

APPENDIX G

**SUPPLEMENTARY
HIGHWAY SAFETY
MANUAL
ANALYSIS
MEMORANDUM**

Memorandum

Date: February 28, 2023
To: Devin Joslin, City of Boulder
From: Charles Alexander, Fehr & Peers
Subject: Supplemental Highway Safety Manual Analysis for Vision Zero Action Plan

DN18-0589.04

This memorandum documents Highway Safety Manual analysis completed using Vision Zero Suite for six additional intersections. Vision Zero Suite uses Colorado Department of Transportation crash data from 2016 through 2020 and applies Colorado-specific Safety Performance Functions. Daily traffic volumes were estimated using the City of Boulder's traffic count data.



28th Street & Iris Avenue

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection
Major Street:	28 th Street AADT: 29,600 vpd
Minor Street:	Iris Avenue/Diagonal Highway AADT: 26,000 vpd
2016-2020 Crash History:	69 total crashes (15 injury crashes)
LOSS:	LOSS II (Total), LOSS II (Severe)
Diagnostic Pattern(s):	Rear End, Sideswipe (Same Direction)

Both 28th Street and Iris Avenue have four general purpose travel lanes. Between 2016 and 2020, 69 total crashes were recorded at the intersection. This is consistent with LOSS II conditions, indicating a low to moderate potential for crash reduction. Rear end crashes were most common (51%), followed by approach turn (19%), broadside (9%), and sideswipe (same direction) (9%).

Injury Crashes

15 injury crashes were recorded at the intersection, consistent with LOSS II conditions, indicating low to moderate potential for crash reduction. Severe crash types included rear end (6 crashes), approach turn (5 crashes), broadside (2 crashes), pedestrian (1 crash), and bicycle (1 crash). Injury crashes primarily occurred during daylight (8 crashes) and dark-lighted (6 crashes) conditions. 13 of 15 crashes occurred during dry road conditions. Driver inexperience and driver preoccupation (driver preoccupied) were cited in 5 of 15 injury crashes.

Rear End Crashes

35 rear end crashes occurred at the intersection, including 6 that resulted in injury.

- For total crashes, 11 crashes involved north/northeast-bound vehicles, 10 involved westbound vehicles, 7 involved eastbound vehicles, and 5 involved south/southeast-bound vehicles
- For injury crashes, 3 involved southbound vehicles, 2 involved westbound vehicles, and 1 involved northbound vehicles

Approach Turn Crashes

13 approach turn crashes occurred at the intersection, including 5 that resulted in injury. 11 crashes involved southbound vehicles. 4 injury crashes involved southbound vehicles.

Broadside Crashes

6 broadside crashes occurred at the intersection, including 2 that resulted in injury. 2 each involved a northbound or westbound vehicle and 1 each involved an eastbound or southbound vehicle.

