Appendix A. Public Engagement Summary

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

MEETING MINUTES

Project Name: Centennial Safety Action Plan

FHU Reference No.: 123612-01

Meeting Type: Stakeholder Safety Summit

Meeting Location: City of Centennial Public Works

Meeting Date: September 5, 2024

In attendance:

Name	Organization	Name	Organization
Anna Bunce	Centennial	Melissa Reese-Thacker	South Suburban Parks
Libby Nordeen	Centennial	Chris Vokurka	CDOT Region 1
Aubrey Thomas	Centennial	Chris Gulli	Arapahoe County Sheriff
Ala Ahmed	Centennial	Adam Burnson	Arapahoe County Sheriff
Carl Harline	Aurora	Jeremiah Gates	Arapahoe County Sheriff
Erik Braaten	DRCOG	Aaron Heumann	Littleton
Colleen Potton	South Metro Fire	Emily Kleinfelter	Littleton
Anthony Valdez	South Metro Fire	Gaurav Vasisht	Felsburg Holt & Ullevig
Mark Stacks	Douglas County	Amanda Denning	Felsburg Holt & Ullevig
Steven Buckley	Arapahoe County	Ryan Saline	Felsburg Holt & Ullevig
Adam Maxwell	Englewood	Matthew Downey	Felsburg Holt & Ullevig

Project Overview

Anna and Gaurav gave an overview of the project and the intent of the safety summit.

Safety Projects

Attendees were asked to share safety-focused projects they are actively working on or plan to pursue:

- Douglas County:
  - Just completed a crash dashboard for county roadways
  - Future SS4A project upcoming
- Arapahoe County
  - Inverness Drive West road diet construction and some other safety-focused CIP projects
  - Tempe St/Belleview Ave roundabout construction
  - Revising neighborhood traffic management program and signing/striping standards

    - Kicking off own safety action plan in early 2025
- Englewood
    - Safety intersection audits – identify hotspots with DiExSys
    - Working on mini-roundabout designs for Dartmouth to address Broadside crashes
    - Bicycle corridor improvements on Sherman St (parallel to Broadway) – design underway for traffic calming elements
    - Aspire to be more proactive about safety actions
- SSPRD
    - Working on a variety of planning studies and design projects to enhance trail safety & comfort (Bear Creek, Mary Carter, High Line Canal)
    - Working with municipal partners to improve connections/ between on-street networks and trail system, including crossing locations
    - Pursuing opportunities for new trail corridors in Centennial
- CDOT
    - Has been focused largely on improving major corridors in Denver (BRT projects)
    - Working with DiExSys to identify specific crash hotspots to focus on
    - Region 1 emphasis on using Flashing Yellow Arrows and omission of phases to serve pedestrians
- ACSO
    - 50 patrol cameras throughout the city – average 300 reports per year but mostly emphasize outstanding warrants, violations, etc. not active traffic enforcement
    - Pretty robust safe start traffic program with schools during the first few weeks of schools in session, looking to expand the program further into the school year
    - Focus on enforcement and engagement; monthly reviews of up-to-date crash stats to determine where to focus
    - Monthly meetings with Centennial staff to discuss issues/hotspots and collaborate on solutions
    - Federal grant was received for traffic safety – officer overtime, additional enforcement & engagement
- South Metro Fire
    - Focus on enforcing the fire code, which sometimes conflicts with traffic safety and pedestrian safety initiatives (e.g., traffic calming has detrimental effect on emergency vehicle access, accommodation of fire trucks leads to road designs which can encourage speeding); always looking to collaborate and be flexible
    - Engineered their own traffic table design that has been implemented throughout the district
    - Like to be engaged on traffic design efforts
    - Lots of education outreach through 2 Safe (Too Safe?) – looking to expand the program to additional schools
    - Teen Driver Safety Week – October 20-26
    - Teach defensive driver classes at dedicated facility
- Littleton

- Kicked off Safer Streets Littleton in 2024 – collaborative efforts across multiple jurisdictions; includes outreach, planning efforts, pilot implementation projects
- Conducting School Zone Safety Evaluation and Traffic Calming Evaluation
- Added wayfinding signs through city to school routes.
- Designing three different protected intersections with construction intended for 2025
- HSIP projects to improve safety at Broadway/Littleton and Broadway/Mineral
- Lots of emphasis on traffic safety from City Council
- 34 projects underway – 13 design, 1 construction, plus others / studies. Corridor studies for SRTS, partnership with Littleton Public Schools.
- Continuing partnership with LPS on Safe Routes to School efforts; promoting culture changes through art programs and outreach programs

- DRCOG
  - Regional Vision Zero Plan was recently updated
  - Developing an updated report for Crash Data Consortium
  - Brand new crash dashboard just went live online
  - DRCOG has taken a more active role recently in corridor planning and neighborhood planning
  - Serve as a resource for local governments
- Centennial
  - Phasing in ATC control cabinets
  - Phasing in flashing yellow arrow displays
  - Overhauled neighborhood traffic calming program
  - Reduced local speed limit from 30 to 25
  - Installing RRFBs at trail crossings
  - Developing roundabout design standards, plan to pursue implementation funding after that; strongly considering opportunities to retrofit legacy intersections from Arapahoe County
- Aurora
  - Developing the Connecting Aurora transportation plan – significant focus on multimodal safety
  - 13th Ave and Havana corridor studies, also focused on multimodal improvement
  - Working on various crosswalk visibility enhancement projects
  - Ongoing RRFB implementation throughout the city
  - Implementing ADA ramps and median refuges at crossings
  - Conducting a before and after study on some of crossing improvement/traffic calming projects
  - Will be developing guidelines for uncontrolled bike/ped crossings

Safety Mitigation

Share safety mitigation focus areas your organization is targeting.

- Littleton:
  - Schools are the focus right now – data-driven assessment of needed improvements around them
  - Looking to increase funding overall for safety initiatives

- No particular mitigation focus area – perception vs reality of speeding is tough to manage
- City itself does not focus on education – looks to partner with others on that
- Leaning on partners like police and Communications Department as experts in education and enforcement while Public Works focuses on engineering.
- Looking to comprehensively address safety all over the city, not just the really dangerous roads
- Safer Streets Littleton is going beyond goal of zero fatalities with the goal of a comfortable and connected network for multi-modal transportation, that attracts people.

- South Metro
  - Focused on a subset of specific problem intersections – Parker Road is a major concern (within Parker city limits)
  - Education/Outreach seems to have limited impacts; hoping to partner with Engineering/Public Works departments to make physical interventions
  - Distracted driving caused by momentary distractions of systems inside vehicle is a major concern as is parking – oversize vehicle parking, obstruction of parking
- ACSO
  - Distracted driving is a major issue – not just cellphones; also low awareness of where speed limits change, where school zones are, etc.
  - Parking issues all over the place
- CDOT
  - Generally lots of crashes all over the highway system
  - Bike/pedestrian safety on the system
  - Implementing safety improvements with limited budget
- SSPRD
  - Data limitations with trail safety are an issue and make it challenging to be proactive
  - Overflow vehicle parking and traffic around neighborhood parks is a common complaint
  - Impacts of e-bikes on trails including high speeds
- Englewood
  - School pick-up/drop-off circulation and safety is a big issue in Englewood and a major focus right now – ignoring signs, speeding, coordination with law enforcement
- Arapahoe County
  - Local Road Safety Plan recommendations are a focus for implementation
  - AC SS4A plan will help focus the agency more
- Douglas County
  - Motorcycle crashes in rural areas have been a big issue, large proportion of fatal and severe crashes. Crashes at even low speeds can be very severe.
- Aurora
  - Signal timing adjustments to improve pedestrian safety are being implemented throughout the city
  - HAWK signals going in at two schools
  - NTCP is focused on speeding on local roads, even where there isn't a significant safety data concern

  - Ongoing coordination with APD and Aurora Public Schools – lots of various traffic safety issues at schools – originally designed for more bussing instead of pick-up/drop-off by parents
- DRCOG
  - Act as a technical resource and data resource to member agencies
  - Facilitating Vision Zero Working Group
  - TIP program helps local agencies acquire funding for safety improvements ($200M - $400M every four years). A powerful way to shape safety in the future based on what projects are funded.

Counter Measures

Share counter measures or policy development your organization has in place/upcoming.

- Aurora
  - Went live with crash dashboard that has been helpful to zero in on issues
  - Enhanced pedestrian crossings have been effective at encouraging more use and slowing down drivers. Roundabouts, physical changes to roadway have shown effectiveness at slowing people down.
  - Funding/Staffing is the main barrier – just want to be able to implement more
  - Hoping to do before/after studies to quantify safety benefits of physical interventions
- DRCOG
  - Pairing of distinct countermeasures (i.e., redundancy) helps boost effectiveness
  - Just mode shift itself can be effective
  - Land use that encourages people to use other modes can be a safety measure. Washington State has cited safer land use that encourages people to walk or bike as a strategy to reduce crashes.
- Littleton
  - Kicking off traffic operations/maintenance planning effort to get more organized around data, policies, etc. – the lack of policy is hindering effectiveness of making permanent improvements
  - Traffic calming measures have shrinking effectiveness over time
  - Community has strong feelings about some existing traffic circles because there was a fatality in one – community pushback against traffic calming elements is an ongoing challenge
  - Some apprehension around "Vision Zero", so the city is de-emphasizing that specific term while still striving for the same mission
  - Vision Zero also often has connotations with major arterial corridors while Safer Streets Littleton has more emphasis on neighborhood safety to promote multi-modal access to the front door
- Centennial
  - Suburban land use is a challenge
  - Focusing on the umbrella term "livable streets" yet remaining consistent with DRCOG's goals
- ACOS
  - General public doesn't know the traffic safety terminology – more education across all channels is beneficial
  - Different agencies communicate and do different things internally – more regional communication and collaboration on safety initiatives and actions are needed

Appendix B. Descriptive Safety Analysis

Technical Memorandum

TO:	Anna Bunce, City of Centennial Libby Nordeen, City of Centennial
FROM:	Gaurav Vasisht, Felsburg Holt & Ullevig Ryan Saline, Felsburg Holt & Ullevig
DATE:	October 2024
SUBJECT:	Centennial Safety Action Plan (FHU No. 123612-01) Descriptive Safety Analysis

This memorandum has been prepared to document descriptive safety analyses conducted in support of the Centennial Safe Streets for All (SS4A) Comprehensive Safety Action Plan.

1. Data Collection

Crash data was obtained from the City of Centennial using *Crash Magic* software to review and document existing safety conditions in the study area. The most recently available five-year period of crash data is from January 1, 2019, to December 31, 2023. Crash history from 2020 was notably impacted by the widespread impacts to travel patterns and subsequently crash frequency stemming from the COVID-19 pandemic.

After obtaining crash data, additional data cleaning was conducted to improve usability for the descriptive safety analyses described in this memo. Cleaning tasks included:

- Assigning CDOT crash types based on harmful events, collision types, vehicle movements/directions, and crash narratives
- Exclusion of crashes occurring explicitly occurring on private property (e.g. parking lots)
- Improvement of geocoded latitude/longitude data for crashes resulting in injury or fatality based on crash narratives.
- Inclusion of one fatal crash that occurred in Centennial but was investigated by Colorado State Patrol and not reported in *Crash Magic*

2. Crash History

The city-wide crash history for the period of January 1, 2019, to December 31, 2023, was evaluated to understand the magnitude and nature of existing safety concerns within the study area.

During the study period, 5,723 crashes were recorded, of which 4,414 resulted in Property Damage Only (PDO), 1,292 resulted in injuries (1,122 in minor injury, 170 in serious injury), and 17 were fatal collisions. **Table 1** summarizes the total crashes by severity over the five-year study period.

Table 1. Annual Crash History (2019-2023)

Year	PDO[1] Crashes	Minor Injury[2] Crashes	Serious Injury[2] Crashes	Fatal[2] Crashes	Total Crashes
2019	1,261	339	43	2	1,645
2020	685	212	24	5	926
2021	772	178	32	2	984
2022	794	178	28	3	1,003
2023	902	215	43	5	1,165
Total	**4,414**	**1,122**	**170**	**17**	**5,723**
Average	**882.8**	**224.4**	**34.0**	**3.4**	**1,144.6**

1: PDO = Property Damage Only
2: Injury and Fatal Crashes are often grouped together as "Severe Crashes"

As shown in the table, total crash frequency was highest in 2019, then reached a low point in 2020 (likely correlated with decreased travel activities during the COVID-19 pandemic), but has steadily increased in each year from 2021-2023. Similar trends were observed for property damage only (PDO) crashes and minor injury crashes. Severe injury and Fatal crash frequency demonstrated more variation – severe crash frequency ranged between 24-43 crashes per year, while fatal crash frequency ranged between 2-5 crashes per year.

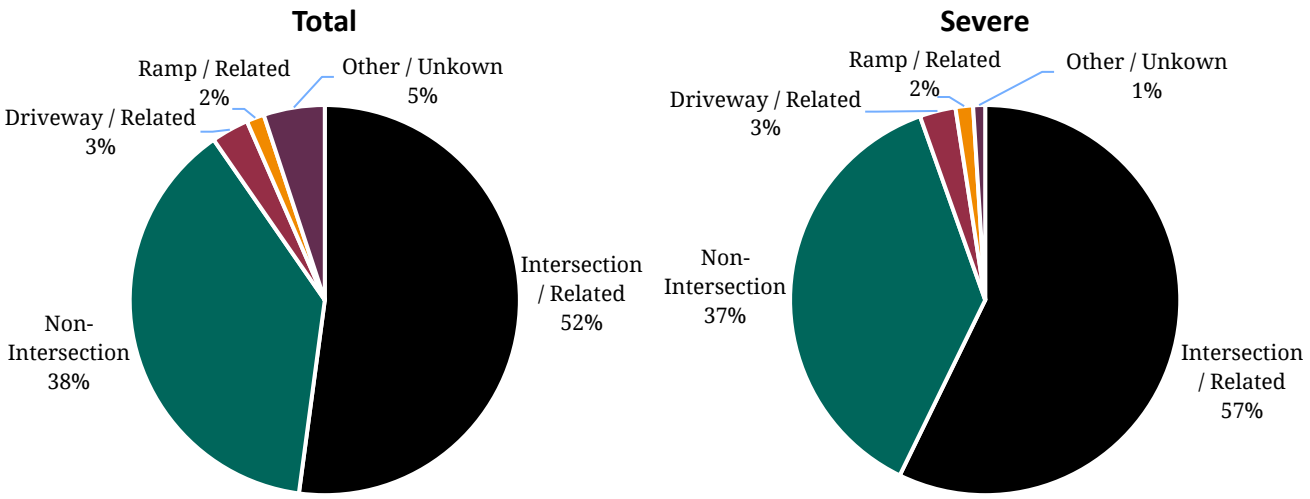
3. Crash Analysis

3.1 Crash Locations

Crash locations were evaluated to understand what types of facilities within Centennial are more susceptible to injury and fatal crashes. **Figure 1** displays a comparison of crash locations for total and severe (injury and fatal) crashes.

As shown in the figure, intersection and intersection-related crashes represent 52 percent of the total crash frequency over the study period, but 57 percent of the severe crash frequency, suggesting that these crashes are more susceptible to injury and fatal crash outcomes.

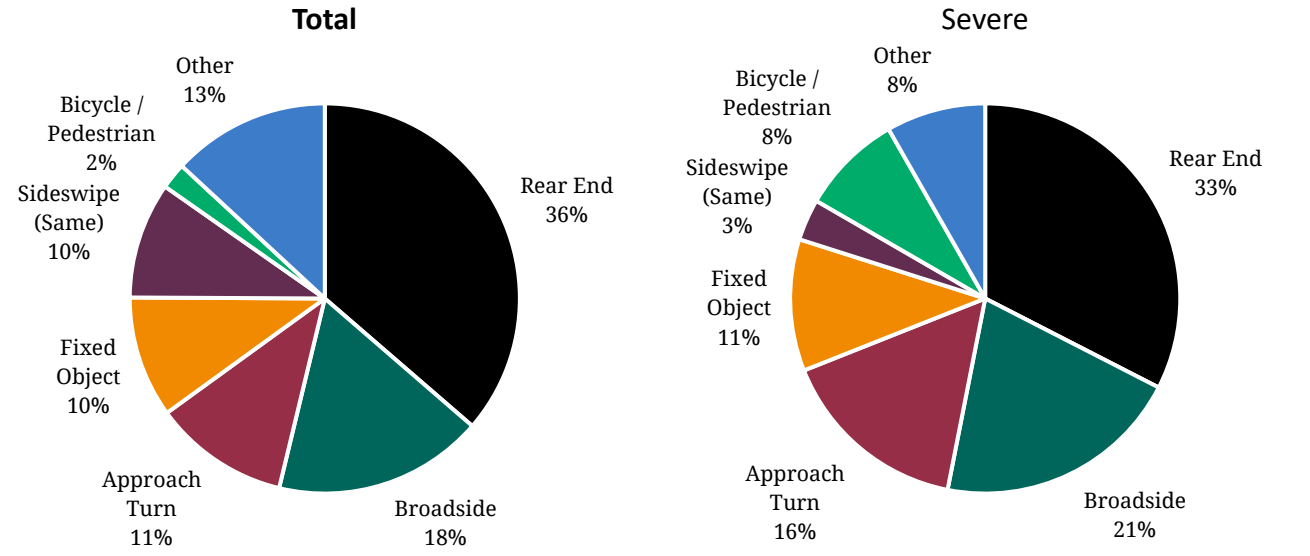
Figure 1. Crash Frequency by Location



3.2 Crash Types

Crash types were evaluated to understand which movements and collision types are most common on the corridor and most likely to result in severe (injury and fatal) crashes. **Figure 1** shows the distribution of recorded crash types for total and severe crash frequencies.

Figure 2. Crash Frequency by Type



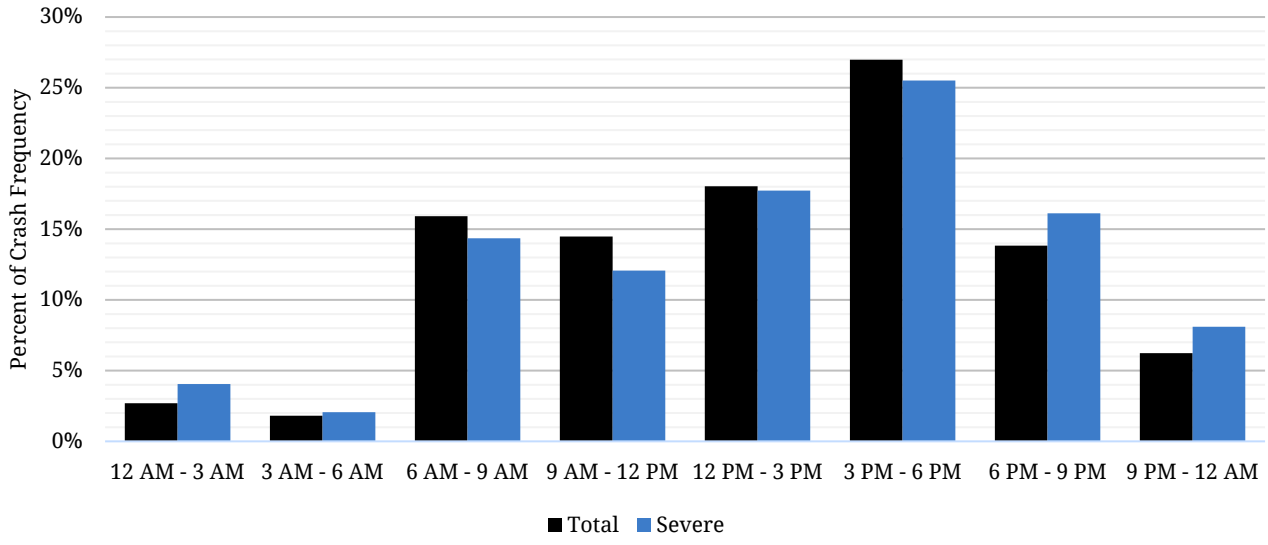
Rear End crashes were most common, comprising 36 percent of total crashes. Broadside (18 percent), Approach Turn (11 percent), Fixed Object (10 percent), and Sideswipe Same Direction (10 percent) crashes were the next most common crash types. As depicted in **Figure 2**, there are some differences between the distribution of total and severe (injury and fatal) crash frequencies. This indicates certain crash types may be more susceptible to injury or fatal crashes. For example:

- Broadside crashes represent 18 percent of total crashes but 21 percent of severe crashes
- Approach Turn crashes represent 11 percent of total crashes but 16 percent of severe crashes.
- Bicycle and Pedestrian crashes combined account for just 2 percent of total crashes but 8 percent of severe crashes.

3.3 Time of Day

Time of day trends were evaluated to understand the temporal distribution of crash frequency. **Figure 3** displays total and severe crash frequency by time of day. As shown in the figure, crash frequency within the city is highest between 3 p.m. and 6 p.m. Total and severe crash frequencies exhibit similar trends by time of day. However, severe crash frequency is higher (as a percentage) than total crash frequency from 6 p.m. to 9 a.m.

Figure 3. Crash Frequency by Time of Day

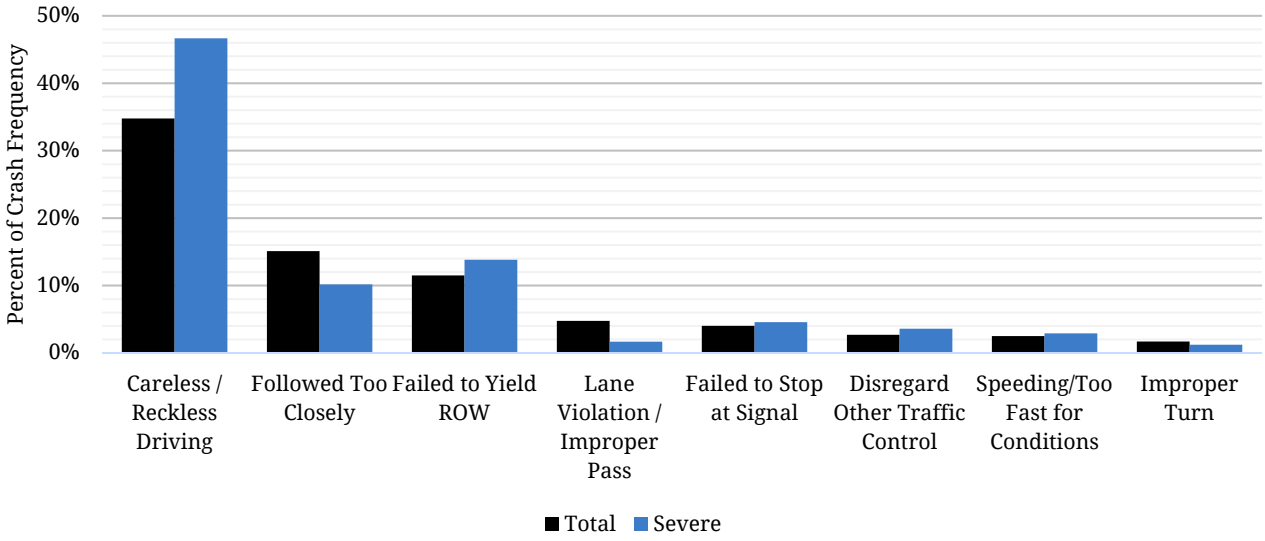


3.4 Driver Actions

Driver Actions describe specific actions or law violations that led to the crash occurring. Most crashes did not cite a contributing action for the at-fault driver. **Figure 4** displays a comparison of the recorded contributing factors for total and severe crashes. As shown in the

figure, Careless or Reckless Driving is the most frequently cited driver action and is cited in 47 percent of severe (injury and fatal) crashes versus only 35 percent of total crashes. Of note, Careless Driving is often cited as a driver action by law enforcement when there is insufficient evidence of a different traffic violation.

Figure 4. At-Fault Driver Actions

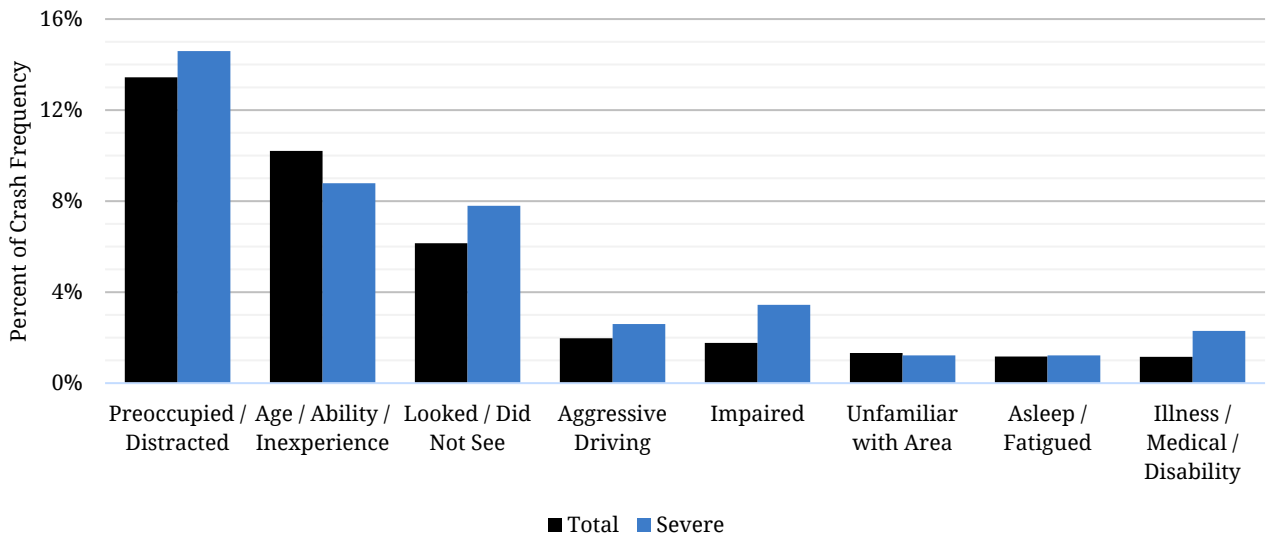


Failure to Yield Right-of-Way, Failure to Stop at Signal, and Disregard of Other Traffic Control driver actions were all cited in a higher percentage of the severe crash frequency than in the total crash frequency.

3.5 Driver Contributing Factors

Driver Contributing Factors were evaluated to understand their impact on the recorded crash history. Most crashes did not cite a contributing factor. **Figure 5** displays a comparison of the recorded contributing factors for total and severe crashes.

Figure 5. At-Fault Driver Contributing Factors

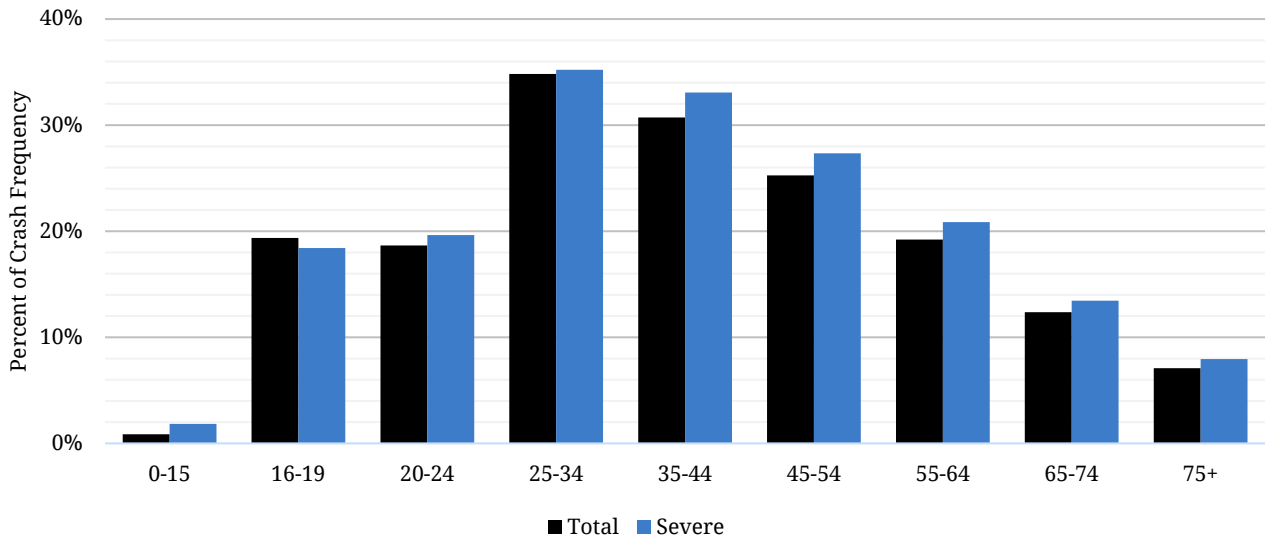


As shown in the figure, Preoccupied or Distracted driving was the most frequently cited contributing factor and was cited in 15 percent of severe (injury and fatal) crashes versus only 13 percent of total crashes. Additionally, Looked/Did Not See, Aggressive Driving, Impaired Driving, and Illness/Medical/Disability contributing factors were all cited in a higher percentage of the severe crash frequency than in the total crash frequency.

3.6 Road User Age Groups

Age groups of road users involved in crashes (excluding passengers of motor vehicles) were evaluated to understand their impact on the recorded crash history. **Figure 6** displays the percentage of crashes that involved at least one road user from each age group. As shown in the figure, young/novice users (ages 0-19) were involved in 20% of the total and severe crashes. Older adult users (age 65 and above) were involved in 19% of total crashes, but 21% of severe crashes.

Figure 6. Road User Age Groups



4. Fatal Crashes

Seventeen fatal crashes occurred along city roadways during the study period, resulting in 19 persons killed. The following sections provide additional details on each fatal crash.

March 7, 2019 – Pedestrian

- **Location:** Ridge Road & Broadway
- **Description:** A pedestrian was crossing Broadway against the traffic signal at Ridge Road and was struck by a northbound motorist. The pedestrian was killed.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; no driver actions/contributing factors were cited.

July 8, 2019 – Rear End

- **Location:** County Line Road east of Colorado Boulevard
- **Description:** A westbound motorist on County Line Road struck a curb near Holly Street and lost the right front tire, then continued to rear end a motorist stopped at the Colorado Boulevard intersection. The driver of the at-fault vehicle was killed.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; reckless driving and impaired driving were cited as factors for the at-fault driver.

February 21, 2020 – Fixed Object

- **Location:** Broncos Parkway east of Joplin Court

- **Description:** A westbound motorist left the roadway on Broncos Parkway, struck guardrail on both sides of the road, then struck a bridge structure and the vehicle caught fire. The driver was killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; reckless driving was cited as a contributing factor.

February 23, 2020 – Pedestrian

- **Location:** Himalaya Street north of Gibraltar Way
- **Description:** A pedestrian was crossing Himalaya Street outside of any marked crosswalks north of Gibraltar Way and was struck by a southbound motorist. The pedestrian from injuries sustained in the crash approximately one week later.
- **Contributing Factors:** Crash occurred at night (dark-unlighted) with clear weather and dry pavement; no driver actions/contributing factors were cited.

March 6, 2020 – Approach Turn

- **Location:** Arapahoe Road & Vine Street
- **Description:** A westbound left-turning motorist collided with an eastbound motorist. The driver of the left-turning motorist died from injuries sustained in the crash at a later date.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; the left-turning motorist failed to yield right-of-way to the eastbound motorist.

May 10, 2020 – Bicycle

- **Location:** County Line Road & Holly Street
- **Description:** A southbound bicyclist entered the intersection during a red light and was struck by a westbound motorist. The bicyclist was killed.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; no driver actions/contributing factors were cited.

October 2, 2020 – Approach Turn

- **Location:** Otero Ave & University Boulevard
- **Description:** A southbound left-turning motorist collided with a northbound motorcyclist. The motorcyclist was killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; reckless driving and aggressive driving were cited as contributing factors. The motorcyclist was estimated to be traveling approximately 50 miles per hour (mph) above the posted speed limit (45 mph) at the time of the crash.

April 8, 2021 – Fixed Object

- **Location:** Southbound I-25 near Dry Creek Road

- **Description:** A southbound motorist on I-25 lost control, struck the center median, and subsequently struck two other motorists. The driver of the first vehicle was killed.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; no driver actions/contributing factors were cited.

July 15, 2021 – Head On

- **Location:** Dry Creek Road west of Jackson Street
- Description: An eastbound motorist crossed the double yellow line and struck a westbound motorist. The drivers of both vehicles were killed.
- **Contributing Factors:** Crash occurred at night (dark-unlighted) with wet pavement; neither driver was properly using a seatbelt; reckless driving and aggressive driving were cited as contributing factors.

February 13, 2022 – Fixed Object

- **Location:** Reservoir Rd & Himalaya St
- **Description:** A southbound motorist veered right in the intersection of Reservoir Road & Himalaya Street, left the roadway and struck a tree. The vehicle then rolled over and struck a fence. The driver was killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; no driver actions/contributing factors were cited.

October 16, 2022 – Fixed Object

- **Location:** Havana Street/Dry Creek Road north of Inverness Drive East
- **Description:** A southbound motorist struck the curb on both sides of the roadway then rolled over on an embankment before returning to the roadway. The driver was ejected during the crash and was killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; reckless driving, impaired driving, and improper seat belt use were cited as contributing factors.

November 25, 2022 – Broadside

- **Location:** Smoky Hill Road & Biscay Circle
- **Description:** An eastbound motorcyclist ran a red light and collided with a northbound motorist who was entering the intersection. The motorcyclist was killed.
- **Contributing Factors:** Crash occurred during the day with clear weather and dry pavement; reckless driving and speeding were cited as contributing factors.

February 14, 2023 – Pedestrian

- **Location:** Picadilly Street & Netherland Street

- **Description:** A pedestrian was crossing Picadilly Street in a marked crosswalk and was struck by a northbound motorist. The pedestrian was killed.
- **Contributing Factors:** Crash occurred at night (dark-unlighted) with clear weather and dry pavement; no driver actions/contributing factors were cited

March 11, 2023 – Parked Vehicle

- **Location:** Magnolia Circle west of Newport Street
- **Description:** A northwest bound motorcyclist failed to navigate the curve in the roadway and struck a parked vehicle. The motorcyclist was killed.
- **Contributing Factors:** Crash occurred during the day with cloudy weather and dry pavement; reckless driving, inexperience, and speeding were cited as contributing factors.

May 23, 2023 – Fixed Object

- **Location:** County Line Road & I-25 Northbound Ramps
- **Description:** An eastbound motorist was traveling on County Line Road attempting to turn towards northbound I-25. The vehicle struck guardrail and a signal pole then rolled over. All three occupants of the vehicle were ejected. The driver was killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; reckless driving, inexperience, speeding, and improper seat belt use were cited as contributing factors.

June 18, 2023 – Fixed Object

- **Location:** Dry Creek Road & Yosemite Street
- **Description:** An eastbound motorist was traveling at a high rate of speed and went airborne in the intersection of Dry Creek Road & Yosemite Street, after hitting the ground, the motorist lost control and hit a tree, rolled over, and came to rest against a parking garage before catching fire. The driver and a passenger were both killed.
- **Contributing Factors:** Crash occurred at night (dark-lighted) with clear weather and dry pavement; reckless driving, was cited as a contributing factor.

September 23, 2023 – Rear End

- **Location:** Arapahoe Road & Lima Street
- **Description:** A westbound motorist was distracted by a disturbance from a passenger, leading the driver to stop suddenly near Arapahoe Road & Lima Street. Another westbound motorist rear ended the first vehicle. The passenger in the first vehicle died as a result of injuries sustained in the crash.
- **Contributing Factors:** Crash occurred at night (dark-unlighted) with clear weather and dry pavement; careless driving and distracted driving were cited as contributing factors.

5. High Frequency Locations

A preliminary review of high-frequency crash locations was conducted to evaluate the spatial distribution of severe (injury and fatal) crashes that occurred within the city.

Figure 7 displays the distribution of intersection and intersection-related crashes. As shown, the highest density of severe crashes often occurs at the intersection of major arterial roadways, for example:

- Arapahoe Road & Peoria Street
- Dry Creek Road & Chester Street/Alton Court
- Smoky Hill Road & Himalaya Street

Figure 8 displays the distribution of segment crashes. As shown, the highest density of severe crashes often occurs along major arterial roadways, for example:

- Interstate 25 ramps
- Dry Creek Road
- Parker Road
- University Boulevard
- Arapahoe Road

Figure 7. Severe Crash Density – Intersection Crashes

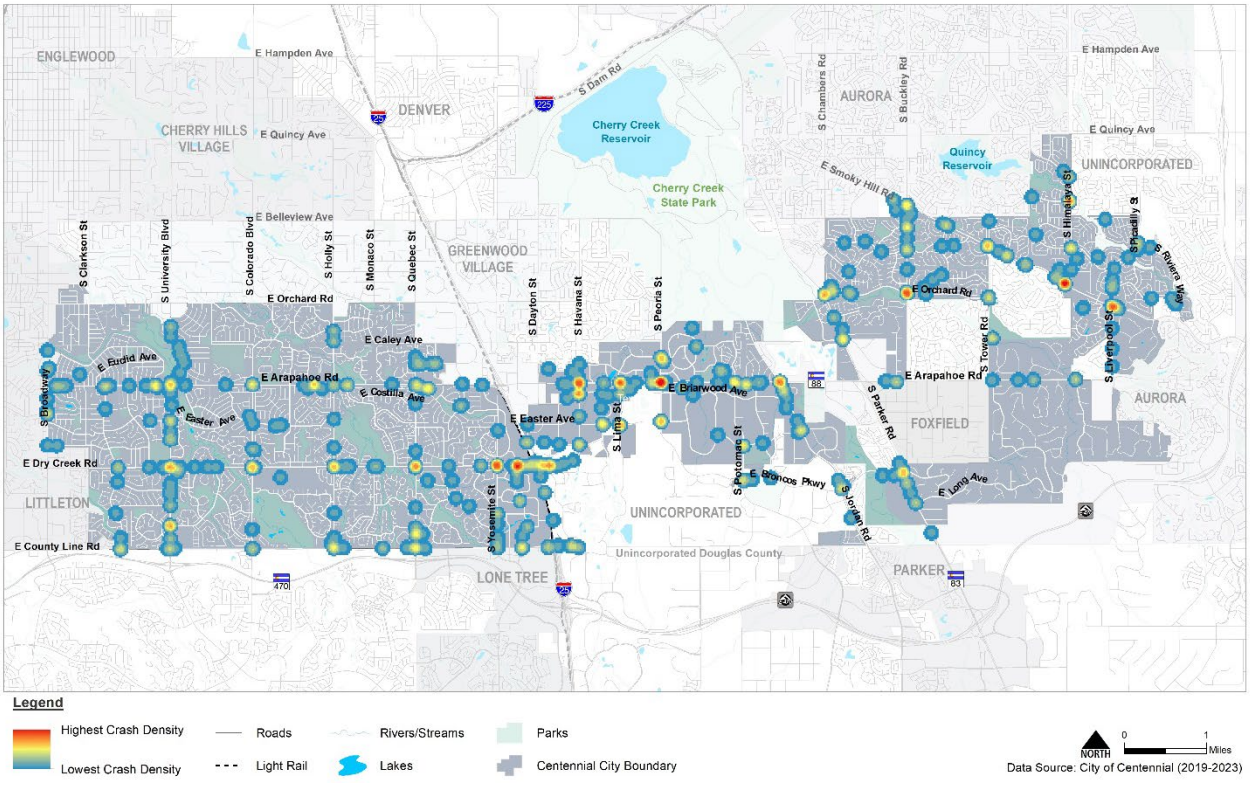
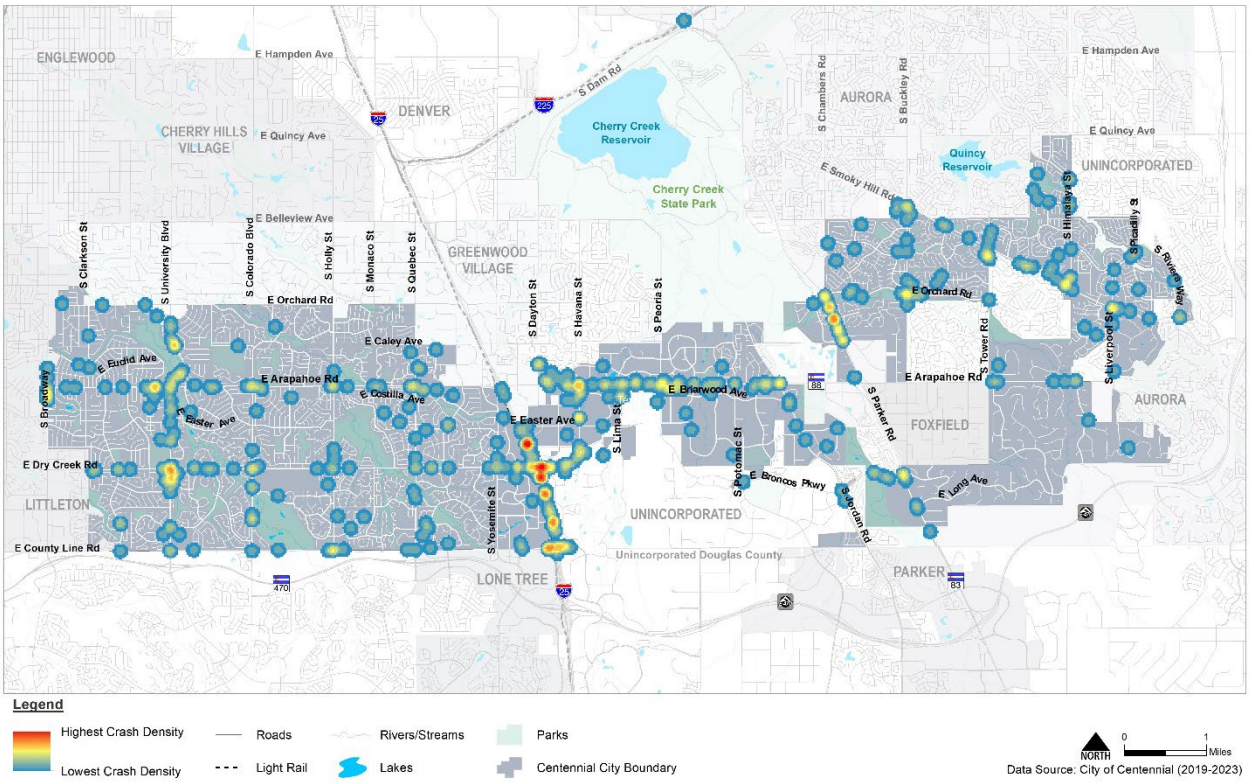


Figure 8. Severe Crash Density – Segment Crashes



6. Summary and Next Steps

This memorandum has been prepared to document descriptive safety analyses that will be included in the Comprehensive Safety Action Plan. Centennial's crash frequency decreased from 2019 to 2020 but has steadily increased year-over-year from 2020 through 2023. Some crash types and factors were found to have a higher frequency in severe (injury and fatal) crashes and need further evaluation, such as:

- Broadside, Approach Turn, Bicycle/Pedestrian crash types
- Nighttime crashes (6 p.m. – 6 a.m.)
- Careless/Reckless driving, Failure to Yield Right-of-Way driver actions
- Preoccupied, Impaired, Looked Did not See contributing factors.

Next steps for the crash analysis will include:

- Development of a high-injury network to identify corridors and intersections with high crash rates based on historic data.
- Systemic crash analysis to identify focus crash types and contextual roadway factors that are most commonly associated with crashes resulting in injury or fatality.

- Development of a high-risk network that, when paired with the high-injury network, helps identify some target areas for improvements.

Appendix C. High Injury Network Analysis

Technical Memorandum

TO:	Anna Bunce, City of Centennial Libby Nordeen, City of Centennial
FROM:	Gaurav Vasisht, Felsburg Holt & Ullevig Ryan Saline, Felsburg Holt & Ullevig
DATE:	November 2024
SUBJECT:	Centennial Safety Action Plan (FHU No. 123612-01) High-Injury Network Development

This memorandum has been prepared to document the development process of the High Injury Network (HIN) for the Centennial Safe Streets for All (SS4A) Comprehensive Safety Action Plan.

1. Introduction

Development of a High Injury Network (HIN) is a method of network screening used to identify the portions of the transportation system that are most susceptible to injury and fatal crash frequency. Once determined, the HIN can be used to help understand patterns of injury and fatality and focus countermeasures to a handful of locations where safety benefits can be maximized given limited resources.

2. Data Collection

2.1 Roadway Network

Roadway network data was obtained from the City of Centennial open data records. Using this base dataset, two unique networks were developed: 1) intersections and 2) roadway segments.

Intersections points were identified at locations where roadway segments crossed. In total, 2,902 unique intersections were identified.

Roadway segments for the HIN were limited to functional classes of Interstate, Arterial, and Collector, resulting in approximately 159 centerline miles of roadway to be evaluated. This subset of segments was then split at all intersections. Additionally, since uniform segment length is a key factor in HIN analysis, long segments were broken to achieve a more uniform segment length between 0.2 miles and 0.4 miles.

2.2 Crashes

Crash data used to develop the HIN was obtained from the City of Centennial using *Crash Magic* software for the five-year period from January 1, 2019, to December 31, 2023. A total of 5,723 crashes were recorded during the analysis period, of which 17 were fatal, 170 resulted in serious injury, and 1,122 resulted in minor injury. In many cases, HIN development tends to focus on fatal and serious injury (KSI) crashes only. However, due to the small sample size in Centennial, the HIN development process included minor injury crashes.

Crash data was separated into intersection and non-intersection categories. Intersection and related crashes accounted for 52 percent of the total crash history (2,983 total crashes) and 57 percent of the severe crash history (749 injury and fatal crashes). Non-intersection crashes accounted for 48 percent of the total crash history (2,740 total crashes) and 43 percent of the severe crash history (560 injury and fatal crashes).

2.3 Joining Roadway and Crash Data

Intersection crashes were joined to defined intersection points assuming a 200-foot buffer for each intersection. Non-intersection crashes were joined to defined roadway segments assuming a 50-foot buffer for each segment.

2,372 of 2,983 intersection and related crashes were joined to intersection points on the roadway network, including 664 of 749 severe (injury and fatal) crashes. The average frequency was 0.28 severe crashes per intersection, with a standard deviation of 1.32 crashes.

2,037 of 2,740 non-intersection crashes were joined to segments on the roadway network, including 428 of 560 severe (injury and fatal) crashes. The average frequency was 3.28 severe crashes per mile per segment, with a standard deviation of 6.51 crashes per mile.

3. HIN Selection

3.1 Severe Crash Frequency

A subset of intersections and segments were selected to the HIN based on their relative severe (injury and fatal) crash frequency.

Intersections were ranked by severe crash frequency. Intersections with a top 15 ranking of severe crash frequency were included in the HIN. This included 20 total locations with nine (9) or more severe crashes.

Segments were ranked by severe crash density (severe crashes per mile). After this ranking, segments associated with the first 50 percent of cumulative severe crashes were included in the HIN. This included 78 segments totaling approximately 13.6 miles.

