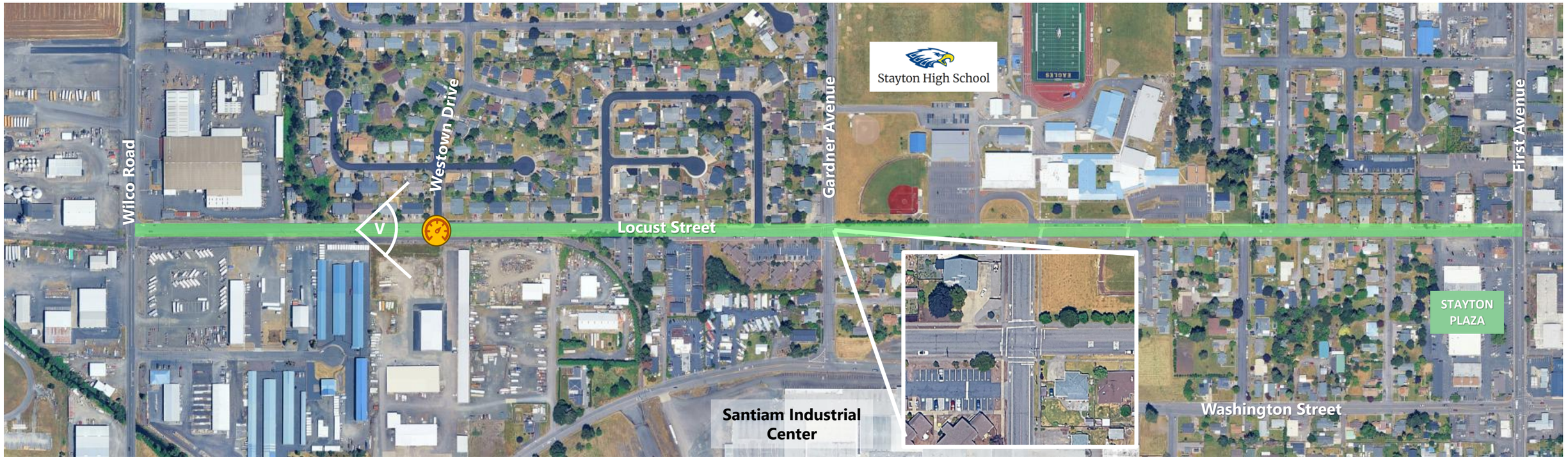
Crossing Enhancements	• Candidate treatments (as described in the FHWA STEP Guide):
	  • Advance Stop Here for Pedestrians sign and stop line
	  • In-Street Pedestrian Crossing Sign
	  • Curb Extension
	  • Pedestrian Refuge Island
	  • Rectangular Rapid-Flashing Beacon
	  • Pedestrian Hybrid Beacon
	• Crosswalk improvements align with TSP Project P52: Study and implement crosswalk enhancements

Intersection Modifications	• Realign intersection: Remove dedicated right turn lane from library exit and add curb extensions on Marion Street to better align the intersection
Pedestrian and Bicycle Improvements	• Complete east-west multiuse trail from First Avenue to Evergreen Avenue • Provide wayfinding to and from the pedestrian path west of the library

Additional Considerations

- **Crossing Enhancements:** Additional public outreach and pedestrian crossing volumes could be used to refine priority enhanced crossing treatment selection.
- **Intersection Modifications**: A traffic analysis should be conducted to evaluate the impacts of removing the dedicated right turn lane from the library exit. If a pedestrian refuge island were added to the concept, then that would remove the dedicated left turn lane from the north leg of the intersection. Additional traffic analysis should be conducted to explore the impact of removing the dedicated turn lane from that location.

Potential Intersection Layout



Functional Classification	• Collector	**Transit Facilities**	• None
Roadway Jurisdiction	• City of Stayton	**Land Use**	• Zoning varies, including Public, Commercial Retail, Density Residential, and Light Industrial
Roadway Facilities	• Two-way traffic without marked centerline • On-street parking • Minor street stop-controlled	**Community Feedback**	• Community mentioned they are concerned about rear-end crashes with left-turning vehicles from Wilco Road to Locust Street • Desire for traffic calming
Roadway Condition	• Good (Category III)	**Existing Safety Countermeasures**	• Advanced warning signage (school crossing)
Posted Speed	• 25 MPH (20 MPH school zone in the vicinity of high school)	**Planned Projects (TSP)**	• P31 & P32: Install Sidewalks (Stayton High School to First Avenue) • B14: Install bike lanes
Observed Speed	• WB 85th Percentile Speed at Westown Drive: 31 MPH		
Pedestrian Facilities	• 6-foot sidewalks along majority of corridor. Mix of curb-tight and buffered facilities.	**Considerations and Constraints**	• Mixed land use could create varied road user expectations
Bicycle Facilities	• None	**Constraints**	• Adding bicycle facilities may result in parking reduction