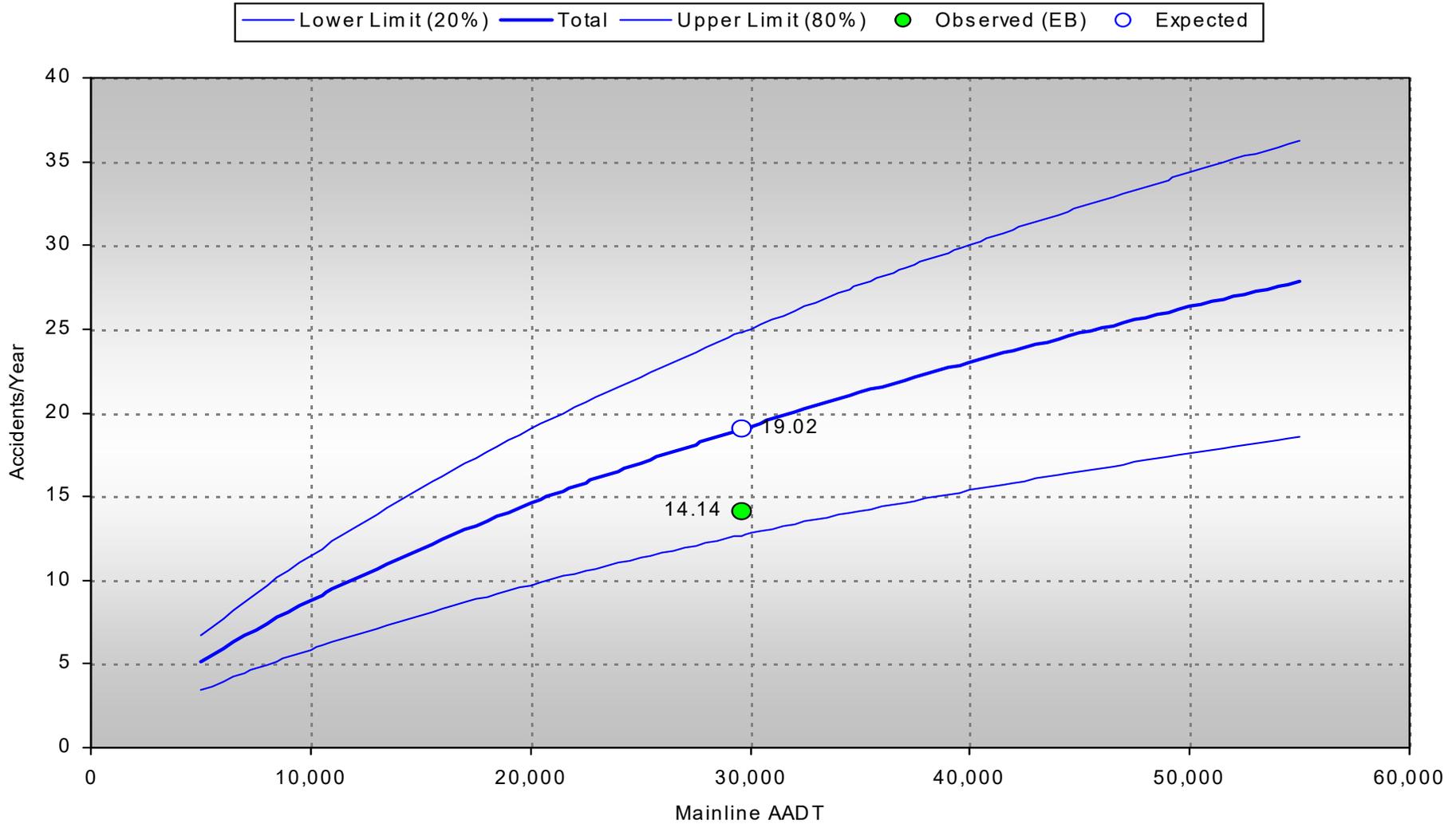


Sideswipe (Same Direction) Crashes

6 sideswipe (same direction) crashes occurred at the intersection, none resulting in injury. 3 involved northbound vehicles and 3 involved south/southeast-bound vehicles.