3.2 Weighted Crash Severity Index

Weighted Crash Severity Index (WCSI) describes a metric used to rank locations based on crash risk using an index value for each crash severity. The WCSI for a location is equal to the sum of weighted crash values. Index values for the WCSI used in this study were based on USDOT's monetized values of crashes by KABCO level.[1] The index value is equal to the ratio of monetary values of a given severity level versus the next level down:

- Fatal (K) =11
- Evident Incapacitating (Serious) Injury (A) = 5
- Evident Non-Incapacitating Injury (B) = 2
- Complaint of Injury (C) = 1
- Property Damage Only (O) = 0

Intersections were ranked by WCSI. Intersections with a top 15 ranking of WCSI were included in the HIN. This included 16 total locations with a WCSI of 19 or higher. 14 of the 16 locations were also included in the HIN based on severe crash frequency.

Segments were ranked by WCSI density (WCSI divided by length). After this ranking, segments associated with the first 50 percent of cumulative WCSI were included in the HIN. This included 72 segments totaling approximately 13.5 miles. 14 of the 16 locations were also included in the HIN based on severe crash frequency. 61 of the 72 segments (11.1 of 13.5 miles) were also included in the HIN based on severe crash frequency.

3.3 Fatal Crash Frequency

Seven (7) intersections were included in the HIN due to a fatal crash recorded at the intersection, but not enough severe (injury and fatal) crashes to support inclusion due to severe crash frequency or WCSI.

4. HIN Refinement

4.1 Network Smoothing

Several pieces of the roadway network were added or removed from the HIN to 1) filter out short, isolated locations, and 2) connect segments by adding links to the HIN to create continuous corridors. Additionally, some intersections were added to the HIN based on total crash frequency and proximity to HIN segments.

[1] United States Department of Transportation. November 2024. *Benefit-Cost Analysis Guidance for Discretionary Grant Programs (Table A-1).*

4.2 Staff Input

Based on input from Centennial staff, a handful of segments were removed from the HIN based local context and knowledge of the areas of concern, as well as the expected impacts of recently completed projects that are not reflected in the historic crash data.

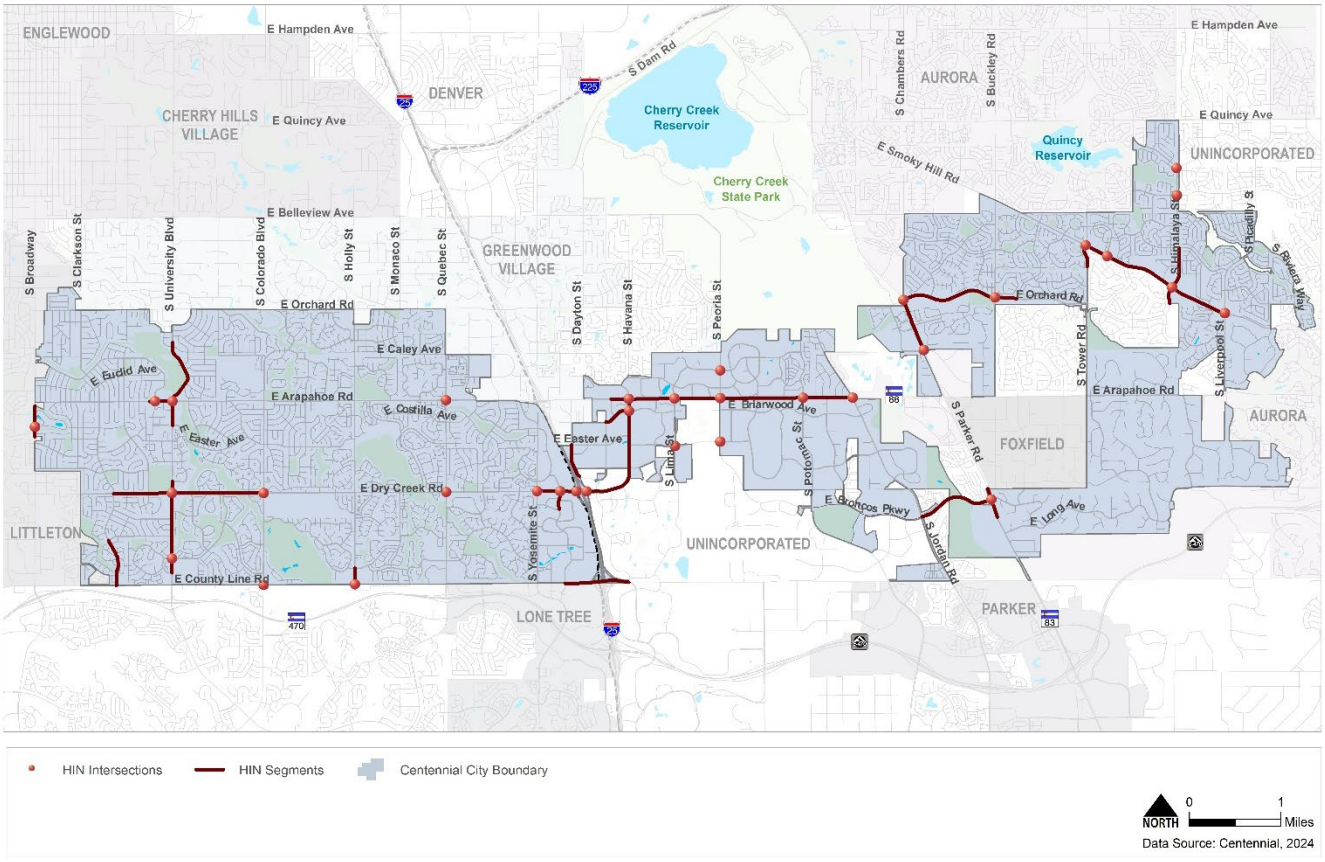
4.3 Additional Locations

Intersection locations were added to the HIN which had not previously been identified due to missing data along the City Boundary. This mostly affected ramp terminal intersections along Interstate 25 (I-25).

5. Final High Injury Network

Figure 1 displays the HIN, which includes 33 intersections and 20 corridors totaling approximately 17 centerline miles. The HIN includes 43 percent (2,261 of 5,273) of total crashes and 44 percent (573 of 1,309) of severe crashes, and accounts for 10 percent (17 of 159 miles) of the total centerline roadway length in Centennial.

Figure 1. High Injury Network



5.1 Intersections

Table 1 displays a summary of the HIN intersections and associated crash frequency. 33 of 2,902 intersections (1 percent) were included in the HIN. Of the 749 severe intersection crashes, 321 (43 percent) occurred at HIN intersections.

5.2 Corridors

Corridors were defined as any series of contiguous segments along the same roadway. **Table 2** displays a summary of the HIN corridors and associated crash frequency. 21 unique corridors were identified in the HIN, totaling 16.7 miles (10 percent). Of the 560 severe non-intersection crashes, 252 (45 percent) occurred on HIN corridors.

Table 1. Summary of HIN Intersections

Main Street	Cross Street	Traffic Control Type		Total Crashes	Severe[1] Crashes	WCSI[2]
S Broadway	E Highline Cir	Two-Way Stop		4	1	11
E Arapahoe Rd	S Vine St	Signal		18	6	22
S University Blvd	E Arapahoe Rd	Signal		44	8	9
S University Blvd	E Dry Creek Rd	Signal		24	9	14
S University Blvd	E Otero Ave	Signal		25	9	30
E Dry Creek Rd	S Colorado Blvd	Signal		20	9	22
E County Line Rd	S Colorado Blvd	Signal		12	3	18
E County Line Rd	S Holly St	Signal		20	7	18
E Arapahoe Rd	S Quebec St	Signal		45	5	6
E Dry Creek Rd	S Quebec St	Signal		38	11	23
E Dry Creek Rd	S Yosemite St	Signal		42	15	38
E Dry Creek Rd	S Alton Ct / S Chester St	Signal		52	17	29
E Dry Creek Rd	I-25 SB Ramps	Signal		18	4	5
E Dry Creek Rd	I-25 NB Ramps	Signal		44	7	10
E Arapahoe Rd	S Havana St	Signal		68	15	29
S Havana St	E Costilla Ave / E Briarwood Ave	Signal		27	9	15
E Arapahoe Rd	S Lima St	Signal		44	13	18
S Lima St	E Easter Ave	Signal		15	9	14
S Peoria St	E Caley Ave	Two-Way Stop		18	8	19
E Arapahoe Rd	S Peoria St	Signal		93	22	51
S Peoria St	E Easter Ave	Signal		34	8	15
E Arapahoe Rd	S Potomac St	Signal		47	12	20

Main Street	Cross Street	Traffic Control Type		Total Crashes	Severe[1] Crashes	WCSI[2]
E Arapahoe Rd	S Jordan Rd	Signal		45	13	20
S Parker Rd	E Orchard Rd	Signal		39	9	11
S Parker Rd	E Fair Pl / S Lewiston Wy	Signal		31	6	9
S Parker Rd	E Broncos Pkwy / E Jamison Ave	Signal		31	9	12
E Orchard Rd	S Buckley Rd	Signal		57	15	25
E Smoky Hill Rd	S Tower Rd	Signal		37	8	9
E Smoky Hill Rd	S Biscay Cir	Signal		8	4	14
S Reservoir Rd / S Himalaya St	S Himalaya St	Signal		4	3	14
S Himalaya St	E Chenango Dr / E Chenango Ave	Signal		37	11	19
E Smoky Hill Rd	S Himalaya St / E Orchard Rd	Signal		66	19	29
E Smoky Hill Rd	S Picadilly St / S Liverpool St	Signal		44	17	41

Notes: 1: Severe includes Injury and Fatal crashes; 2: WCSI = Weighted Crash Severity Index

Table 2. Summary of HIN Corridors

Roadway	Start	End	Length (miles)	Total Crash/mi	Severe[1] Crash/mi	WCSI[2] per mile
S Broadway	n.o. E Highline Cir (City Limits)	s.o. E Costilla Ave (City Limits)	0.34	68.4	23.8	50.6
S Clarkson St	E Mineral Ave	E County Line Rd	0.52	13.4	5.8	28.8
S University Blvd	E Cresthill Ave	E Commons Ave / E Easter Ave	1.01	77.9	17.8	28.6
E Arapahoe Rd	S Race St	S University Blvd	0.25	96.8	24.2	48.4
S University Blvd	S Knolls Wy	E Otero Cir	1.00	51.2	13.0	24.1
E Dry Creek Rd	S Clarkson St	S Colorado Blvd	1.64	26.9	6.7	16.5
S Holly St	E Otero Ave	E County Line Rd	0.17	34.3	5.7	28.6
E Dry Creek Rd	S Yosemite St	Inverness Dr E	0.94	213.1	37.3	82.1
S Chester St	E Dry Creek Rd	E Panorama Dr	0.20	25.3	10.1	15.2
E County Line Rd	S Chester St	Inverness Dr W	0.70	122.1	27.3	63.2
S Clinton St	E Easter Ave	s.o. E Geddes Ave (City Limits)	0.36	13.8	11.0	27.5
S Havana St	E Arapahoe Rd	Inverness Dr E	0.97	50.3	12.3	28.7
E Costilla Ave	S Fulton St	S Havana St	0.30	10.1	3.4	16.9
E Arapahoe Rd	S Galena St	S Jordan Rd	2.64	98.5	17.1	36.8
S Parker Rd	E Orchard Rd	E Fair Pl / S Lewiston Wy	0.59	181.6	49.2	78.1
E Broncos Pkwy	S Jordan Rd	S Parker Rd	0.84	27.2	5.9	21.3
S Parker Rd	n.o. E Broncos Pkwy (City Limits)	s.o. E Broncos Pkwy (City Limits)	0.33	73.3	15.3	21.4
E Orchard Rd	S Parker Rd	S Telluride St	1.29	25.6	7.8	17.1
S Tower Rd	E Smoky Hill Rd	E Berry Rd	0.24	41.2	24.7	70.0
E Smoky Hill Rd	S Tower Rd	S Picadilly St / S Liverpool St	1.70	32.3	6.5	12.3
S Himalaya St / E Orchard Rd	E Crestline Cir / E Berry Dr	s.o. E Smoky Hill Rd (City Limits)	0.64	26.5	12.5	37.5

Notes: 1: Severe includes Injury and Fatal crashes; 2: WCSI = Weighted Crash Severity Index

6. Conclusion

In conclusion, the development of the High Injury Network (HIN) identifies key locations within the transportation network that are most susceptible to injury and fatal crashes. The analysis utilized crash data from 2019 to 2023 to prioritize locations with high crash frequencies and severity. The HIN includes 33 intersections and 20 corridors, totaling approximately 17 centerline miles of roadway, which account for 43% of all crashes and 44% of severe crashes in Centennial.

The methodology applied in this study involved ranking intersections and roadway segments by both severe crash frequency and Weighted Crash Severity Index (WCSI). Intersections and segments representing the top 15% in terms of severe crash frequency and WCSI density were selected for inclusion in the HIN. Additionally, locations were added or removed based on local context and knowledge, as well as the expected impact of recently completed infrastructure projects. These findings will help inform the identification of future implementation strategies, actions, and countermeasures.

Appendix D. Systemic Safety Analysis

Technical Memorandum

TO:	Anna Bunce, City of Centennial
FROM:	Gaurav Vasisht, Felsburg Holt & Ullevig Ryan Saline, Felsburg Holt & Ullevig
DATE:	October 2024
SUBJECT:	Centennial Safety Action Plan (FHU No. 123612-01) Systemic Safety Analysis – Focus Crashes

This memorandum has been prepared to document the selection of Focus Crashes which will be evaluated in the systemic safety analysis in support of the Centennial Safe Streets for All (SS4A) Safety Action Plan. Crash data from the City of Centennial was collected from *Crash Magic* for the period from January 1, 2019, to December 31, 2023, to conduct this analysis.

1. Overrepresented Crashes

The following crash types and contributing factors were identified as overrepresented in the fatal and serious injury (KSI) and/or fatal and injury (Severe) crash histories compared to the total five-year crash record for the City:

- Number of Users
  - 1-Vehicle Crash
  - 3+ Vehicle Crash
- Location
  - Ran Off Road Left
- Crash Type
  - Approach Turn
  - Bicycle
  - Broadside
  - Fixed Object
  - Head On
  - Pedestrian
- Road Condition
  - Dry
- Weather
  - Clear
- Lighting
  - Dark-Lighted
  - Dark-Unlighted
- Involved Vehicle Types
  - Motorcycle
  - Pickup/SUV
- Involved Road User Ages
  - 65+
- At-Fault Vehicle Movements
  - Going Straight
  - Making Left-Turn
  - Negotiating a Curve
  - Traveled Wrong Way
  - Other Vehicle Movement
- At-Fault Driver Action
  - Careless/Reckless Driving
  - Disregarded Other Traffic Control
  - Failed to Yield ROW
- At-Fault Driver Contributing Factor
  - Illness/Medical/ Disability
  - Impairment
  - Looked/Did Not See
  - Other Contributing Factor

- Other
  - Involving Impaired Driver
  - Involving Improper Seat Belt Use

Table 1 displays a summary of the Total, Killed and Seriously Injured (KSI), and Severe (fatal and injury) crash frequencies of all overrepresented crashes.

Table 1. Summary of Overrepresented Crashes (2019-2023)

Overrepresented Crash	Total Crashes	KSI Crashes	Severe Crashes
Total	**5,723**	**187**	**1,309**
1-Vehicle Crash	714	62	250
3+ Vehicle Crash	653	29	217
Ran Off Road (Left)	117	9	39
Approach Turn	644	31	208
Bicycle	58	10	48
Broadside	997	38	269
Fixed Object	575	29	142
Head On	66	12	38
Pedestrian	66	22	62
Dry Road	4,639	169	1,131
Clear Weather	4,514	157	1,099
Dark (Lighted)	950	34	270
Dark (Unlighted)	388	25	106
Involving a Motorcycle	92	26	67
Involving a Pickup/SUV	3,025	94	728
Involving Road User Aged 65+	408	23	104
Going Straight	2,679	82	659
Making Left-Turn	964	39	274
Negotiating a Curve	57	5	23
Traveled Wrong Way	28	5	16
Other Vehicle Movement	165	15	40
Careless/Reckless Driving	1,970	91	604
Disregarded Other Traffic Control	153	6	46
Failed to Yield Right-of-Way	646	21	176
Illness/Medical/Disability	65	8	30
Impairment	100	9	44
Looked/Did Not See	341	17	96

Overrepresented Crash	Total Crashes	KSI Crashes	Severe Crashes
Other Contributing Factor	832	25	264
Involving Impaired Driver	233	15	90
Involving Improper Seat Belt Use	140	26	66

2. Focus Crash Refinement

Refinement to the list of overrepresented crashes was conducted to develop a selection of Focus Crashes that will be used for more detailed systemic safety analysis. Through this refinement process, some overrepresented crash types and contributing factors were removed from the list of Focus crashes based on their status as the normal travel condition, redundancy with other crashes, lack of total crash frequency, unique scenarios found within crash trees, or additional stakeholder input.

2.1 Normal Condition

Multiple crash types were removed from the list of Focus Crashes based on their status as the "normal condition" within the crash history:

- **Dry Road:** Dry Road conditions were identified as an overrepresented contributing factor but represent a normal state for road conditions and are therefore removed from the list of Focus Crashes.
- **Clear Weather:** Clear Weather conditions were identified as an overrepresented contributing factor but represent a normal state of weather and are therefore removed from the list of Focus Crashes.
- **Going Straight:** Going Straight movements were identified as an overrepresented contributing factor but represent a normal state of and are therefore removed from the list of Focus Crashes.

2.2 Redundancy

Multiple crash types and contributing factors were removed from the list of Focus Crashes based on their redundancy with other crashes:

- **1-Vehicle Crash:** Approximately 87 percent of crashes involving only one vehicle were Bicycle, Pedestrian, or Fixed Object crashes, which are also identified as focus crashes. 1-Vehicle Crash was therefore removed from the list of Focus Crashes since it is a less specific crash characteristic.
- **Ran Off Road (Left):** Nearly 90 percent of Run Off Road – Left Side crashes were Fixed Object crashes, which is also identified as a focus crash. Ran Off Road (Left) was therefore removed from the list of Focus Crashes since it is a less specific crash characteristic.

- **Impairment (At-Fault Driver Contributing Factor):** Impairment (At-Fault Driver Contributing Factor) and Involving Impaired Driver are both overrepresented but are redundant. Impairment (At-Fault Driver Contributing Factor) was therefore removed from the list of Focus Crashes due to smaller sample size.
- **Making Left-Turn:** Nearly 85 percent of crashes involving left-turns were Approach Turn, Broadside, Bicycle, or Pedestrian, which are all redundant overrepresented crash types. Making Left-Turn movements were therefore removed from the list of Focus Crashes since it is a less specific crash characteristic.

2.3 Total Crash Frequency

Multiple crash types and contributing factors had less than 100 total crashes occur throughout the city and were therefore removed from the list of Focus Crashes:

- **Bicycle (Crash Type) & Pedestrian (Crash Type):** Bicycle and Pedestrian crashes were identified as an overrepresented crash types but had less than 100 total crashes each. These crashes were combined into a single Bicycle/Pedestrian crash type for further evaluation.
- **Head On:** Head On crashes were identified as an overrepresented crash type but had less than 100 total crashes and were therefore removed from the list of Focus Crashes.
- **Involving a Motorcycle:** Crashes involving at least one motorcycle were identified as overrepresented but had less than 100 total crashes and were therefore removed from the list of Focus Crashes.
- **Negotiating a Curve:** Crashes involving an at-fault motorist who was negotiating a curve were identified as overrepresented but had less than 100 total crashes and were therefore removed from the list of Focus Crashes.
- **Traveled Wrong Way:** Crashes involving an at-fault motorist who traveled the wrong way were identified as overrepresented but had less than 100 total crashes and were therefore removed from the list of Focus Crashes.
- **Illness/Medical/Disability:** Illness/Medical/Disability was identified as an overrepresented contributing factor but had less than 100 total crashes and was therefore removed from the list of Focus Crashes.

2.4 Stakeholder Input

Through conversations with Arapahoe County Sheriff's Office (ACSO), some contributing factors that were identified as overrepresented are frequently used by law enforcement as catch-all fields when specific information about a crash cannot be determined. These factors were therefore removed from the list of Focus Crashes:

- **Careless/Reckless Driving:** Careless and Reckless Driving citations are often used by ACSO when other specific driver actions in a crash cannot be determined. Therefore, this field was removed from the list of Focus Crashes.
- **Other Vehicle Movement:** Other Vehicle Movement does not describe a specific set of vehicle movements but is seemingly used when detailed information about the crash is not available. Therefore, this field was removed from the list of Focus Crashes.
- **Other Contributing Factor:** Other Contributing Factor does not describe a specific set of factors but is seemingly used when detailed information about the crash is not available. Therefore, this field was removed from the list of Focus Crashes.

Crashes involving three or more motorists are an overrepresented crash type, but discussions throughout the refinement process concluded that the number of vehicles involved in a crash has a degree of random variability and there are no direct countermeasures to address these crashes. Therefore, this field was removed from the list of Focus Crashes.

Following discussions with staff at City of Centennial, age-related trends in crash frequency were investigated as a possible contributing factor to KSI and Severe crashes. Two key road user groups were identified: young/novice users (ages 0-19) and older adults (ages 65 and above). Crashes with at least one road user aged 65 and above are overrepresented and therefore included in the list of Focus Crashes.

2.5 Crash Trees

Crash trees were developed for all overrepresented crash types to evaluate the frequency of crashes in specific roadway conditions and eliminate crash types and contributing factors from the list of Focus Crashes if potential countermeasures are beyond the scope of the safety action plan (e.g. high crash frequency on freeways controlled by other jurisdictions).

After developing and evaluating crash trees, there were no crash types or contributing factors that demonstrated a high propensity for occurring on interstates or state highways. However, it was found that if only city streets are considered, KSI and Severe crash frequency would not support Looked/Did Not See as an overrepresented contributing factor. Therefore, Looked/Did Not See was removed from the list of Focus Crashes.

3. List of Focus Crashes

After completing the refinement process, including consideration of input from stakeholders, the following list of 11 Focus Crashes will be advanced for use in conducting systemic safety analysis:

- Approach Turn
- Broadside
- Fixed Object
- Bicycle/Pedestrian
- Dark (Lighted)
- Dark (Unlighted)
- Involving a Pickup/SUV
- Involving Road User Aged 65+
- Disregarded Other Traffic Control
- Involving Impaired Driver
- Involving Improper Seat Belt Use

4. Next Steps

Using this list of Focus Crashes, systemic safety analysis will continue with the following steps:

- Map locations of Focus Crashes
- Pair crash data with roadway and land use attributes from GIS
- Identify Critical Roadway Attributes that are significant risk factors for Focus Crashes
- Develop Countermeasure Toolbox based on Critical Roadway Attributes and Focus Crashes
- Identify/screen locations to develop a prioritized list of potential locations for systemic safety improvements

Technical Memorandum

TO:	Anna Bunce, City of Centennial
FROM:	Gaurav Vasisht, Felsburg Holt & Ullevig Ryan Saline, Felsburg Holt & Ullevig
DATE:	January 2025
SUBJECT:	Centennial Safety Action Plan (FHU No. 123612-01) Systemic Safety Analysis – High-Risk Network

This memorandum has been prepared to document the development process of the High-Risk Network (HRN) for the Centennial Safe Streets for All (SS4A) Comprehensive Safety Action Plan.

1. Introduction

Development of a High-Risk Network (HRN) is a method of network screening used to identify the portions of the transportation system with characteristics that are most closely associated with the Focus Crashes that were previously identified. Once determined, the HRN can be used to identify locations without substantial crash history that could be candidates for proactive treatments to prevent crashes in the future.

2. Data Collection

2.1 Join Crash Data with Roadway Attributes

Crash data was joined with roadway attribute data, including the following characteristics:

- Signalized Intersection
- Functional Classification
  - Interstate
  - Major Arterial
  - Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
- Number of Lanes
  - Two-Lane Road
  - Four-Lane Road
  - 6-Lane Road
- Posted Speed Limit
  - 25 MPH or less
  - 30-40 MPH
  - 45 MPH or more
- Volume-to-Capacity Ratio
  - Uncongested
  - Approaching Congested
  - Near Capacity/Congested
  - Over Capacity/Highly Congested
- Walksheds
  - 10-Minute School Walkshed
  - 10-Minute Recreation Walkshed
  - 10-Minute Transit Walkshed

3. High-Risk Factors

3.1 Identifying Overrepresented Characteristics

Select Focus Crashes were identified to include in the High-Risk analysis:

- Approach Turn
- Broadside
- Fixed Object
- Bicycle/Pedestrian
- Dark (Lighted)
- Dark (Unlighted)
- Road User Age 65+

Roadway characteristics associated with specific Focus Crashes were evaluated using the binomial distribution to determine if they are overrepresented relative to their total frequency within the citywide crash history. As a result, a subset of roadway characteristics were identified as High-Risk Factors for each Focus Crash.

3.2 Summary of High-Risk Factors

Table 1 displays a summary of the High-Risk Factors for each Focus Crash. Additionally, the table displays the minimum number of High-Risk Factors that overlap to be considered part of the High-Risk Network.

Table 1. Summary High-Risk Factors by Focus Crash

Focus Area:	Approach Turn	Broadside	Fixed Object	Bicycle/ Pedestrian	Dark (Lighted)	Dark (Unlighted)	Road User Age 65+
High-Risk Factors:	• Signalized Intersection • Major Arterial • Minor Collector • Four-Lane Road • Speed Limit = 30-40 MPH • Approaching Congestion (V/C = 0.7-0.9) • Congested (V/C = 0.9-1.2)	• Minor Arterial • Major Collector • Four-Lane Road • Speed Limit = 30-40 MPH • Uncongested (V/C < 0.7) • Approaching Congestion (V/C = 0.7-0.9) • 10-Minute School Walkshed	• Minor Arteria • Major Collector • Two-Lane Road • 10-Minute Recreation Walkshed	• Four-Lane Road • Speed Limit = 30-40 MPH • Uncongested (V/C = less than 0.7) • 10-Minute School Walkshed • 10-Minute Transit Walkshed	• Signalized Intersection • Interstate • Minor Arterial	• Four-Lane Road • 10-Minute Recreation Walkshed	• Signalized Intersection • Major Arterial • Four-Lane Road • Speed Limit = 30-40 MPH • Highly Congested (V/C >1.2) • 10-Minute Recreation Walkshed
Minimum Overlapping Factors on HIN:	3	3	2	3	1	2	3

4. Mapping the High-Risk Network

To better understand locations with elevated risk profiles, segments and intersections featuring High-Risk Factors were mapped, highlighting locations where risk factors overlap. This process allows for the identification of the High-Risk Network (HRN) – a collection of critical roadway segments and intersections with elevated risk profiles – for each Focus Area.

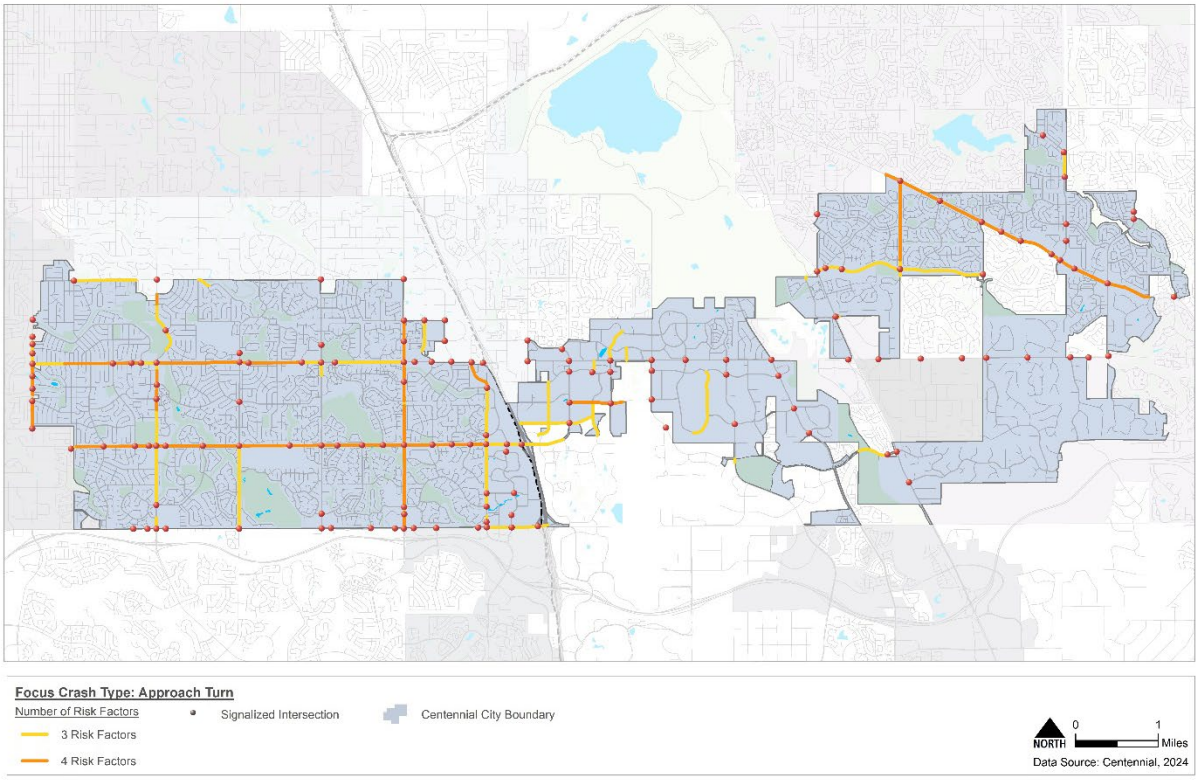
4.1 Approach Turn

High-Risk Factors associated with Approach Turn crashes include:

- Signalized Intersections
- Functional Class: Major Arterial
- Functional Class: Minor Arterial
- Four-Lane Roadways
- 30-40 MPH Posted Speed Limit
- Approaching Congested Conditions (V/C Ratio between 0.7-0.9)
- Near Capacity/Congested (V/C Ratio between 0.9-1.2)

Figure 1 displays the HRN for Approach Turn crashes. This includes all segments with at least three (3) of the factors shown above, as well as signalized intersections along the HRN.

Figure 1. High-Risk Network – Approach Turn



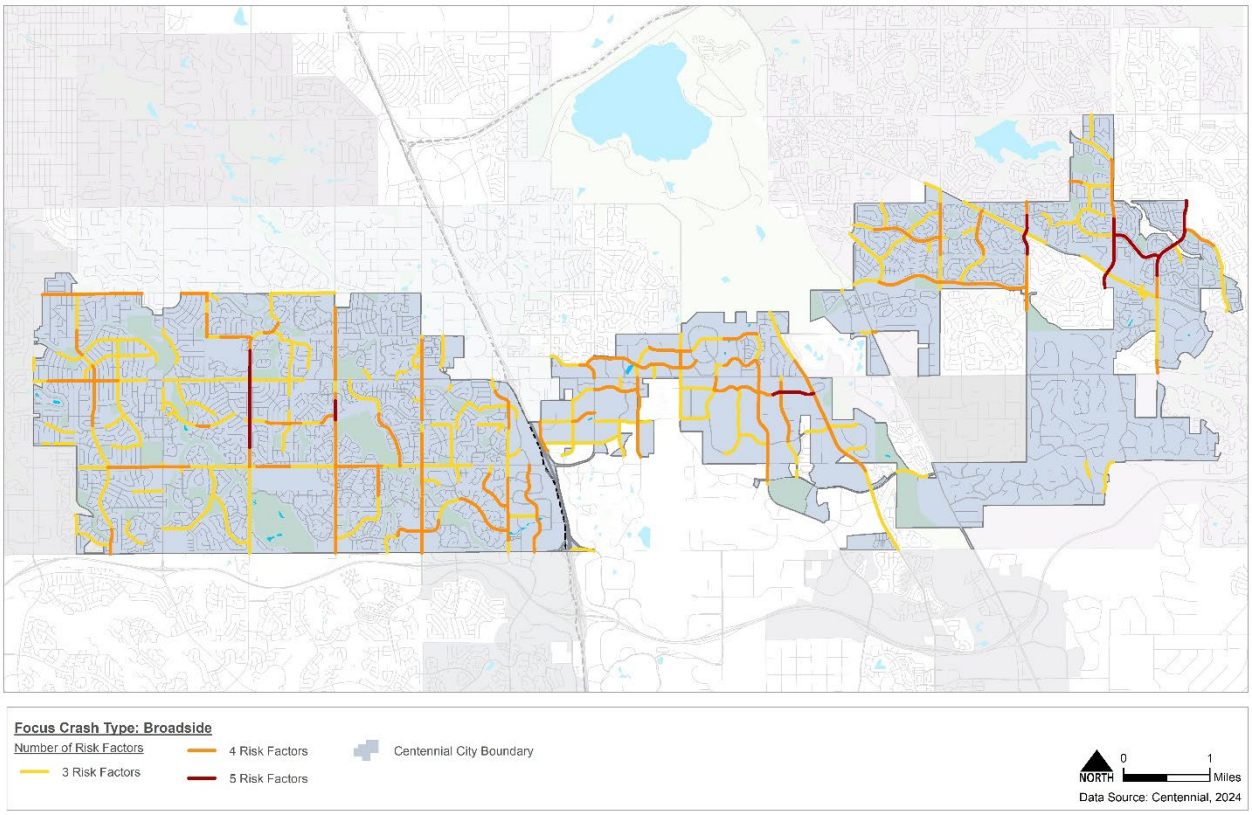
4.2 Broadside

High-Risk Factors associated with Broadside crashes include:

- Functional Class: Minor Arterial
- Functional Class: Major Collector
- Four-Lane Roadways
- 30-40 MPH Posted Speed Limit
- Uncongested Conditions (V/C Ratio less than 0.7)
- Approaching Congested Conditions (V/C Ratio between 0.7-0.9)
- 10-Minute School Walkshed

Figure 2 displays the HRN for Broadside crashes. This includes all roadway segments with at least three (3) of the factors shown above.

Figure 2. High-Risk Network – Broadside



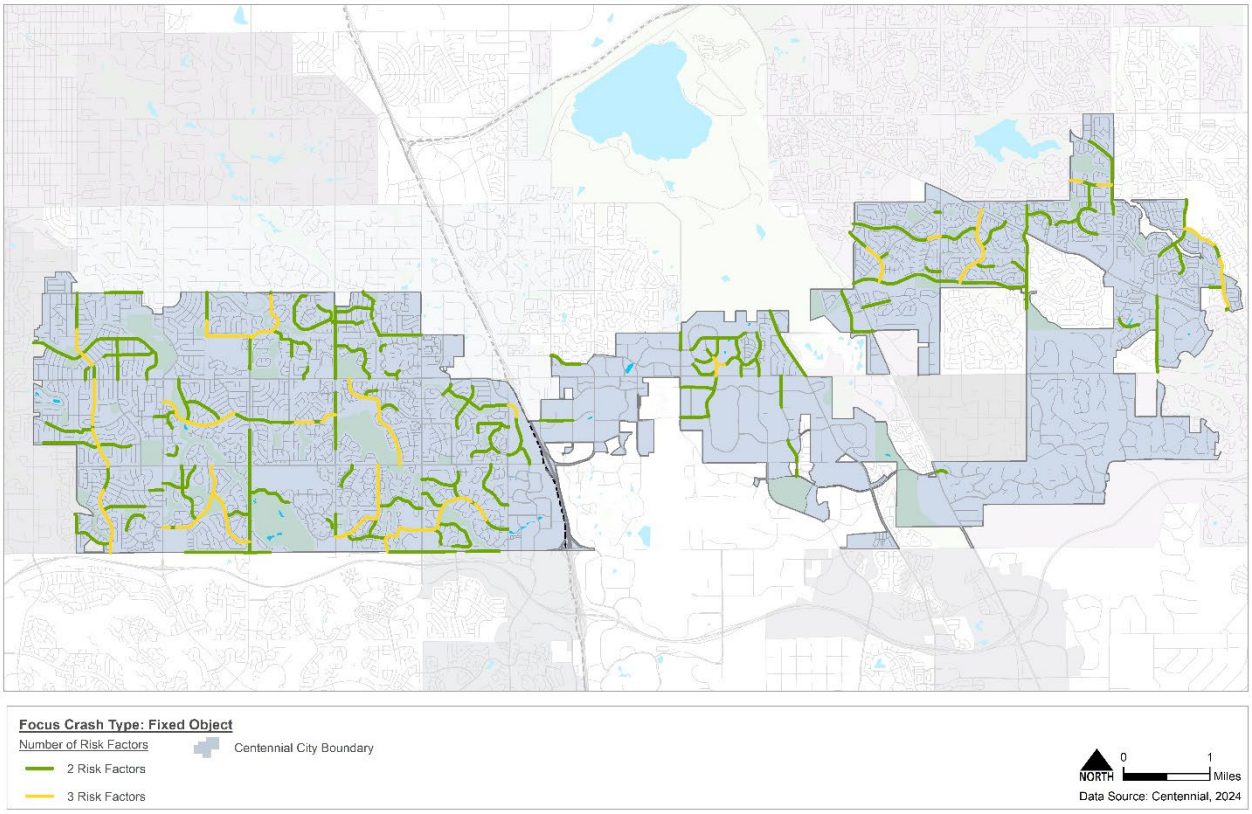
4.3 Fixed Object

High-Risk Factors associated with Fixed Object crashes include:

- Functional Class: Minor Arterial
- Functional Class: Major Collector
- Two-Lane Roadways
- 10-Minute Recreation Walkshed

Figure 3 displays the HRN for Fixed Object crashes. This includes all roadway segments with at least two (2) of the factors shown above.

Figure 3. High-Risk Network – Fixed Object



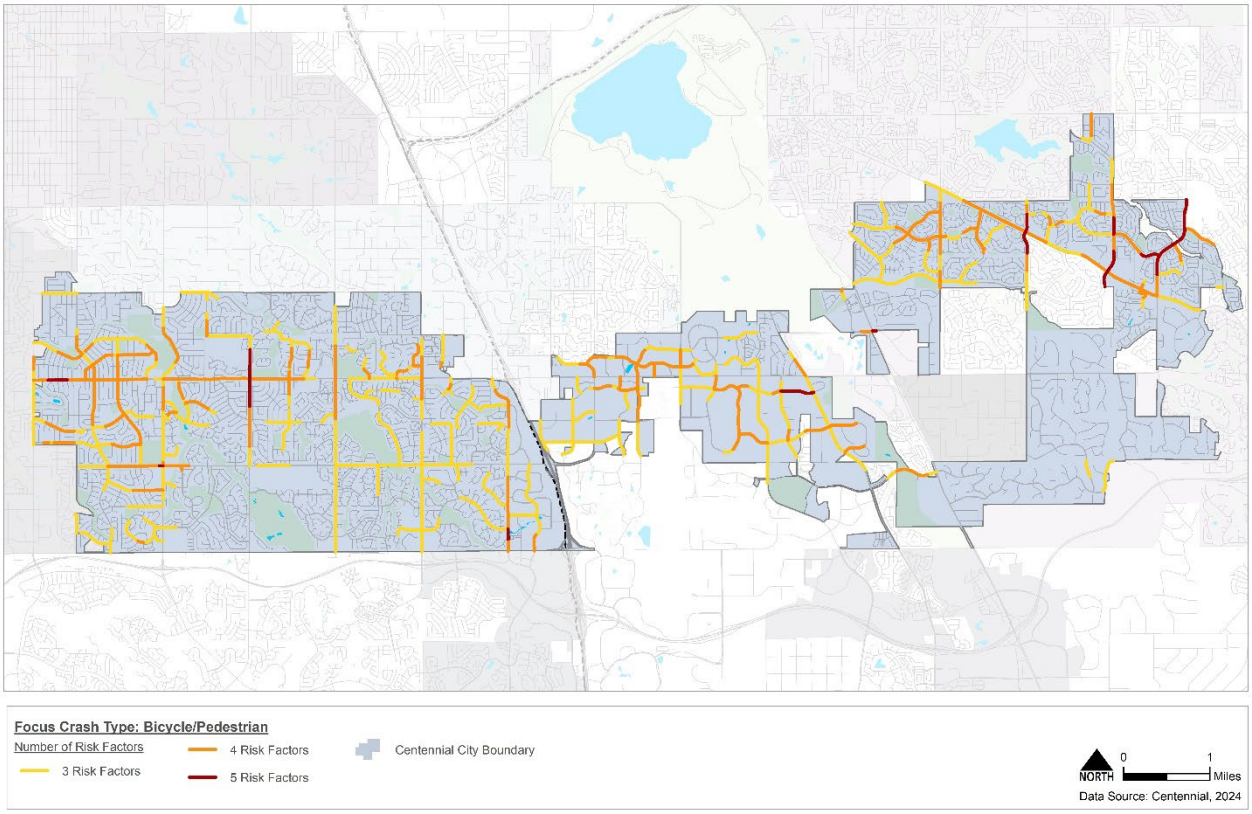
4.4 Bicycle/Pedestrian

High-Risk Factors associated with Bicycle/Pedestrian crashes include:

- Four-Lane Roadways
- 30-40 MPH Posted Speed Limit
- Uncongested Conditions (V/C Ratio less than 0.7)
- 10-Minute School Walkshed
- 10-Minute Transit Walkshed

Figure 4 displays the HRN for Bicycle/Pedestrian crashes. This includes all roadway segments with at least three (3) of the factors shown above.

Figure 4. High-Risk Network – Bicycle/Pedestrian



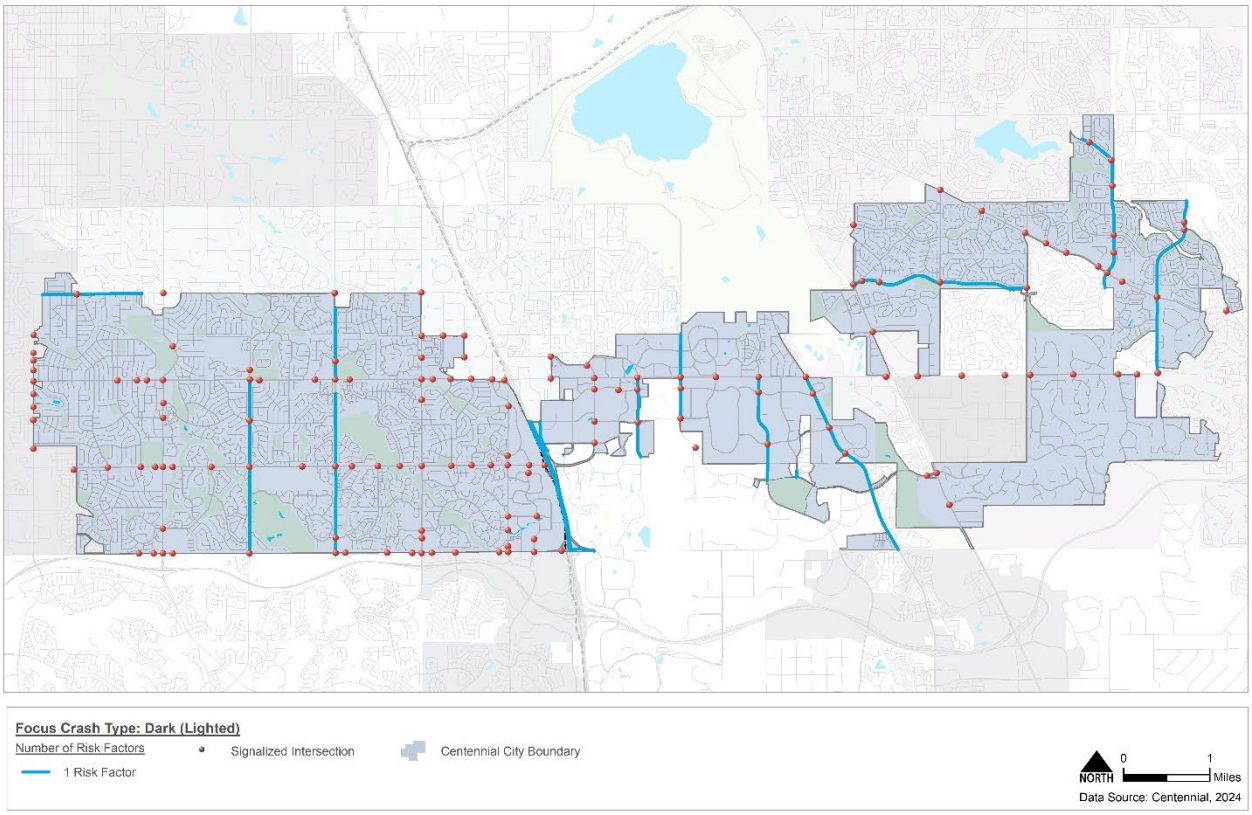
4.5 Dark (Lighted)

High-Risk Factors associated with Dark (Lighted) crashes include:

- Signalized Intersections
- Functional Class: Interstate
- Functional Class: Minor Arterial

Figure 5 displays the HRN for Dark (Lighted) crashes. This includes all roadway segments with at least one (1) of the factors shown above, as well as any signalized intersections along the HRN segments.

Figure 5. High-Risk Network – Dark (Lighted)



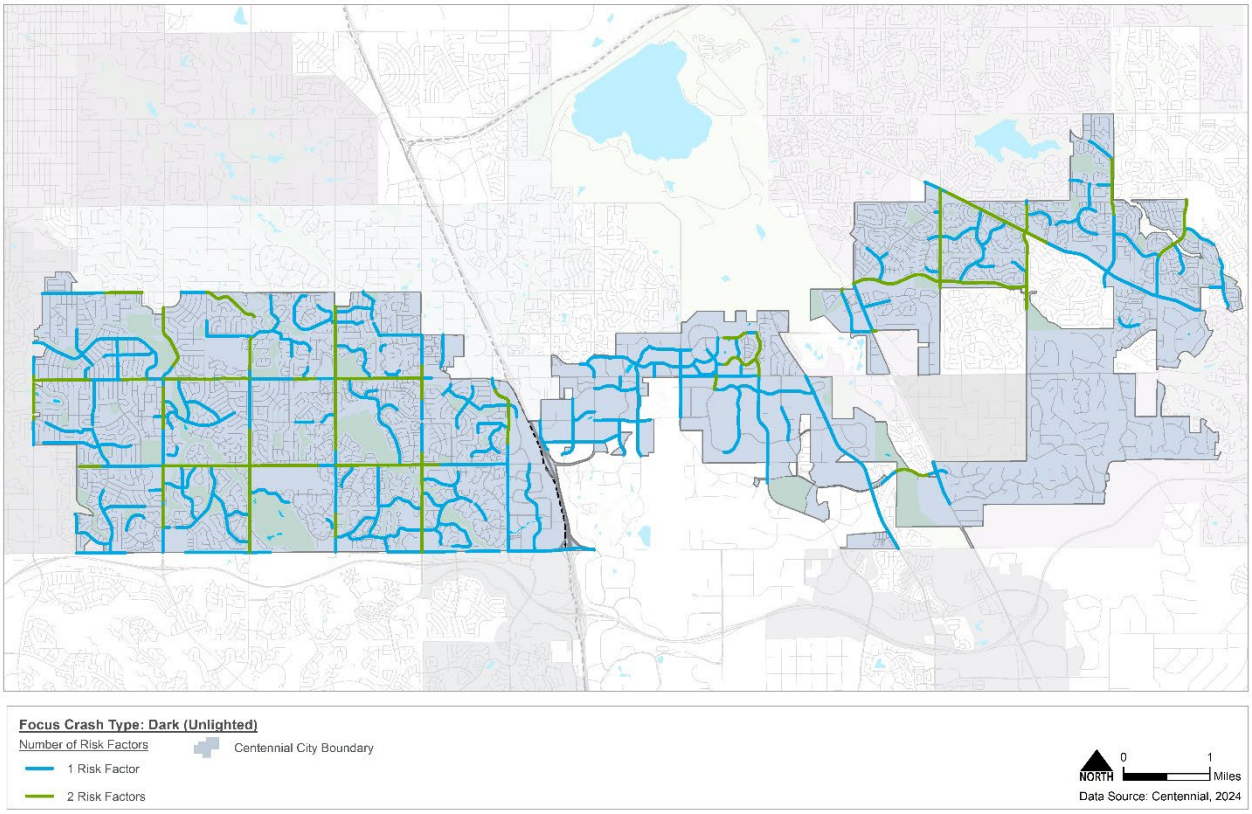
4.6 Dark (Unlighted)

High-Risk Factors associated with Dark (Unlighted) crashes include:

- Four-Lane Roadways
- 10-Minute Recreation Walkshed

Figure 6 displays the HRN for Dark (Unlighted) crashes. This includes all roadway segments with at least two (2) of the factors shown above.