KITTELSON & ASSOCIATES

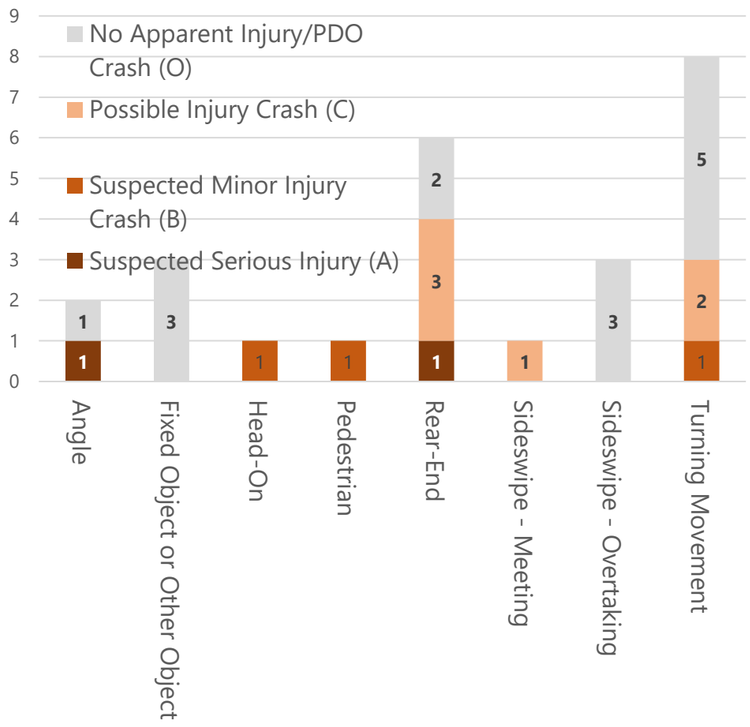
Locust Street (Wilco Street to First Avenue)
Site Context
Stayton, Oregon

Figure 11

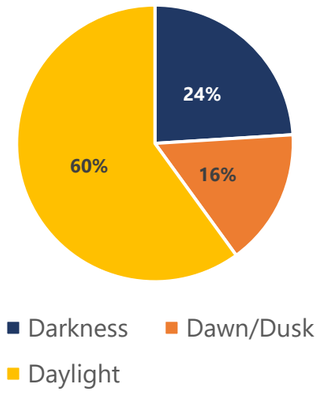
Crash History (January 1, 2018-December 31, 2022)

Nearest Intersecting Street	Collision Type							Total
	Angle	Turn	Rear-End	Fixed Object	Ped	Sideswipe	Other	
Wilco Street	-	-	2	1	-	-	-	**3**
Westown Drive	-	1	-	-	-	-	-	**1**
Gardner Avenue	1	1	1	-	1	-	-	**4**
Birch Avenue	-	-	-	-	-	-	1	**1**
First Avenue	1	6	2	1	-	1	-	**11**
Segment Crashes (Wilco to First Avenue)	-	-	1	1	-	3	-	**5**

Crash Severity by Type



Lighting Conditions



Potential Countermeasures

Countermeasure	Description

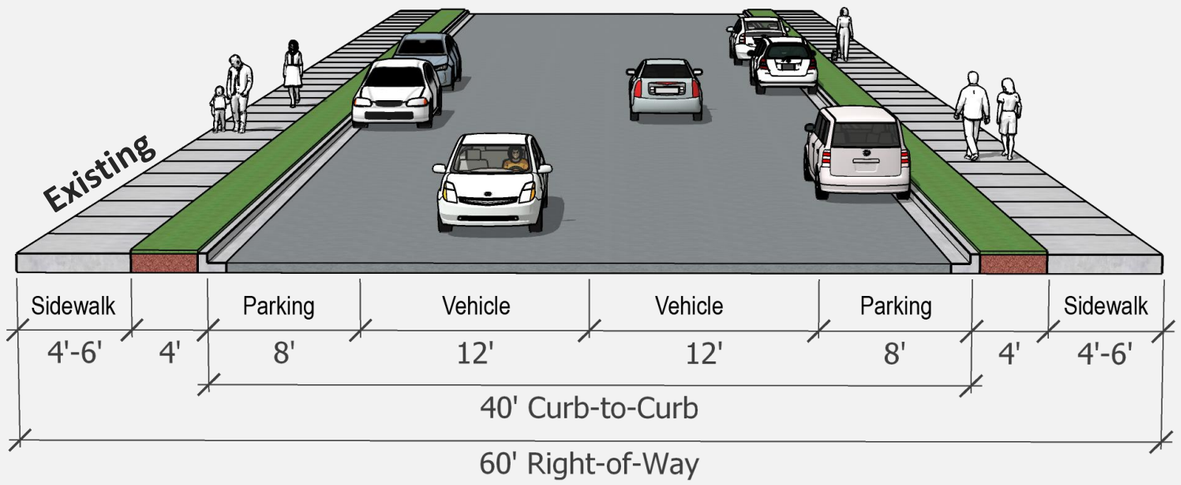
Fill Gaps in the Sidewalk and Bicycle Network	• Complete TSP Projects to fill sidewalk and bicycle gaps:
	  • P31 & P32: Install Sidewalks (Stayton High School to First Avenue)
	  • B14: Install bike lanes

Traffic Calming	• Install curb extensions • Install speed cushions, chicanes, and/or raised intersections along the segment • Restripe travel lanes to 11-feet wide • Implement a raised intersection or painted intersection at Locust Street/ Gardner Avenue
Intersection Modifications at First Avenue	• Limit on-street parking or restrict accesses in the vicinity of First Avenue
Relocate Fixed Objects	• Relocate fixed objects further from the roadway at locations with fixed object crashes
Access Management	• Access management between Birch Avenue and First Avenue