Location: 000000036B 119B

Begin: 34.99 End: 35.03 From: 01/01/2016 To: 12/31/2020



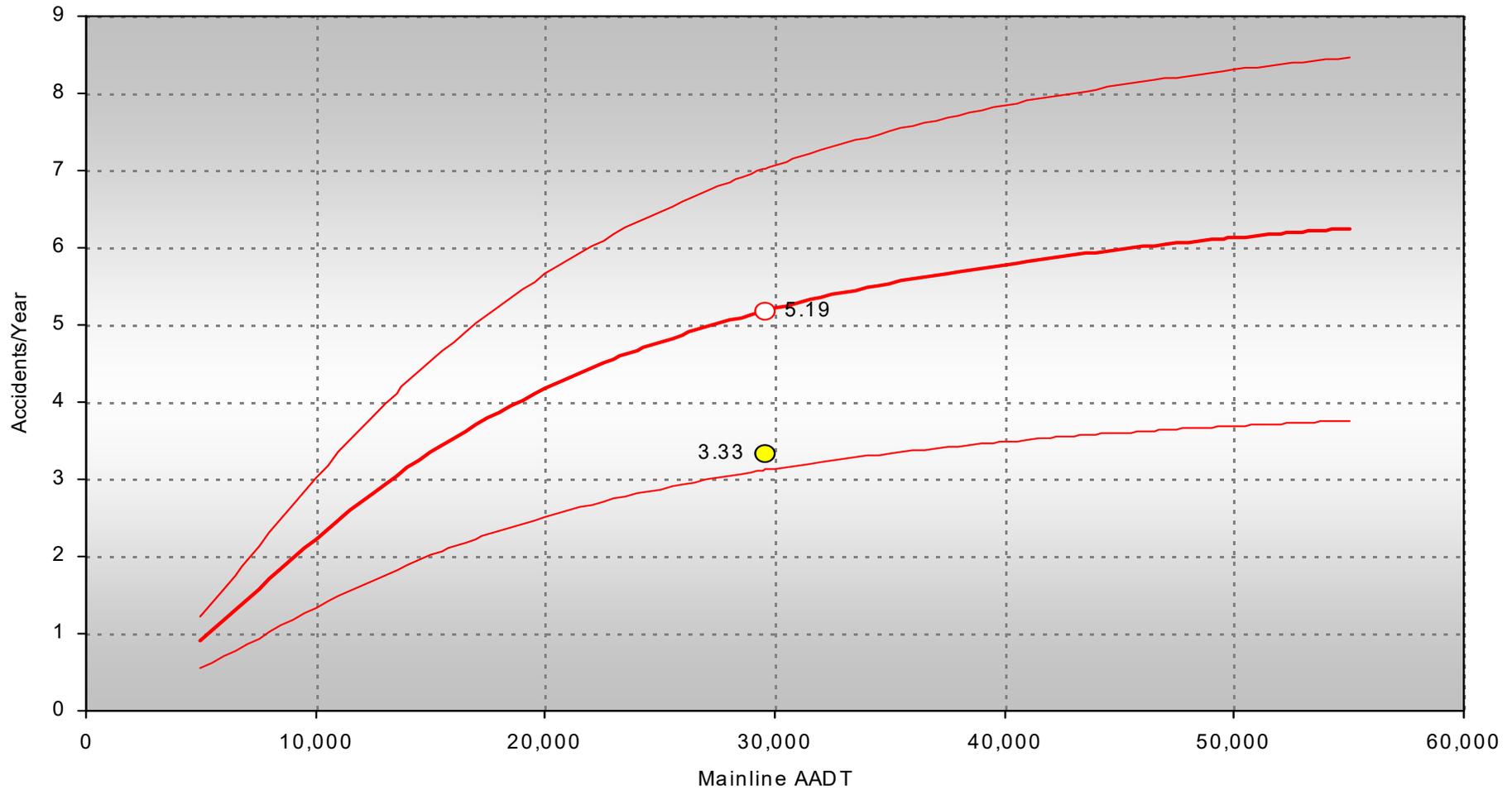
Location: 000000036B 119B

Begin: 34.99

End: 35.03

From: 01/01/2016

To: 12/31/2020



Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03499_03503 Cutoff: 5 Acc's @ 95%