Figure 6. High-Risk Network – Dark (Unlighted)



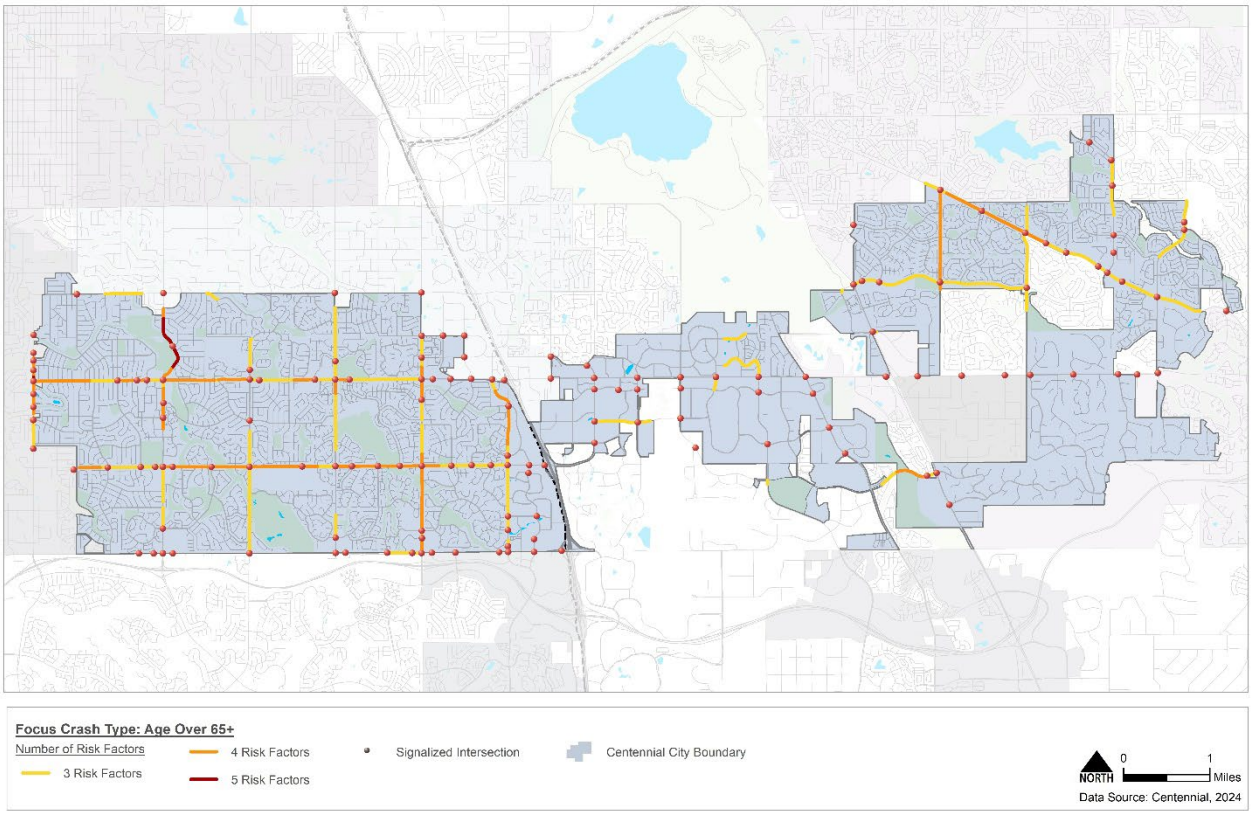
4.7 Road User Age 65+

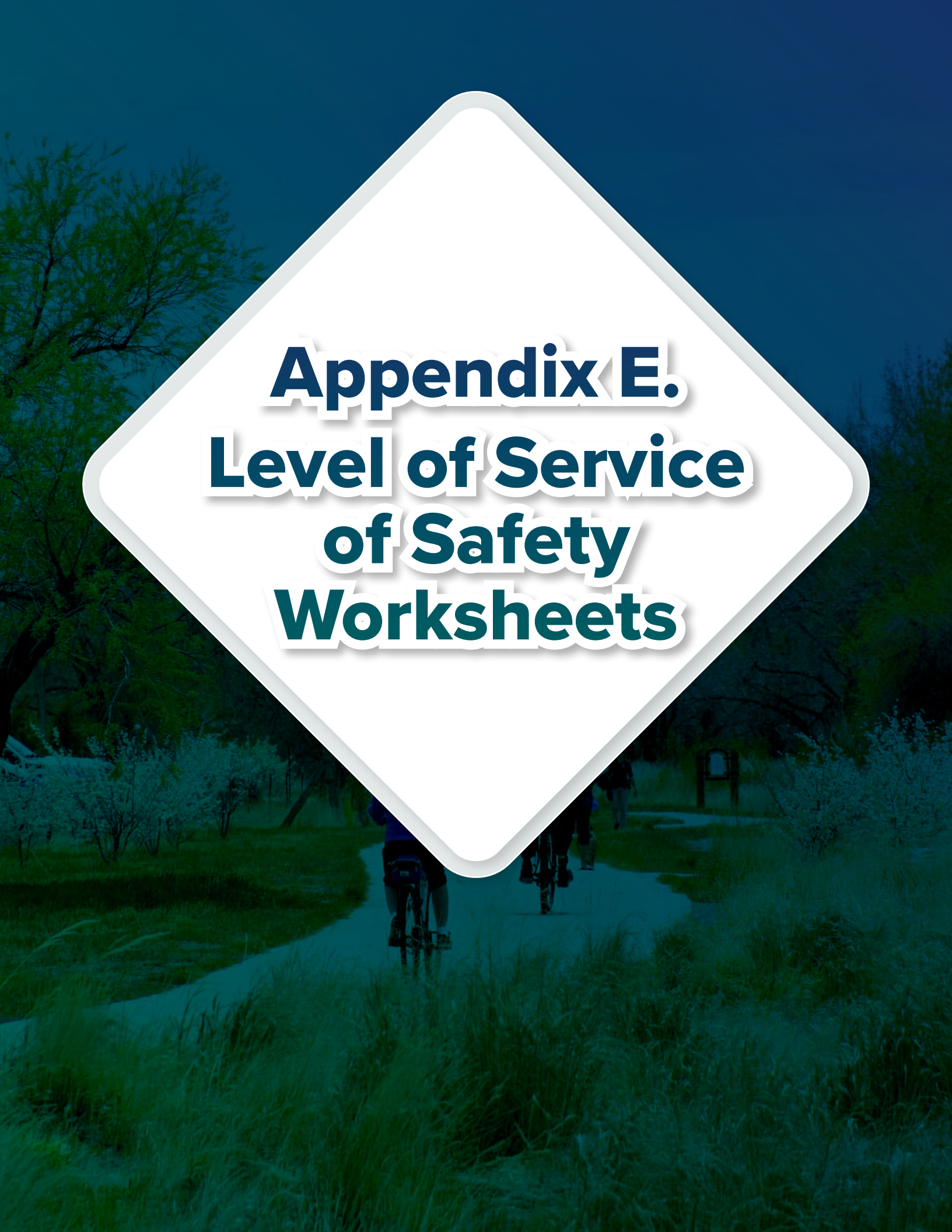
High-Risk Factors associated with Road User Age 65+ crashes include:

- Signalized Intersections
- Functional Class: Major Collector
- Four-Lane Roadways
- 30-40 MPH Posted Speed Limit
- Over Capacity/Highly Congested (V/C Ratio greater than 1.2)
- 10-Minute Recreation Walkshed

Figure 7 displays the HRN for Road User Age 65+ crashes. This includes all roadway segments with at least three (3) of the factors shown above.

Figure 7. High-Risk Network – Road User Age 65+





Appendix E. Level of Service of Safety Worksheets

Accessibility of Appendix E

In accordance with section 24-34-802(1), C.R.S. and Rules Establishing Technology Accessibility Standards, 8 CCR 1501-11, the Centennial Safety Action Plan and associated Appendices A through D comply with the accessibility standards established by the Governor's Office of Information Technology. This page describes the plan for providing equally effective access for Appendix E, which is currently not accessible for all users.

1. Inaccessible Technology/Documents

Appendix E of the Centennial Safety Action Plan

- The PDF document has known accessibility barriers with navigation by keyboard and lack of screen reader support. Compliance will require fundamental alteration of both the source file and output PDF documents.
- Accessibility currently imposes an undue burden of prohibitive cost.

2. Individuals likely affected by above accessibility issues:

- Members of the public
- Employees
- Elected officials

3. Process for the City to provide an alternative means for accessible use/content:

For those affected and requiring accommodation, please contact the following project team members through the information below:

- Name and Title: Anna Bunce, City Traffic Engineer
- Email: abunce@centennialco.gov
- Phone: (303) 325-8036

Individual Level of Service of Safety (LOSS) Worksheets will be made accessible upon request. The project team will respond to the accessibility request with information as to when the accessible documents will be produced on a case-by-case basis.

The project consultant is currently working toward developing an accessible LOSS worksheet template to reduce the burden of compliance.

S Broadway & E Highline Cir

Intersection Characteristics

Classification:	Urban 4-Lane Divided Unsignalized 4-Leg Intersection		
Major Street:	S Broadway	**AADT:**	34,400
Minor Street:	E Highline Cir	**AADT:**	3,400

Level of Service of Safety

Total	Severe
II	II

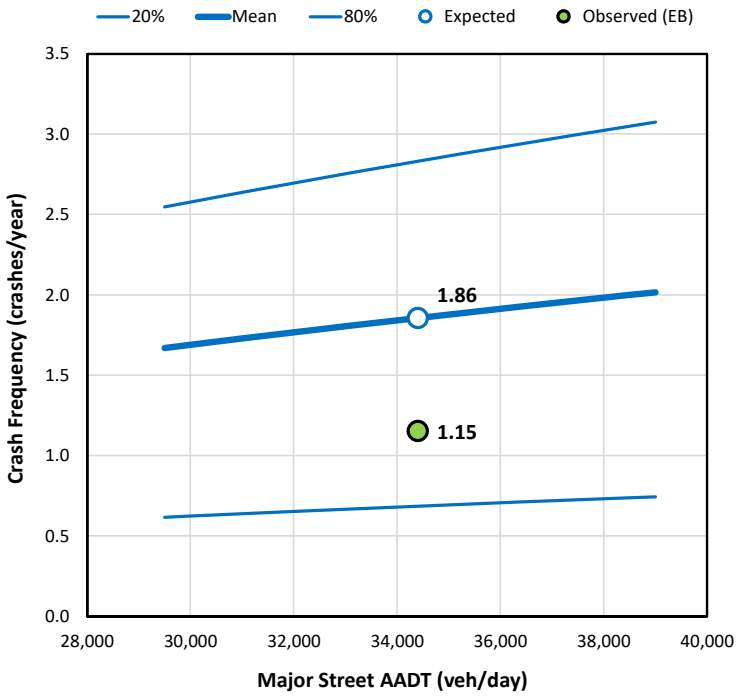
2019-2023 Crash History

PDO	Injury	Fatal	Total
3	0	1	4

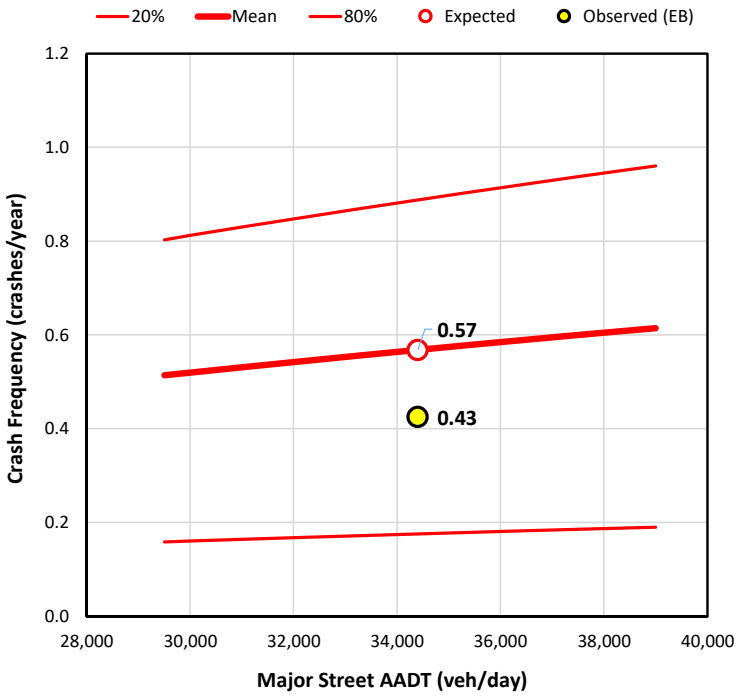
K:	1
A:	0
B:	0
C:	0
O:	3

Safety Performance Functions

Total SPF



Severe SPF

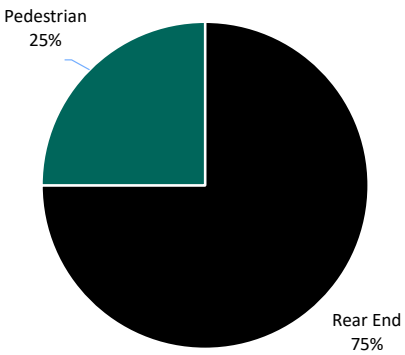


Diagnostic Patterns

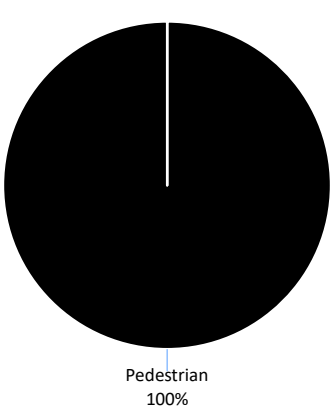
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



E Arapahoe Rd & S Vine St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	29,300
Minor Street:	S Vine St	**AADT:**	7,300

Level of Service of Safety

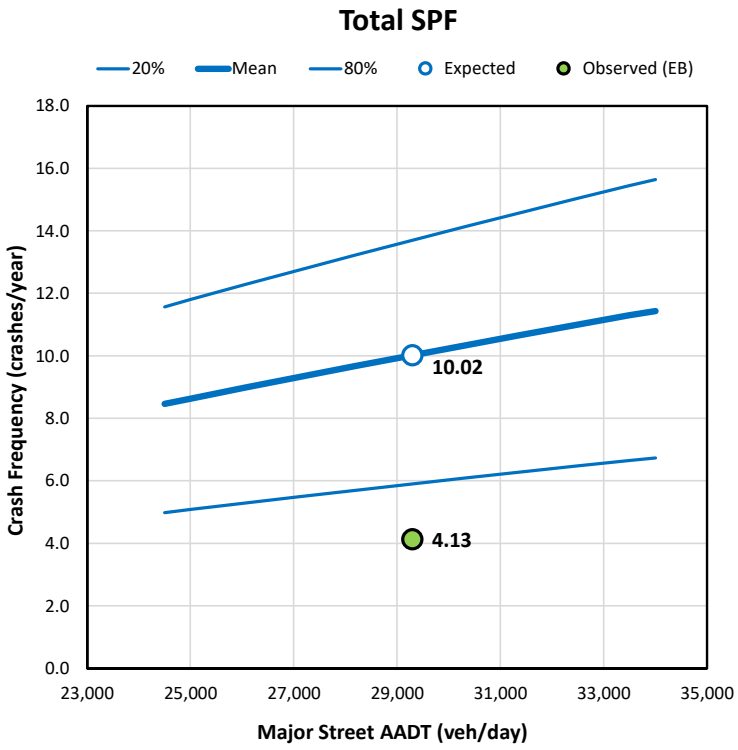
Total	Severe
I	I

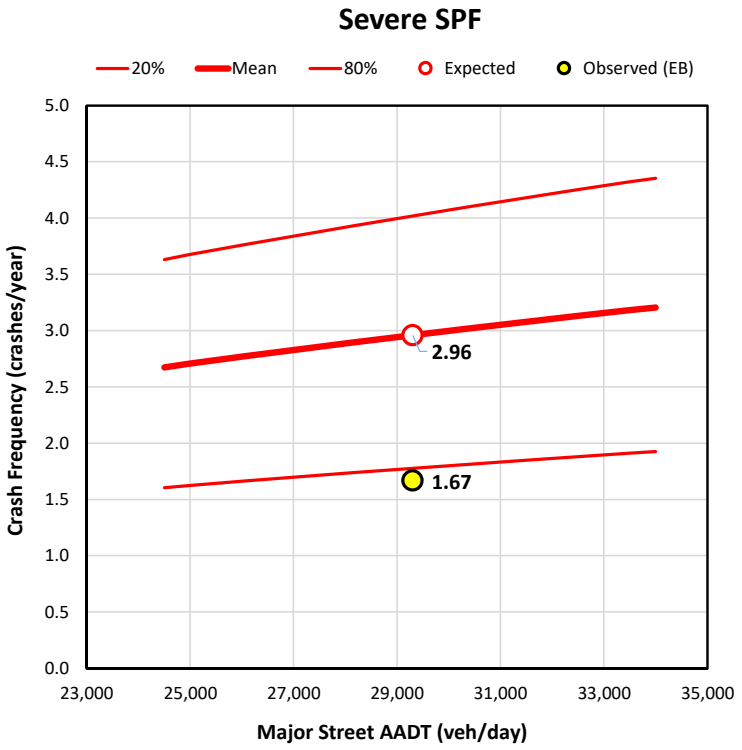
2019-2023 Crash History

PDO	Injury	Fatal	Total
12	5	1	18

K:	1
A:	1
B:	2
C:	2
O:	12

Safety Performance Functions

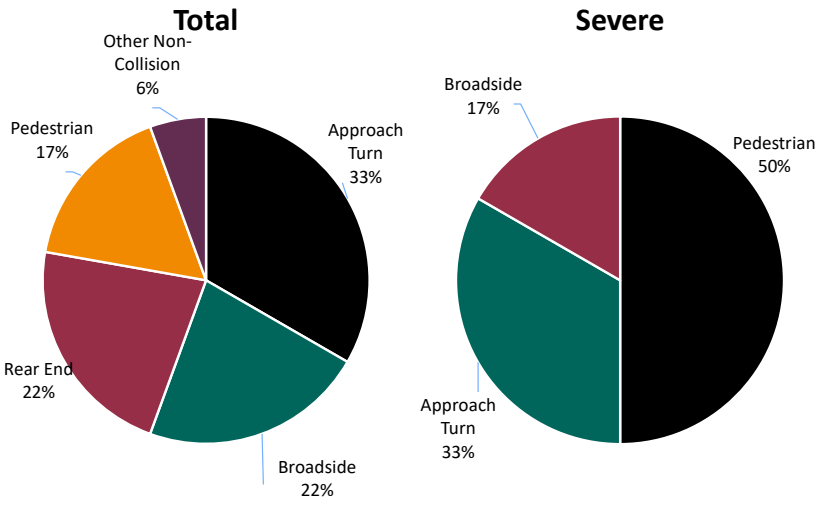




Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	6	97.6%

Crash Types



S University Blvd & E Arapahoe Rd

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S University Blvd	**AADT:**	38,200
Minor Street:	E Arapahoe Rd	**AADT:**	32,400

Level of Service of Safety

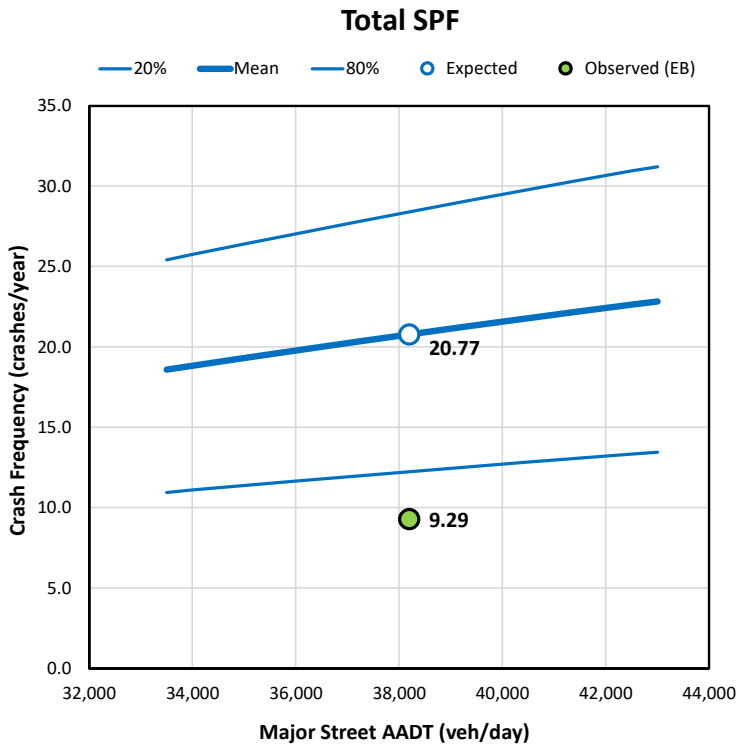
Total	Severe
I	I

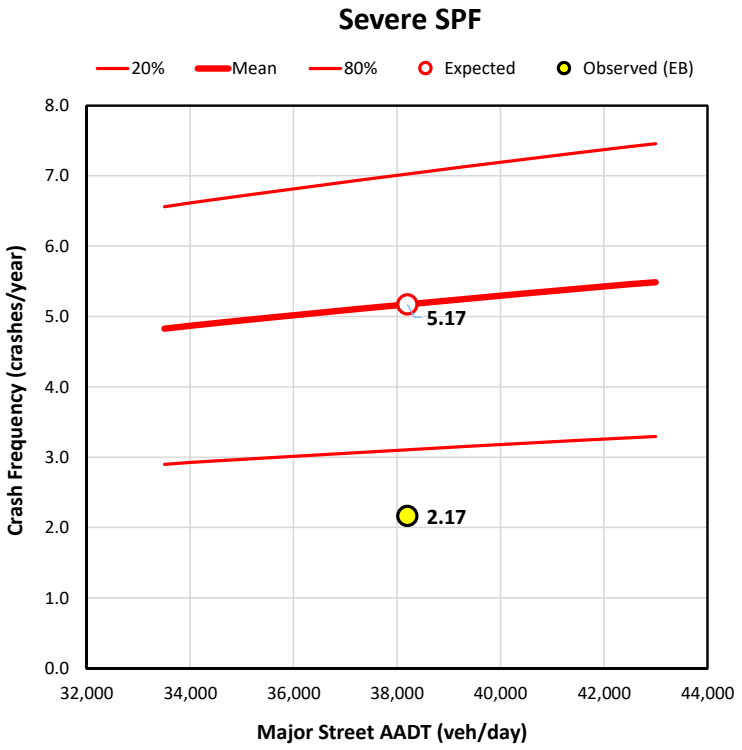
2019-2023 Crash History

PDO	Injury	Fatal	Total
36	8	0	44

K:	0
A:	0
B:	1
C:	7
O:	36

Safety Performance Functions

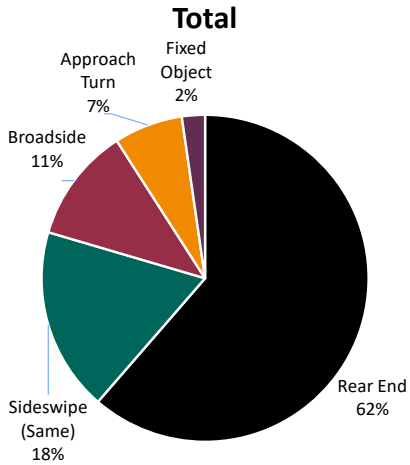


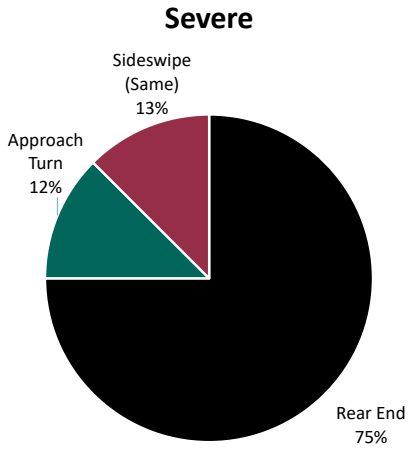


Diagnostic Patterns

Pattern	# Crashes	Probability
Sideswipe (Same)	8	96.2%

Crash Types





S University Blvd & E Dry Creek Rd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S University Blvd	**AADT:**	32,400
Minor Street:	E Dry Creek Rd	**AADT:**	24,000

Level of Service of Safety

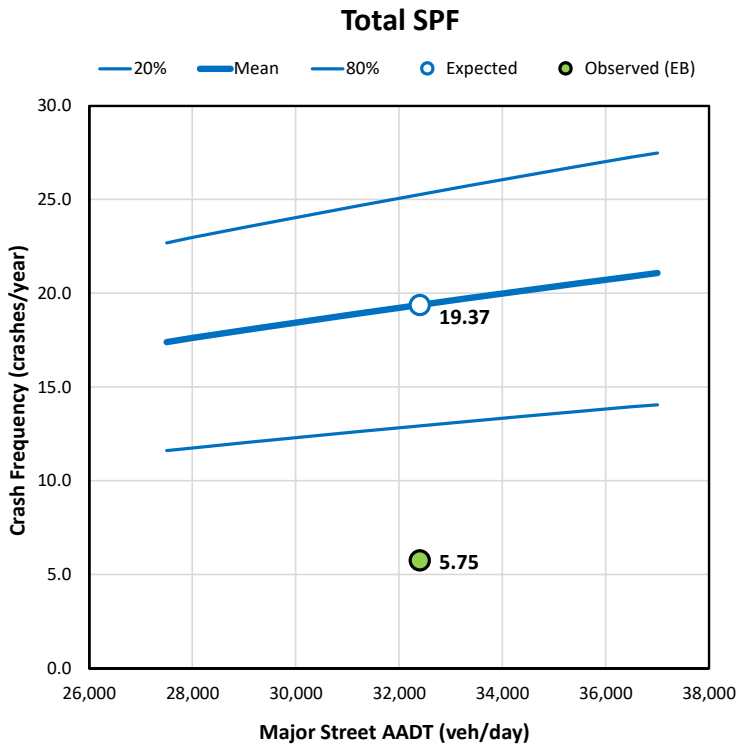
Total	Severe
I	I

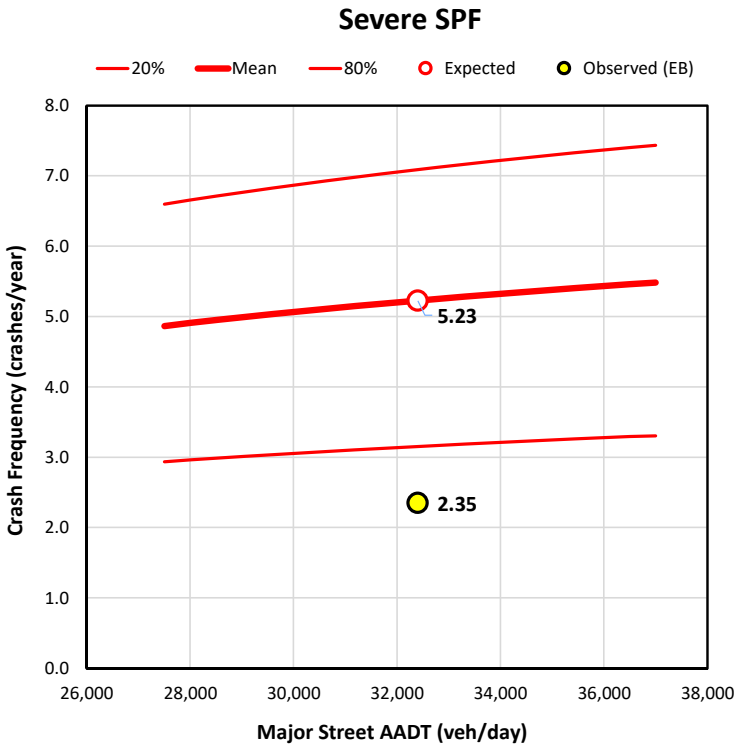
2019-2023 Crash History

PDO	Injury	Fatal	Total
15	9	0	24

K:	0
A:	1
B:	1
C:	7
O:	15

Safety Performance Functions

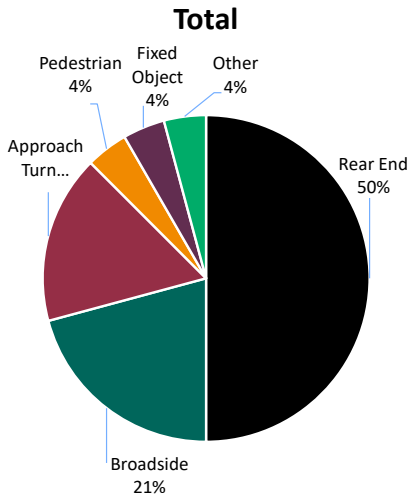


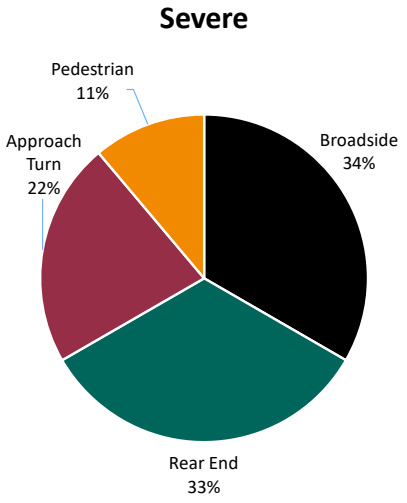


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	5	96.8%

Crash Types





S University Blvd & E Otero Ave

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S University Blvd	**AADT:**	32,900
Minor Street:	E Otero Ave	**AADT:**	3,300

Level of Service of Safety

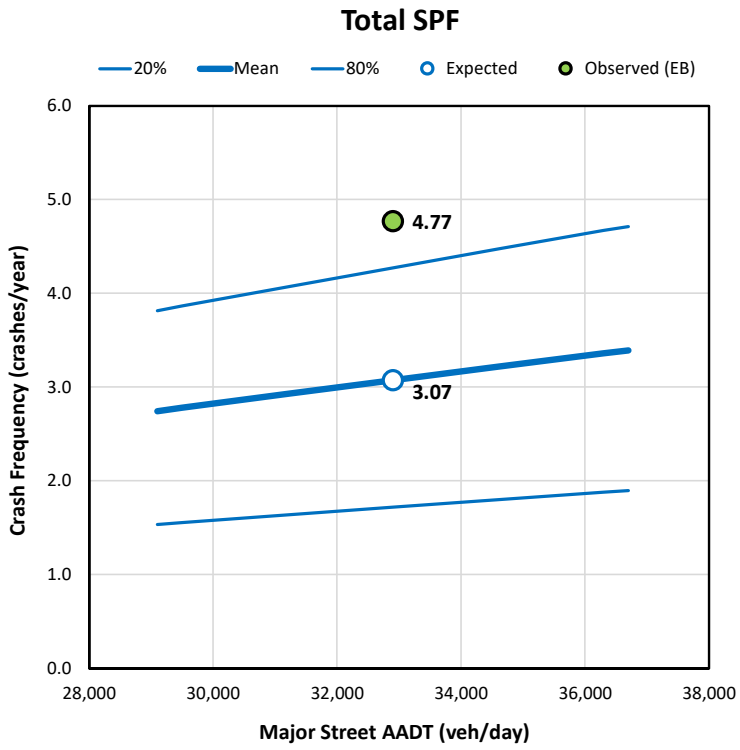
Total	Severe
IV	IV

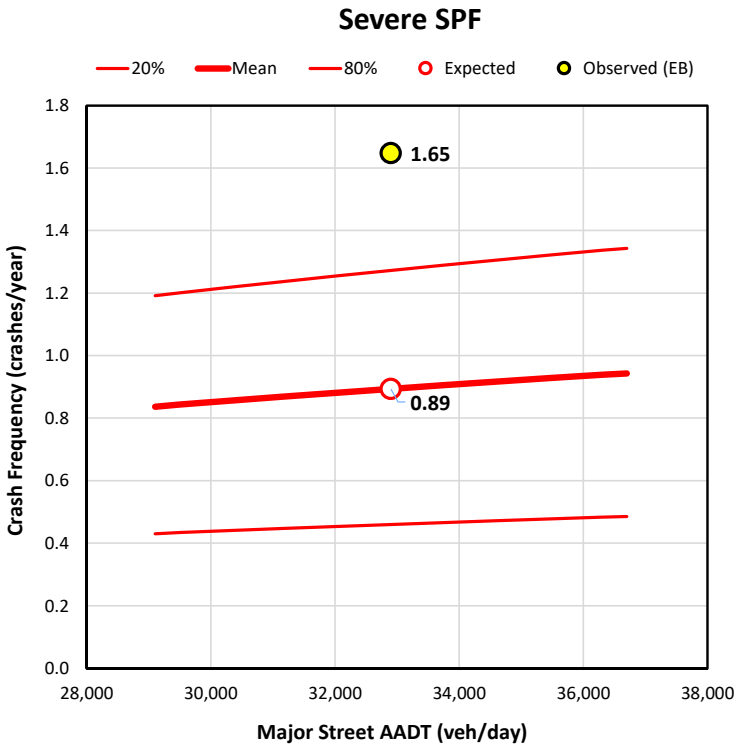
2019-2023 Crash History

PDO	Injury	Fatal	Total
16	8	1	25

K:	1
A:	2
B:	3
C:	3
O:	16

Safety Performance Functions

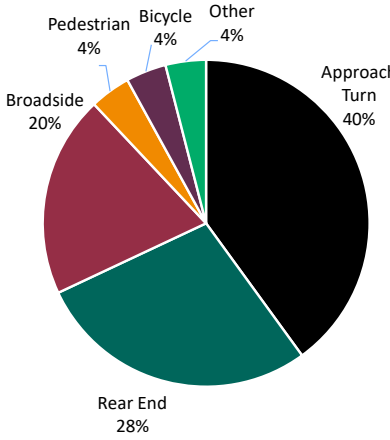


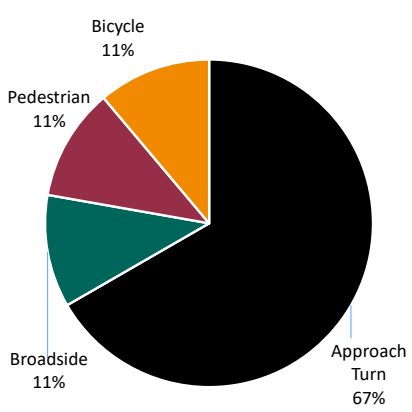


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	5	96.1%
Approach Turn	10	99.9%

Crash Types





E Dry Creek Rd & S Colorado Blvd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	25,300
Minor Street:	S Colorado Blvd	**AADT:**	11,700

Level of Service of Safety

Total	Severe
I	II

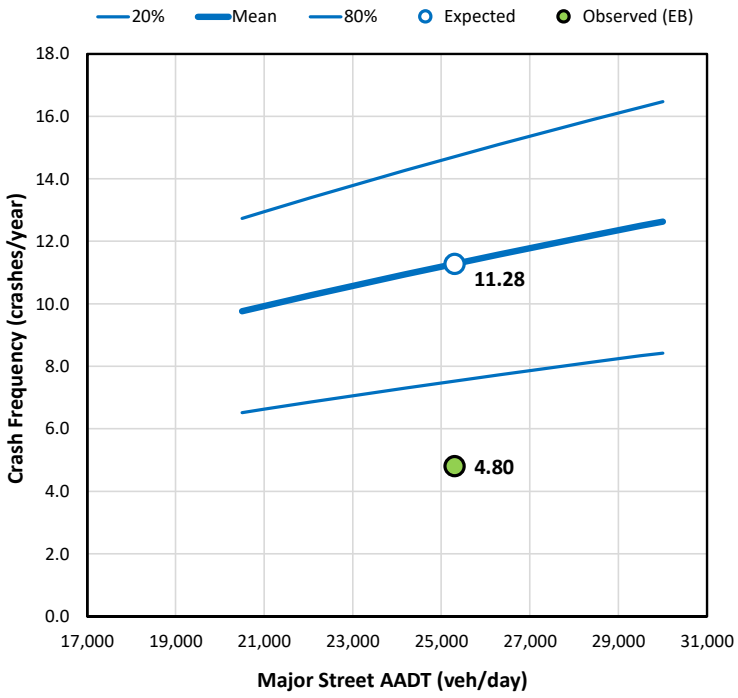
2019-2023 Crash History

PDO	Injury	Fatal	Total
11	9	0	20

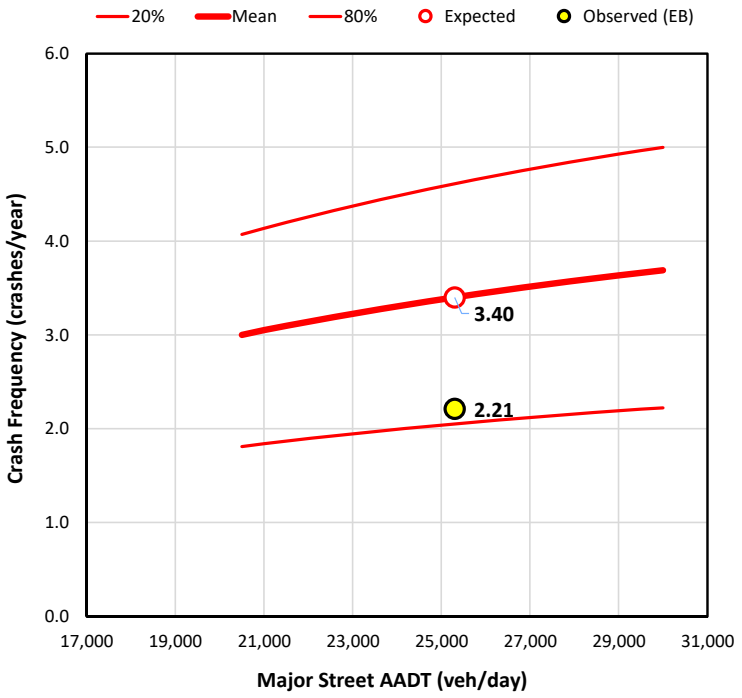
K:	0
A:	3
B:	1
C:	5
O:	11

Safety Performance Functions

Total SPF



Severe SPF

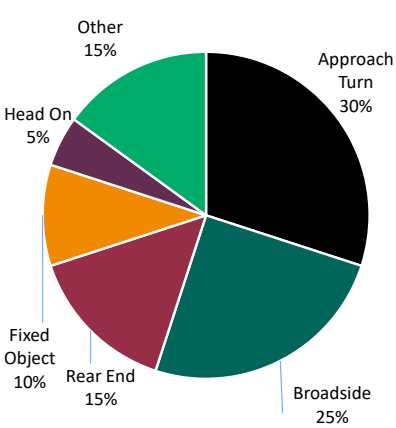


Diagnostic Patterns

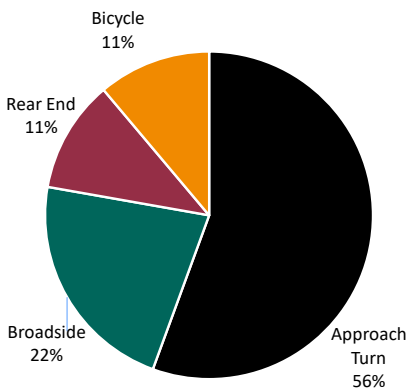
Pattern	# Crashes	Probability
INJ	9	96.6%
Approach Turn	6	96.9%

Crash Types

Total



Severe



E County Line Rd & S Colorado Blvd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E County Line Rd	**AADT:**	31,600
Minor Street:	S Colorado Blvd	**AADT:**	15,300

Level of Service of Safety

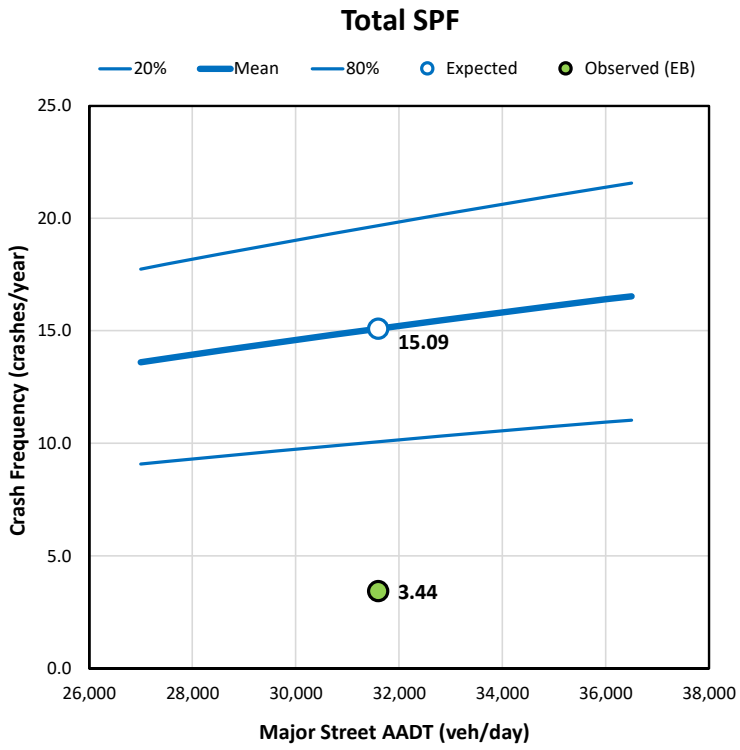
Total	Severe
I	I

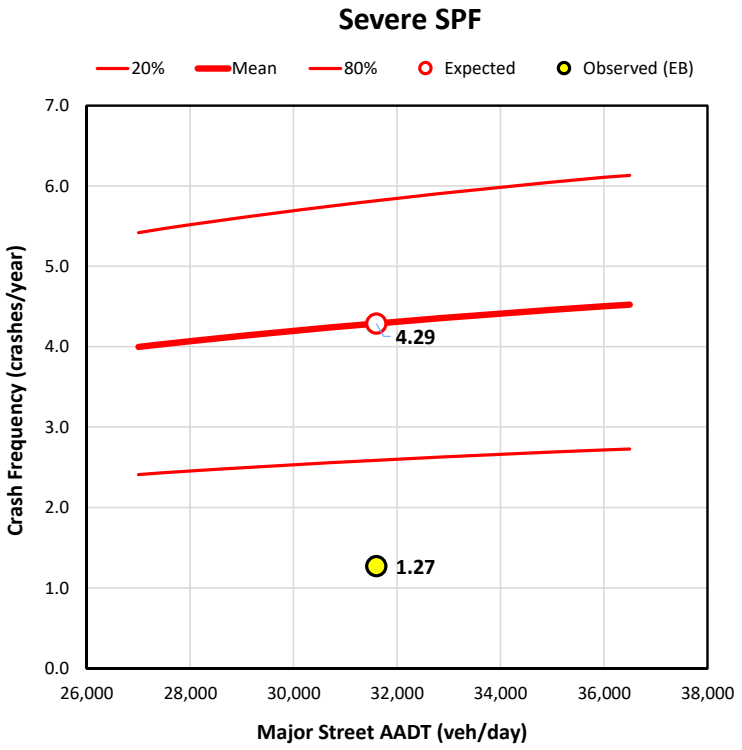
2019-2023 Crash History

PDO	Injury	Fatal	Total
9	2	1	12

K:	1
A:	1
B:	1
C:	0
O:	9

Safety Performance Functions

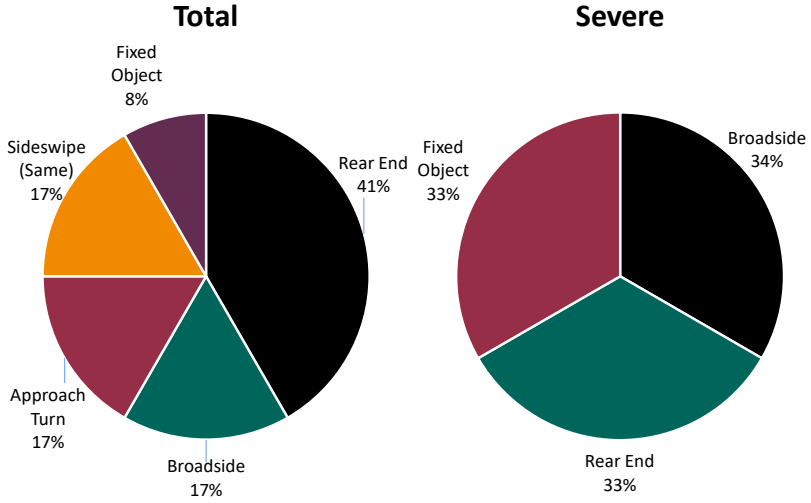




Diagnostic Patterns

Pattern	# Crashes	Probability
No Patterns		

Crash Types



E County Line Rd & S Holly St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E County Line Rd	**AADT:**	24,600
Minor Street:	S Holly St	**AADT:**	14,000