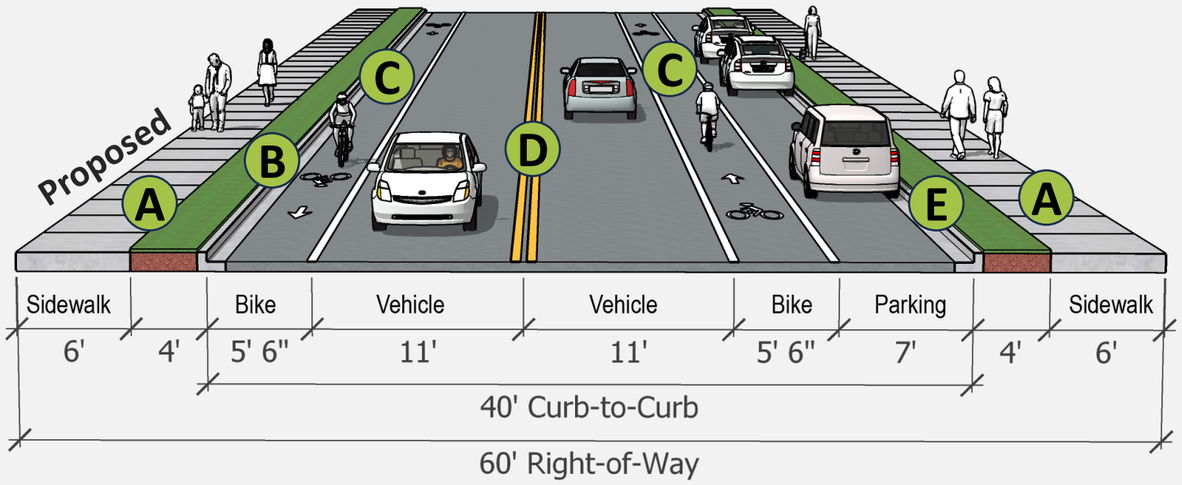
Additional Considerations

- **Fill Gaps in the Sidewalk and Bicycle Network:** Addition of bike lanes may require removal of on-street parking or purchase of right-of-way, especially approaching First Avenue.
- **Traffic Calming:** Proposed curb extensions are preferred only on minor-street approaches or where there is on-street parking to maintain a continuous bicycle facility along Locust Street. Coordinate with maintenance staff and emergency response services on any traffic calming treatments.
- **Access Management**: Traffic operations and turning movement analyses typically occurs with development or as part of a full roadway reconstruction project. Additional public outreach should be conducted when reducing access points. Any limitations on high-volume access points should be further evaluated for their potential impact on overall traffic circulation.
- **Sight Distance Checks:** Sight distance appears to be more limited along Locust Street at the horizontal curvature of the roadway west of Gardner Avenue. Consider parking limitations or other visibility improvements at this location.

Potential Cross Section and Safety Treatments



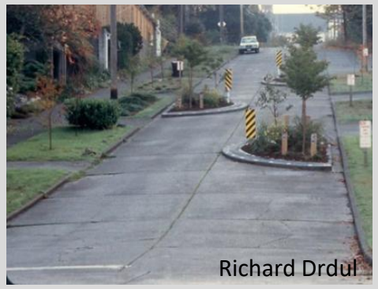
A – Install new or widened sidewalk
B – Remove parking on north or south side of street
C – Install striped bike lanes
D -- Repaved roadway with narrowed travel lanes
E – Ensure fixed objects are clear of roadway



Speed Cushions

Raised Intersections

Chicanes



Access Management

Curb Extensions

Painted Intersections

Conceptual Design Only: Final roadway design and the balance between roadway elements and right-of-way (ROW) will be subject to change based on further engineering analysis and public engagement.

Functional Classification	• Minor Arterial	**Transit Facilities**	• None
Roadway Jurisdiction	• City of Stayton	**Land Use**	• Primarily zoned Light Industrial • Some residential and commercial zoning
Roadway Facilities	• Two through lanes • Marked on-street parked along some segments • Minor street stop-controlled	**Community Feedback**	• Concerns regarding excessive speeding • Safety concerns at Washington Street/First Avenue intersection • As area develops, importance of safety infrastructure will increase
Roadway Condition	• Very Poor (Category IV and Category V)	**Existing Safety Countermeasures**	• Painted median • Advanced warning signage (bump, railroad crossing)
Posted Speed	• 35 MPH, 25 MPH east of Gardener Ave	**Planned Projects (TSP)**	• P8, P9, P33, P34, P35: Install sidewalks (Wilco to First) • B15: Install bike lanes • M2: Install roundabout at Stayton Road/Wilco Road/Washington Street/Ida Street Intersection • M6: Install permissive/protected left turns at First Avenue/Washington Street
Observed Speed	• WB 85th Percentile Speed at Douglas Avenue: 34 MPH		
Pedestrian Facilities	• 6-foot curb-tight sidewalks east of Evergreen Ave, sparse sidewalks west of Evergreen	**Considerations**	• Freight route per TSP
Bicycle Facilities	• None	**Constraints**	• Inactive railroad crossing east of Miller Drive • Highly skewed intersections