CATEGORY	Statewide Average		This Location		Probability
	# Crashes	%	# Crashes	%	%
Property Damage Only (PDO)	0	0.00%	54	78.26%	100.00%
Injury (INJ)	1,639	98.73%	15	21.74%	0.00%
Fatal (FAT)	21	1.27%	0	0.00%	N/A
Persons Injured	2,358		19		
Persons Killed	22		0		N/A
Single Vehicle Accidents	58	3.49%	4	5.80%	90.64%
Two Vehicle Accidents	1,406	84.70%	62	89.86%	91.92%
Three or More Vehicle Accidents	196	11.81%	3	4.35%	3.06%
Unknown Number of Vehicles	0	0.00%	0	0.00%	N/A
On Road	1,611	97.05%	66	95.65%	33.34%
Off Road	49	2.95%	3	4.35%	85.31%
Off Road Left	20	1.20%	0	0.00%	N/A
Off Road Right	25	1.51%	3	4.35%	97.95%
Off Road at Tee	0	0.00%	0	0.00%	N/A
Off Road in Median	4	0.24%	0	0.00%	N/A
Unknown Road Location	0	0.00%	0	0.00%	N/A
Overtaking	22	1.33%	0	0.00%	N/A
Other Non Collision	1	0.06%	0	0.00%	N/A
Vehicle Cargo or Debris	0	0.00%	0	0.00%	N/A
Pedestrian	103	6.20%	1	1.45%	6.70%
Broadside	310	18.67%	6	8.70%	1.78%
Head On	9	0.54%	0	0.00%	N/A
Rear End	638	38.43%	35	50.72%	98.60%
Sideswipe (Same Direction)	39	2.35%	6	8.70%	99.88%
Sideswipe (Opposite Direction)	6	0.36%	0	0.00%	N/A
Approach Turn	399	24.04%	13	18.84%	19.40%
Overtaking Turn	5	0.30%	1	1.45%	98.14%
Parked Motor Vehicle	3	0.18%	0	0.00%	N/A
Railway Vehicle	0	0.00%	0	0.00%	N/A
Bicycle or Pedal Cycle	80	4.82%	3	4.35%	57.30%
Motorized Bicycle	0	0.00%	0	0.00%	N/A
Domestic Animal	0	0.00%	0	0.00%	N/A
Wild Animal	0	0.00%	1	1.45%	100.00%
Light or Utility Pole	14	0.84%	1	1.45%	88.46%
Traffic Signal Pole or Equipment	11	0.66%	1	1.45%	92.30%
Traffic Sign or Post or Overhead Sign Structure	4	0.24%	0	0.00%	N/A
Bridge Rail	0	0.00%	0	0.00%	N/A
Guard Rail	0	0.00%	0	0.00%	N/A
Cable Rail	0	0.00%	0	0.00%	N/A
Concrete Barrier	1	0.06%	0	0.00%	N/A
Bridge Abutment	0	0.00%	0	0.00%	N/A
Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
Culvert or Headwall	0	0.00%	0	0.00%	N/A
Embankment or Ditch	1	0.06%	0	0.00%	N/A
Curb or Island	9	0.54%	0	0.00%	N/A
Delineator Post	0	0.00%	0	0.00%	N/A
Fence or Fence Part	0	0.00%	0	0.00%	N/A
Trees or Shrubs	1	0.06%	0	0.00%	N/A
Large Boulders or Rocks	0	0.00%	0	0.00%	N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (INJ) (2020)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03499_03503 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Rocks in Roadway	0	0.00%	0	0.00%	N/A
	Barricade	0	0.00%	0	0.00%	N/A
	Wall or Building	0	0.00%	0	0.00%	N/A
	Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
	Mailbox	0	0.00%	0	0.00%	N/A
	Other Fixed Object	0	0.00%	1	1.45%	100.00%
	Other Object	3	0.18%	0	0.00%	N/A
	Road Maintenance Equipment	1	0.06%	0	0.00%	N/A
	Unknown Accident Type	0	0.00%	0	0.00%	N/A
	Total Fixed Objects	41	2.47%	3	4.35%	90.86%
	Total Other Objects	4	0.24%	0	0.00%	N/A
	Daylight	1,164	70.12%	41	59.42%	3.77%
	Dawn or Dusk	75	4.52%	4	5.80%	79.88%
	Dark - Lighted	399	24.04%	23	33.33%	97.09% 
	Dark - Unlighted	20	1.20%	0	0.00%	N/A
	Unknown Lighting	2	0.12%	1	1.45%	99.68%
	No Adverse Weather	1,501	90.42%	62	89.86%	49.53%
	Rain	56	3.37%	4	5.80%	91.64%
	Snow or Sleet or Hail	78	4.70%	3	4.35%	59.19%
	Fog	5	0.30%	0	0.00%	N/A
	Dust	0	0.00%	0	0.00%	N/A
	Wind	12	0.72%	0	0.00%	N/A
	Unknown Weather	8	0.48%	0	0.00%	N/A
	Dry Road	1,442	86.87%	58	84.06%	29.30%
	Wet Road	122	7.35%	7	10.14%	86.71%
	Muddy Road	0	0.00%	0	0.00%	N/A
	Snowy Road	48	2.89%	1	1.45%	40.34%
	Icy Road	29	1.75%	1	1.45%	66.00%
	Slushy Road	4	0.24%	1	1.45%	98.78%
	Foreign Material Road	2	0.12%	0	0.00%	N/A
	With Road Treatment	0	0.00%	0	0.00%	N/A
	Dry with Icy Road Treatment	5	0.30%	0	0.00%	N/A
	Wet with Icy Road Treatment	1	0.06%	0	0.00%	N/A
	Snowy with Icy Road Treatment	4	0.24%	0	0.00%	N/A
	Icy with Icy Road Treatment	2	0.12%	1	1.45%	99.68%
	Slushy with Icy Road Treatment	0	0.00%	0	0.00%	N/A
	Unknown Road Condition	1	0.06%	0	0.00%	N/A
	Driver 1 - No Apparent Contributing Factor	734	44.22%	32	46.38%	68.64%
	Driver 1 - Asleep at the Wheel	8	0.48%	1	1.45%	95.60%
	Driver 1 - Illness	21	1.27%	0	0.00%	N/A
	Driver 1 - Distracted by Passenger	27	1.63%	0	0.00%	N/A
	Driver 1 - Driver Inexperience	117	7.05%	10	14.49%	99.14% 
	Driver 1 - Driver Fatigue	19	1.14%	0	0.00%	N/A
	Driver 1 - Driver Preoccupied	215	12.95%	8	11.59%	45.53%
	Driver 1 - Driver Unfamiliar with Area	48	2.89%	0	0.00%	N/A
	Driver 1 - Driver Emotionally Upset	4	0.24%	0	0.00%	N/A
	Driver 1 - Evading Law Enforcement Officer	12	0.72%	0	0.00%	N/A
	Driver 1 - Physical Disability	3	0.18%	0	0.00%	N/A
	Driver 1 - Unknown Contributing Factor	452	27.23%	18	26.09%	47.72%