Level of Service of Safety

Total	Severe
I	I

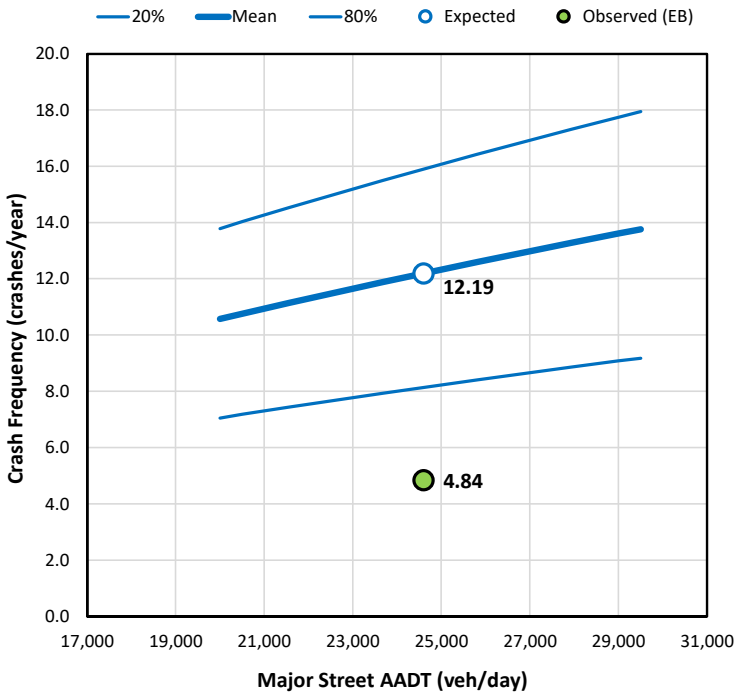
2019-2023 Crash History

PDO	Injury	Fatal	Total
13	6	1	20

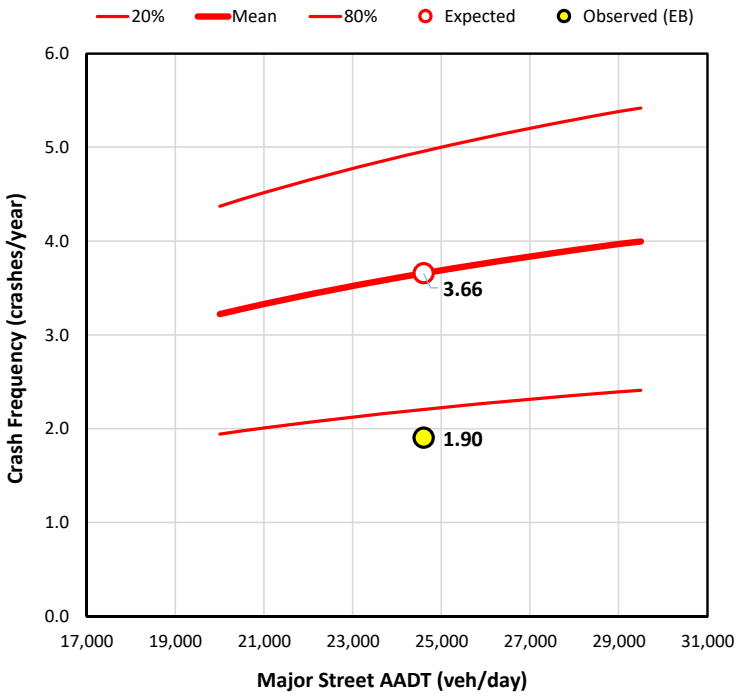
K:	1
A:	0
B:	1
C:	5
O:	13

Safety Performance Functions

Total SPF



Severe SPF

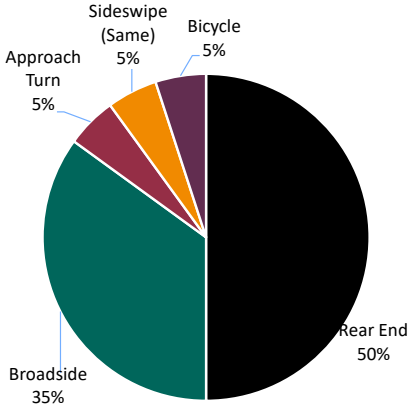


Diagnostic Patterns

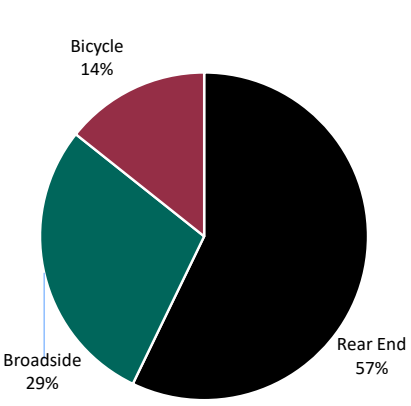
Pattern	# Crashes	Probability
3+ Vehicles	5	99.7%
Broadside	7	99.5%

Crash Types

Total



Severe



E Arapahoe Rd & S Quebec St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	37,100
Minor Street:	S Quebec St	**AADT:**	24,000

Level of Service of Safety

Total	Severe
I	I

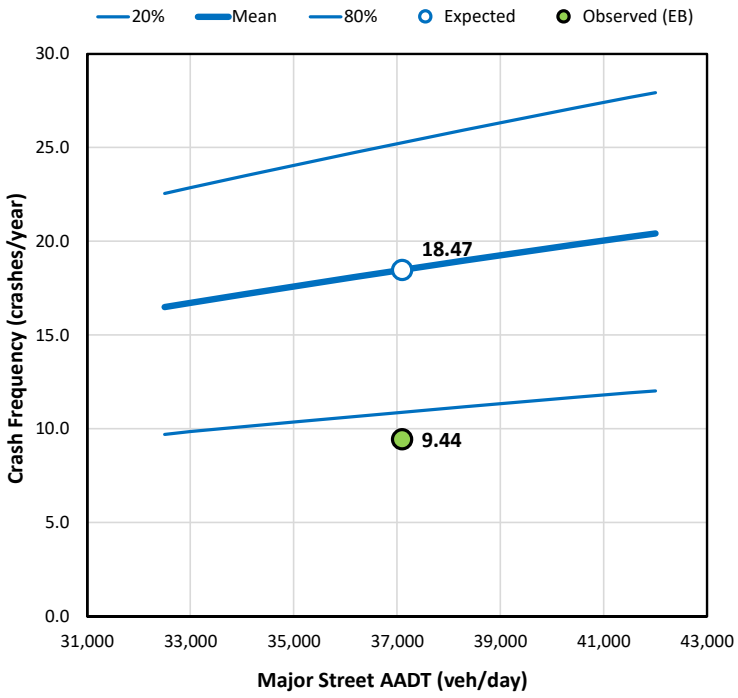
2019-2023 Crash History

PDO	Injury	Fatal	Total
40	5	0	45

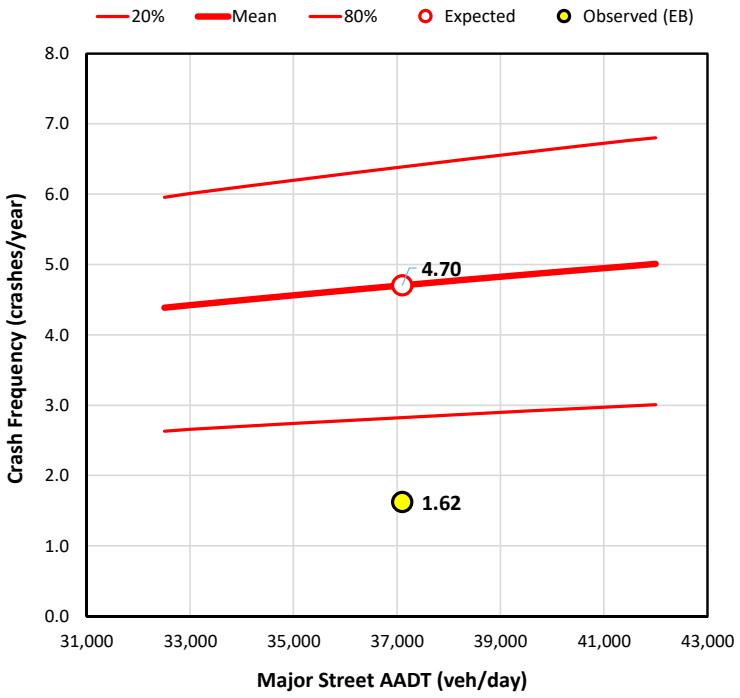
K:	0
A:	0
B:	1
C:	4
O:	40

Safety Performance Functions

Total SPF



Severe SPF

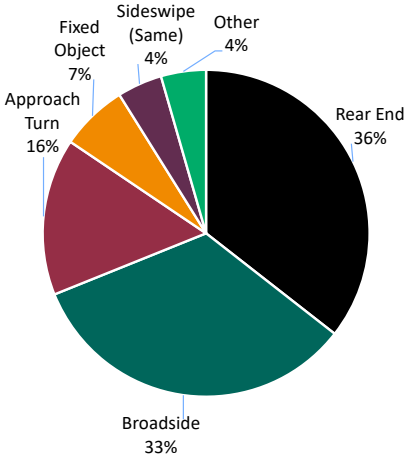


Diagnostic Patterns

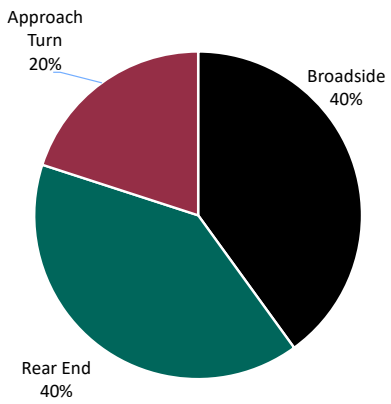
Pattern	# Crashes	Probability
3+ Vehicles	10	99.7%
Broadside	15	100.0%

Crash Types

Total



Severe



E Dry Creek Rd & S Quebec St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	27,700
Minor Street:	S Quebec St	**AADT:**	21,200

Level of Service of Safety

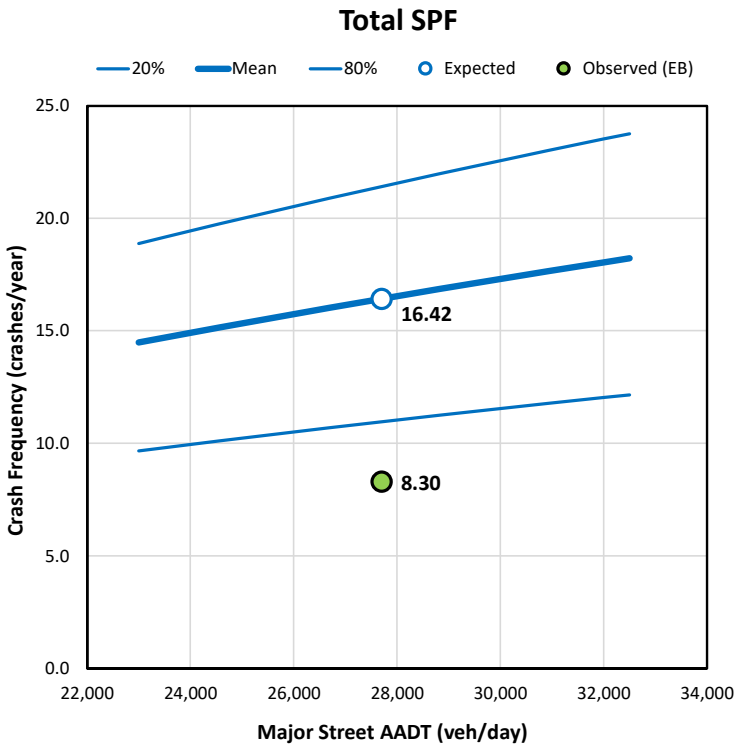
Total	Severe
I	I

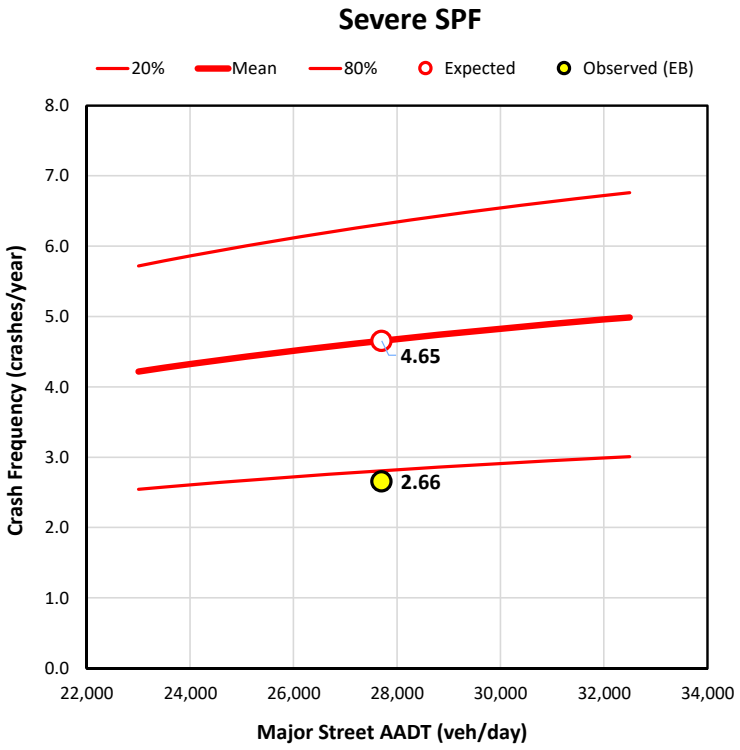
2019-2023 Crash History

PDO	Injury	Fatal	Total
27	11	0	38

K:	0
A:	2
B:	4
C:	5
O:	27

Safety Performance Functions

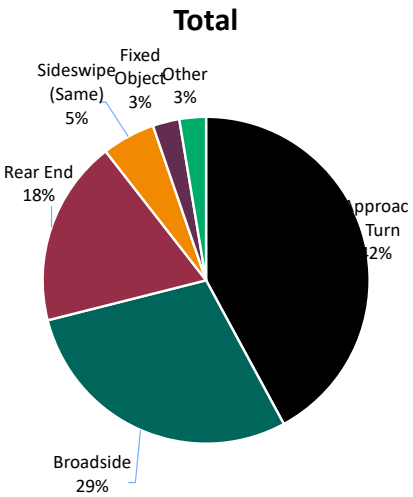


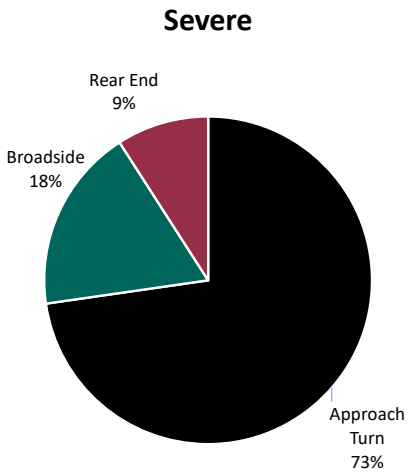


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	11	99.4%
Approach Turn	16	100.0%
Dark-Lighted	13	97.2%
Inexperience	7	98.8%

Crash Types





E Dry Creek Rd & S Yosemite St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	23,100
Minor Street:	S Yosemite St	**AADT:**	14,200

Level of Service of Safety

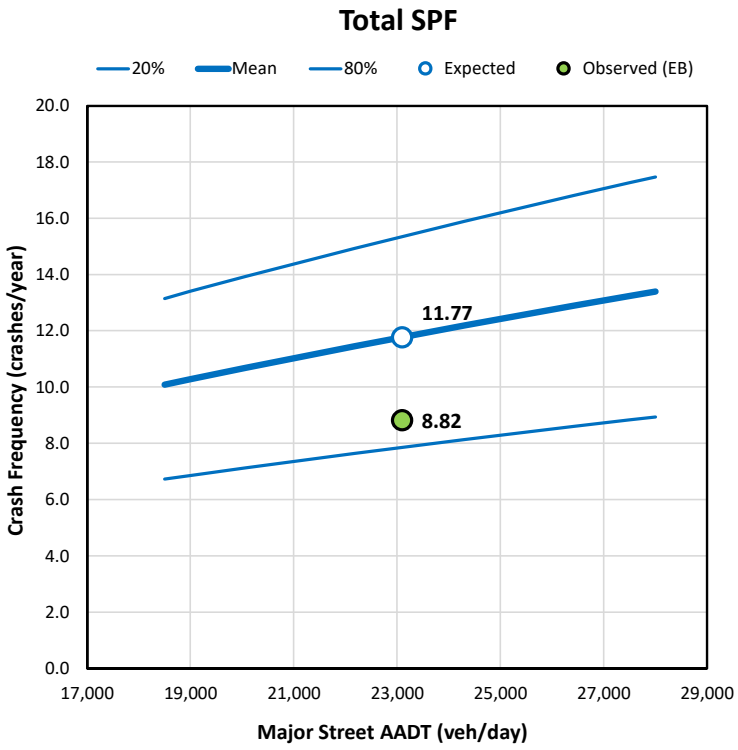
Total	Severe
II	II

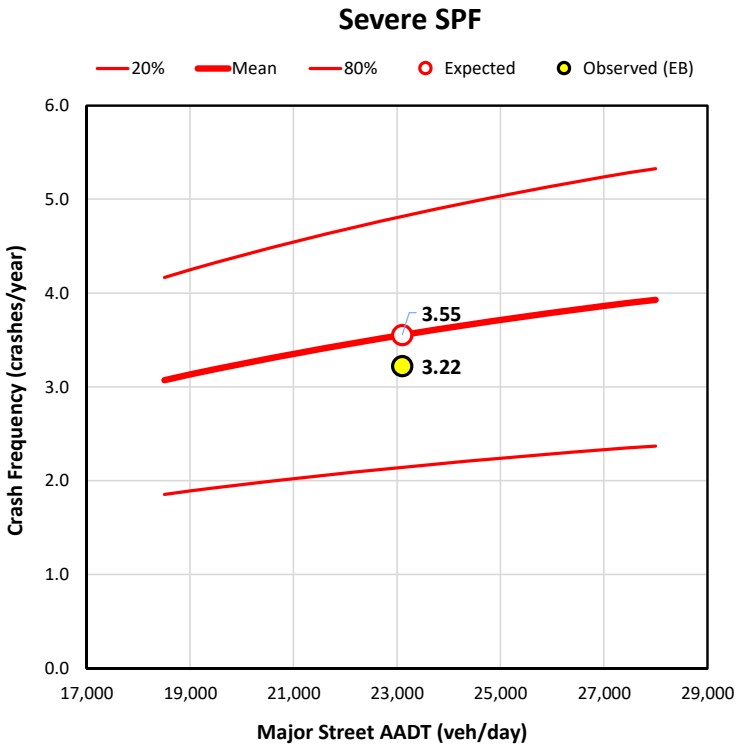
2019-2023 Crash History

PDO	Injury	Fatal	Total
27	14	1	42

K:	1
A:	1
B:	9
C:	4
O:	27

Safety Performance Functions

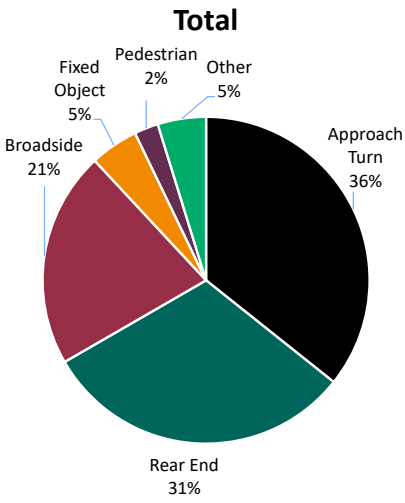


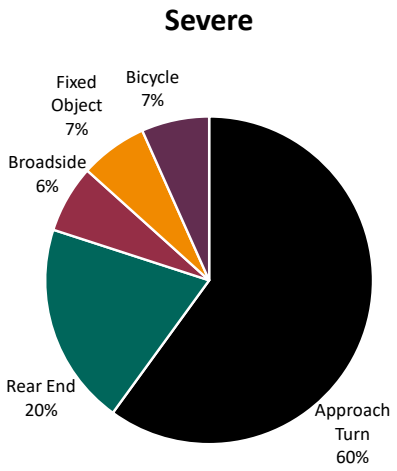


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	15	100.0%

Crash Types





E Dry Creek Rd & S Alton Ct / S Chester St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	31,700
Minor Street:	S Alton Ct / S Chester St	**AADT:**	7,900

Level of Service of Safety

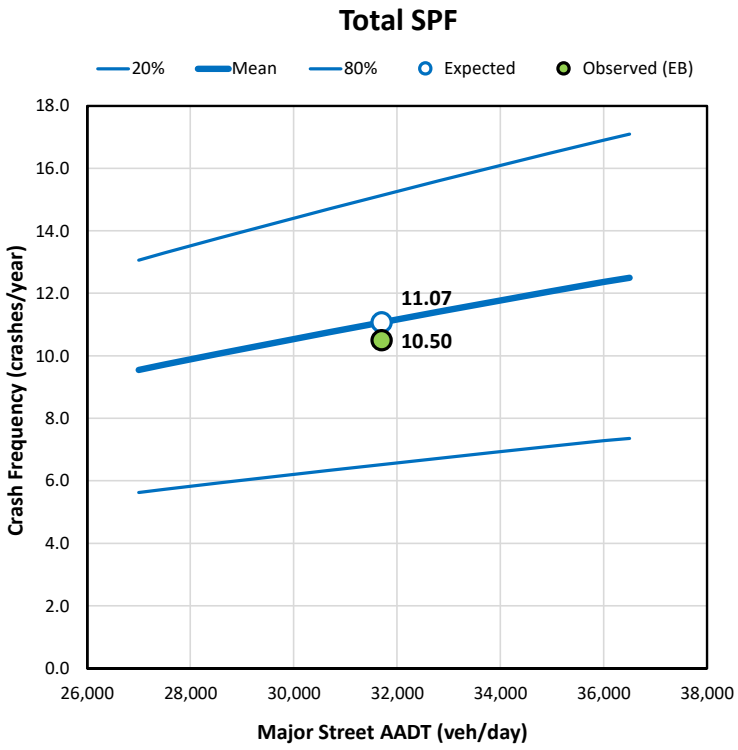
Total	Severe
II	III

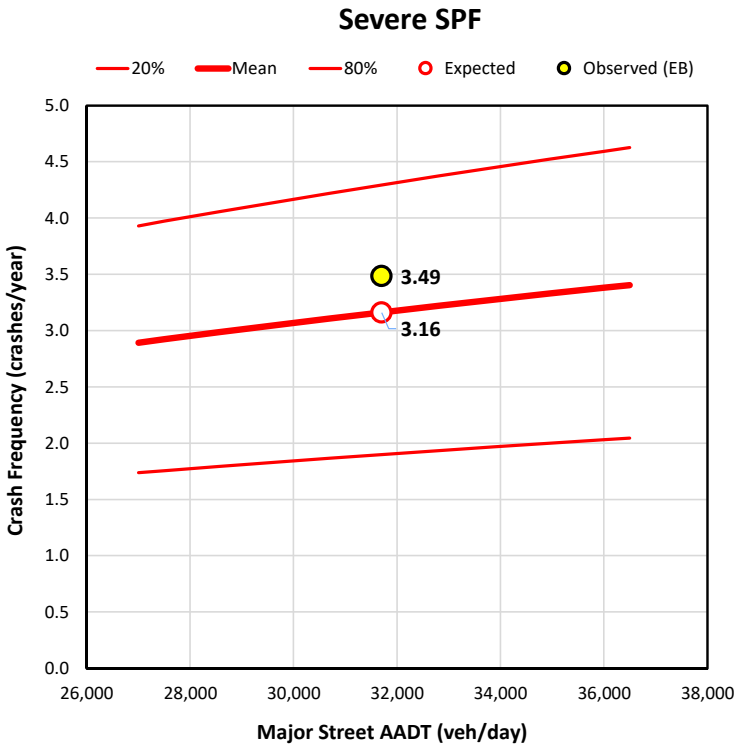
2019-2023 Crash History

PDO	Injury	Fatal	Total
35	17	0	52

K:	0
A:	2
B:	4
C:	11
O:	35

Safety Performance Functions

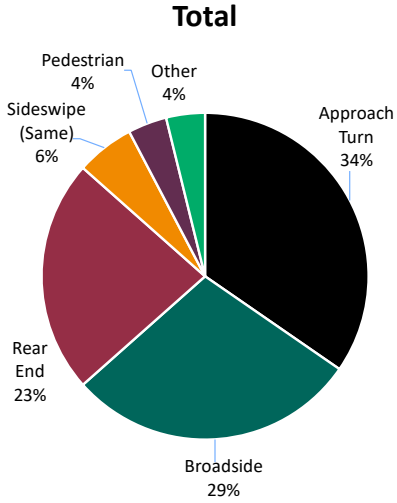


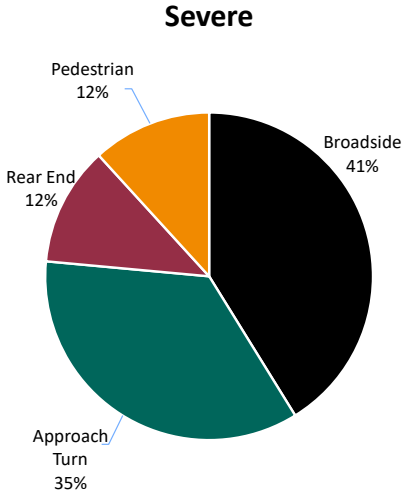


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	15	100.0%
Approach Turn	18	99.9%

Crash Types





E Dry Creek Rd & I-25 SB Ramps

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Ramp Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	36,400
Minor Street:	I-25 SB Ramps	**AADT:**	10,000

Level of Service of Safety

Total	Severe
I	I

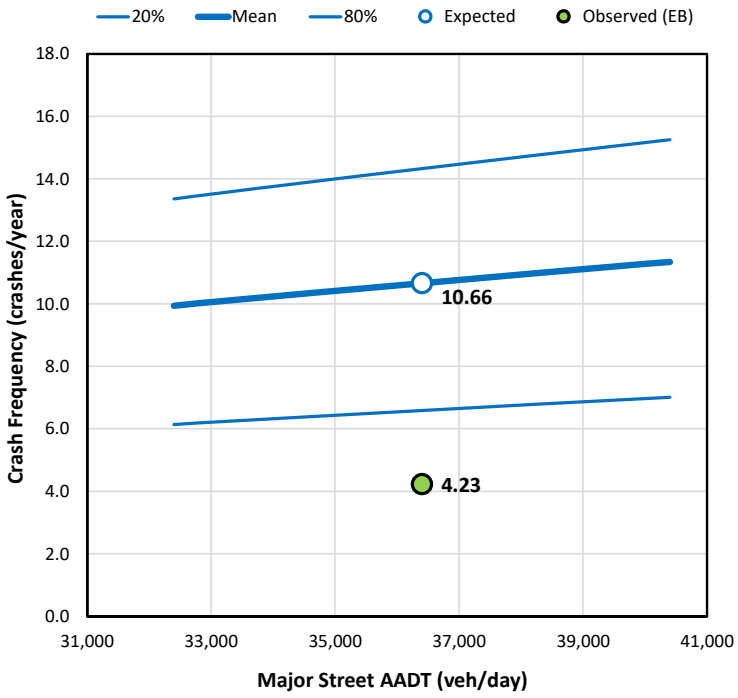
2019-2023 Crash History

PDO	Injury	Fatal	Total
14	4	0	18

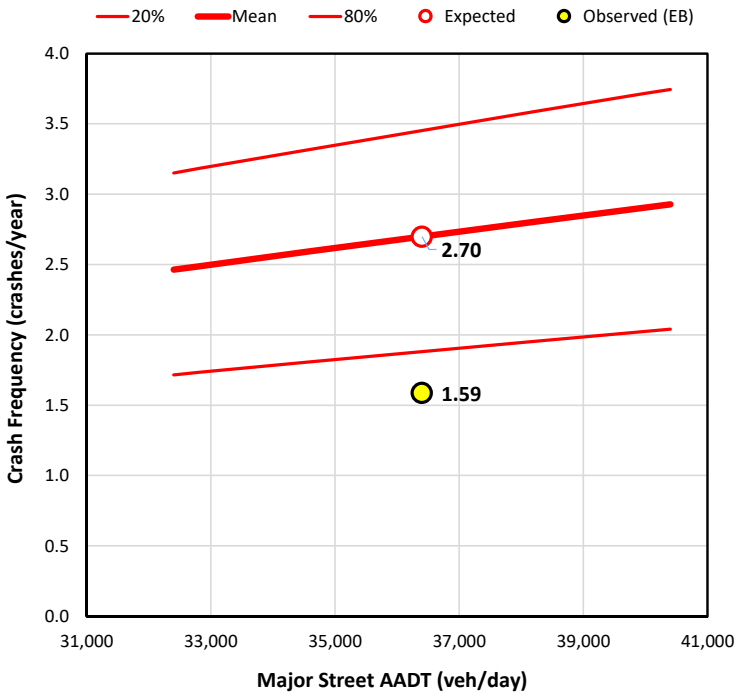
K:	0
A:	0
B:	1
C:	3
O:	14

Safety Performance Functions

Total SPF



Severe SPF

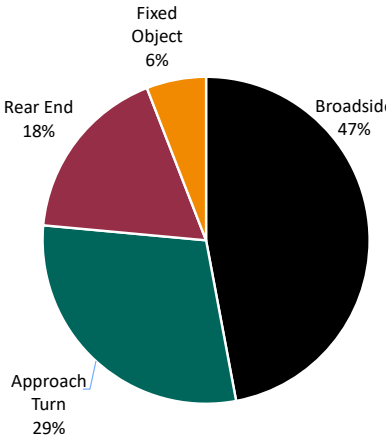


Diagnostic Patterns

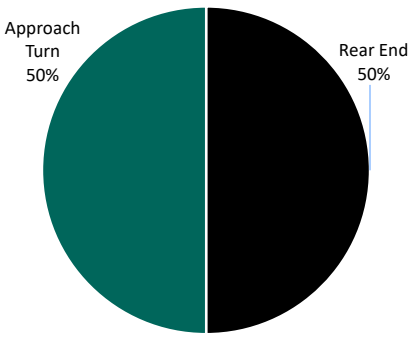
Pattern	# Crashes	Probability
Broadside	8	98.9%

Crash Types

Total



Severe



E Dry Creek Rd & I-25 NB Ramps

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Ramp Intersection		
Major Street:	E Dry Creek Rd	**AADT:**	36,400
Minor Street:	I-25 NB Ramps	**AADT:**	9,800

Level of Service of Safety

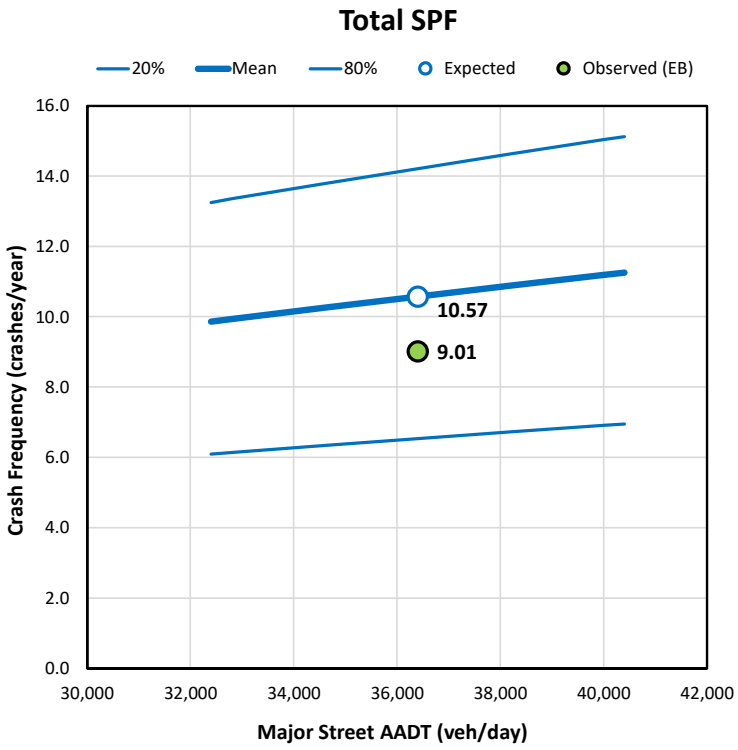
Total	Severe
II	II

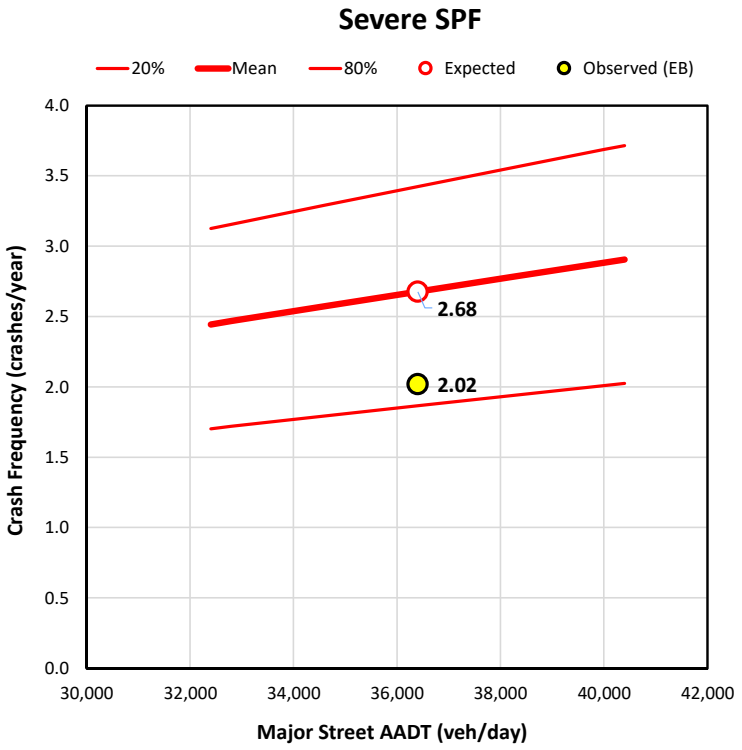
2019-2023 Crash History

PDO	Injury	Fatal	Total
37	7	0	44

K:	0
A:	0
B:	3
C:	4
O:	37

Safety Performance Functions

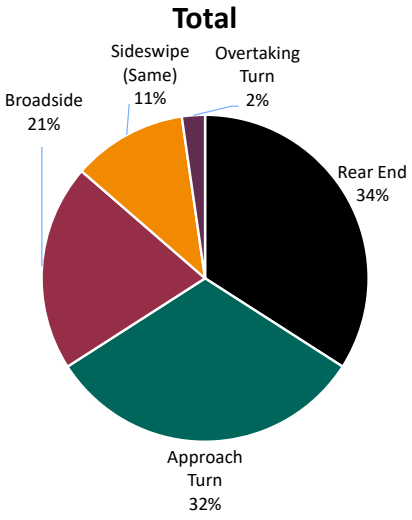


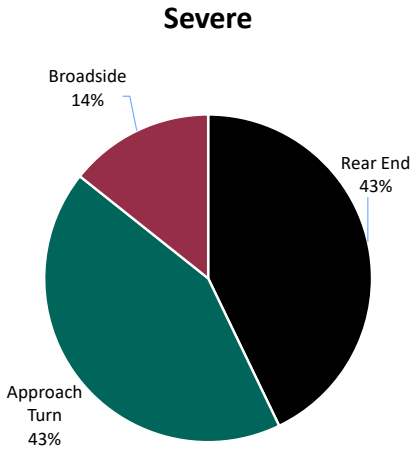


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	14	97.7%

Crash Types





E Arapahoe Rd & S Havana St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	58,700
Minor Street:	S Havana St	**AADT:**	17,300

Level of Service of Safety

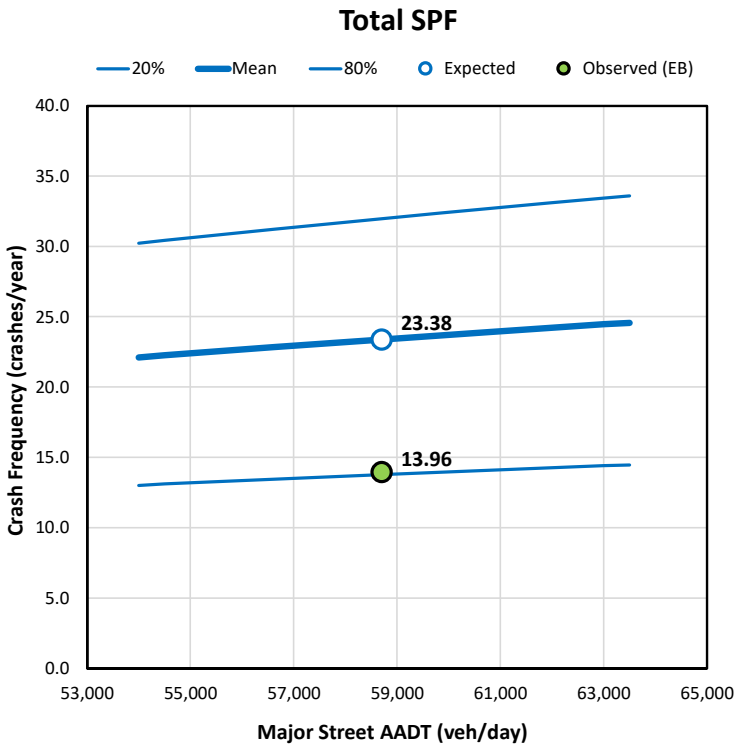
Total	Severe
II	II

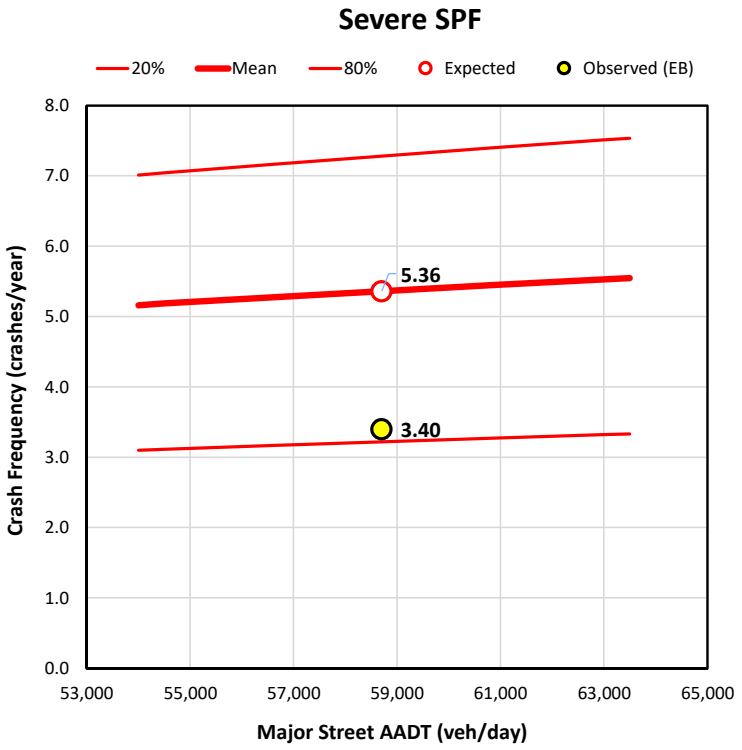
2019-2023 Crash History

PDO	Injury	Fatal	Total
53	15	0	68

K:	0
A:	2
B:	6
C:	7
O:	53

Safety Performance Functions

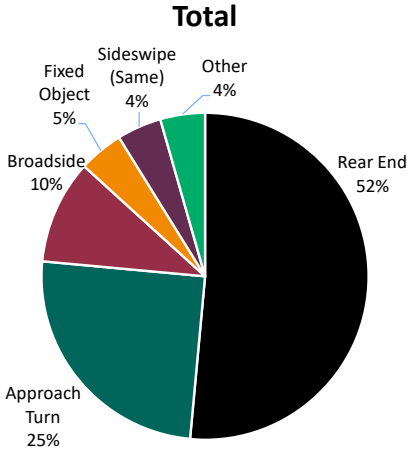


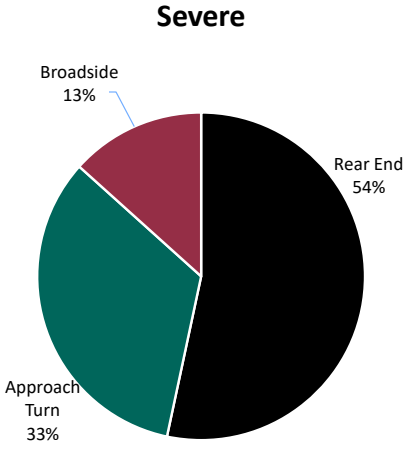


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	17	98.3%
Dawn/Dusk	7	98.9%

Crash Types





S Havana St & E Costilla Ave / E Briarwood Ave

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Havana St	**AADT:**	21,600
Minor Street:	E Costilla Ave / E Briarwood Ave	**AADT:**	5,400

Level of Service of Safety

Total	Severe
II	II

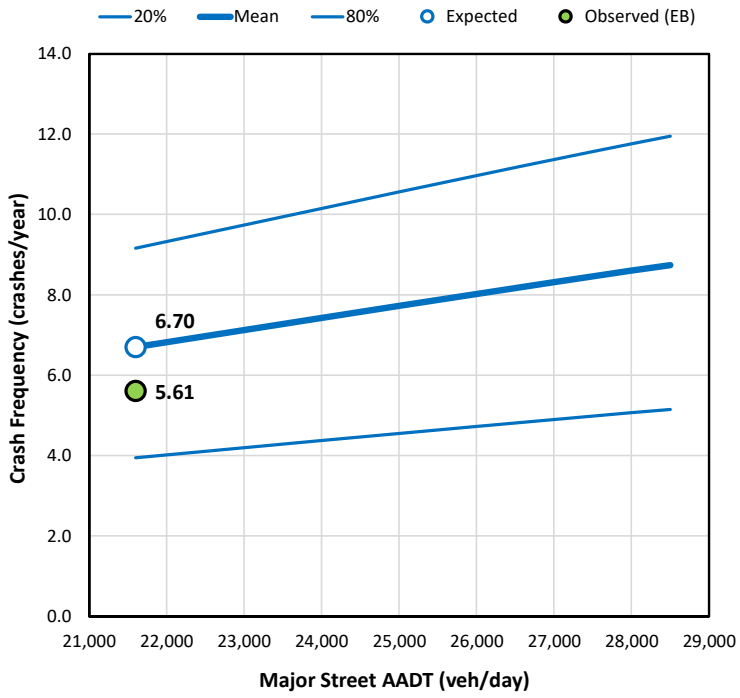
2019-2023 Crash History

PDO	Injury	Fatal	Total
18	9	0	27

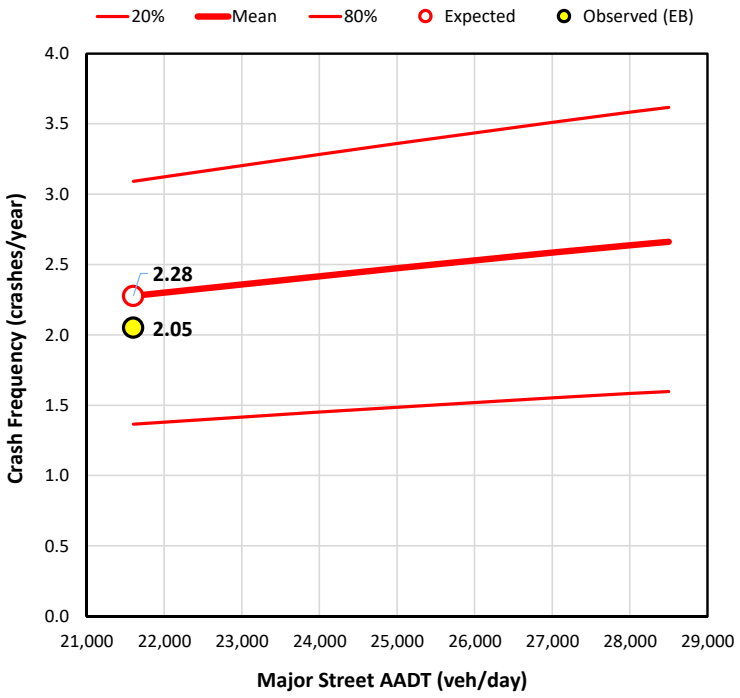
K:	0
A:	1
B:	2
C:	6
O:	18

Safety Performance Functions

Total SPF



Severe SPF

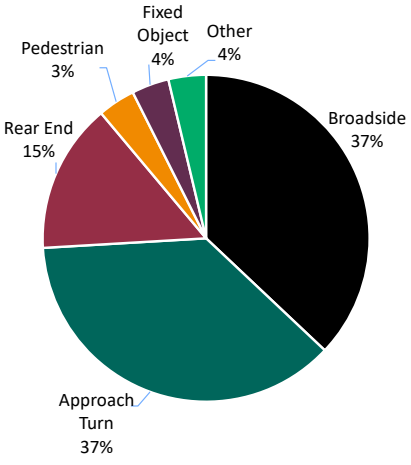


Diagnostic Patterns

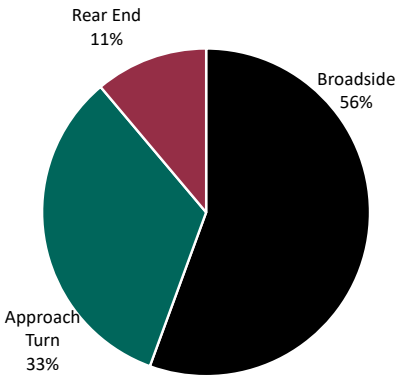
Pattern	# Crashes	Probability
Broadside	10	100.0%
Approach Turn	10	99.7%

Crash Types

Total



Severe



E Arapahoe Rd & S Lima St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	67,200
Minor Street:	S Lima St	**AADT:**	12,800