KITTELSON & ASSOCIATES

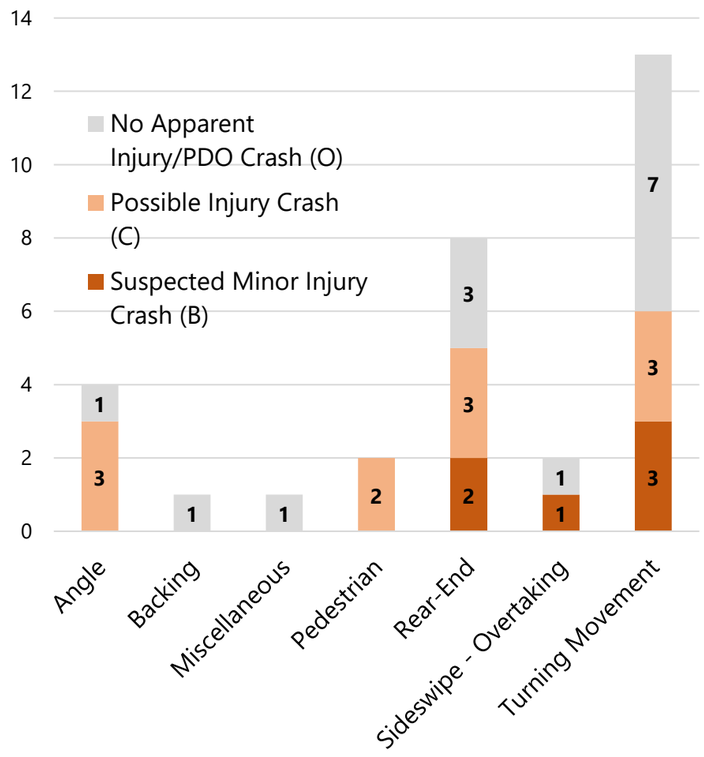
Washington Street (Wilco Road to First Avenue)
Site Context
Stayton, Oregon

Figure 14

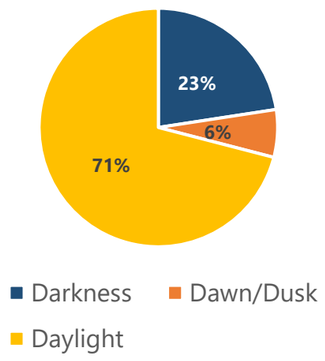
Crash History (January 1, 2018-December 31, 2022)

Nearest Intersecting Street	Collision Type						Total
	Angle	Turn	Rear-End	Ped	Sideswipe	Other	
Ida Street / Wilco Road	3	2	3	-	-	1	**9**
Noble Avenue	-	1	1	-	-	-	**2**
Larch Avenue	-	-	-	-	1	-	**1**
Gardner Avenue	-	1	-	-	-	-	**1**
Birch Avenue	-	-	2	-	1	-	**3**
First Avenue	1	9	2	2	-	1	**15**

Crash Severity by Type



Lighting Conditions



Potential Countermeasures

Countermeasure	Description

Fill Gaps in the Sidewalk and Bicycle Network	• Complete TSP Projects to fill bicycle and pedestrian gaps
	  • P8, P9, P33, P34, P35: Install sidewalks (Wilco to First)
	  • B15: Install bike lanes

Crossing Enhancements	• Implement crossing improvements aligned with the informal paths at Gardner Avenue and Evergreen Avenue. See FHWA STEP Guide for candidate treatments.
Roadway Repaving and Restriping	• While addressing sidewalk and bicycle gaps (see above), narrow travel lanes to 11-feet wide and explore access management at driveways to support traffic calming and reduced conflict points • Repave roadway to avoid residual road markings and improve comfort for people biking in the roadway • Restripe centerline as solid double yellow line to restrict passing

Intersection Modifications	• Complete the following TSP Projects:
	  • M2: Install roundabout at Stayton Road/Wilco Road/Washington Street/Ida Street Intersection
	  • M6: Install permissive/protected left turns at First Avenue/Washington Street
	• Conduct access management in the vicinity of the intersection of with First Avenue.
	• Implement Leading Pedestrian Interval (LPI) and prohibit right-turn on red at the intersection with First Avenue.

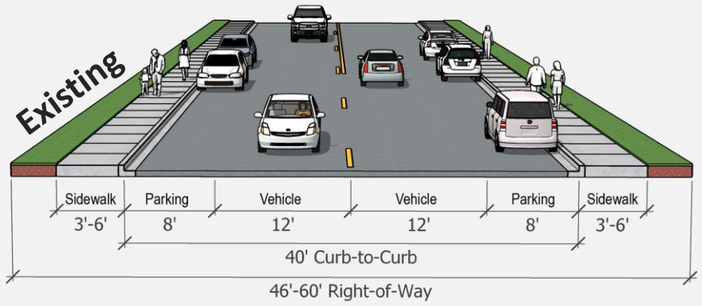
Traffic Calming	• Implement raised or painted at intersection with Gardner Avenue • Consider implementing additional painted intersections
Maintain Vegetation	• Maintain vegetation to improve sight distance with intersection of Birch Avenue
Remove Inactive Rail Crossing	• Explore the potential to remove the rail crossing. This includes coordination to understand if there is a future need for a rail crossing to be reactivated, or if the railroad tracks, gate, and warning pavement markings can be removed.

Additional Considerations

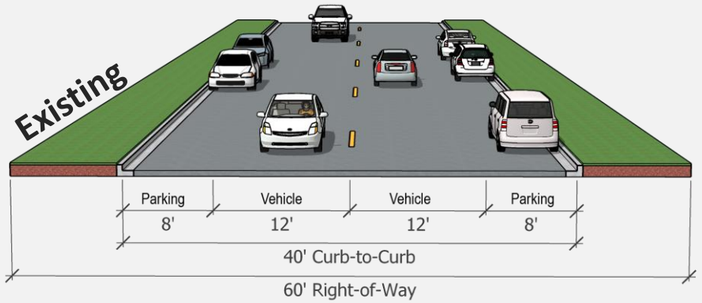
- **Fill Gaps in the Sidewalk and Bicycle Network:** Addition of bike lanes may require removal of on-street parking and may require purchase of right-of-way.
- **Crossing Enhancements:** Additional public outreach and pedestrian crossing volumes could be used to refine priority enhanced crossing treatment selection.
- **Intersection Modifications**: Traffic operations and turning movement analyses should occur with development or as part of a full roadway reconstruction project. Any limitations on high-volume access points should be further evaluated for their potential impact on overall traffic circulation.
- **Traffic Calming**: Coordinate with maintenance staff and emergency response services on any traffic calming treatments.

Potential Cross Section and Safety Treatments

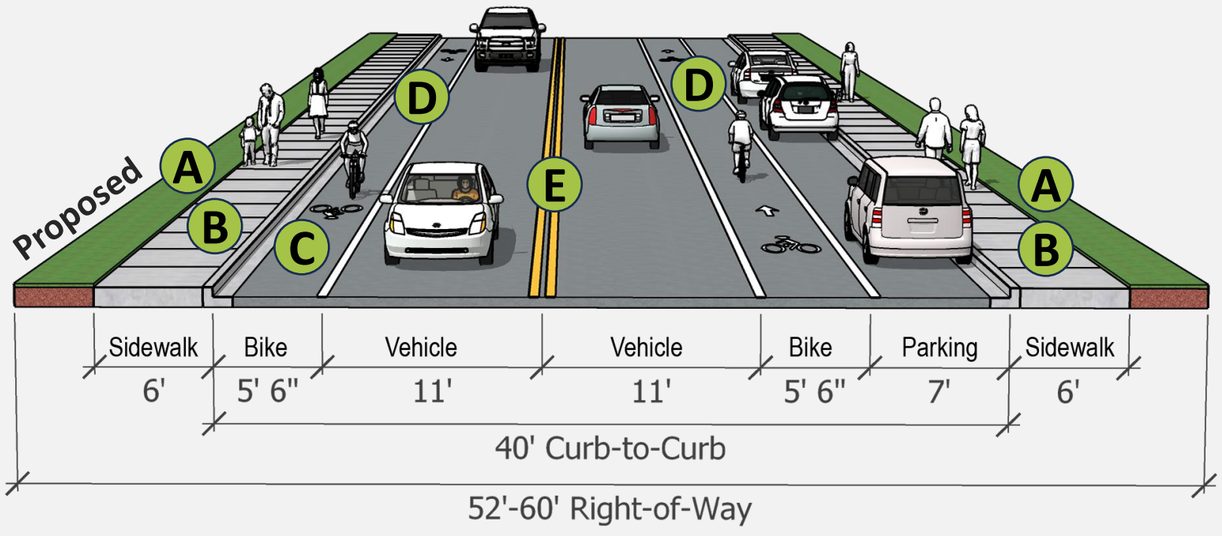
Near First Avenue



Near Wilco Road



A – Ensure fixed objects are clear of roadway
B – Install new or widened sidewalk; purchase ROW
C – Remove parking on north or south side of street
D – Install striped bike lanes
E -- Repaved roadway with narrowed travel lanes



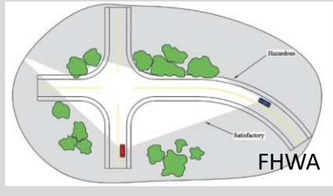
Crossing Enhancements

Raised Intersections

Painted Intersections

Access Management

Trim Vegetation



Roundabout

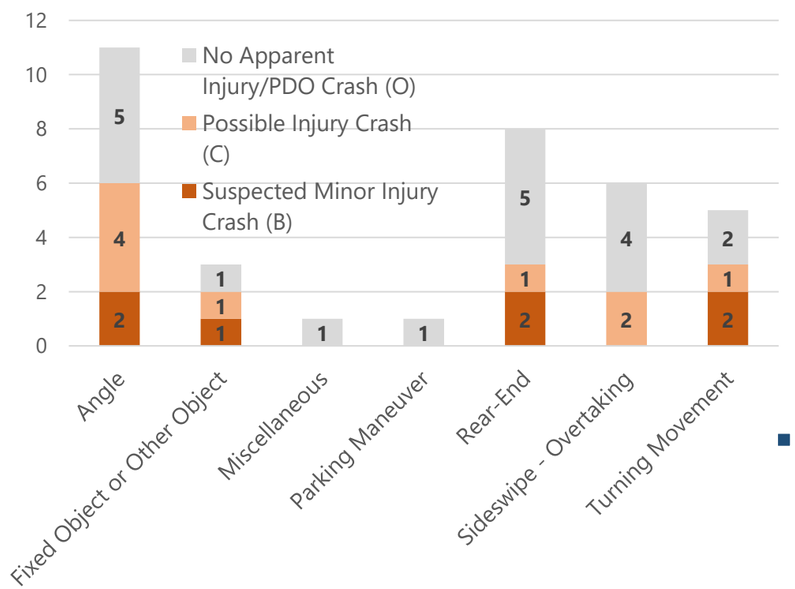
Conceptual Design Only: Final roadway design and the balance between roadway elements and right-of-way (ROW) will be subject to change based on further engineering analysis and public engagement.