Level of Service of Safety

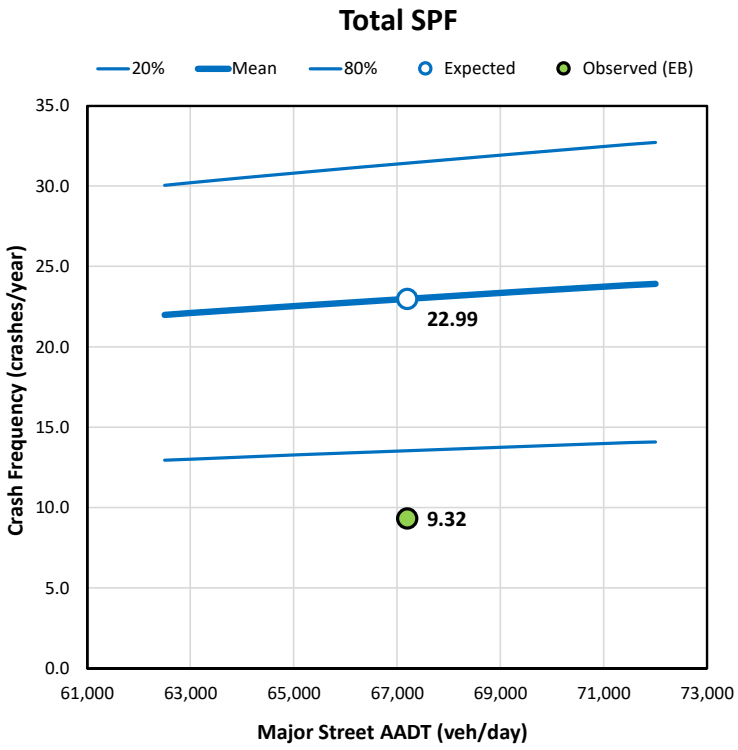
Total	Severe
I	I

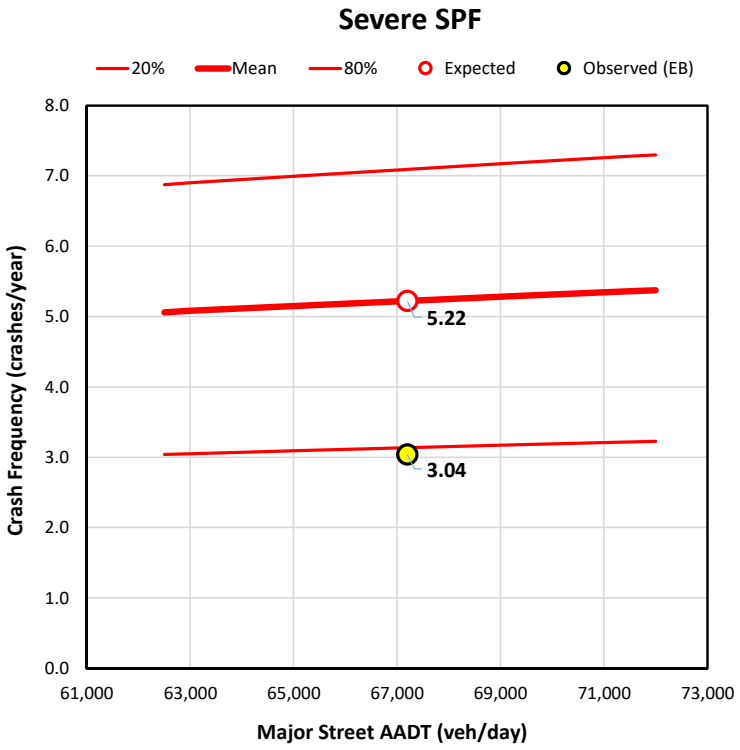
2019-2023 Crash History

PDO	Injury	Fatal	Total
31	13	0	44

K:	0
A:	0
B:	5
C:	8
O:	31

Safety Performance Functions

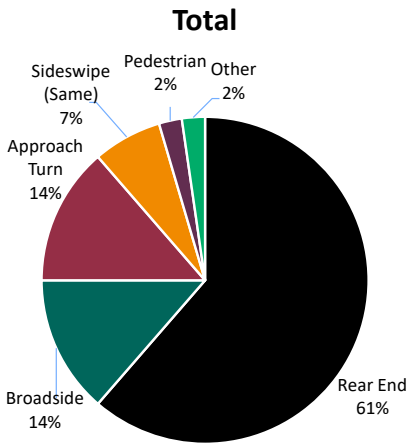


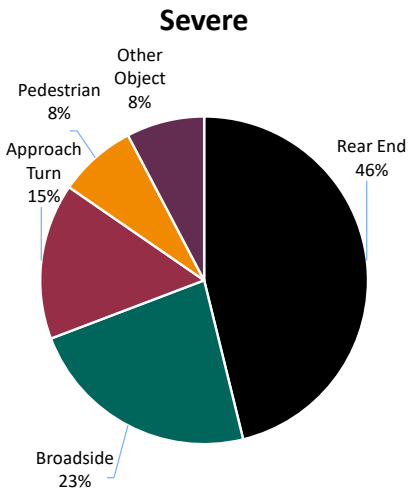


Diagnostic Patterns

Pattern	# Crashes	Probability
No Patterns		

Crash Types





E Easter Ave & S Lima St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Easter Ave	**AADT:**	20,400
Minor Street:	S Lima St	**AADT:**	10,700

Level of Service of Safety

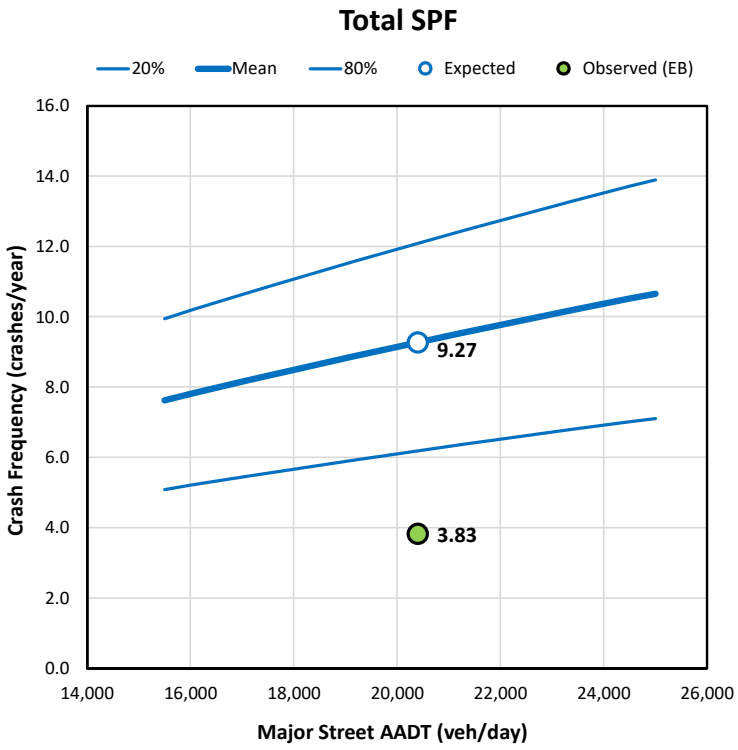
Total	Severe
I	II

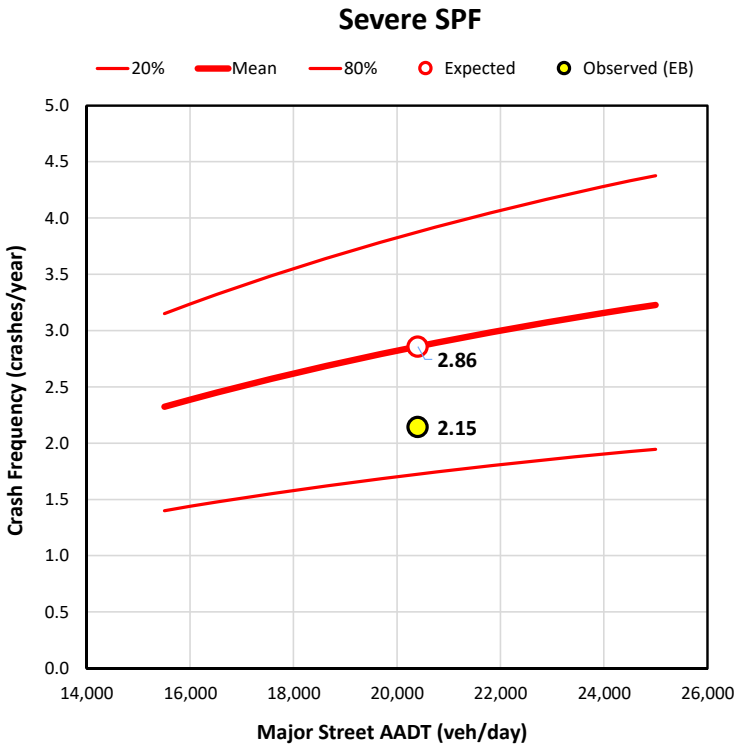
2019-2023 Crash History

PDO	Injury	Fatal	Total
6	9	0	15

K:	0
A:	0
B:	5
C:	4
O:	6

Safety Performance Functions

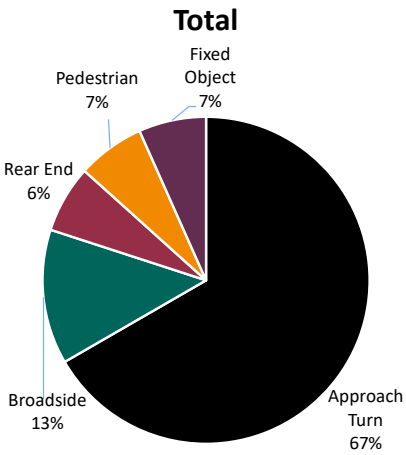


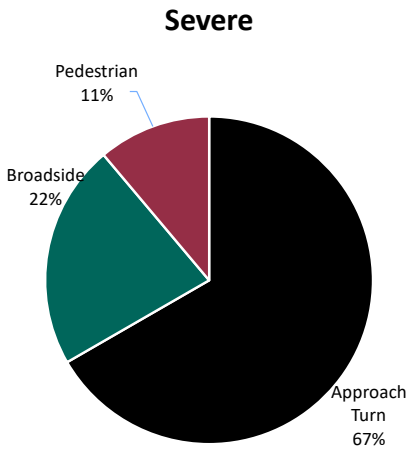


Diagnostic Patterns

Pattern	# Crashes	Probability
INJ	9	99.8%
Approach Turn	10	100.0%

Crash Types





S Peoria St & E Caley Ave

Intersection Characteristics

Classification:	Urban 4-Lane Divided Unsignalized 4-Leg Intersection		
Major Street:	S Peoria St	**AADT:**	11,300
Minor Street:	E Caley Ave	**AADT:**	5,700

Level of Service of Safety

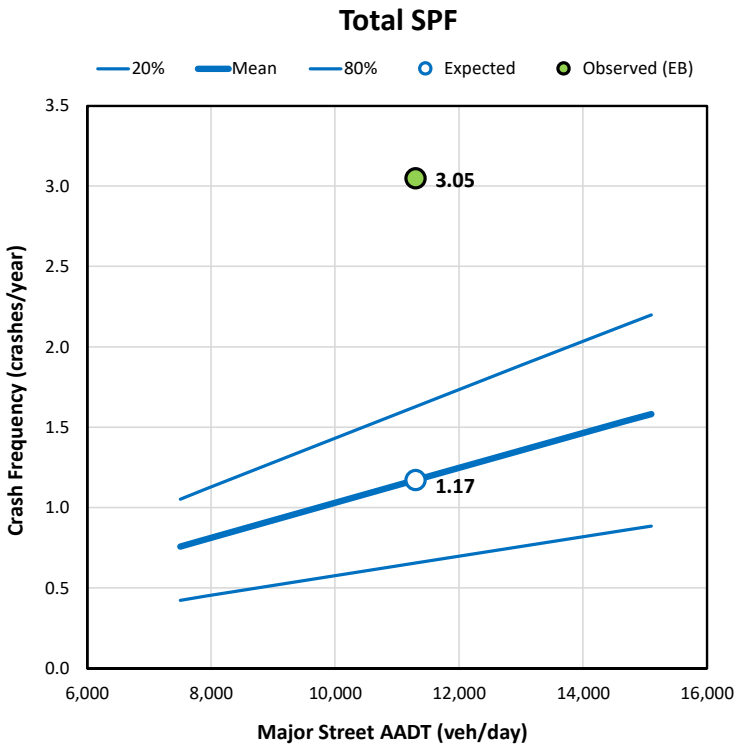
Total	Severe
IV	IV

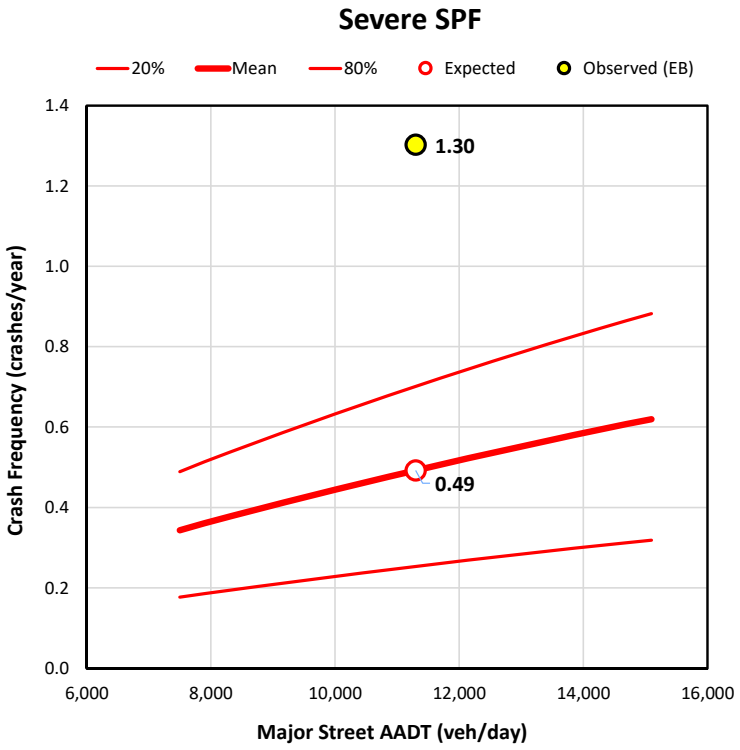
2019-2023 Crash History

PDO	Injury	Fatal	Total
10	8	0	18

K:	0
A:	2
B:	3
C:	3
O:	10

Safety Performance Functions

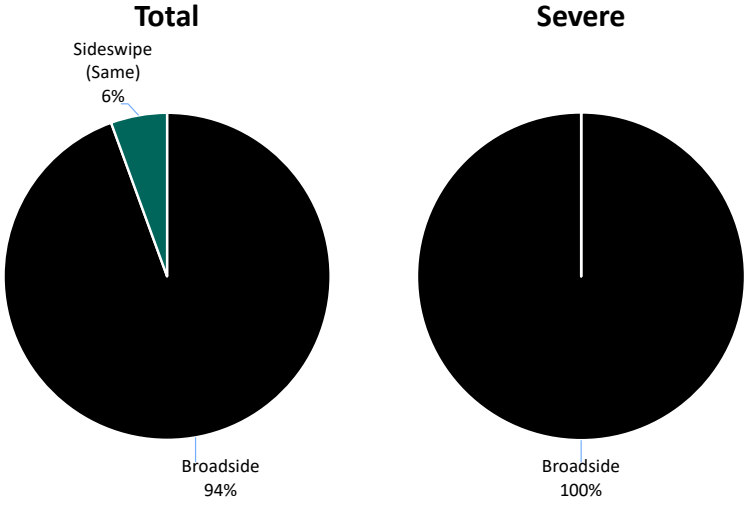




Diagnostic Patterns

Pattern	# Crashes	Probability
2 Vehicles	17	96.5%
Broadside	17	100.0%
Inexperience	5	99.5%

Crash Types



E Arapahoe Rd & S Peoria St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	51,100
Minor Street:	S Peoria St	**AADT:**	10,800

Level of Service of Safety

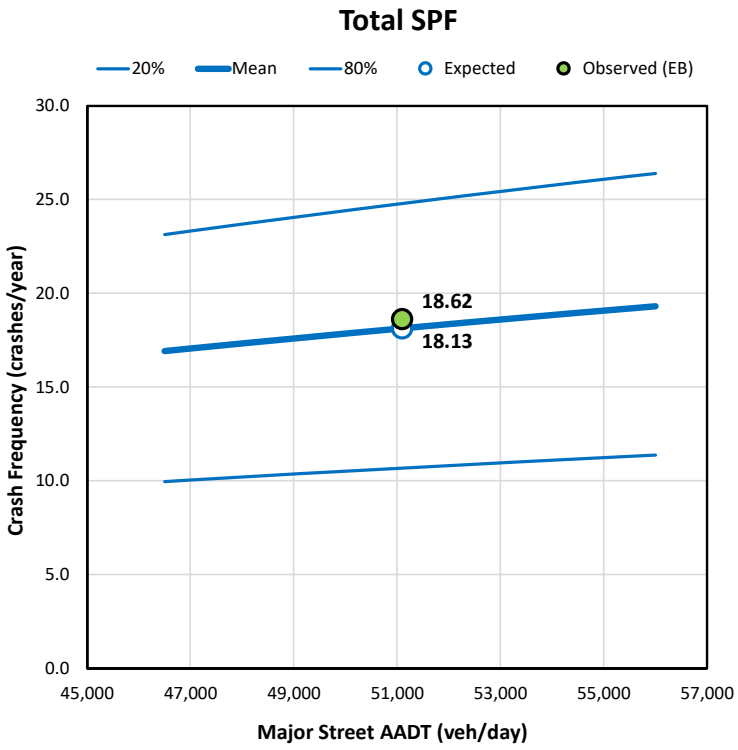
Total	Severe
III	III

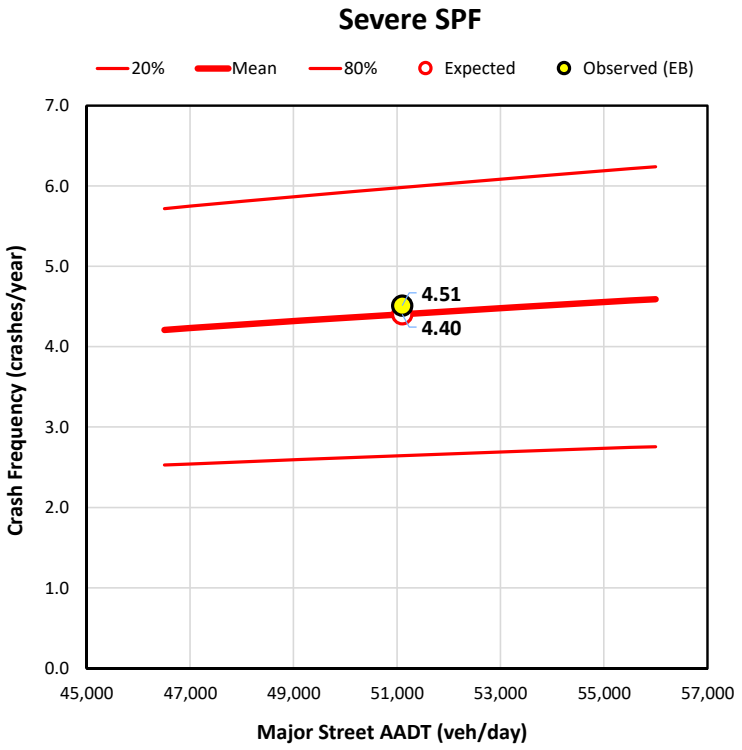
2019-2023 Crash History

PDO	Injury	Fatal	Total
71	22	0	93

K:	0
A:	5
B:	9
C:	8
O:	71

Safety Performance Functions

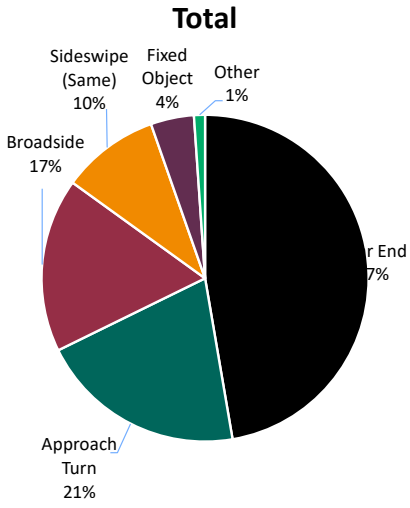


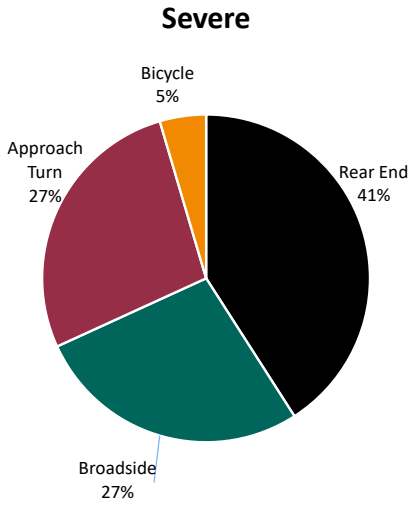


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	16	98.4%

Crash Types





S Peoria St & E Easter Ave

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Peoria St	**AADT:**	29,400
Minor Street:	E Easter Ave	**AADT:**	24,100

Level of Service of Safety

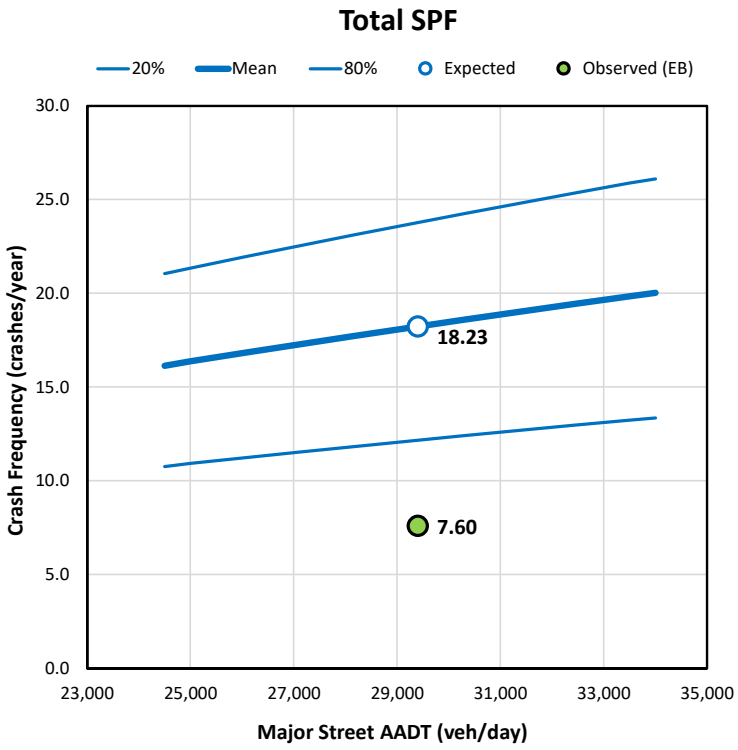
Total	Severe
I	I

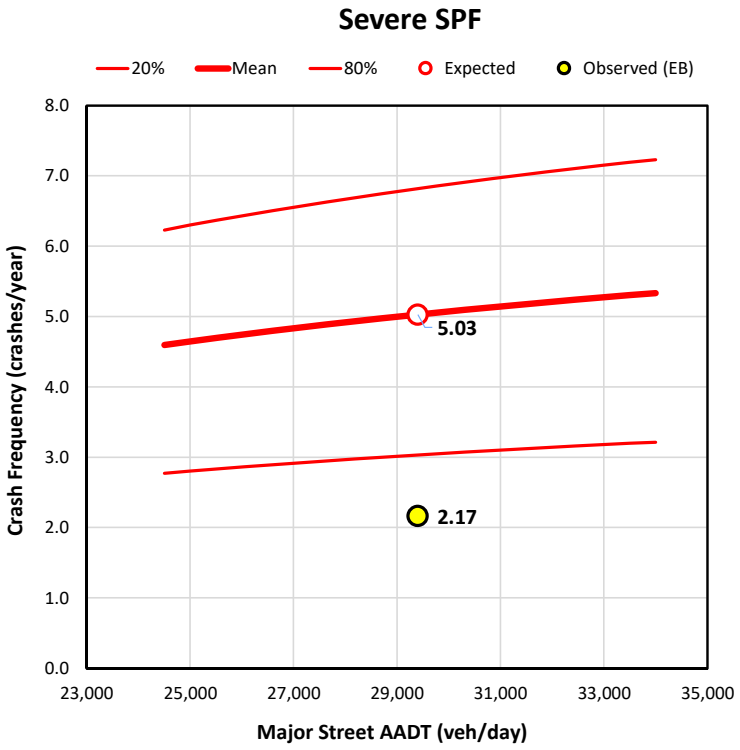
2019-2023 Crash History

PDO	Injury	Fatal	Total
26	8	0	34

K:	0
A:	1
B:	3
C:	4
O:	26

Safety Performance Functions

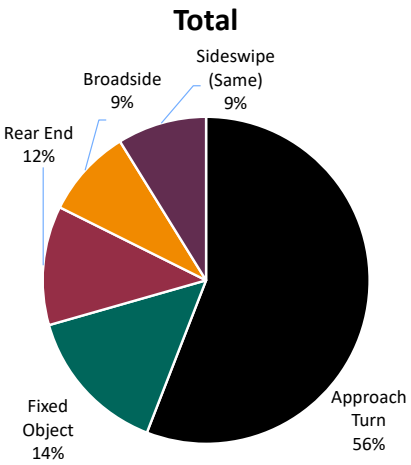


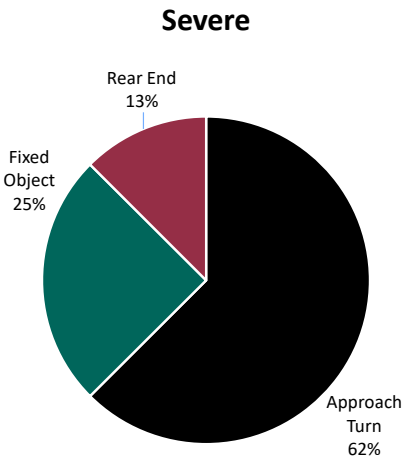


Diagnostic Patterns

Pattern	# Crashes	Probability
3+ Vehicles	6	98.7%
Approach Turn	19	100.0%
Total Fixed Object	5	99.8%
Dawn/Dusk	6	99.9%

Crash Types





E Arapahoe Rd & S Potomac St

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	63,700
Minor Street:	S Potomac St	**AADT:**	17,300

Level of Service of Safety

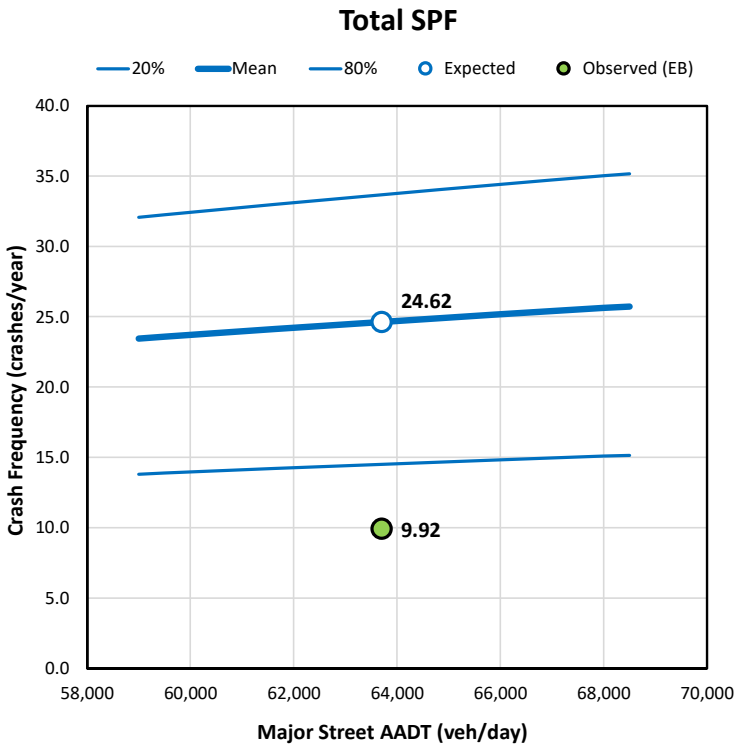
Total	Severe
I	I

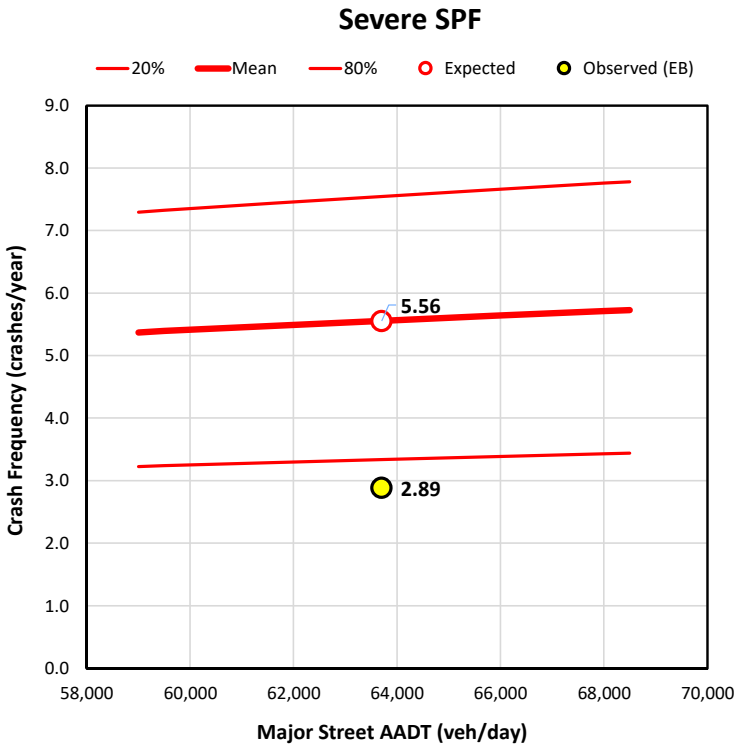
2019-2023 Crash History

PDO	Injury	Fatal	Total
35	12	0	47

K:	0
A:	1
B:	4
C:	7
O:	35

Safety Performance Functions

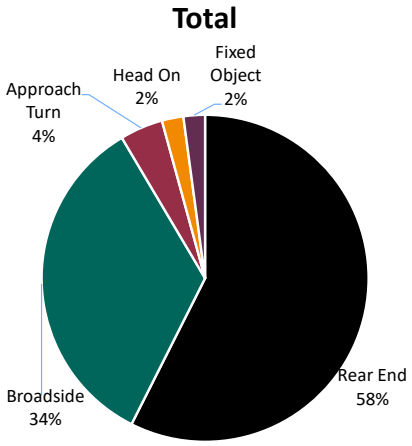


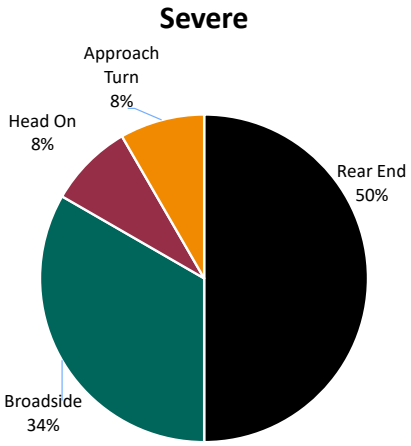


Diagnostic Patterns

Pattern	# Crashes	Probability
2 Vehicles	44	98.7%
Broadside	16	100.0%

Crash Types





E Arapahoe Rd & S Jordan Rd

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Arapahoe Rd	**AADT:**	59,800
Minor Street:	S Jordan Rd	**AADT:**	19,700

Level of Service of Safety

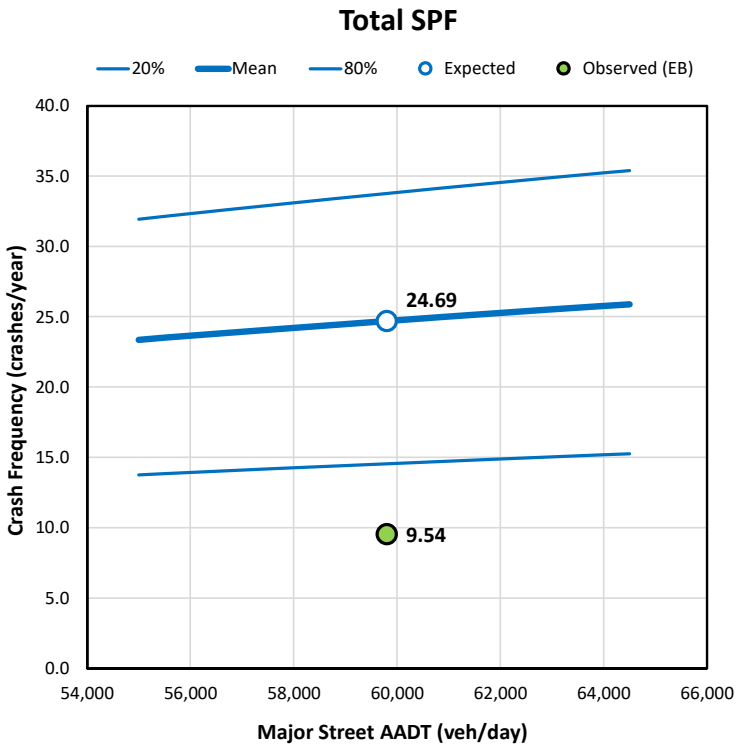
Total	Severe
I	I

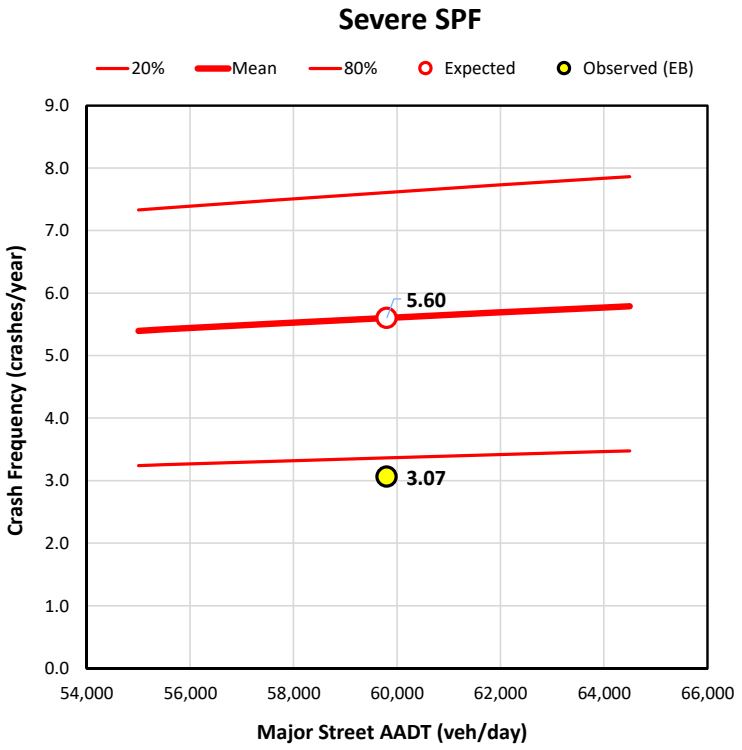
2019-2023 Crash History

PDO	Injury	Fatal	Total
32	13	0	45

K:	0
A:	1
B:	3
C:	9
O:	32

Safety Performance Functions

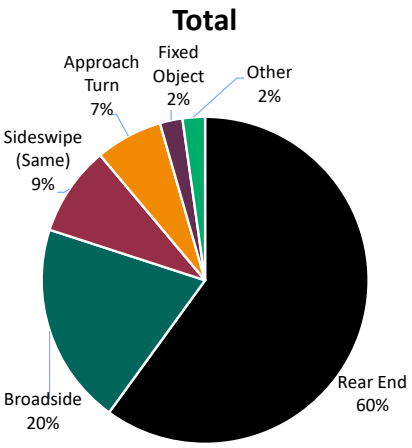


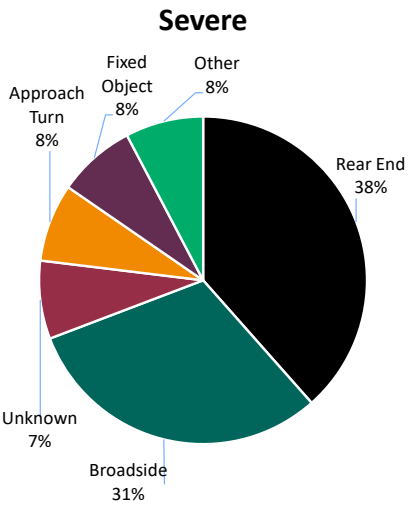


Diagnostic Patterns

Pattern	# Crashes	Probability
2 Vehicles	42	98.3%
Broadside	9	98.4%
Inexperience	8	99.9%

Crash Types





S Parker Rd & E Orchard Rd

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Parker Rd	**AADT:**	70,100
Minor Street:	E Orchard Rd	**AADT:**	24,100

Level of Service of Safety

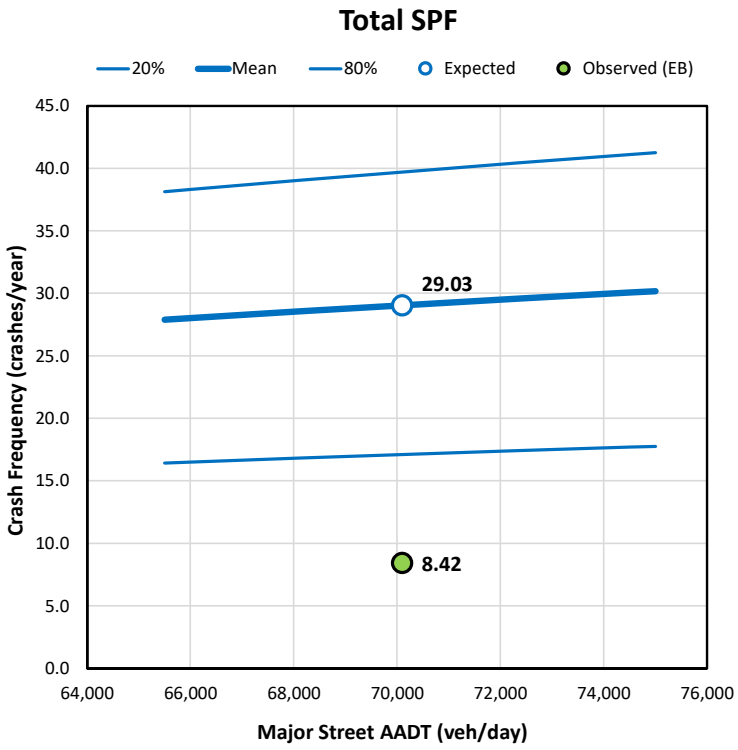
Total	Severe
I	I

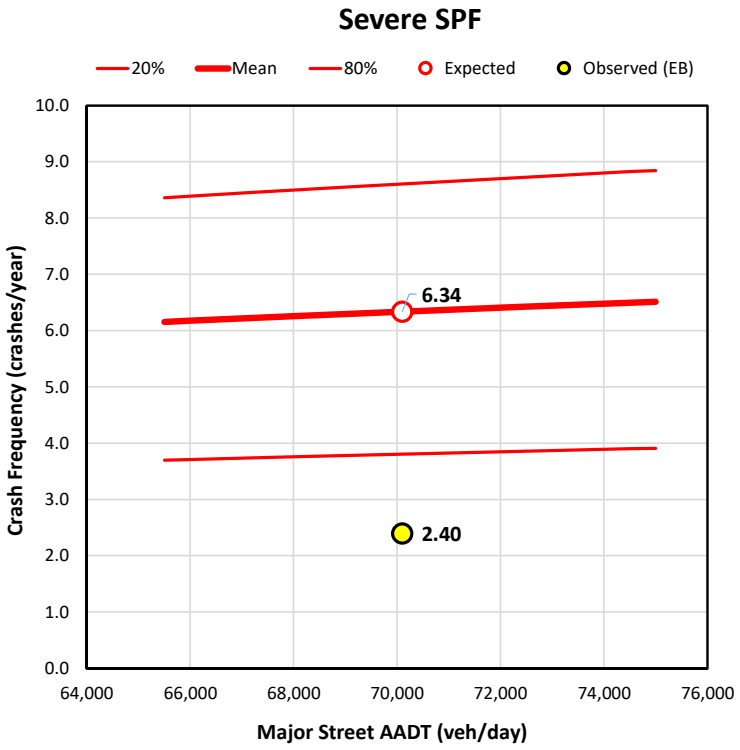
2019-2023 Crash History

PDO	Injury	Fatal	Total
30	9	0	39

K:	0
A:	0
B:	2
C:	7
O:	30

Safety Performance Functions

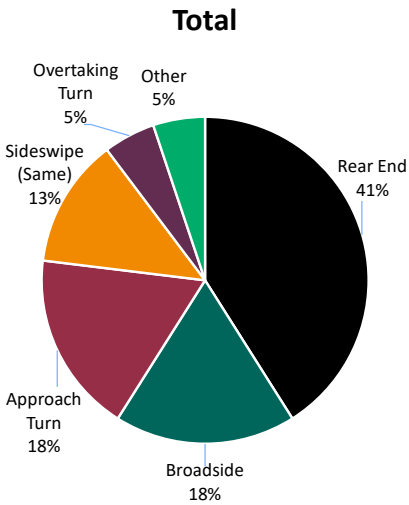


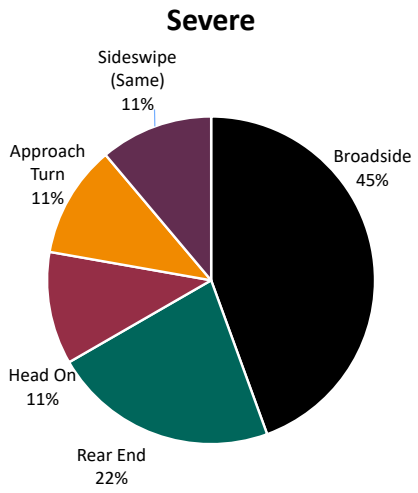


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	7	95.4%

Crash Types





S Parker Rd & E Fair Pl / S Lewiston Wy

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Parker Rd	**AADT:**	68,700
Minor Street:	E Fair Pl / S Lewiston Wy	**AADT:**	17,200

Level of Service of Safety

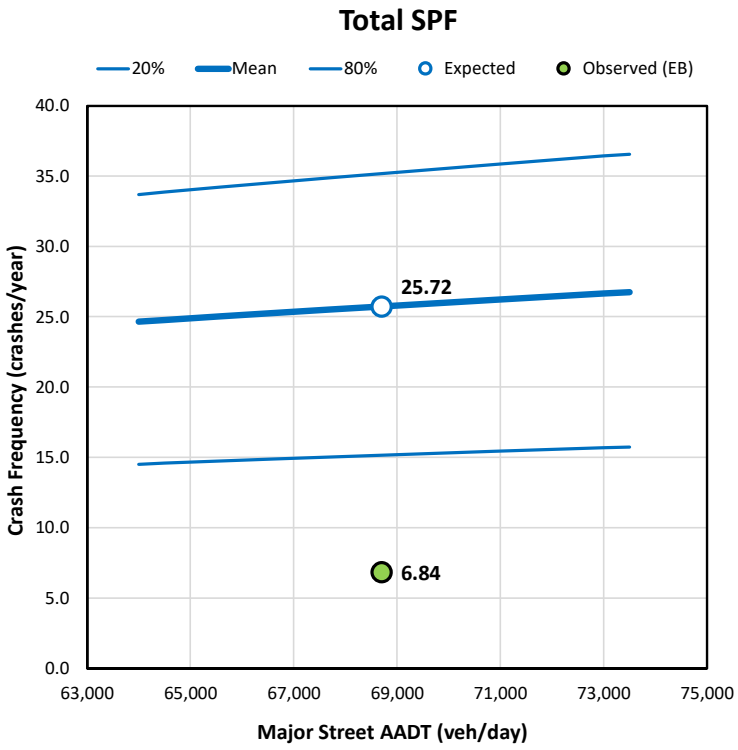
Total	Severe
I	I

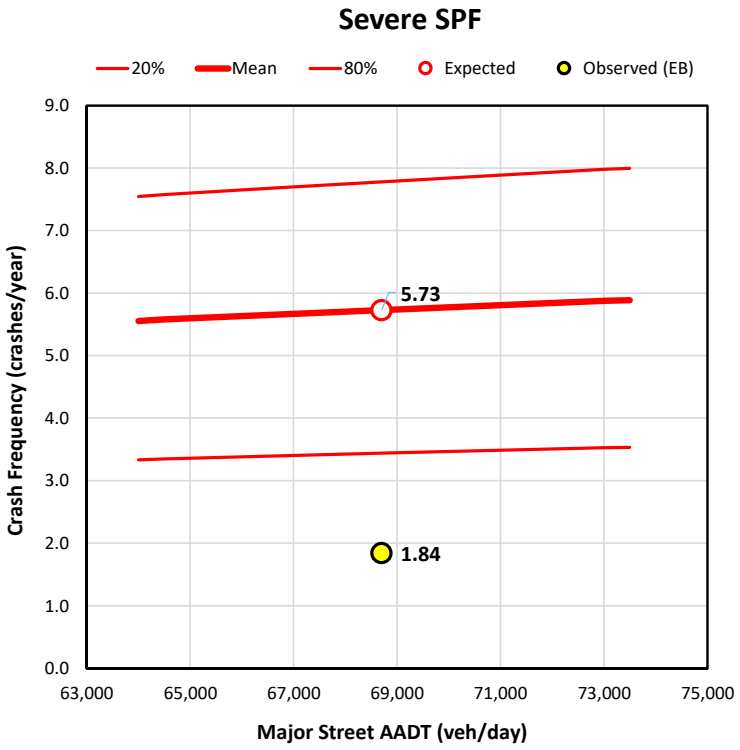
2019-2023 Crash History

PDO	Injury	Fatal	Total
25	6	0	31

K:	0
A:	0
B:	3
C:	3
O:	25

Safety Performance Functions

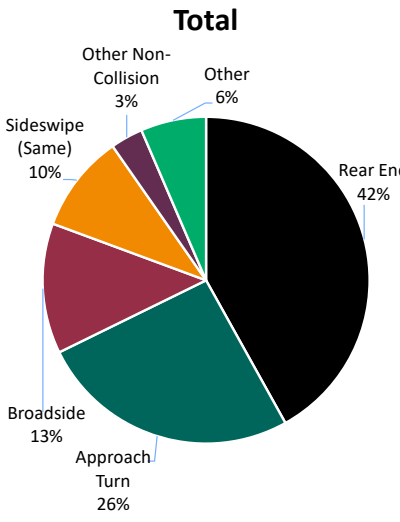


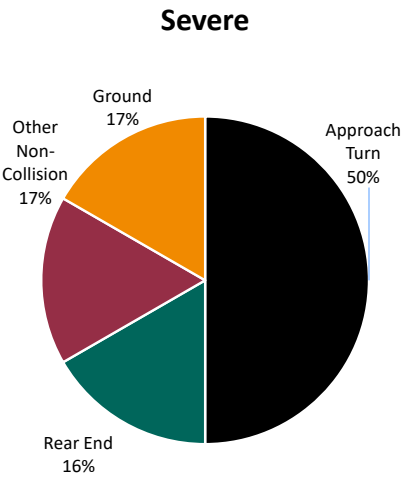


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	8	95.4%

Crash Types





S Parker Rd & E Broncos Pkwy / E Jamison Ave

Intersection Characteristics

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Parker Rd	**AADT:**	45,500
Minor Street:	oncos Pkwy / E Jamison	**AADT:**	17,600