Functional Classification	• Collector	**Bicycle Facilities**	• None
Roadway Jurisdiction	• City of Stayton	**Transit Facilities**	• None
Roadway Facilities	• Two through lanes (marked) • Marked on-street parked along some segments • Minor street stop-controlled	**Land Use**	• Zoned Low Density and Medium Density Residential
Roadway Condition	• Very Poor (Category IV and Category V)	**Community Feedback**	• Drivers ignore intersection control devices • Need to fill sidewalk gaps
Posted Speed	• 30 MPH	**Existing Safety Countermeasures**	• Reflective striping on utility poles
Observed Speed	• WB 85th Percentile Speed at Birch Avenue: 29 MPH	**Planned Projects (TSP)**	• P12, P13, P14: Install sidewalks (Wilco Road to First Avenue) • B9: Add signing and striping to denote bicycle route • M2: Install roundabout at Stayton Road/Wilco Road/Washington Street/Ida Street Intersection
Pedestrian Facilities	• 6-foot sidewalks along majority of corridor. Mix of curb-tight and buffered facilities.	**Considerations and Constraints**	• On-street parking required (per TSP)

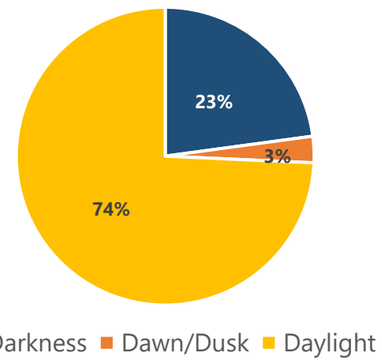
Crash History (January 1, 2018-December 31, 2022)

Nearest Intersecting Street	Collision Type						Total
	Angle	Turn	Rear-End	Fixed Object	Sideswipe	Other	
Wilco Street / Washington Street	3	2	3	-	-	1	**9**
Oak Avenue	2	-	-	-	-	1	**3**
Noble Avenue	-	-	3	-	-	-	**3**
Segment between Holly Ave and King Ave	-	-	1	-	4	-	**5**
Fern Avenue	-	-	-	1	-	-	**1**
Segment between Fern Avenue and Evergreen Avenue	-	-	1	1	-	-	**2**
Evergreen Avenue	-	-	-	1	-	-	**1**
Segment between Evergreen Avenue and Cherry Avenue	1	-	-	-	-	-	**1**
First Avenue	5	3	-	-	2	-	**10**

Crash Severity by Type



Lighting Conditions



Potential Countermeasures

Countermeasure	Description

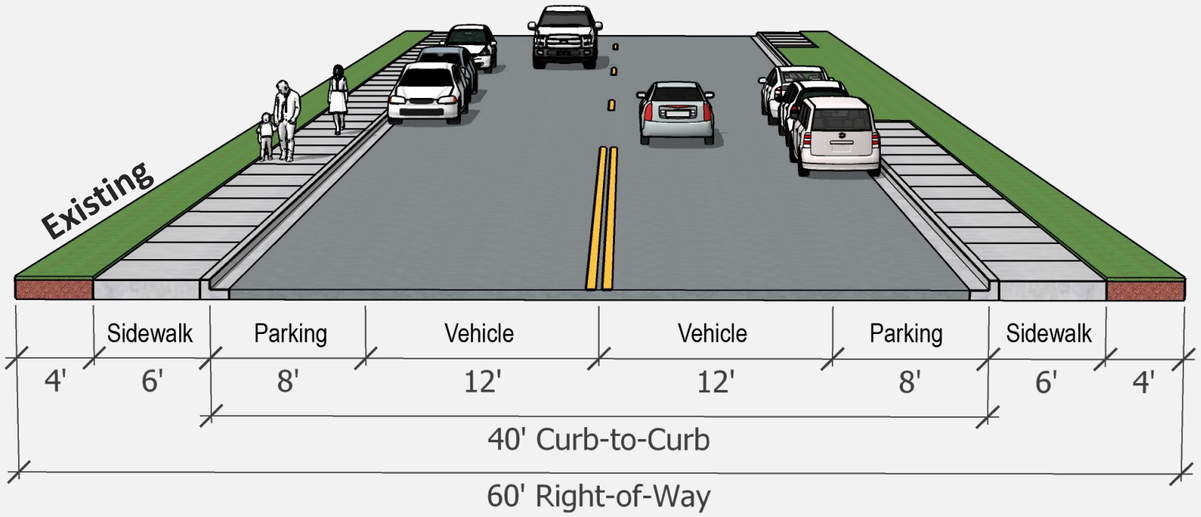
Fill Gaps in the Sidewalk and Bicycle Network	• Complete TSP Projects to fill bicycle and pedestrian gaps
	  • P12, P13, P14: Install sidewalks (Wilco Road to First Avenue)
	  • B9: Add signing and striping to denote bicycle route
	• Medium-term option to repave the roadway and implement a pedestrian side path using bollards.

Crossing Enhancements	• Implement crossing enhancements as pedestrian facilities are installed. See FHWA STEP Guide for candidate treatments.
Traffic Calming	• Install speed cushions • Install curb extensions
Intersection Modifications	• Complete TSP Projects • M2: Install roundabout at Stayton Road/Wilco Road/Washington Street/Ida Street Intersection • Install raised or painted intersections at additional locations, potentially at Noble Avenue, Larch Avenue, and Evergreen Avenue
Roadway Repaving and Restriping	• Remove skip stripe and paint a double marked centerline to prohibit vehicle passing. • Repave roadway to improve comfort for people walking and biking.
Relocate Fixed Objects	• Relocate fixed objects further from the roadway at locations with fixed object crashes.

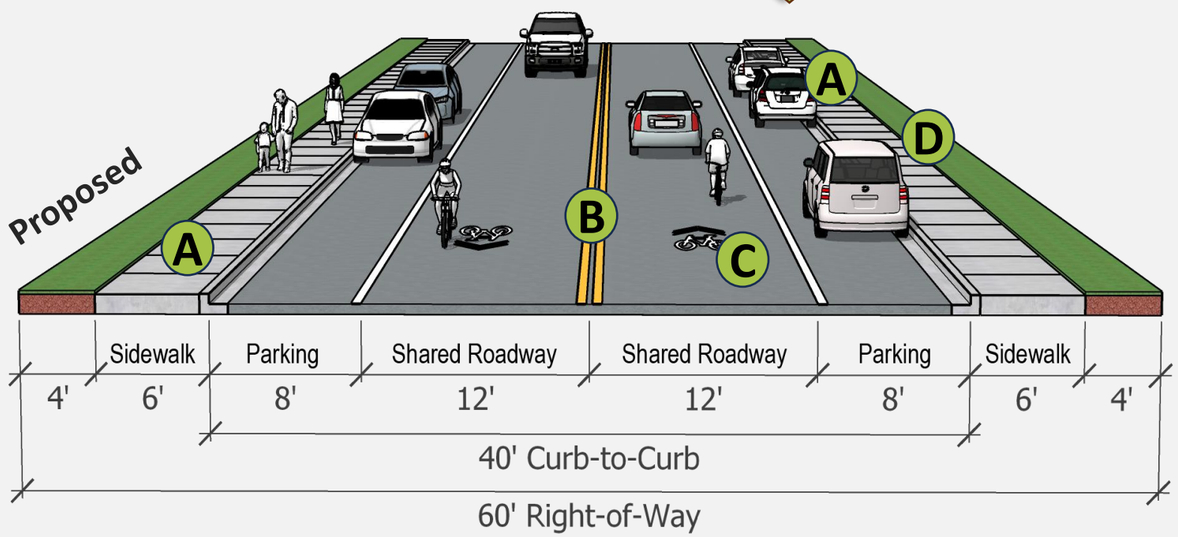
Additional Considerations

- **Fill Gaps in the Sidewalk and Bicycle Network:** Addition of bike lanes may require removal of on-street parking or purchase of right-of-way.
- **Crossing Enhancements:** Additional public outreach and pedestrian crossing volumes could be used to refine priority enhanced crossing treatments.
- **Traffic Calming:** Consider narrowing the roadway with 11' travel lanes when the road is next repaved to provide additional space for wider sidewalks. Coordinate with maintenance staff and emergency response services on any traffic calming treatments.

Potential Cross Section and Safety Treatments



A – Install new or widened sidewalk
B – Repave and restripe roadway with solid centerline
C – Install sharrows
D – Ensure fixed objects are clear of roadway



Speed Cushions

Raised Intersections

Crossing Enhancements

Curb Extensions

Painted Intersections

Roundabout

Conceptual Design Only: Final roadway design and the balance between roadway elements and right-of-way (ROW) will be subject to change based on further engineering analysis and public engagement.

Implementation and Monitoring

This section identifies the key actions that the City of Stayton and its partner agencies can take to implement the strategies and treatments identified within the SAP and monitor performance and progress towards achieving the objectives of the plan.

Implementation

The Safe Streets and Roads for All (SS4A) self-certification worksheet requires that this SAP identifies a comprehensive set of projects and strategies to address safety problems, with information about time ranges when they will be deployed, and an explanation of project prioritization criteria. Treatments and strategies were prioritized based on the following factors:

- Expected safety performance according to the crash reduction factor or Safe System Roadway Hierarchy Tier
- The amount of time, energy, or cost required for implementation
- Ability to implement interim or quick-build project phases
- Support from partners (businesses, agencies, nonprofits, etc.) that are interested in assisting implementation
- Near-term public support or need for education/marketing campaigns for the treatments

Table 4 presents the systemic and location-specific treatments and strategies highlighted in the previous sections along with a breakdown of implementation phases, organized by emphasis area. Treatments and strategies may be implemented in a different order as needs shift within the City, as funding becomes available, and as partner agencies have capacity to support implementation.

Table 4. Implementation Timeline

Treatment/Strategy	Emphasis Area Addressed[9]	Partners	Near-Term Actions (<2 years)	Medium-Term Actions (2-5 years)	Long-Term Actions (>5 years)
First Avenue Improvements	N/A	– Stayton Public Works – Marion County Public Works	– Coordinate with County to incorporate additional safety treatments into upcoming County project along First Avenue	–	– -
First Avenue & Marion Street Improvements	N/A	– Stayton Public Works – Marion County Public Works	– Complete concept design for proposed treatments	– Design and construct proposed treatments	– -
Locust Street Improvements	N/A	– Stayton Public Works	– Complete concept design for proposed treatments – Construct quick-build/pilot installations for traffic calming	– Design and construct proposed treatments – Construct permanent traffic calming treatments	– -
Washington Street Improvements	N/A	– Stayton Public Works	– -	– Design and construct proposed treatments in conjunction with upcoming development	– -
Ida Street Improvements	N/A	– Stayton Public Works	– Complete concept design for proposed treatments	– -	– Design and construct proposed treatments
Low-Cost Countermeasures at Stop Controlled Intersections	Intersections	– Stayton Public Works – Marion County Public Works	– Install treatments at priority intersections and other suggested locations; coordinate with County as needed	– Coordinate with Marion County to continue implementing treatments	– -
Update Stayton Land Use and Development Code to Increase Safety Analysis and Mitigation	Intersections	– Stayton City Council – Stayton Public Works	– -	– Review and Update Stayton's Land Use and Development Code	– -
Crossing Enhancements	Vulnerable Road Users	– Stayton Public Works – Marion County Public Works	– -	– Construct quick-build installations at high priority City-managed locations; identify locations for permanent crossing enhancements	– Continue constructing permanent crossing enhancements
Traffic Calming	Vulnerable Road Users	– Stayton Public Works	– Install quick-build traffic calming on high priority corridors, such as those identified on the CRIN or in previous sections	– Continue expanding quick build installations, construct permanent traffic calming	– Continue expanding quick build installations, construct permanent traffic calming
Fill Gaps in the Sidewalk Network	Vulnerable Road Users	– Stayton Public Works – Marion County Public Works	– Fill high priority sidewalk gaps on City-managed roadways as identified in the CRIN and Stayton TSP; identify County roadways for sidewalk infill	– Continue filing high priority sidewalk gaps on City-managed roadways – Coordinate with the County to fill high priority sidewalk gaps along County-managed roadways	– Continue filling sidewalk gaps
Fill Gaps in the Bicycle Network	Vulnerable Road Users	– Stayton Public Works	– Fill high priority bicycle gaps on City-managed roadways as identified in the CRIN and Stayton TSP; identify County roadways for bicycle improvements	– Continue filling high priority bicycle gaps on City-managed facilities – Coordinate with the County to fill high priority bicycle gaps on County-managed roadways	– Continue filling bicycle gaps