Level of Service of Safety

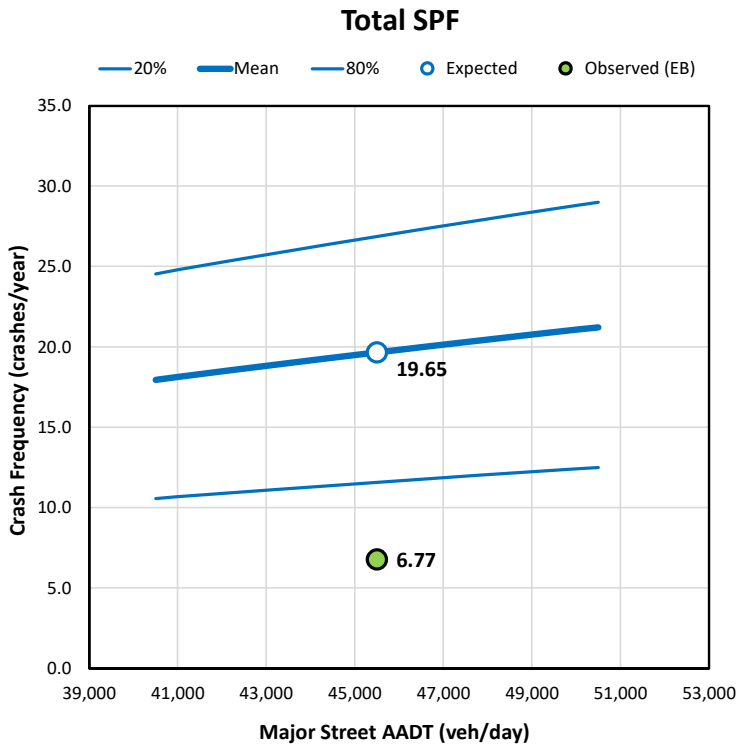
Total	Severe
I	I

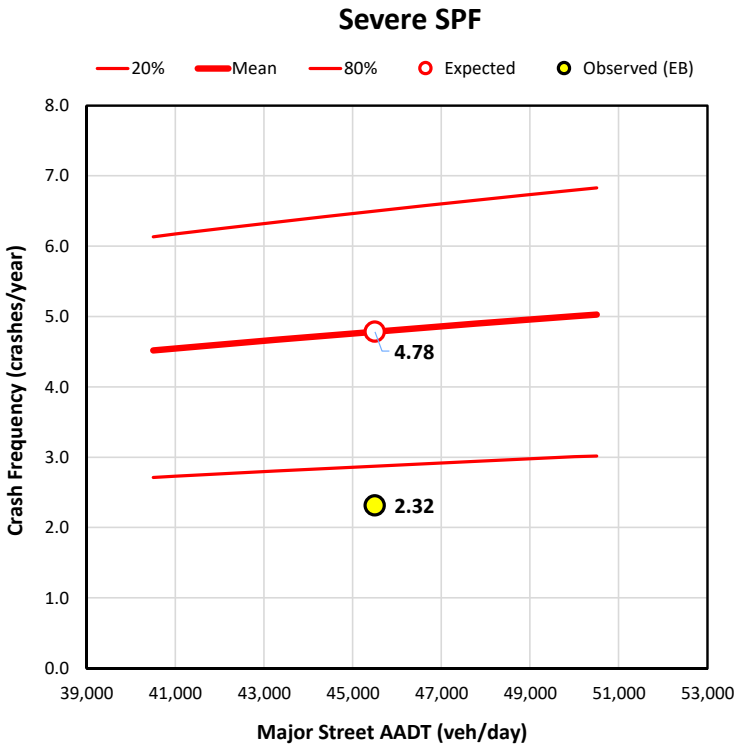
2019-2023 Crash History

PDO	Injury	Fatal	Total
22	9	0	31

K:	0
A:	0
B:	3
C:	6
O:	22

Safety Performance Functions

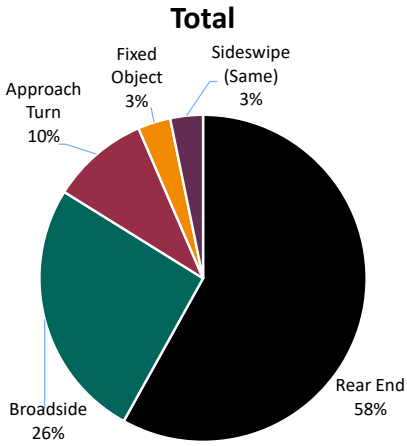


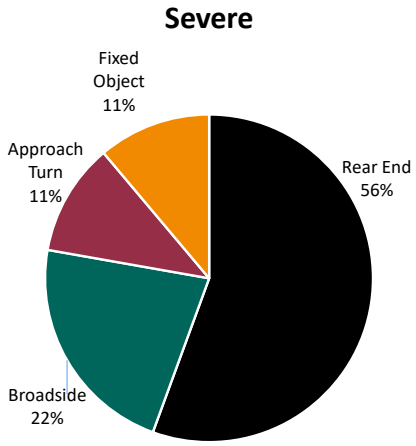


Diagnostic Patterns

Pattern	# Crashes	Probability
3+ Vehicles	6	97.7%
Broadside	8	99.4%

Crash Types





E Orchard Rd & S Buckley Rd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Orchard Rd	**AADT:**	21,500
Minor Street:	S Buckley Rd	**AADT:**	17,300

Level of Service of Safety

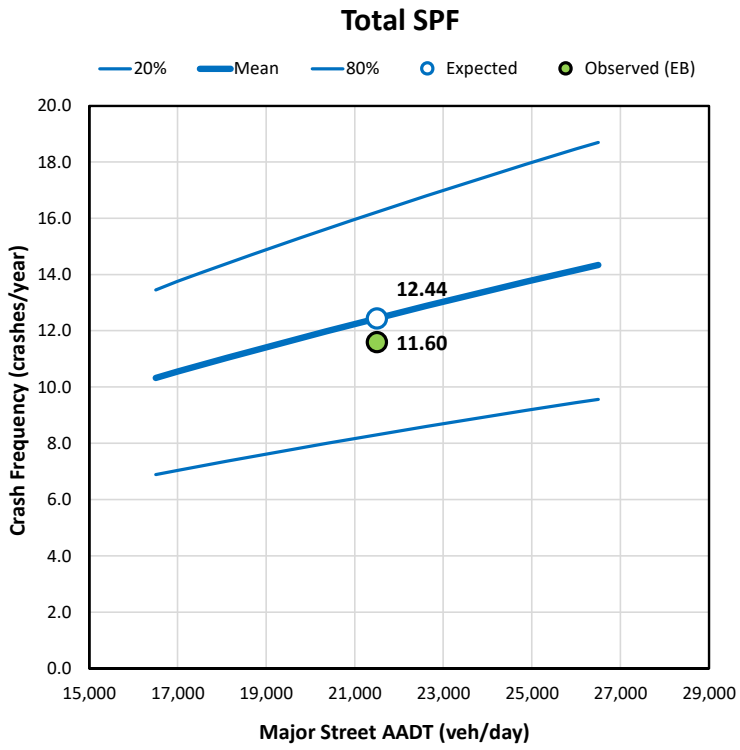
Total	Severe
II	II

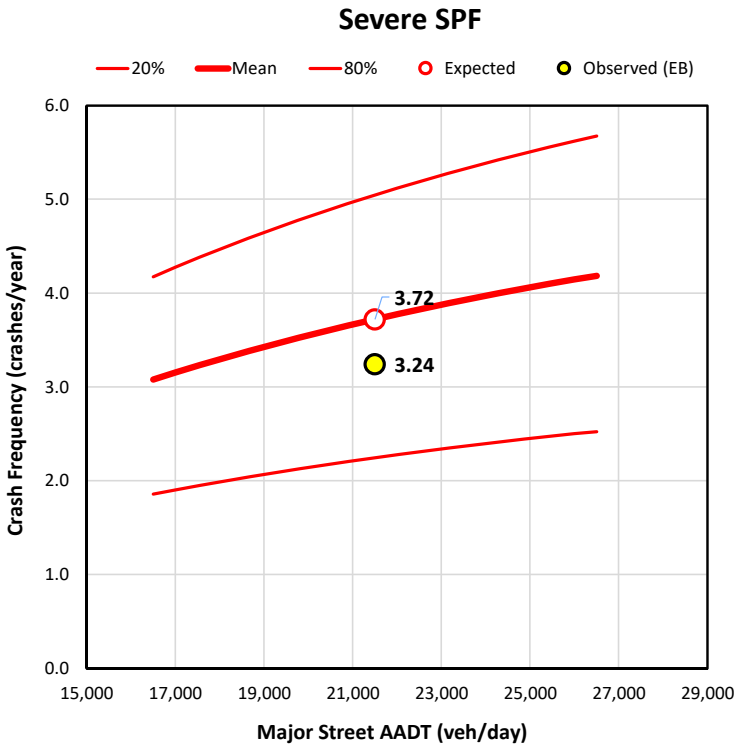
2019-2023 Crash History

PDO	Injury	Fatal	Total
42	15	0	57

K:	0
A:	2
B:	2
C:	11
O:	42

Safety Performance Functions

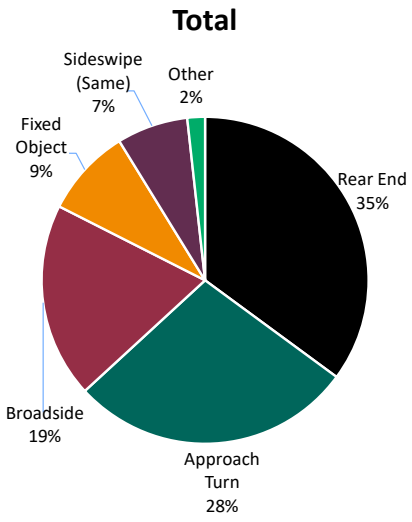


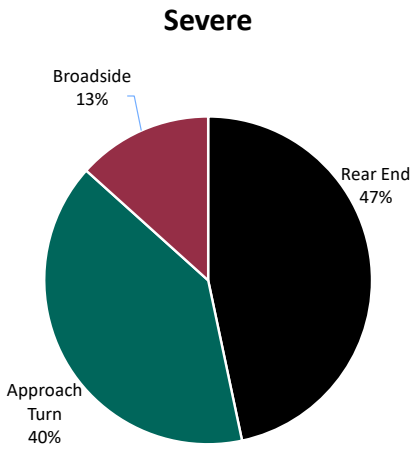


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	16	99.3%
Total Fixed Object	5	97.4%
Dark-Lighted	20	99.2%

Crash Types





E Smoky Hill Rd & S Tower Rd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Smoky Hill Rd	**AADT:**	30,400
Minor Street:	S Tower Rd	**AADT:**	7,800

Level of Service of Safety

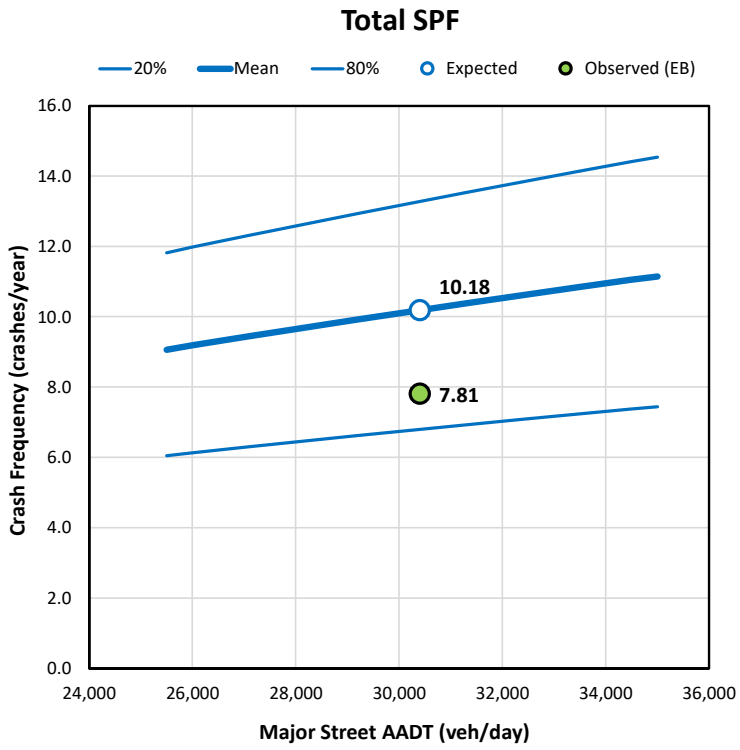
Total	Severe
II	II

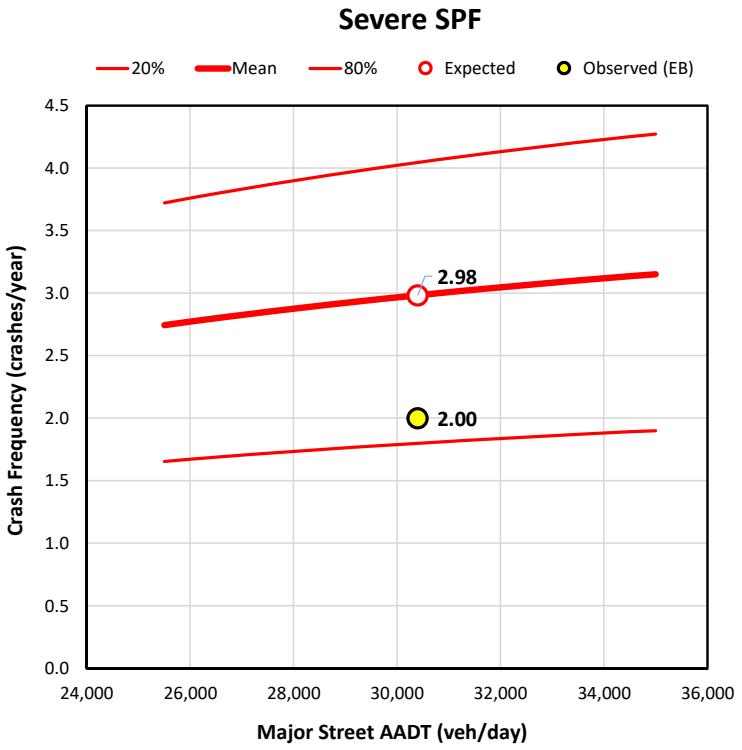
2019-2023 Crash History

PDO	Injury	Fatal	Total
29	8	0	37

K:	0
A:	0
B:	1
C:	7
O:	29

Safety Performance Functions

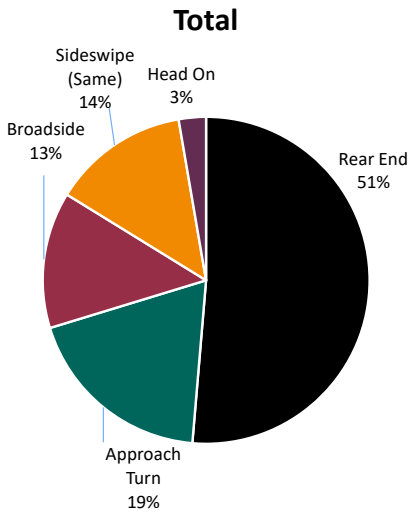


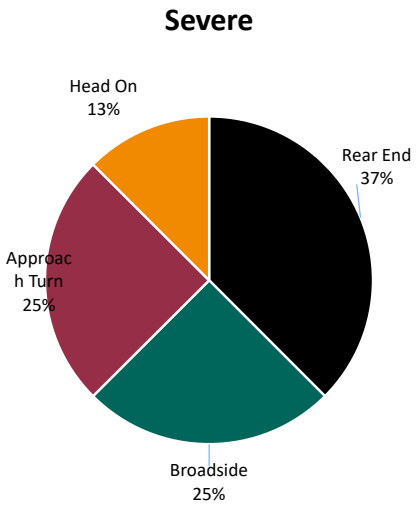


Diagnostic Patterns

Pattern	# Crashes	Probability
2 Vehicles	36	99.2%

Crash Types





E Smoky Hill Rd & S Biscay Cir

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Smoky Hill Rd	**AADT:**	28,200
Minor Street:	S Biscay Cir	**AADT:**	2,800

Level of Service of Safety

Total	Severe
I	II

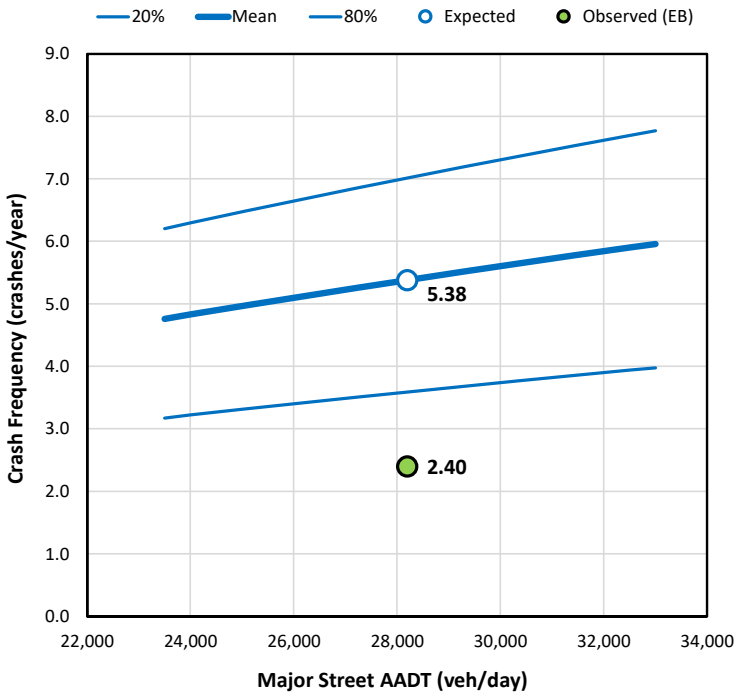
2019-2023 Crash History

PDO	Injury	Fatal	Total
4	3	1	8

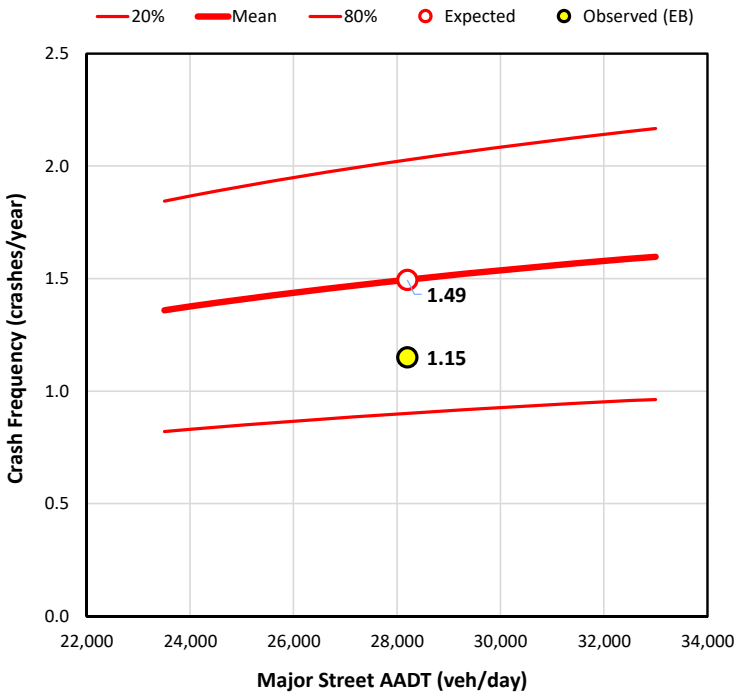
K:	1
A:	0
B:	0
C:	3
O:	4

Safety Performance Functions

Total SPF



Severe SPF

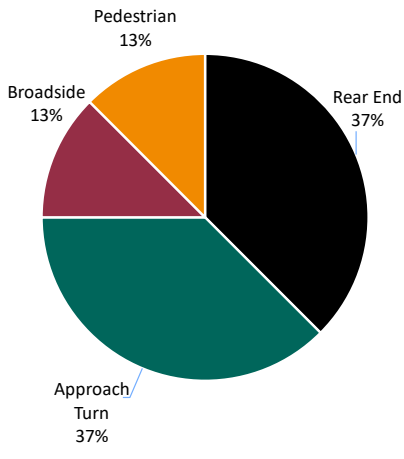


Diagnostic Patterns

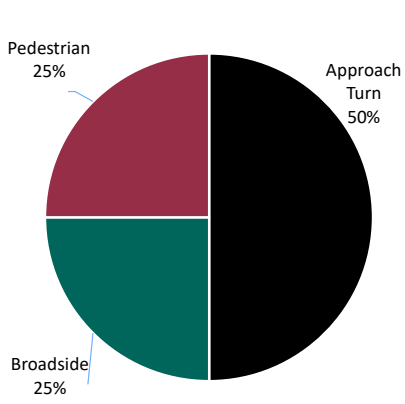
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



S Reservoir Rd / S Himalaya St & S Himalaya St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 3-Leg Intersection		
Major Street:	S Reservoir Rd / S Himalaya St	**AADT:**	18,500
Minor Street:	S Himalaya St	**AADT:**	3,900

Level of Service of Safety

Total	Severe
I	III

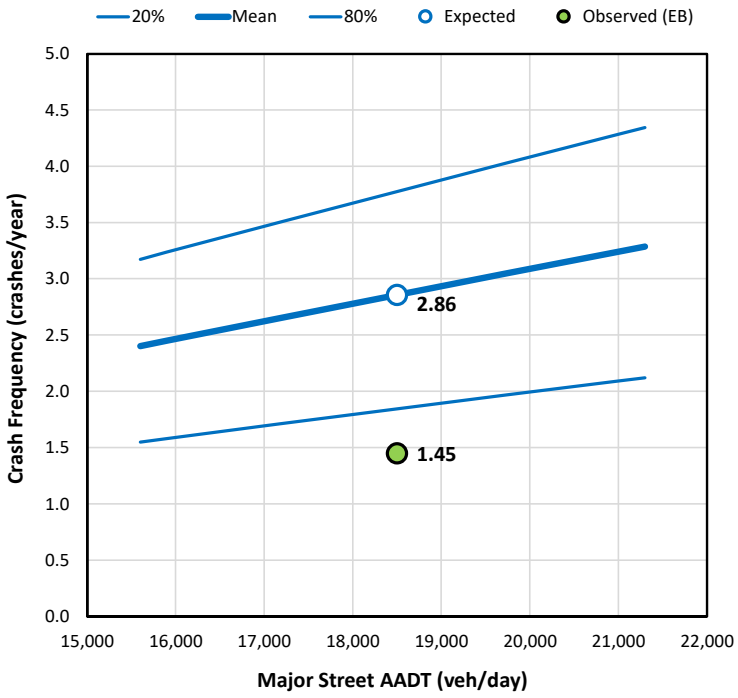
2019-2023 Crash History

PDO	Injury	Fatal	Total
1	2	1	4

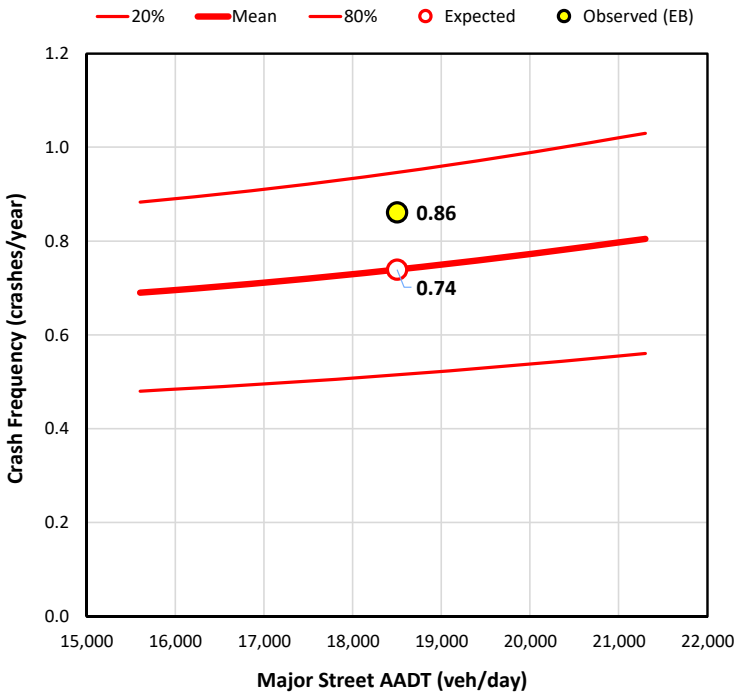
K:	1
A:	0
B:	1
C:	1
O:	1

Safety Performance Functions

Total SPF



Severe SPF

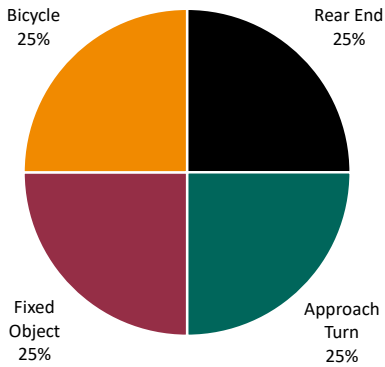


Diagnostic Patterns

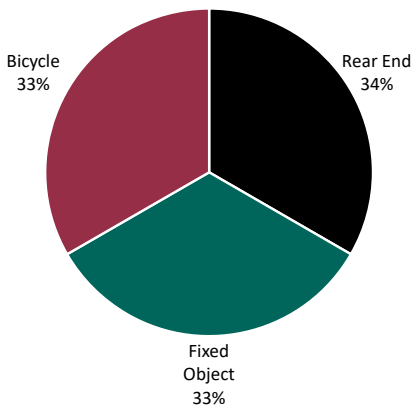
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



S Himalaya St & E Chenango Dr / E Chenango Ave

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	S Himalaya St	**AADT:**	17,500
Minor Street:	E Chenango Dr / E Chenango Ave	**AADT:**	7,800

Level of Service of Safety

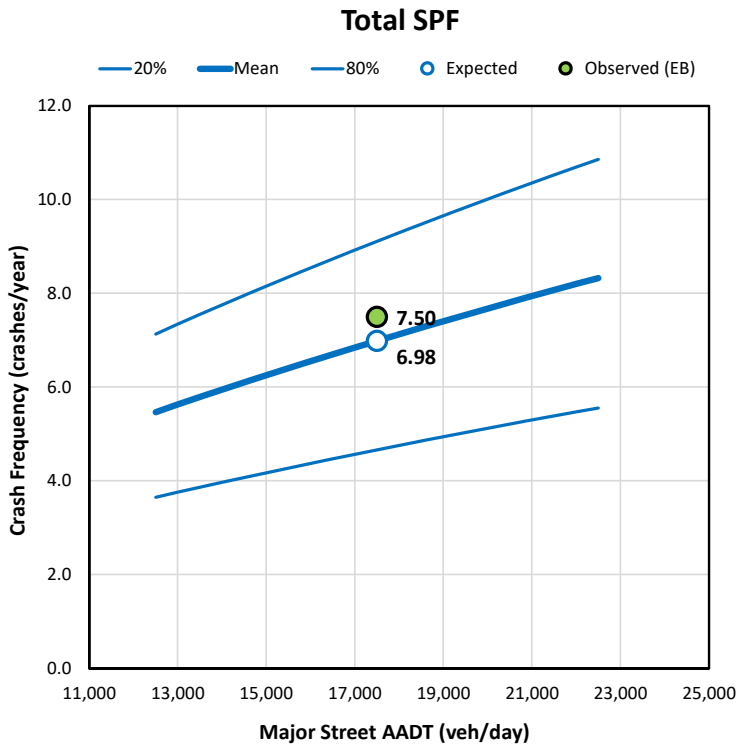
Total	Severe
III	III

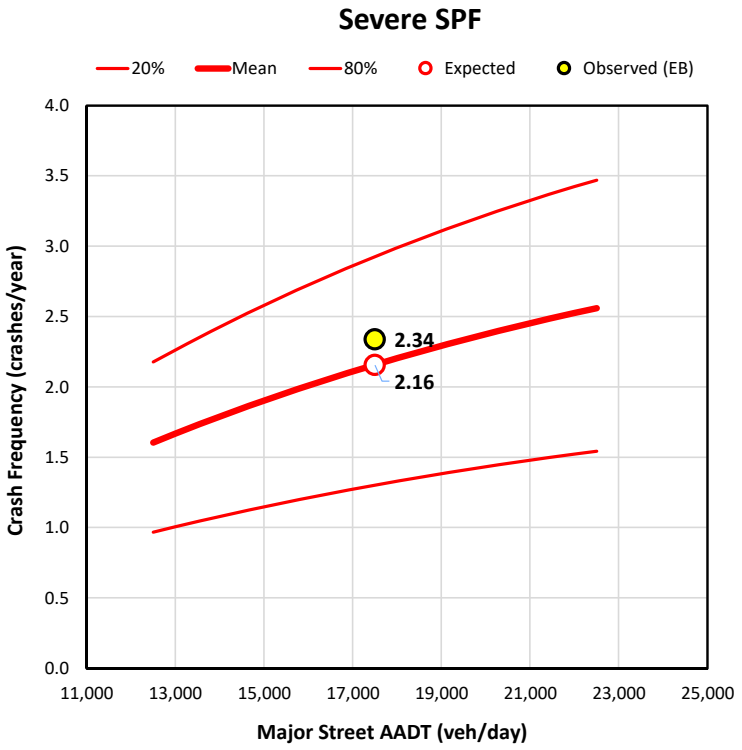
2019-2023 Crash History

PDO	Injury	Fatal	Total
26	11	0	37

K:	0
A:	1
B:	4
C:	6
O:	26

Safety Performance Functions

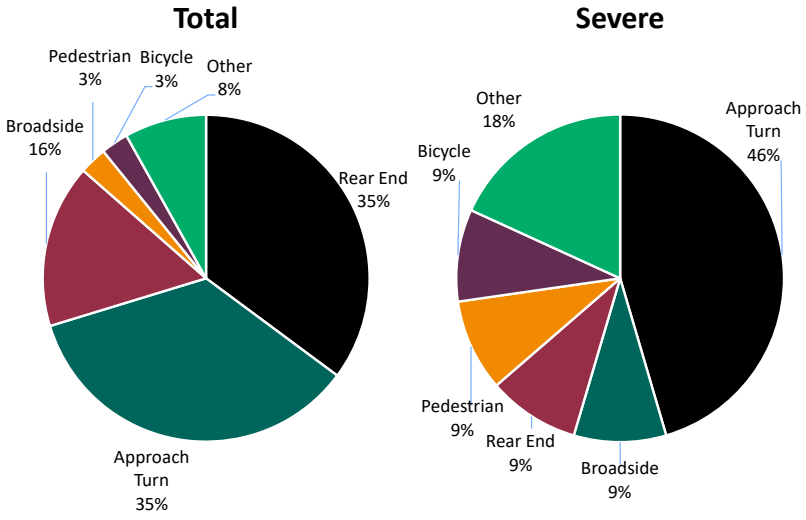




Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	13	99.9%
Inexperience	6	96.8%

Crash Types



E Smoky Hill Rd & S Himalaya St / E Orchard Rd

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Smoky Hill Rd	**AADT:**	30,900
Minor Street:	S Himalaya St / E Orchard Rd	**AADT:**	12,600

Level of Service of Safety

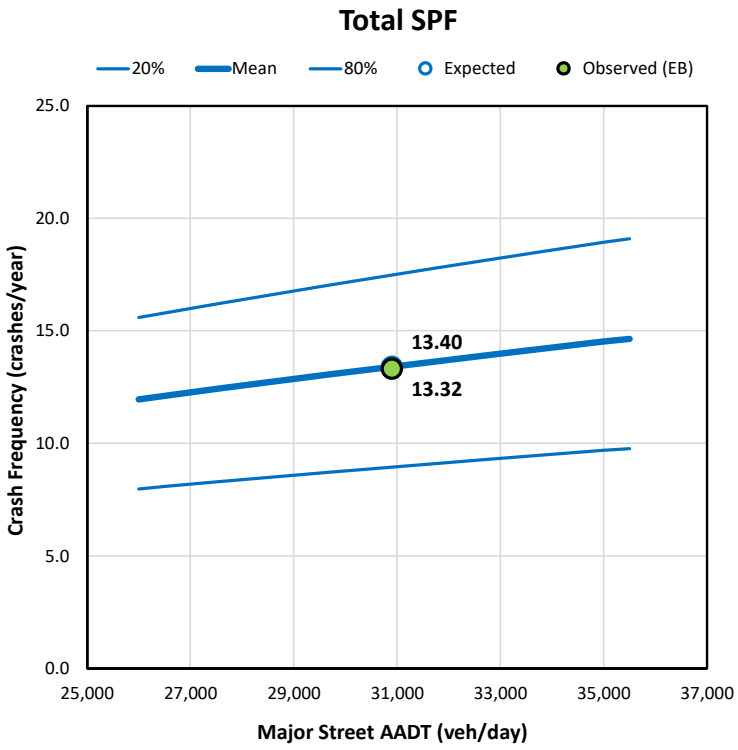
Total	Severe
II	III

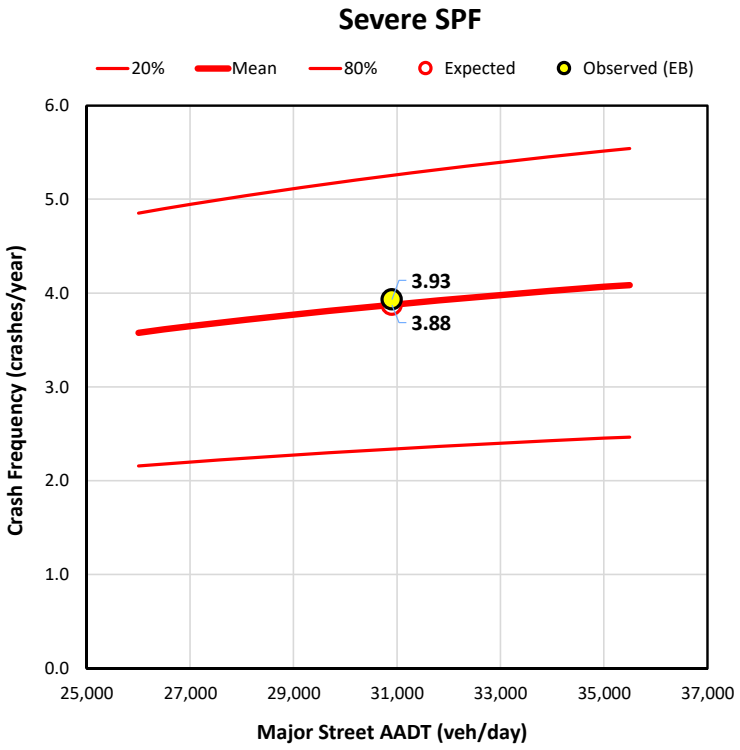
2019-2023 Crash History

PDO	Injury	Fatal	Total
47	19	0	66

K:	0
A:	1
B:	6
C:	12
O:	47

Safety Performance Functions

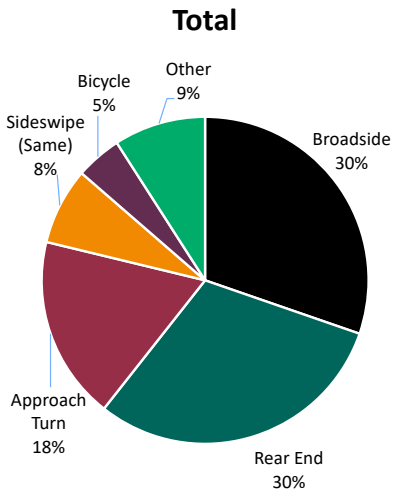


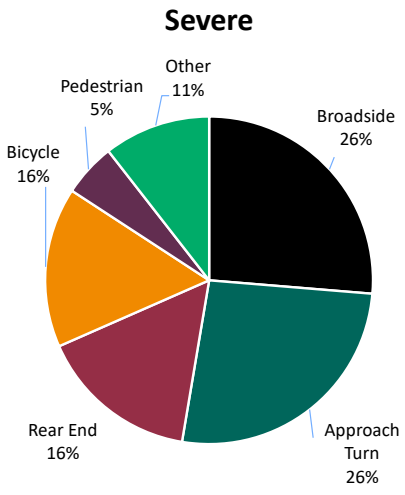


Diagnostic Patterns

Pattern	# Crashes	Probability
1 Vehicle	7	98.8%
Broadside	20	100.0%
Inexperience	9	95.3%

Crash Types





E Smoky Hill Rd & S Picadilly St / S Liverpool St

Intersection Characteristics

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection		
Major Street:	E Smoky Hill Rd	**AADT:**	29,100
Minor Street:	S Picadilly St / S Liverpool St	**AADT:**	15,000

Level of Service of Safety

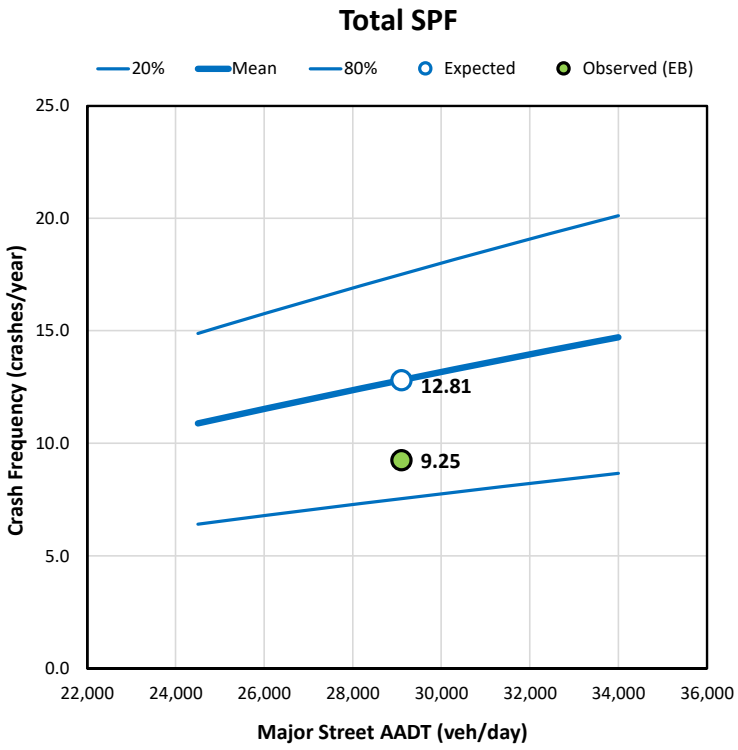
Total	Severe
II	II

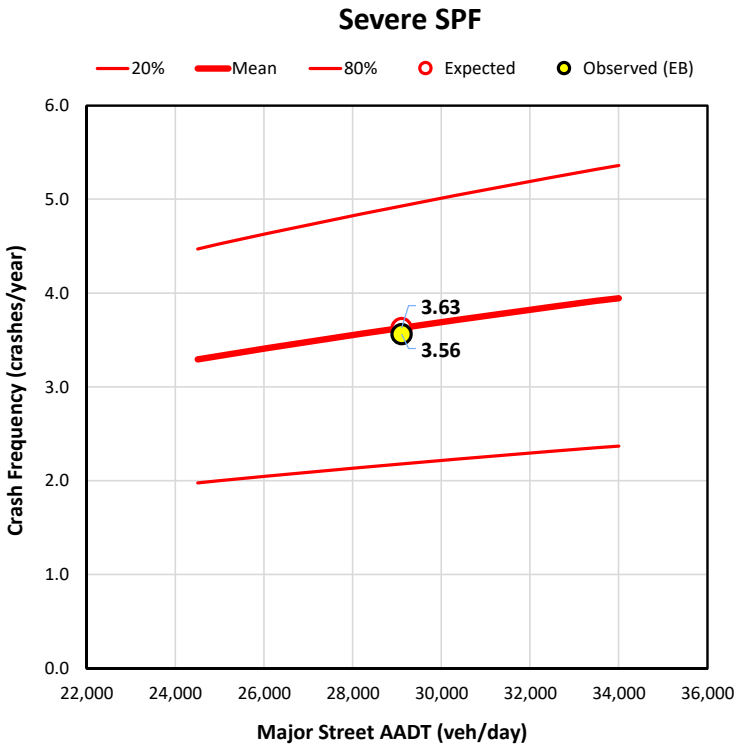
2019-2023 Crash History

PDO	Injury	Fatal	Total
27	17	0	44

K:	0
A:	5
B:	4
C:	8
O:	27

Safety Performance Functions

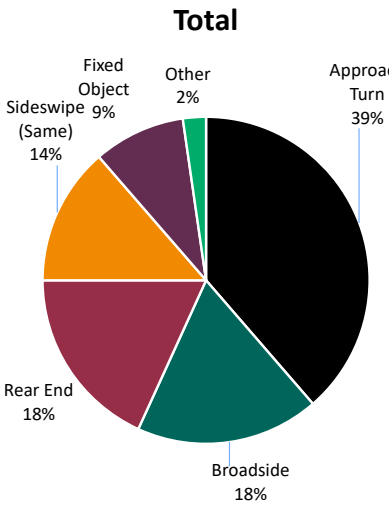


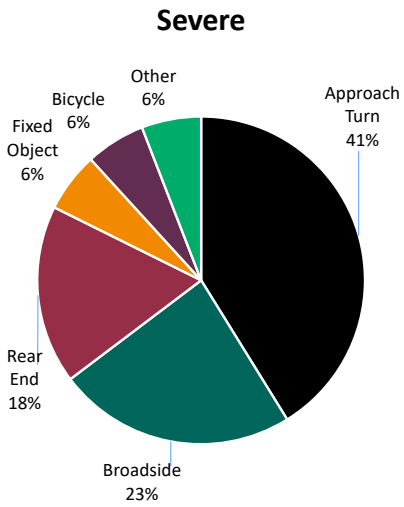


Diagnostic Patterns

Pattern	# Crashes	Probability
Approach Turn	17	100.0%
Dawn/Dusk	7	99.9%

Crash Types





S Broadway

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	n.o. E Highline Cir (City Limits)	**Len:**	0.34
To Street:	s.o. E Costilla Ave (City Limits)	**AADT:**	34,400

Level of Service of Safety

Total	Severe
II	III

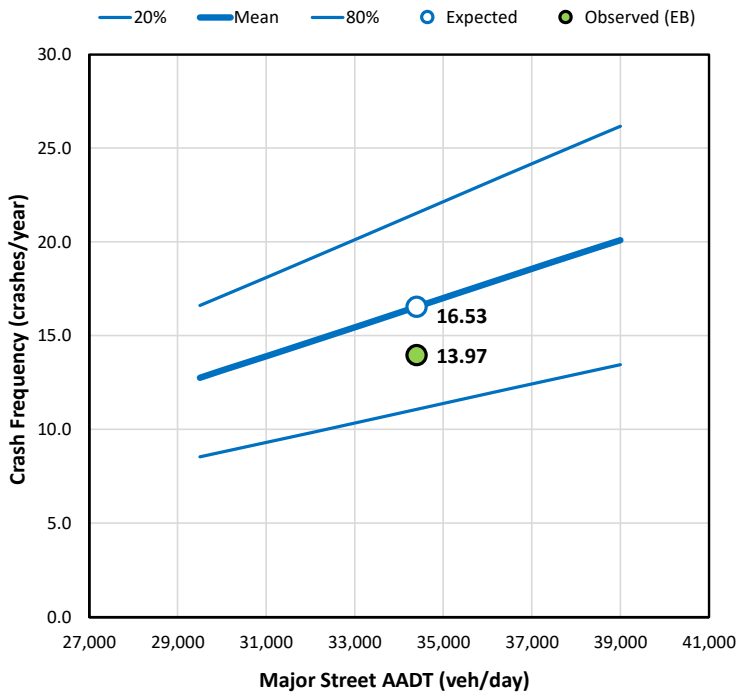
2019-2023 Crash History

PDO	Injury	Fatal	Total
15	8	0	23
(44.6 per mile)	(23.8 per mile)	(0 per mile)	(68.4 per mile)

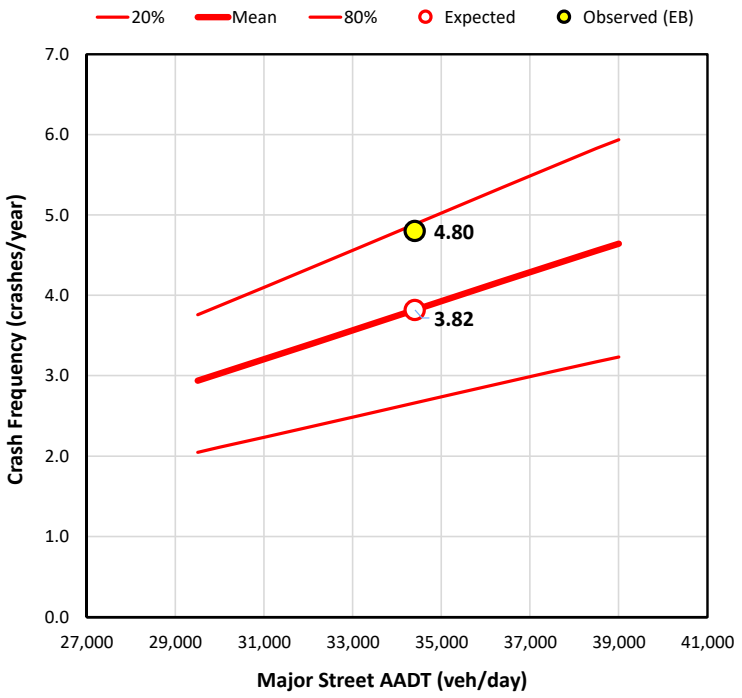
K:	0
A:	2
B:	1
C:	5
O:	15

Safety Performance Functions

Total SPF



Severe SPF

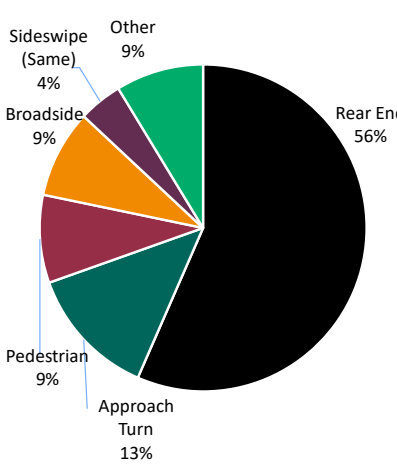


Diagnostic Patterns

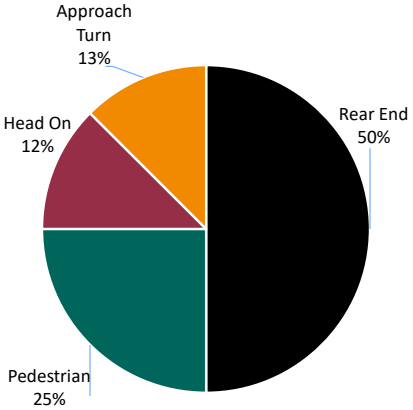
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



S University Blvd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Cresthill Ave	**Len:**	1.01
To Street:	E Commons Ave / E Easter Ave	**AADT:**	33,100

Level of Service of Safety

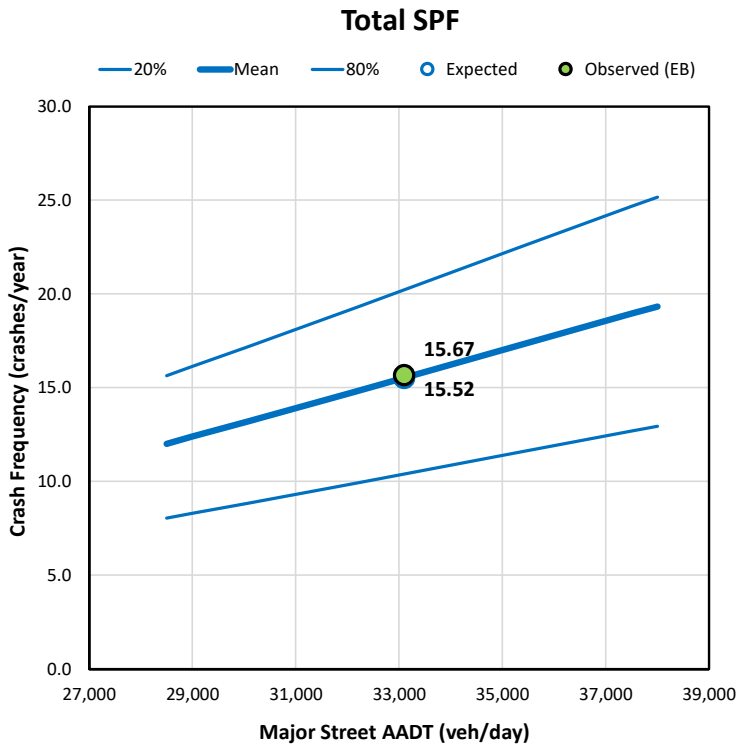
Total	Severe
III	III

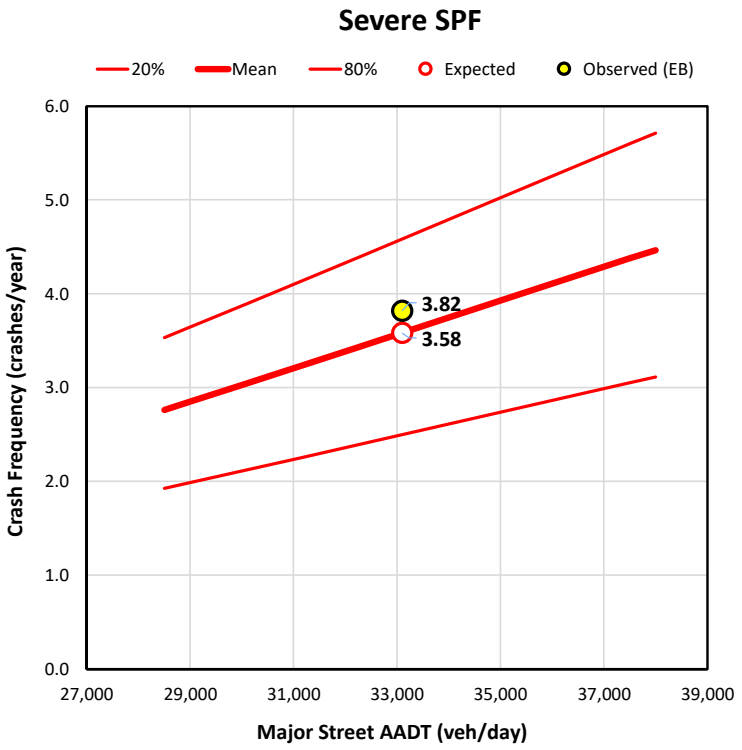
2019-2023 Crash History

PDO	Injury	Fatal	Total
61	18	0	79
(60.2 per mile)	(17.8 per mile)	(0 per mile)	(77.9 per mile)