[9] Location-specific treatments were selected based on a review of the CRIN and address all emphasis areas.

Treatment/Strategy	Emphasis Area Addressed[9]	Partners	Near-Term Actions (<2 years)	Medium-Term Actions (2-5 years)	Long-Term Actions (>5 years)
Update Roadway Design Standards to Promote Context-Sensitive Design	Vulnerable Road Users	– Stayton Public Works	– -	– Review and Update Stayton's Roadway Design Standards	– -
Appropriate Posted Speeds for All Road Users	Vulnerable Road Users	– Stayton and Marion County Public Works	– -	– Coordinate with Marion County and ODOT to draft and adopt policy and install updated speed limit signs as needed	– -
20 Is Plenty	Vulnerable Road Users	– Stayton Public Works	– Coordinate with City Council to draft and adopt "20 Is Plenty" policy – Install new speed limit signs on local streets	– -	– -
Dynamic Speed Feedback Signs	Risky Driver Behaviors	– Stayton Public Works – Stayton Police Department	– -	– Install dynamic speed feedback signs at priority locations	– Continue installing dynamic speed feedback signs at priority locations
Hardened Centerlines and Turn Wedges	Risky Driver Behaviors	– Stayton Public Works	– Install treatments at priority locations	– Continue installing treatments	– -
Education Campaigns	Risky Driver Behaviors	– Stayton Schools – Stayton Police Department – Community Based Organizations	– Identify partners and develop a transportation safety education plan	– Implement the transportation safety education plan	– Continue implementing the transportation safety education plan
Targeted and High-Visibility Enforcement	Risky Driver Behaviors	– Stayton Police Department – Marion County Sheriff's Office – Oregon State Police	– -	– Perform targeted and high-visibility enforcement	– Continue performing targeted and high-visibility enforcement
Develop Automatic Traffic Enforcement Policy	Risky Driver Behaviors	– Stayton City Council – Stayton Police Department	– -	– Consider developing policy	– Consider developing and adopting policy

Funding Opportunities

The City of Stayton has limited transportation resources to cover expenses ranging from safety, repairs and maintenance to growth. The strategies and treatments within this plan cost money; to achieve the goals of this SAP, Stayton must prioritize safety through the fiscal budgeting process. This might include reallocating existing City funds or seeking additional funding sources. Potential funding sources at the federal, state, and local level include:

- Federal funding
  - SS4A Planning and Demonstration Grants[10]
  - SS4A Implementation Grants[10]
  - Highway Safety Improvement Program Grants
  - Better Utilizing Investments to Leverage Development (BUILD) Grants
  - Transportation Alternatives Program (TAP) Grants
- State funding
  - Pedestrian and Bicycle Strategic Grants
  - ARTS Program Grants
  - Transportation and Growth Management (TGM) Grants
  - Connect Oregon Grants
- Local funding
  - Tax Increment Financing (TIF)
  - Bonds

Performance Measures

Performance measures are important for many reasons: they help develop a better understanding of and linkage between the SAP and safety outcomes, they can help improve safety communication with the public and other project partners, and they create greater accountability by tracking City progress towards achieving the plan's safety goals. Performance measures can focus on objective crash statistics, behavioral metrics, or education and enforcement actions taken. For clarity, performance measures have been classified into "implementation metrics" and "outcome metrics." Implementation metrics evaluate progress towards implementing the strategies and treatments within the plan whereas outcome metrics evaluate the effectiveness of the implemented projects and policies in reducing fatal and serious injury crashes.

Implementation and outcome performance measures relating to each of the three emphasis areas are described in Table 5.

[10] If SS4A is not renewed, there may be similar grant programs in future transportation bills.

Table 5. Performance Measures

Type	Performance Measure
Implementation Metrics[11]	Number of systemic intersection strategies and treatments implemented
	Number of systemic vulnerable road user strategies and treatments implemented
	Number of risky driver behavior strategies and treatments implemented
	Number of location-specific treatments implemented
Outcome Metrics	Number of total crashes
	Number of FSI crashes
	Number of FSI crashes at intersections
	Number of FSI crashes involving a vulnerable road user
	Number of FSI crashes involving risky driver behavior

Next Steps

A Safety Action Plan will be developed to document the analysis conducted to-date, the recommended strategies and treatments, and the implementation and monitoring plan.

[11] To ensure consistency, Stayton should establish a standardized approach to measuring implementation metrics. Given that projects and strategies vary in cost, it may be helpful to track both dollars spent on safety and the number of projects delivered. Additionally, because infrastructure and policy projects often follow different timelines and implementation mechanisms, they should be tracked separately. The City can further subdivide implementation metrics as needed. Regardless of the chosen structure, using a consistent methodology year-over-year will best support effective tracking of SAP implementation progress.