K:	0
A:	1
B:	7
C:	10
O:	61

Safety Performance Functions

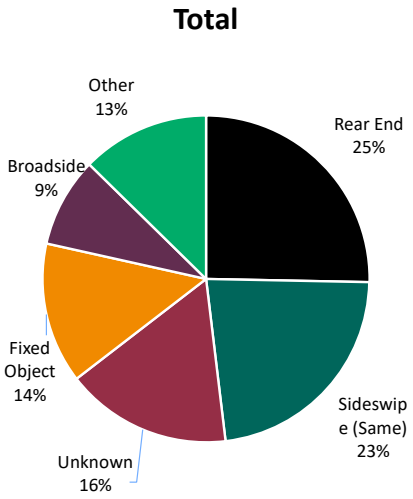


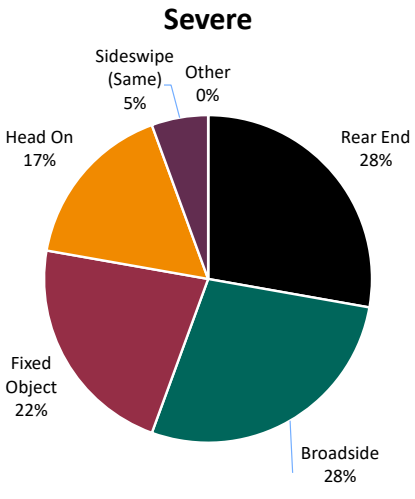


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	7	100.0%
Head On	7	100.0%
Dawn/Dusk	6	96.2%

Crash Types





E Arapahoe Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	S Race St	**Len:**	0.25
To Street:	S University Blvd	**AADT:**	26,400

Level of Service of Safety

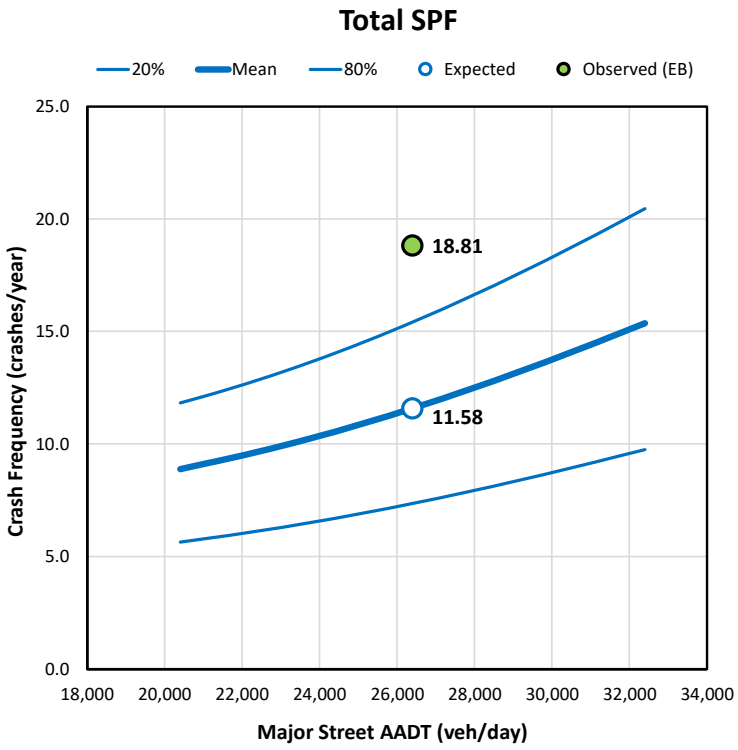
Total	Severe
IV	IV

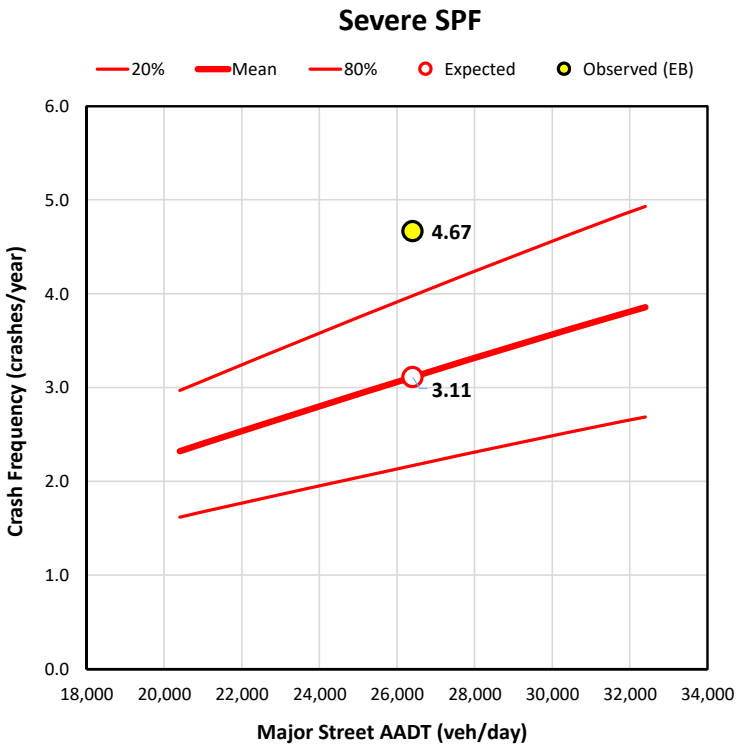
2019-2023 Crash History

PDO	Injury	Fatal	Total
18	6	0	24
(72.6 per mile)	(24.2 per mile)	(0 per mile)	(96.8 per mile)

K:	0
A:	1
B:	2
C:	3
O:	18

Safety Performance Functions

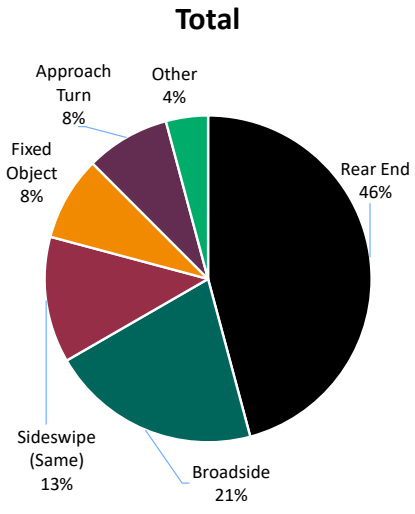


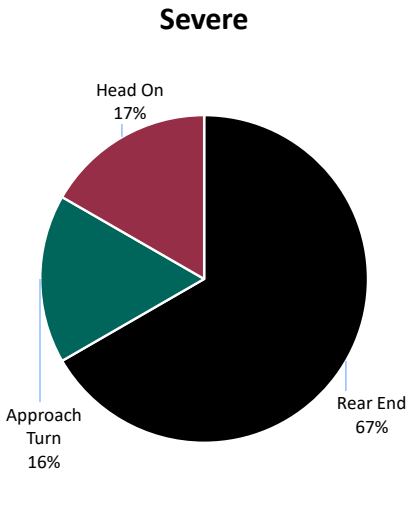


Diagnostic Patterns

Pattern	# Crashes	Probability
Broadside	5	100.0%

Crash Types





S University Blvd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Knolls Wy	**Len:**	1.00
To Street:	E Otero Cir	**AADT:**	30,800

Level of Service of Safety

Total	Severe
II	II

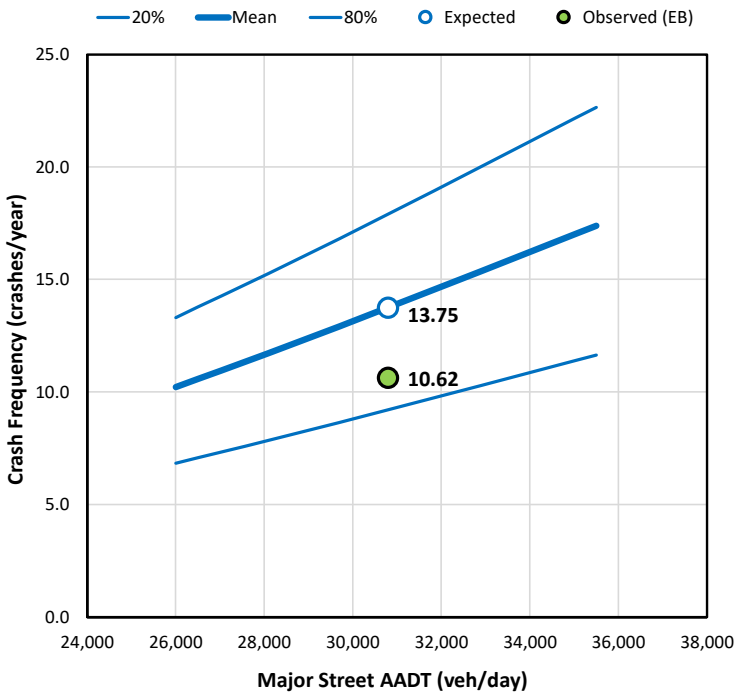
2019-2023 Crash History

PDO	Injury	Fatal	Total
38	13	0	51
(38.1 per mile)	(13 per mile)	(0 per mile)	(51.2 per mile)

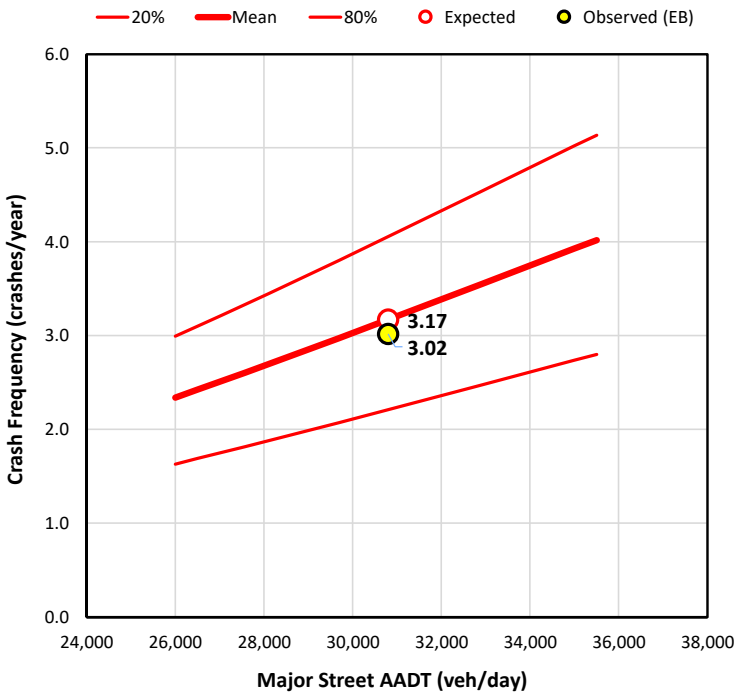
K:	0
A:	2
B:	3
C:	8
O:	38

Safety Performance Functions

Total SPF



Severe SPF

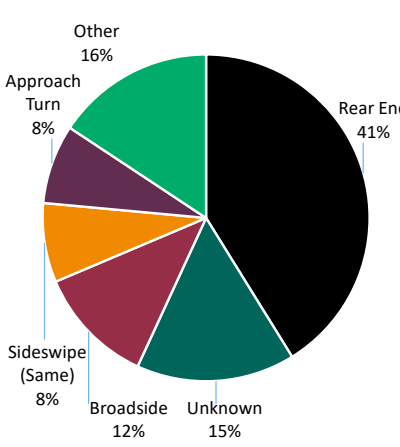


Diagnostic Patterns

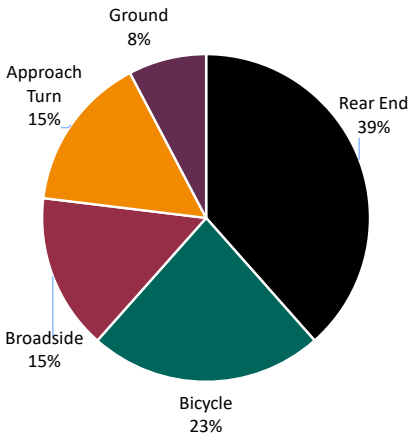
Pattern	# Crashes	Probability
Broadside	6	100.0%

Crash Types

Total



Severe



E Dry Creek Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Clarkson St	**Len:**	1.64
To Street:	S Colorado Blvd	**AADT:**	24,700

Level of Service of Safety

Total	Severe
I	II

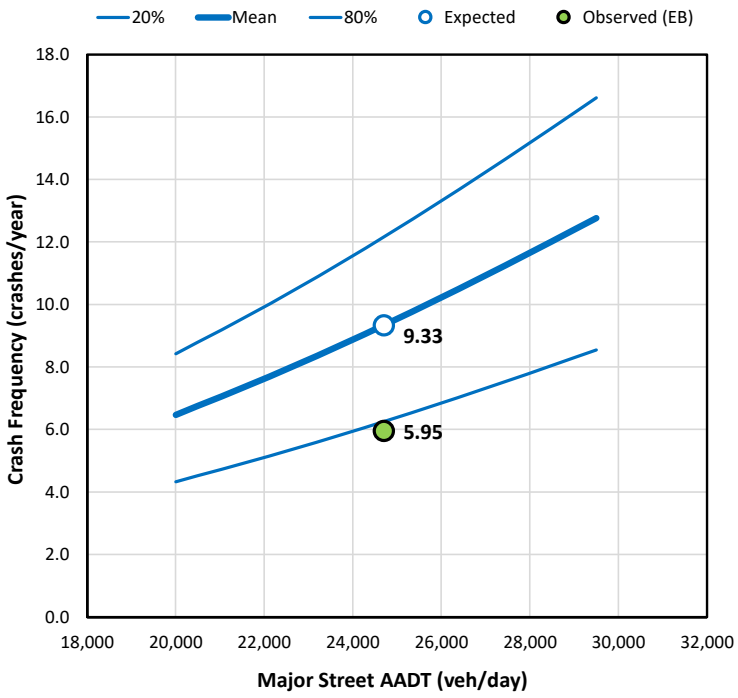
2019-2023 Crash History

PDO	Injury	Fatal	Total
33	10	1	44
(20.2 per mile)	(6.1 per mile)	(0.6 per mile)	(26.9 per mile)

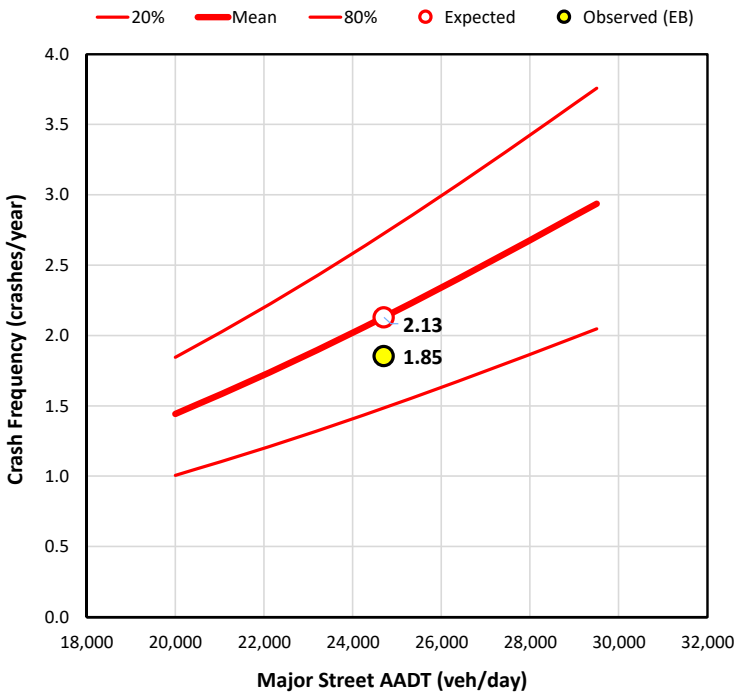
K:	1
A:	1
B:	2
C:	7
O:	33

Safety Performance Functions

Total SPF



Severe SPF

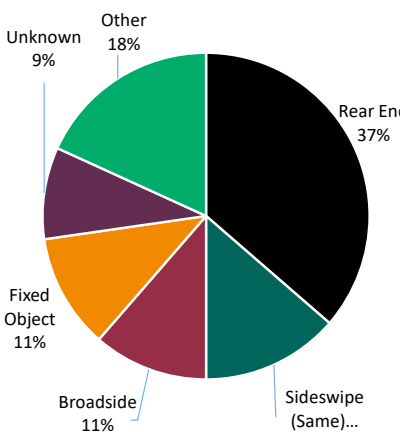


Diagnostic Patterns

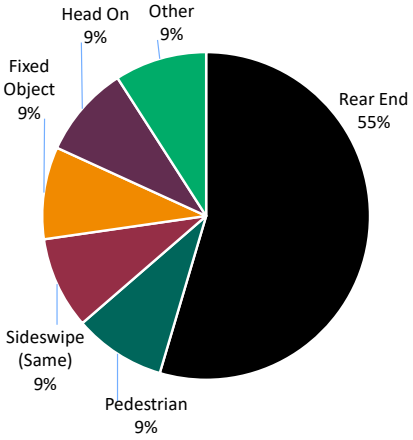
Pattern	# Crashes	Probability
Broadside	5	100.0%
Dark-Unlighted	5	98.5%

Crash Types

Total



Severe



S Holly St

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Otero Ave	**Len:**	0.17
To Street:	E County Line Rd	**AADT:**	14,000

Level of Service of Safety

Total	Severe
IV	IV

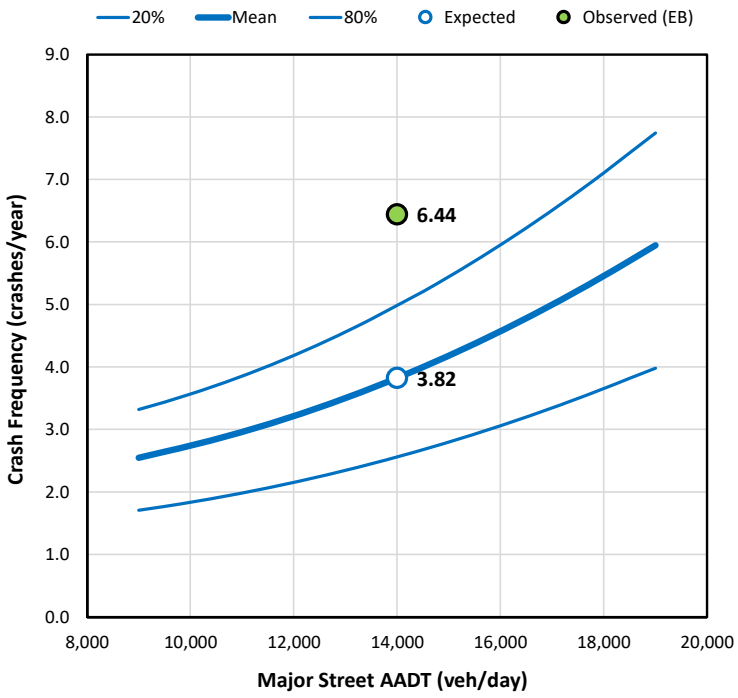
2019-2023 Crash History

PDO	Injury	Fatal	Total
5	1	0	6
(28.6 per mile)	(5.7 per mile)	(0 per mile)	(34.3 per mile)

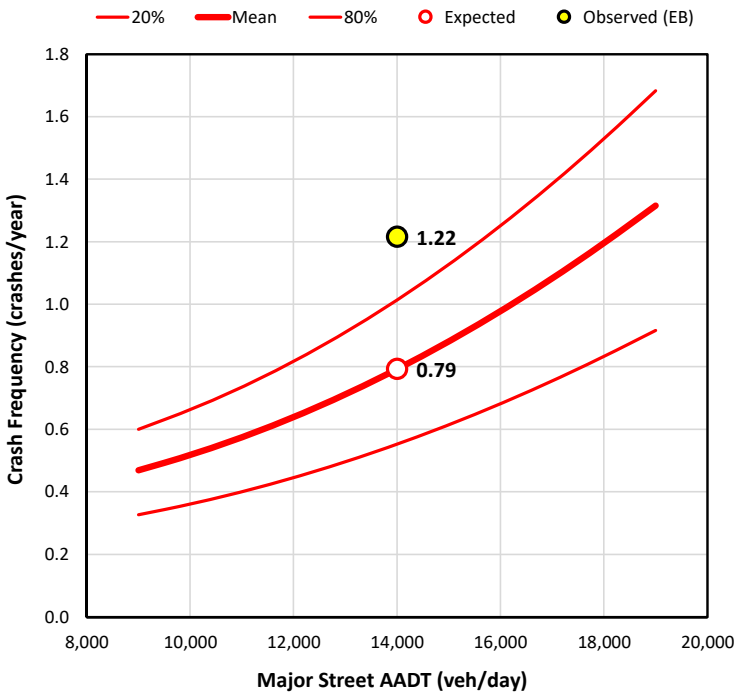
K:	0
A:	1
B:	0
C:	0
O:	5

Safety Performance Functions

Total SPF



Severe SPF

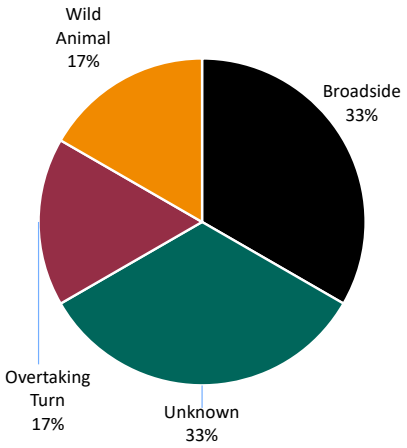


Diagnostic Patterns

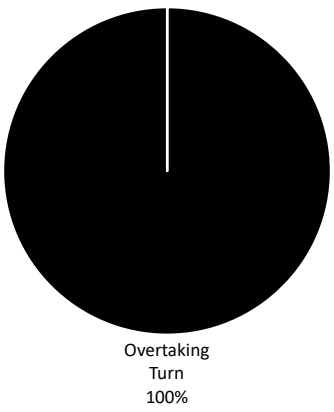
Pattern	# Crashes	Probability
2 Vehicles	5	98.3%

Crash Types

Total



Severe



E Dry Creek Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	S Yosemite St	**Len:**	0.94
To Street:	Inverness Dr E	**AADT:**	33,500

Level of Service of Safety

Total	Severe
IV	II

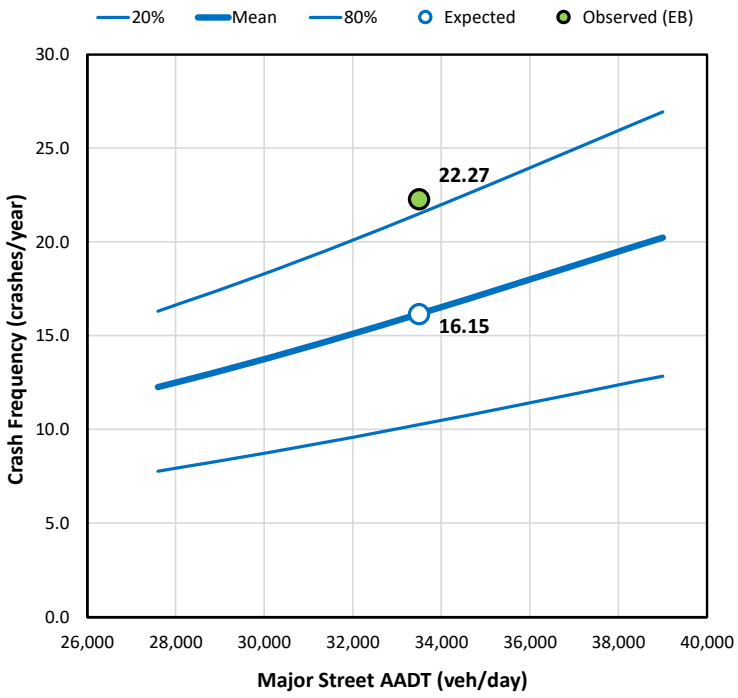
2019-2023 Crash History

PDO	Injury	Fatal	Total
93	13	0	106
(99.1 per mile)	(13.9 per mile)	(0 per mile)	(113 per mile)

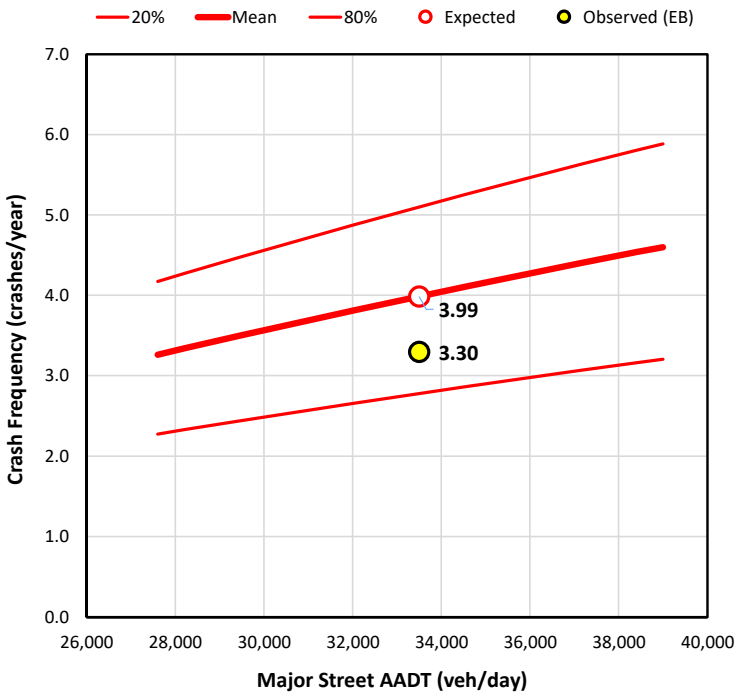
K:	0
A:	3
B:	4
C:	6
O:	93

Safety Performance Functions

Total SPF



Severe SPF

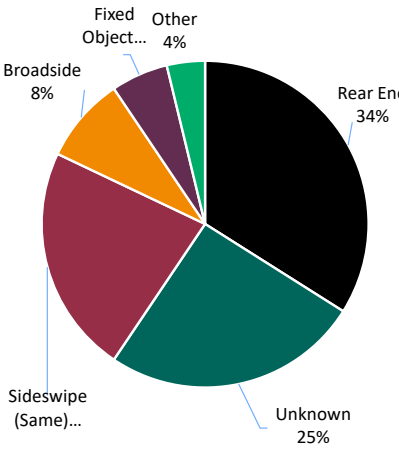


Diagnostic Patterns

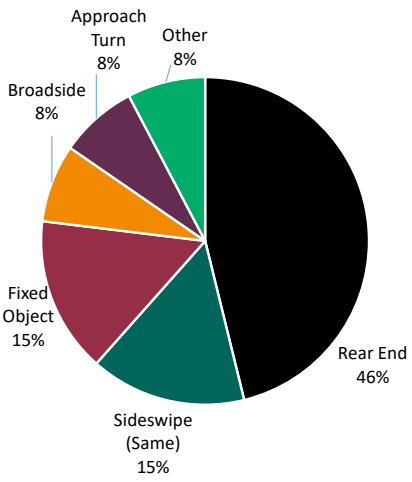
Pattern	# Crashes	Probability
2 Vehicles	86	99.1%
Broadside	9	100.0%
Dark-Unlighted	5	98.5%

Crash Types

Total



Severe



S Chester St

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Dry Creek Rd	**Len:**	0.20
To Street:	E Panorama Dr	**AADT:**	7,900

Level of Service of Safety

Total	Severe
IV	IV

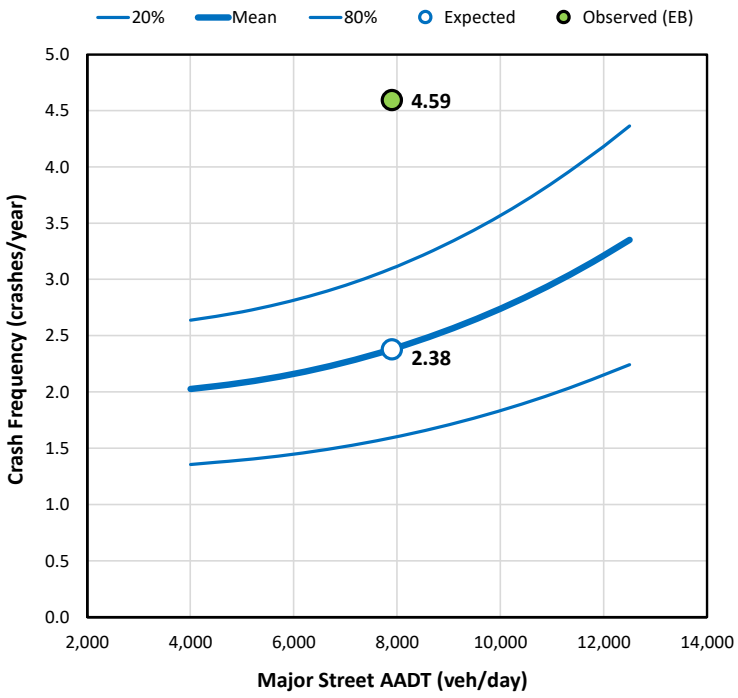
2019-2023 Crash History

PDO	Injury	Fatal	Total
3	2	0	5
(15.2 per mile)	(10.1 per mile)	(0 per mile)	(25.3 per mile)

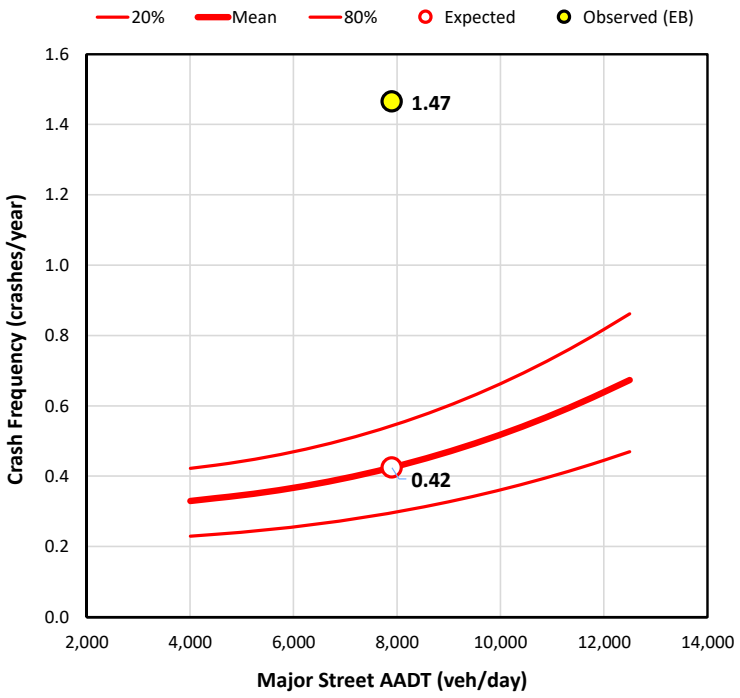
K:	0
A:	0
B:	1
C:	1
O:	3

Safety Performance Functions

Total SPF



Severe SPF

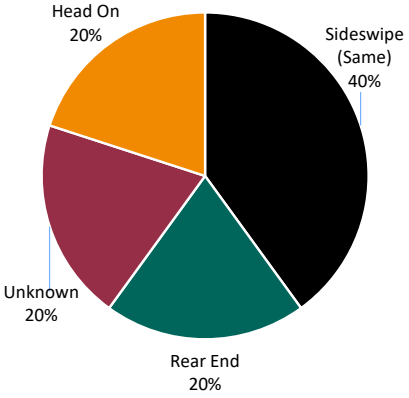


Diagnostic Patterns

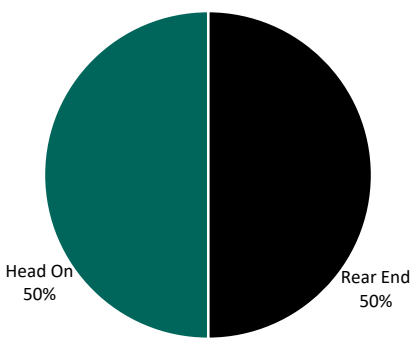
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



E County Line Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Chester St	**Len:**	0.70
To Street:	Inverness Dr W	**AADT:**	30,400

Level of Service of Safety

Total	Severe
II	II

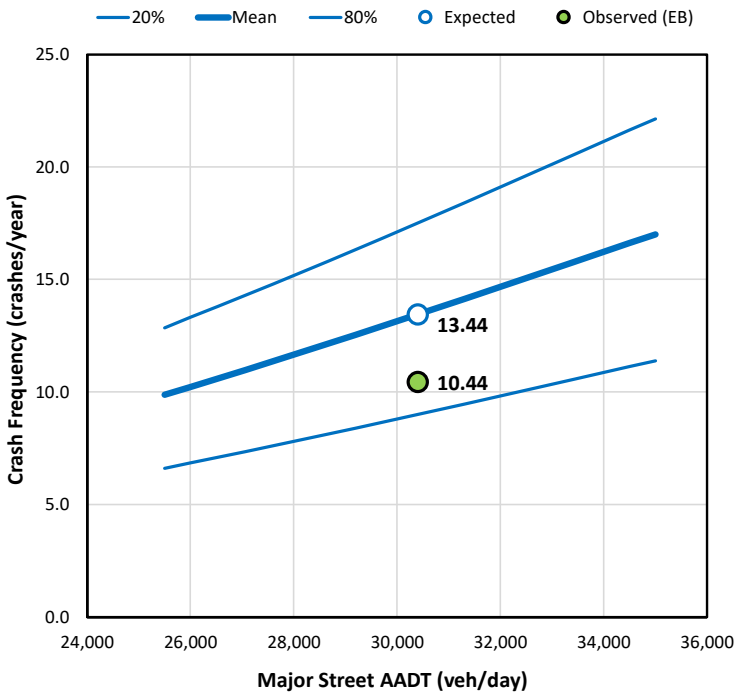
2019-2023 Crash History

PDO	Injury	Fatal	Total
28	6	1	35
(40.2 per mile)	(8.6 per mile)	(1.4 per mile)	(50.3 per mile)

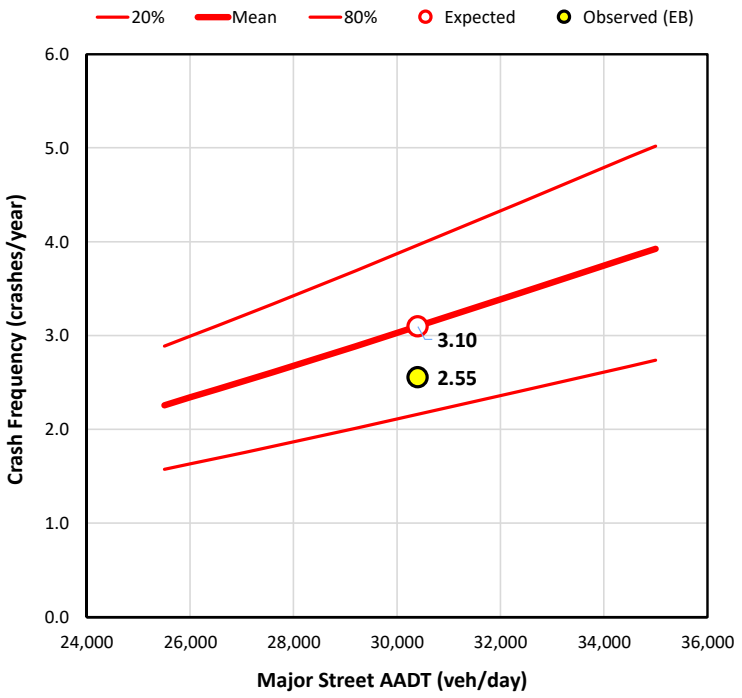
K:	1
A:	2
B:	0
C:	4
O:	28

Safety Performance Functions

Total SPF



Severe SPF

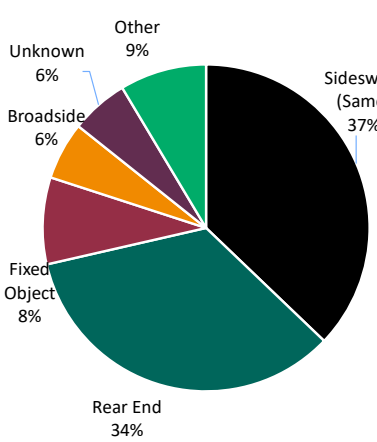


Diagnostic Patterns

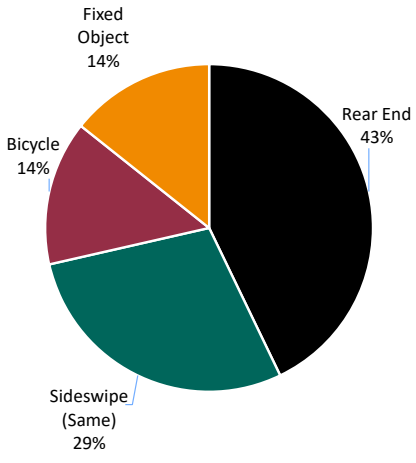
Pattern	# Crashes	Probability
Sideswipe (Same)	13	99.6%

Crash Types

Total



Severe



S Clinton St

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Easter Ave	**Len:**	0.36
To Street:	s.o. E Geddes Ave (City Limits)	**AADT:**	9,500

Level of Service of Safety

Total	Severe
III	IV

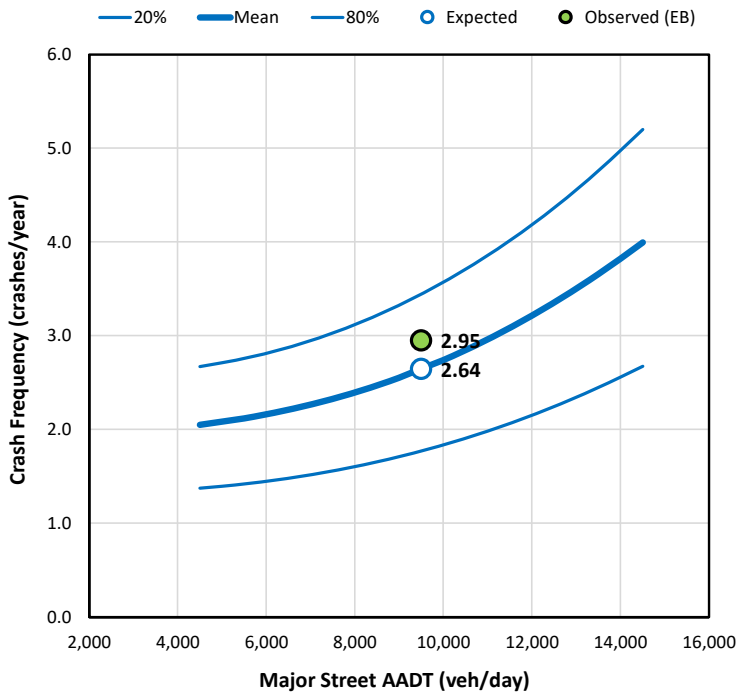
2019-2023 Crash History

PDO	Injury	Fatal	Total
1	4	0	5
(2.8 per mile)	(11 per mile)	(0 per mile)	(13.8 per mile)

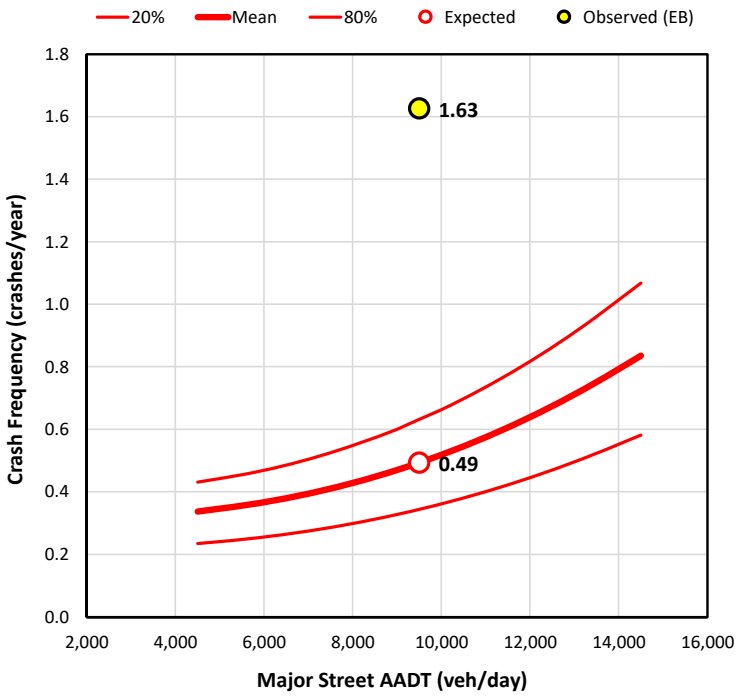
K:	0
A:	1
B:	2
C:	1
O:	1

Safety Performance Functions

Total SPF



Severe SPF

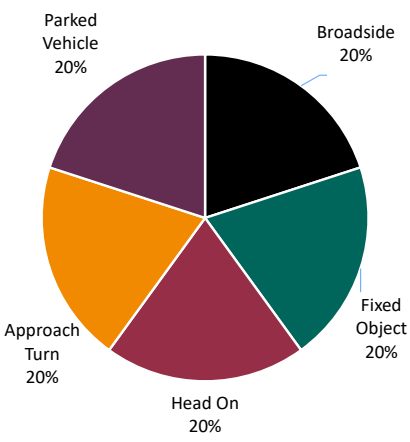


Diagnostic Patterns

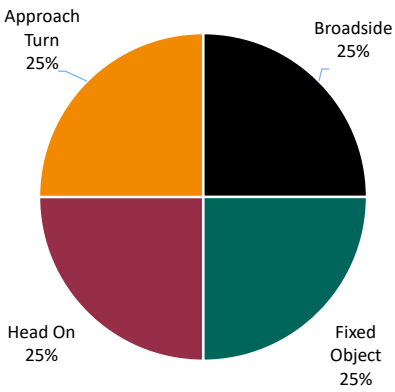
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



S Havana St

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	E Arapahoe Rd	**Len:**	0.97
To Street:	Inverness Dr E	**AADT:**	27,300

Level of Service of Safety

Total	Severe
II	II

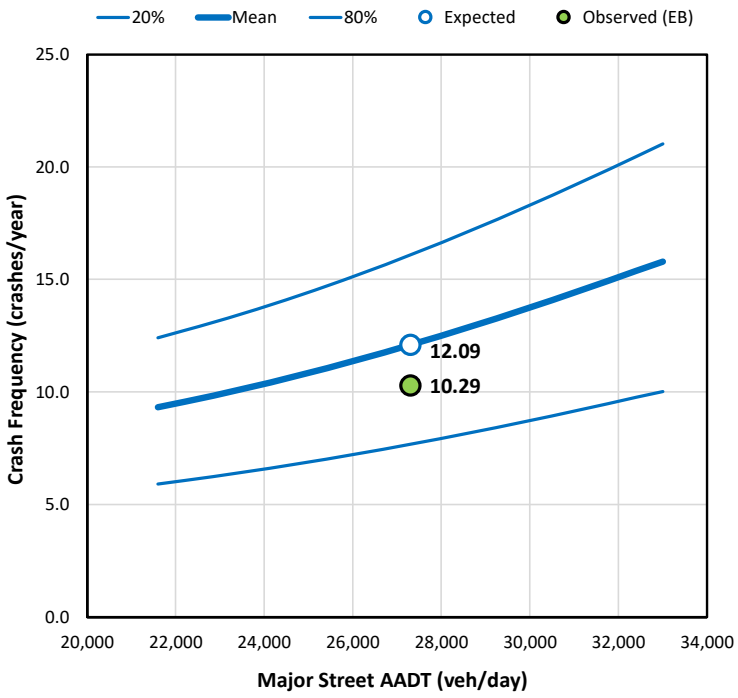
2019-2023 Crash History

PDO	Injury	Fatal	Total
37	11	1	49
(38 per mile)	(11.3 per mile)	(1 per mile)	(50.3 per mile)

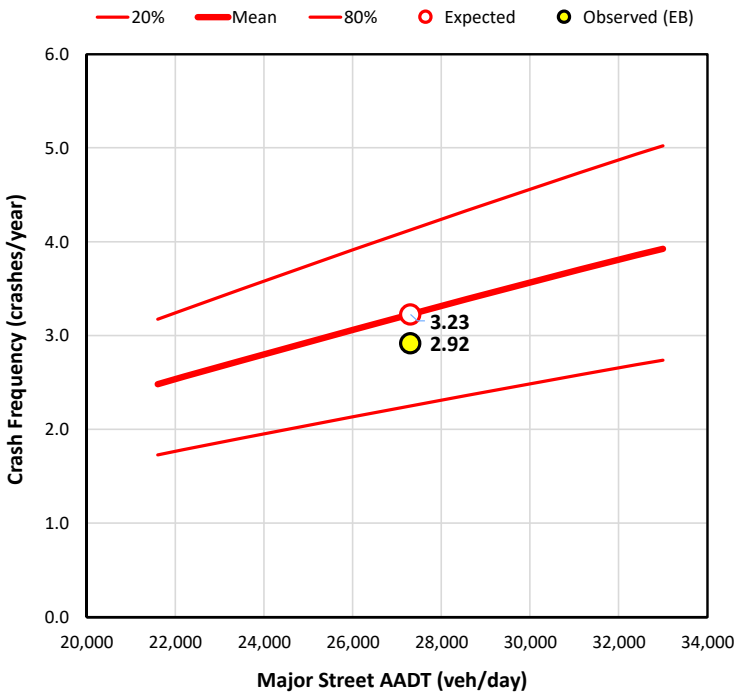
K:	1
A:	1
B:	2
C:	8
O:	37

Safety Performance Functions

Total SPF



Severe SPF

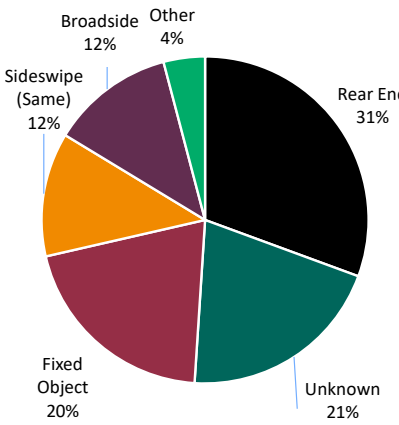


Diagnostic Patterns

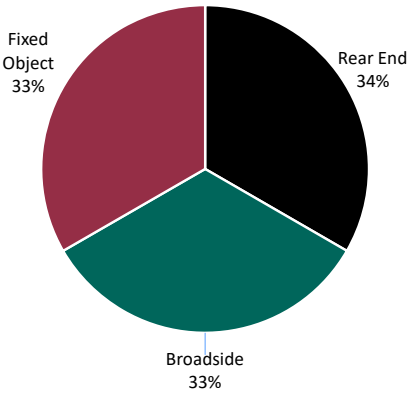
Pattern	# Crashes	Probability
1 Vehicle	10	99.6%
Broadside	6	100.0%
Total Fixed Object	10	99.9%

Crash Types

Total



Severe



E Costilla Ave

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Fulton St	**Len:**	0.30
To Street:	S Havana St	**AADT:**	4,400

Level of Service of Safety

Total	Severe
III	IV

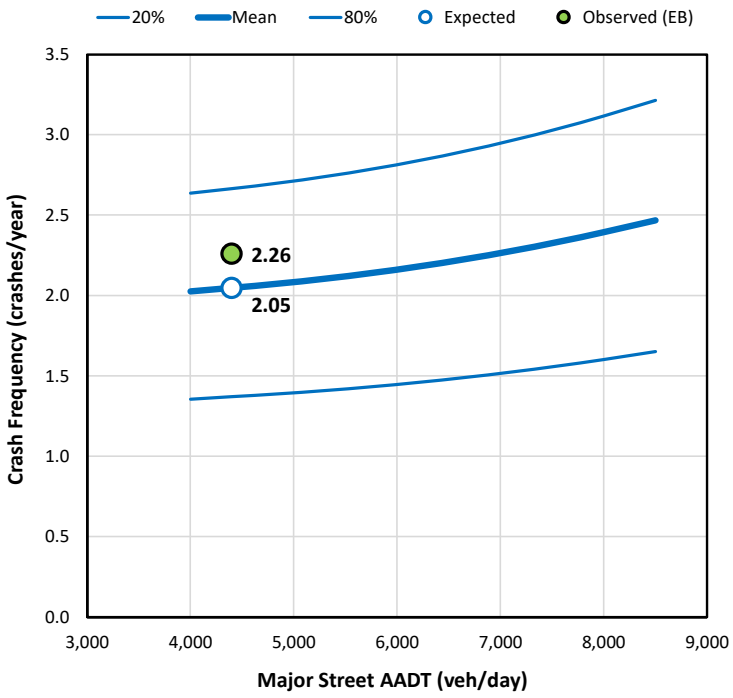
2019-2023 Crash History

PDO	Injury	Fatal	Total
2	1	0	3
(6.7 per mile)	(3.4 per mile)	(0 per mile)	(10.1 per mile)

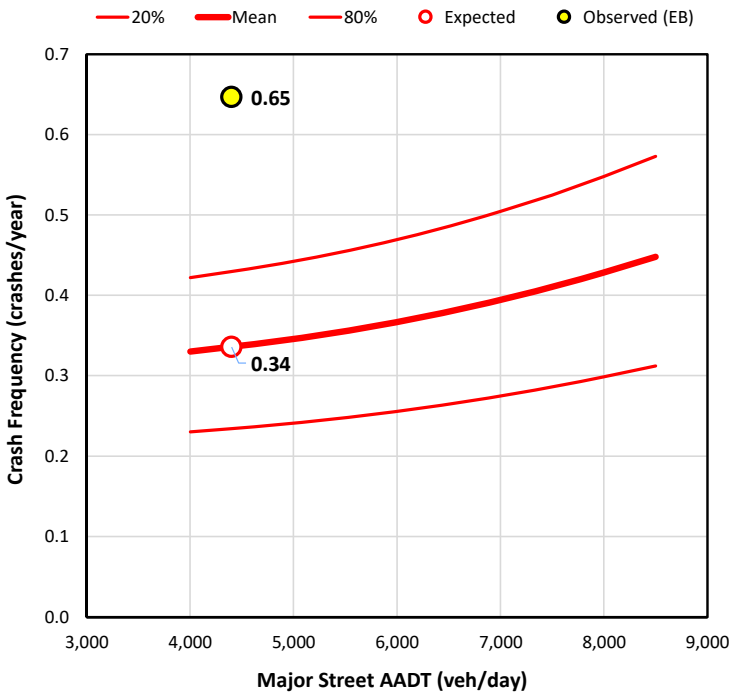
K:	0
A:	1
B:	0
C:	0
O:	2

Safety Performance Functions

Total SPF



Severe SPF

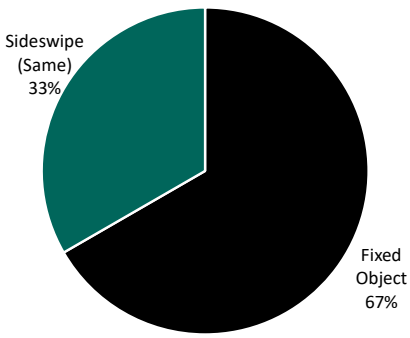


Diagnostic Patterns

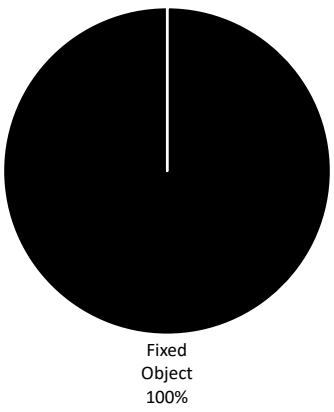
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



E Arapahoe Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	S Galena St	**Len:**	2.64
To Street:	S Jordan Rd	**AADT:**	65,400

Level of Service of Safety

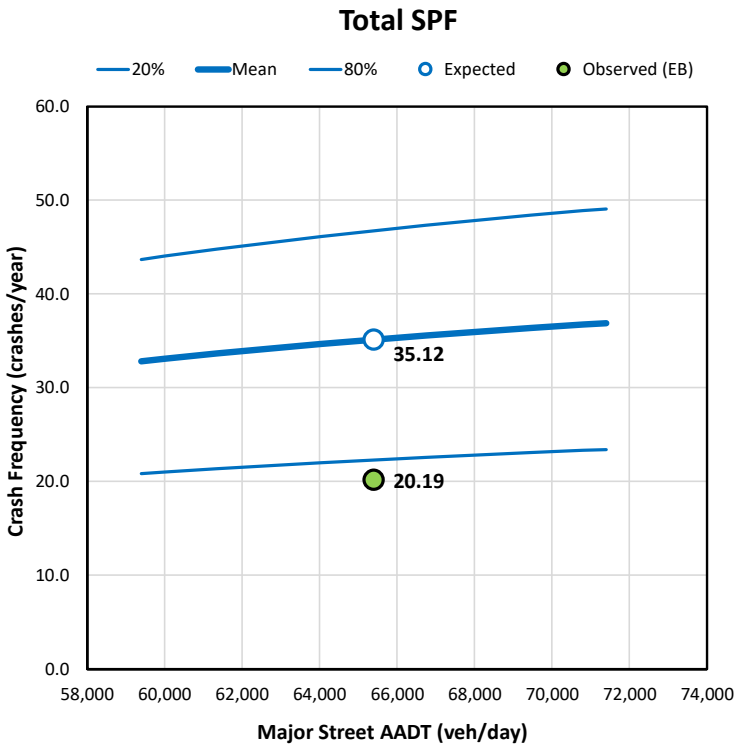
Total	Severe
I	I

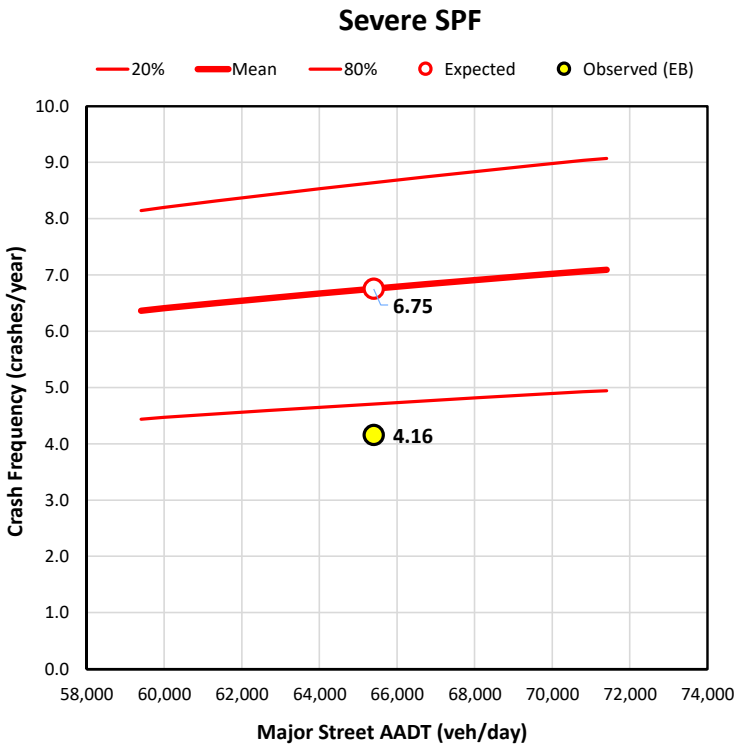
2019-2023 Crash History

PDO	Injury	Fatal	Total
215	44	1	260
(81.5 per mile)	(16.7 per mile)	(0.4 per mile)	(98.5 per mile)

K:	1
A:	6
B:	18
C:	20
O:	215

Safety Performance Functions

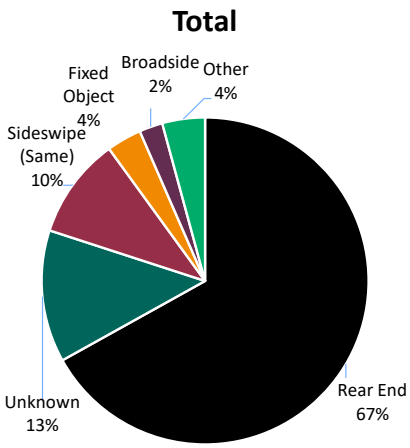


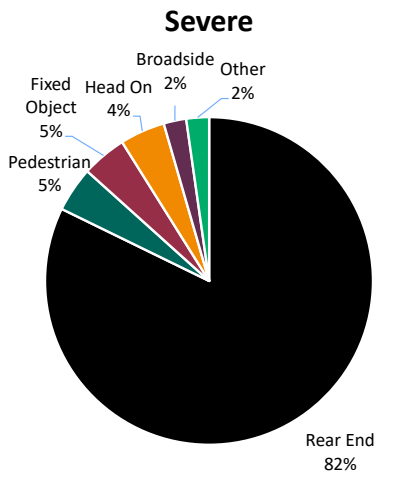


Diagnostic Patterns

Pattern	# Crashes	Probability
2 Vehicles	198	95.3%
Broadside	6	100.0%
Rear End	174	100.0%

Crash Types





S Parker Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	E Orchard Rd	**Len:**	0.59
To Street:	E Fair Pl / S Lewiston Wy	**AADT:**	70,100

Level of Service of Safety

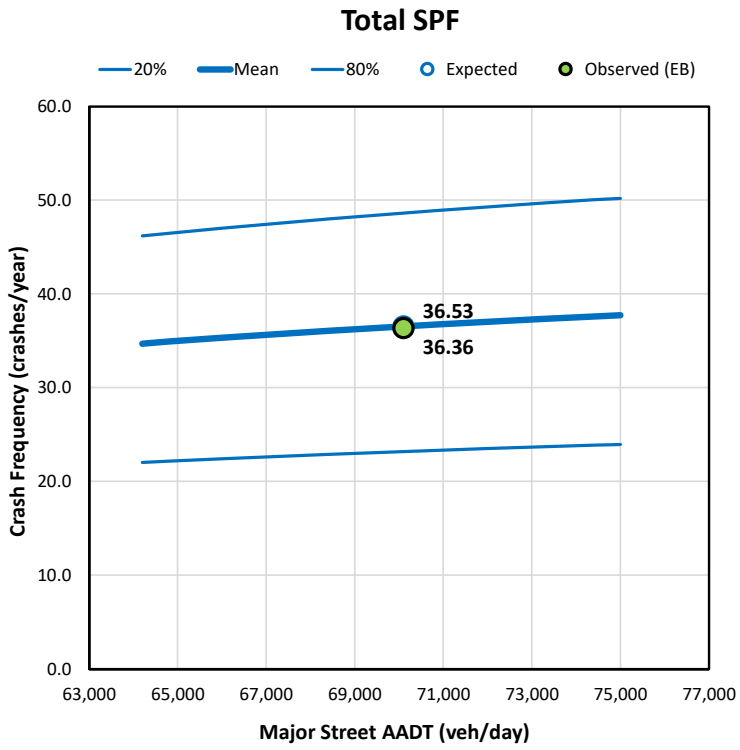
Total	Severe
II	IV

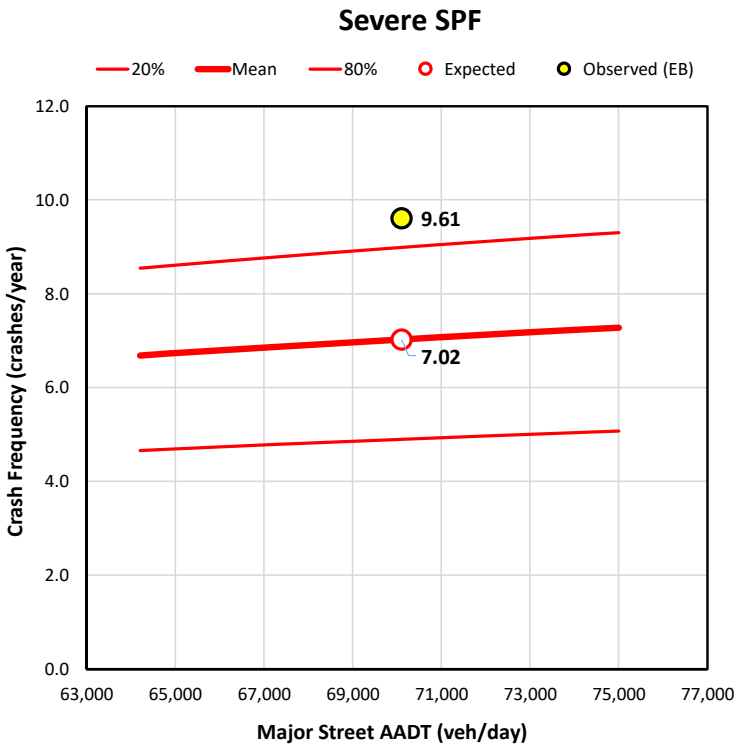
2019-2023 Crash History

PDO	Injury	Fatal	Total
78	29	0	107
(132.4 per mile)	(49.2 per mile)	(0 per mile)	(181.6 per mile)

K:	0
A:	2
B:	9
C:	18
O:	78

Safety Performance Functions

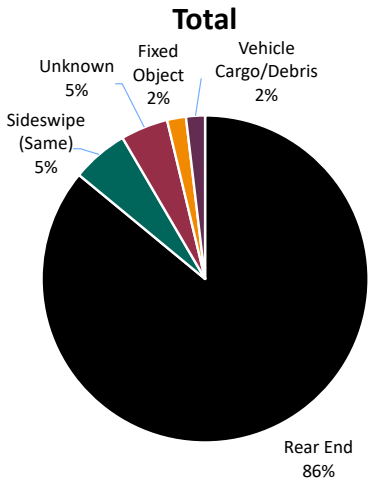


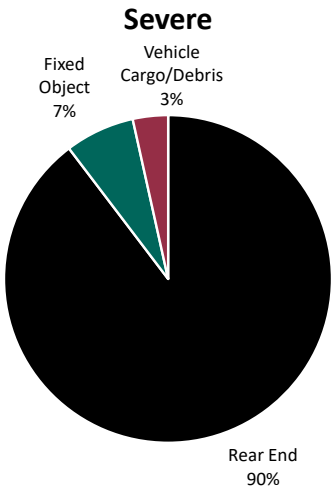


Diagnostic Patterns

Pattern	# Crashes	Probability
INJ	29	96.5%
3+ Vehicles	24	96.6%
Rear End	92	100.0%

Crash Types





E Broncos Pkwy

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Jordan Rd	**Len:**	0.84
To Street:	S Parker Rd	**AADT:**	17,600

Level of Service of Safety

Total	Severe
III	III

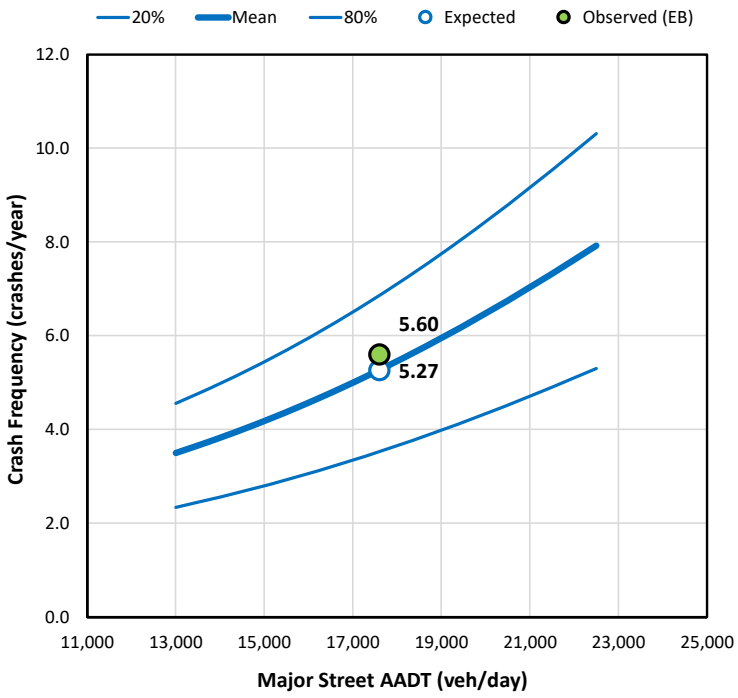
2019-2023 Crash History

PDO	Injury	Fatal	Total
18	4	1	23
(21.3 per mile)	(4.7 per mile)	(1.2 per mile)	(27.2 per mile)

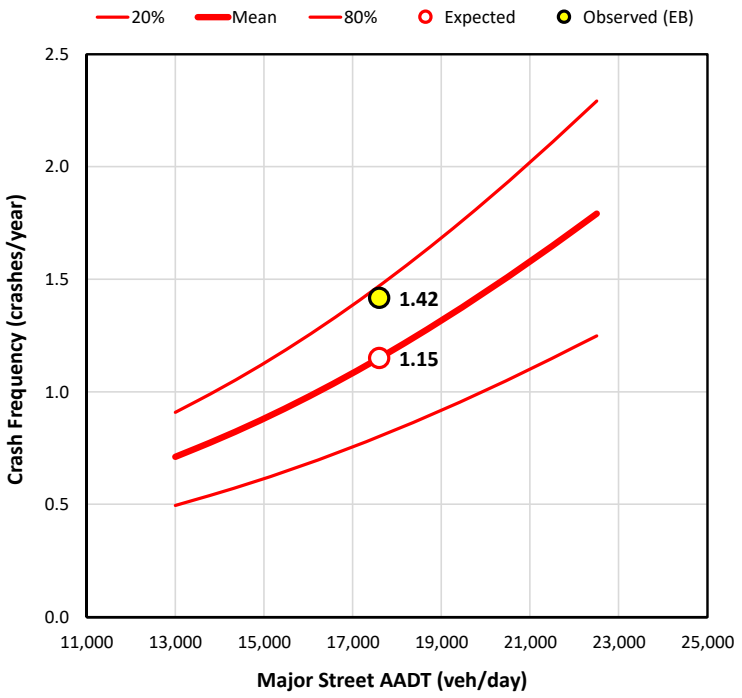
K:	1
A:	0
B:	3
C:	1
O:	18

Safety Performance Functions

Total SPF



Severe SPF

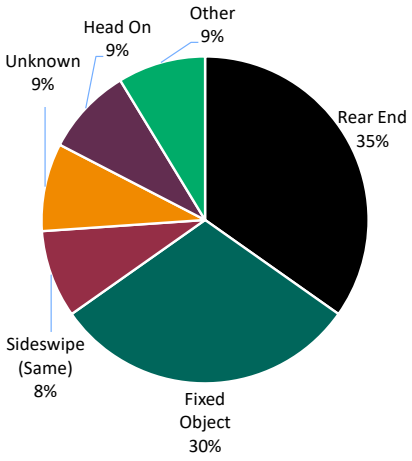


Diagnostic Patterns

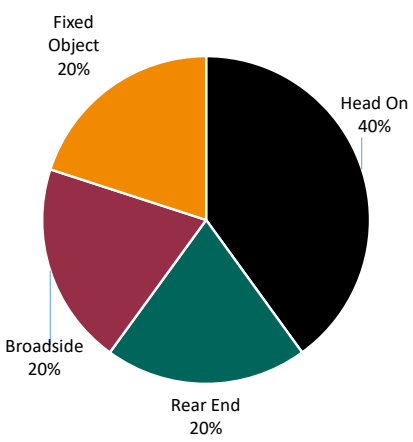
Pattern	# Crashes	Probability
No Patterns		

Crash Types

Total



Severe



S Parker Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 6-Lane Divided Highway		
From Street:	n.o. E Broncos Pkwy (City Limits)	**Len:**	0.33
To Street:	s.o. E Broncos Pkwy (City Limits)	**AADT:**	45,500

Level of Service of Safety

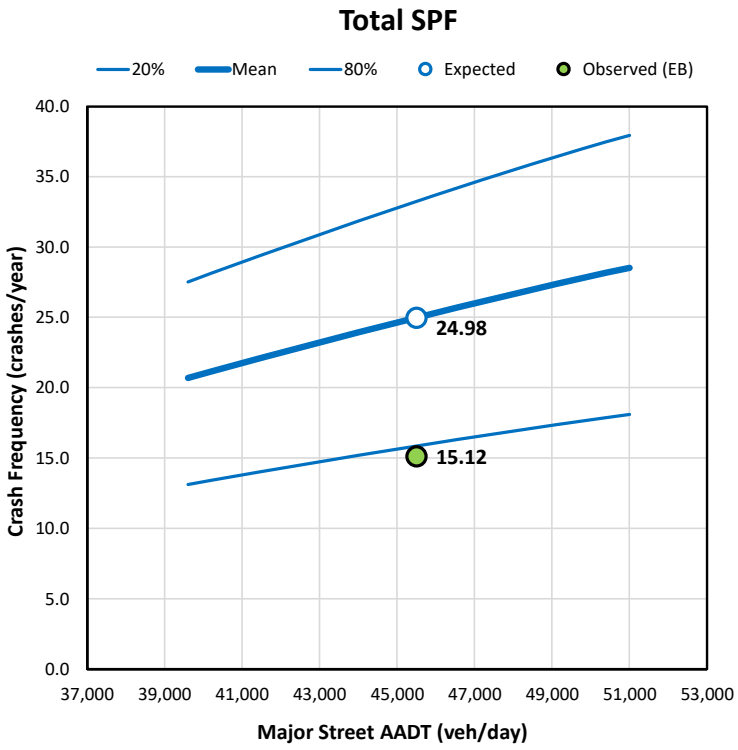
Total	Severe
I	II

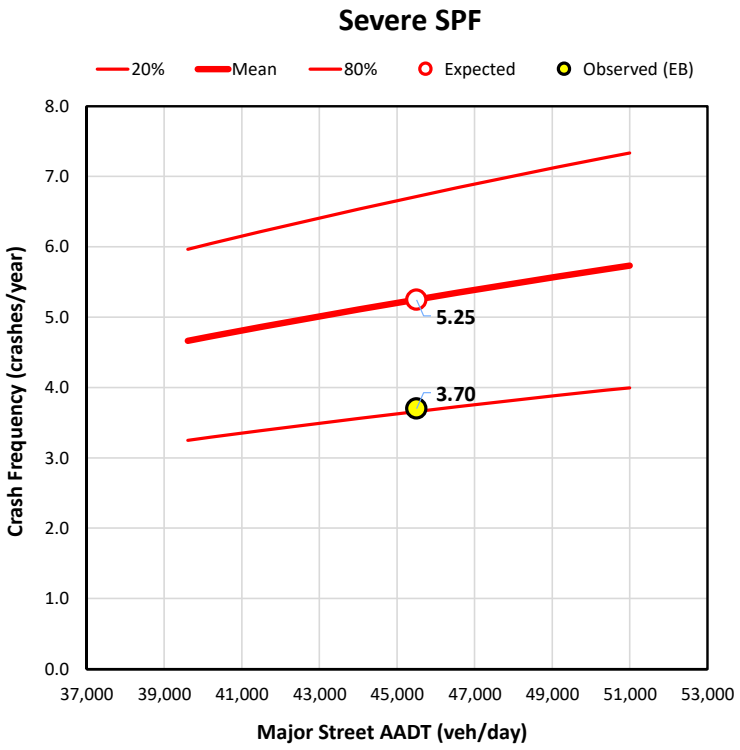
2019-2023 Crash History

PDO	Injury	Fatal	Total
19	5	0	24
(58 per mile)	(15.3 per mile)	(0 per mile)	(73.3 per mile)

K:	0
A:	0
B:	2
C:	3
O:	19

Safety Performance Functions

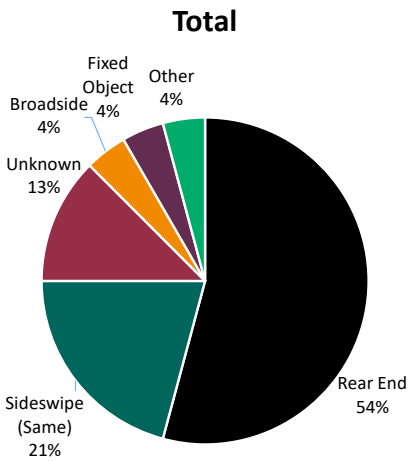


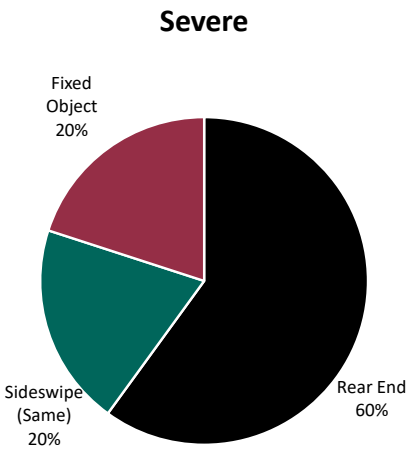


Diagnostic Patterns

Pattern	# Crashes	Probability
No Patterns		

Crash Types





E Orchard Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Parker Rd	**Len:**	1.29
To Street:	S Telluride St	**AADT:**	22,700

Level of Service of Safety

Total	Severe
II	III

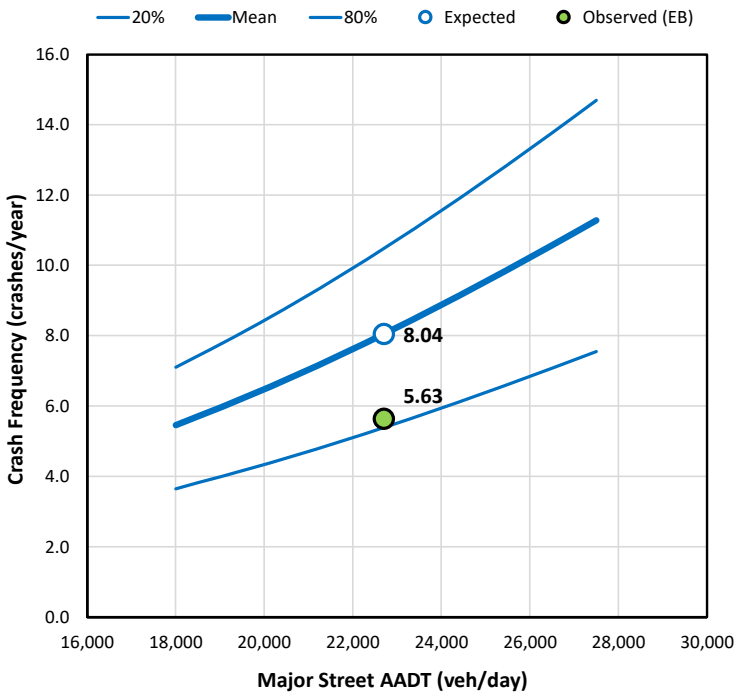
2019-2023 Crash History

PDO	Injury	Fatal	Total
23	10	0	33
(17.9 per mile)	(7.8 per mile)	(0 per mile)	(25.6 per mile)

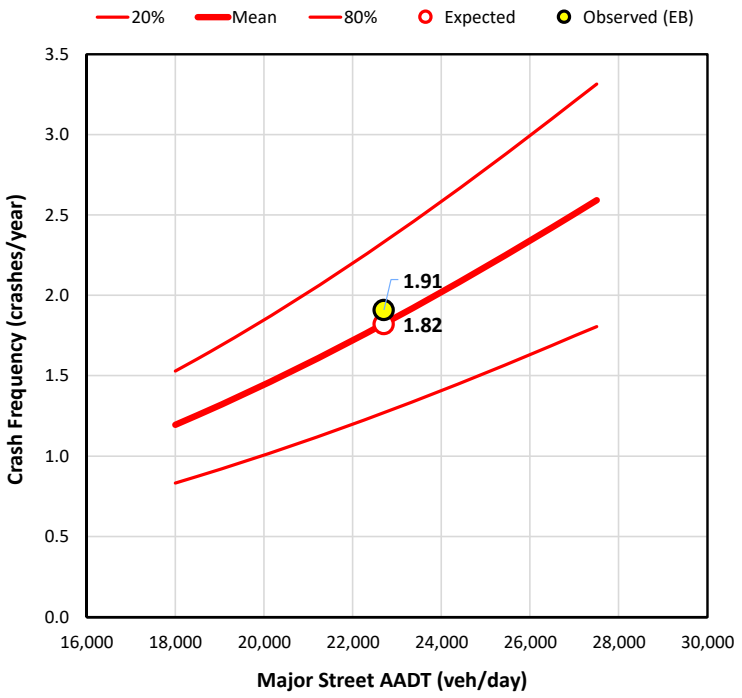
K:	0
A:	2
B:	4
C:	4
O:	23

Safety Performance Functions

Total SPF



Severe SPF

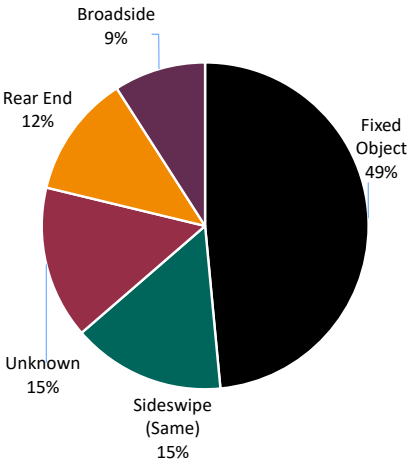


Diagnostic Patterns

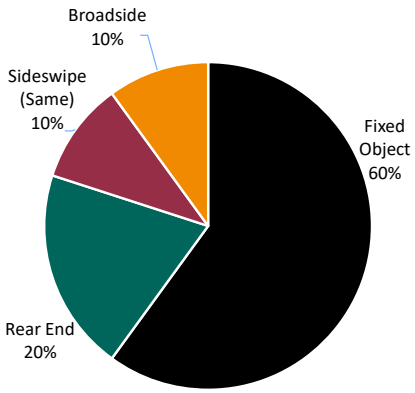
Pattern	# Crashes	Probability
1 Vehicle	16	100.0%
Total Fixed Object	16	100.0%
Dark-Unlighted	5	99.6%

Crash Types

Total



Severe



S Tower Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Smoky Hill Rd	**Len:**	0.24
To Street:	E Berry Rd	**AADT:**	7,800

Level of Service of Safety

Total	Severe
IV	IV

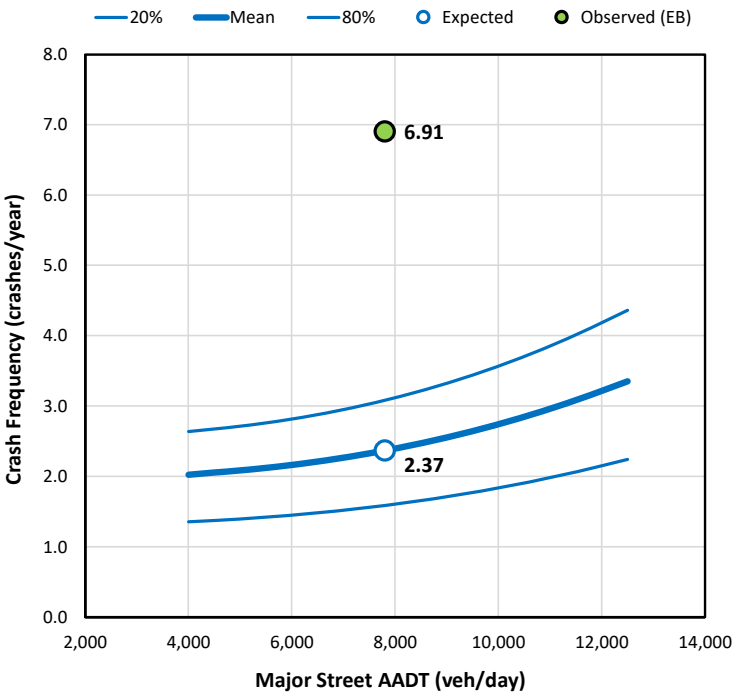
2019-2023 Crash History

PDO	Injury	Fatal	Total
4	6	0	10
(16.5 per mile)	(24.7 per mile)	(0 per mile)	(41.2 per mile)

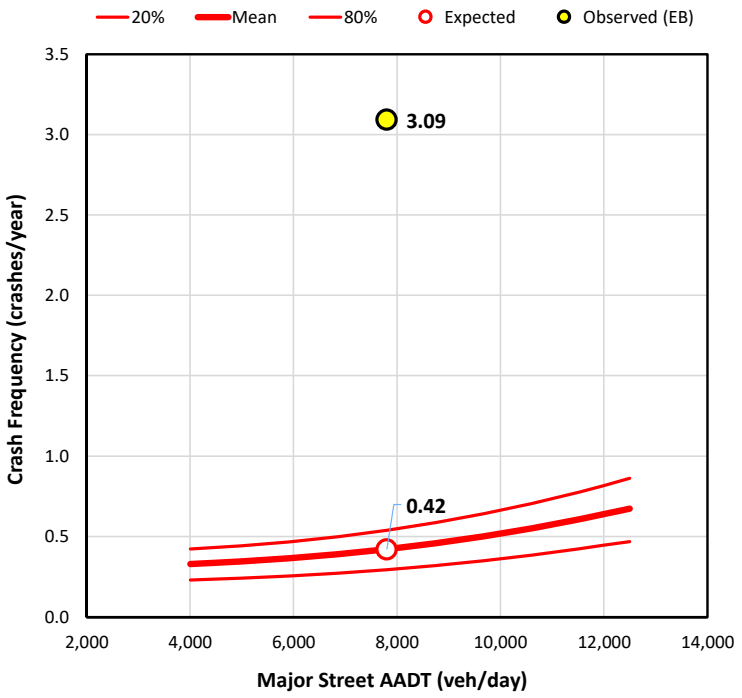
K:	0
A:	2
B:	3
C:	1
O:	4

Safety Performance Functions

Total SPF



Severe SPF

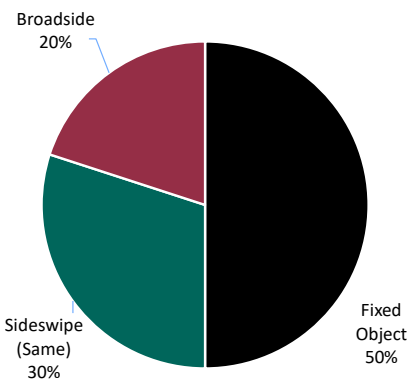


Diagnostic Patterns

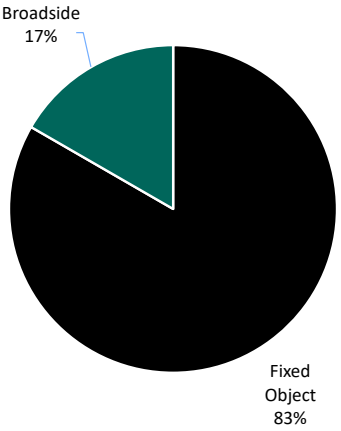
Pattern	# Crashes	Probability
INJ	6	99.9%
Total Fixed Object	5	99.4%

Crash Types

Total



Severe



E Smoky Hill Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	S Tower Rd	**Len:**	1.70
To Street:	S Picadilly St / S Liverpool St	**AADT:**	28,900

Level of Service of Safety

Total	Severe
I	I

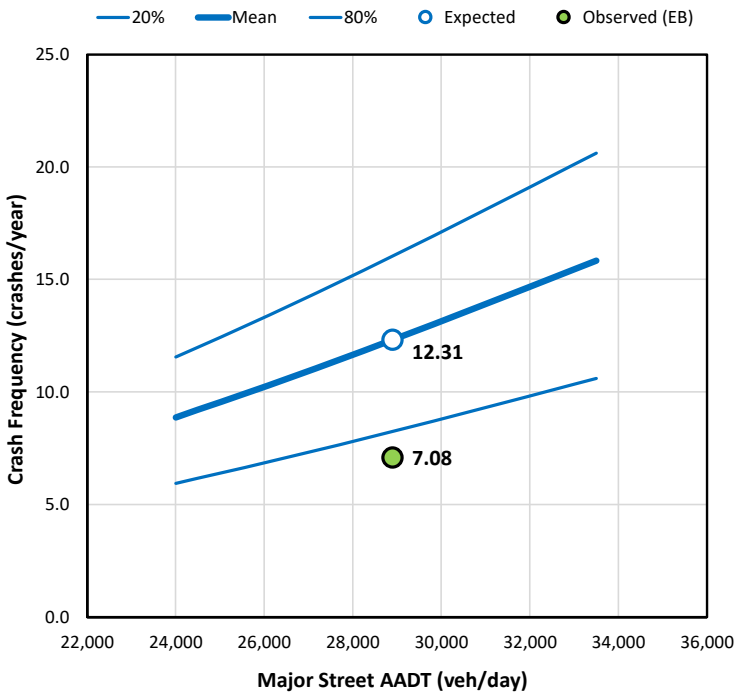
2019-2023 Crash History

PDO	Injury	Fatal	Total
44	11	0	55
(25.8 per mile)	(6.5 per mile)	(0 per mile)	(32.3 per mile)

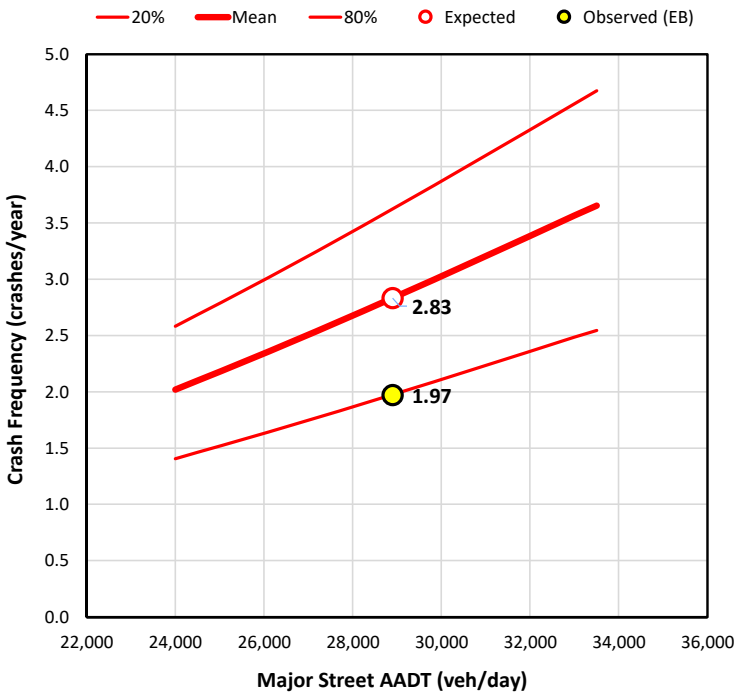
K:	0
A:	2
B:	2
C:	7
O:	44

Safety Performance Functions

Total SPF



Severe SPF

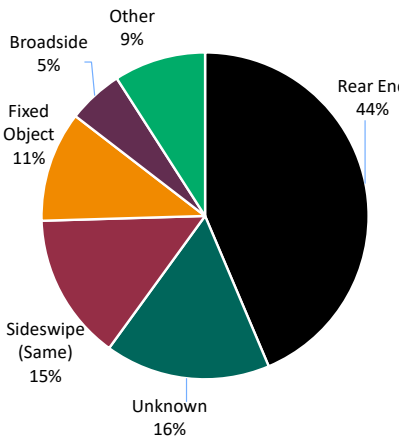


Diagnostic Patterns

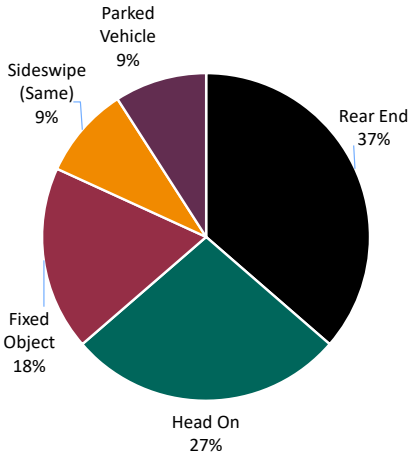
Pattern	# Crashes	Probability
Dark-Unlighted	8	99.9%

Crash Types

Total



Severe



S Himalaya St / E Orchard Rd

Intersection Characteristics

Classification:	Urban Flat Rolling Mountainous 4-Lane Divided Highway		
From Street:	E Crestline Cir / E Berry Dr	**Len:**	0.64
To Street:	s.o. E Smoky Hill Rd (City Limits)	**AADT:**	12,500

Level of Service of Safety

Total	Severe
IV	IV

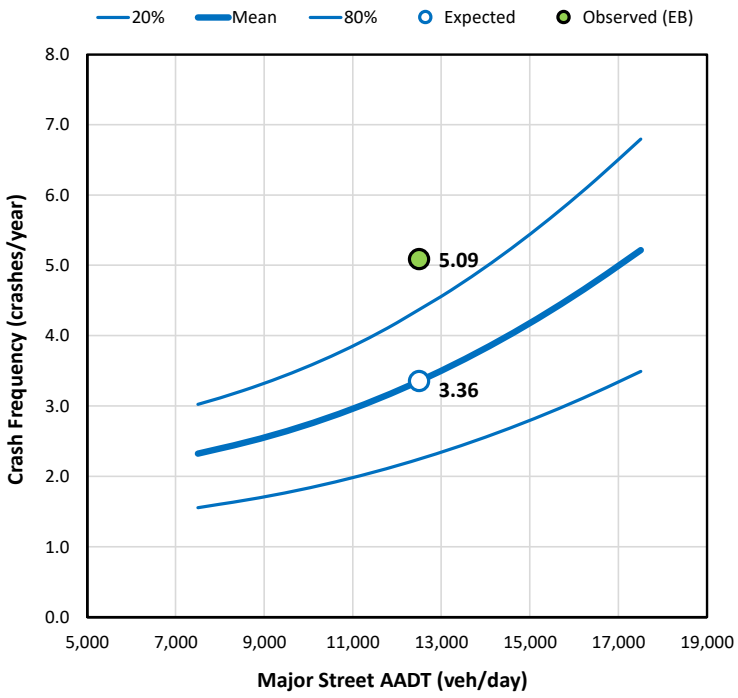
2019-2023 Crash History

PDO	Injury	Fatal	Total
9	7	1	17
(14 per mile)	(10.9 per mile)	(1.6 per mile)	(26.5 per mile)

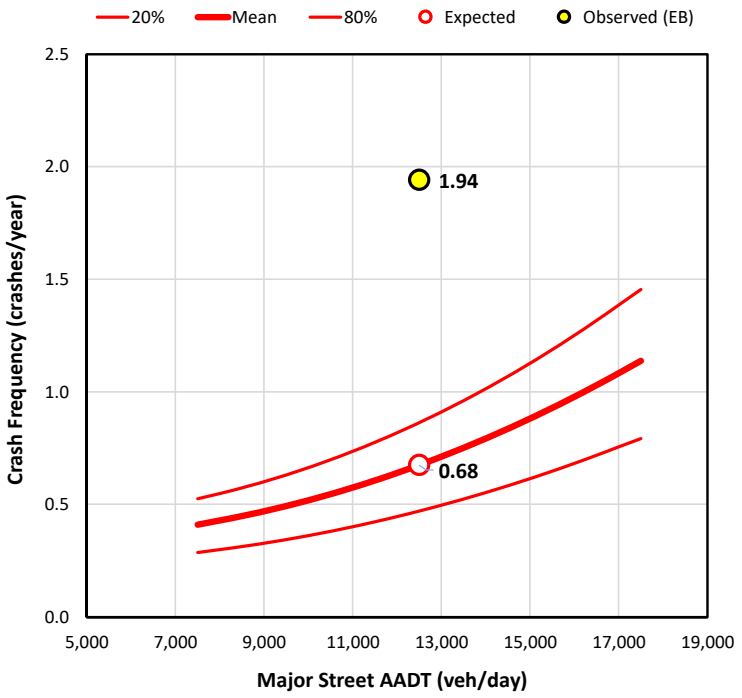
K:	1
A:	1
B:	2
C:	4
O:	9

Safety Performance Functions

Total SPF



Severe SPF

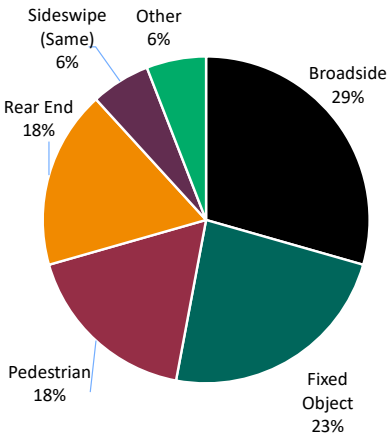


Diagnostic Patterns

Pattern	# Crashes	Probability
INJ	7	99.1%
Broadside	5	100.0%

Crash Types

Total



Severe