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (INJ) (2020)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03499_03503 **Cutoff:** 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Driver 1 - No Impairment Suspected	1,538	92.65%	67	97.10%	96.66% 
	Driver 1 - Alcohol Involved	84	5.06%	2	2.90%	31.52%
	Driver 1 - RX, Medication, or Drugs Involved	22	1.33%	0	0.00%	N/A
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	16	0.96%	0	0.00%	N/A
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	1,660		69		
	Total Number of Records	156		0		N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (INJ) (2020)



28th Street & Pearl Street

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection
Major Street:	28 th Street AADT: 33,900 vpd
Minor Street:	Pearl Street AADT: 20,000 vpd
2016-2020 Crash History	64 total crashes (19 injury crashes)
LOSS:	LOSS II (Total), LOSS II (Severe)
Diagnostic Patterns:	Broadside

Both 28th Street and Pearl Street have four general purpose travel lanes. Between 2016 and 2020, 64 total crashes were recorded at the intersection. This is consistent with LOSS II conditions, indicating a low to moderate potential for crash reduction. Rear end crashes were most common (44%), followed by broadside (20%), approach turn (14%), and sideswipe (same direction) (11%).

Injury Crashes

19 injury crashes were recorded at the intersection, consistent with LOSS II conditions, indicating low to moderate potential for crash reduction. Severe crash types included rear end (11 crashes), broadside (4 crashes), approach turn (2 crashes), sideswipe (same direction) (1 crash), and bicycle (1 crash). 16 of 19 crashes occurred during dry road conditions. Driver inexperience, driver illness, and driver preoccupation (driver preoccupied) were cited in 4 of 19 crashes.

Rear End Crashes

28 rear end crashes occurred at the intersection, including 11 that resulted in injury.

- For total crashes, 13 involved southbound vehicles, 9 involved northbound vehicles, 4 involved eastbound vehicles, and 2 involved westbound vehicles
- For injury crashes, 4 involved southbound vehicles, 4 involved northbound vehicles, 2 involved westbound vehicles, and 1 involved an eastbound vehicle

Broadside Crashes

13 broadside crashes occurred at the intersection, including 4 that resulted in injury. 8 involved a northbound vehicle, 2 each involved a northbound or westbound vehicle, and 1 involved a southbound vehicle.

Location: 000000036B

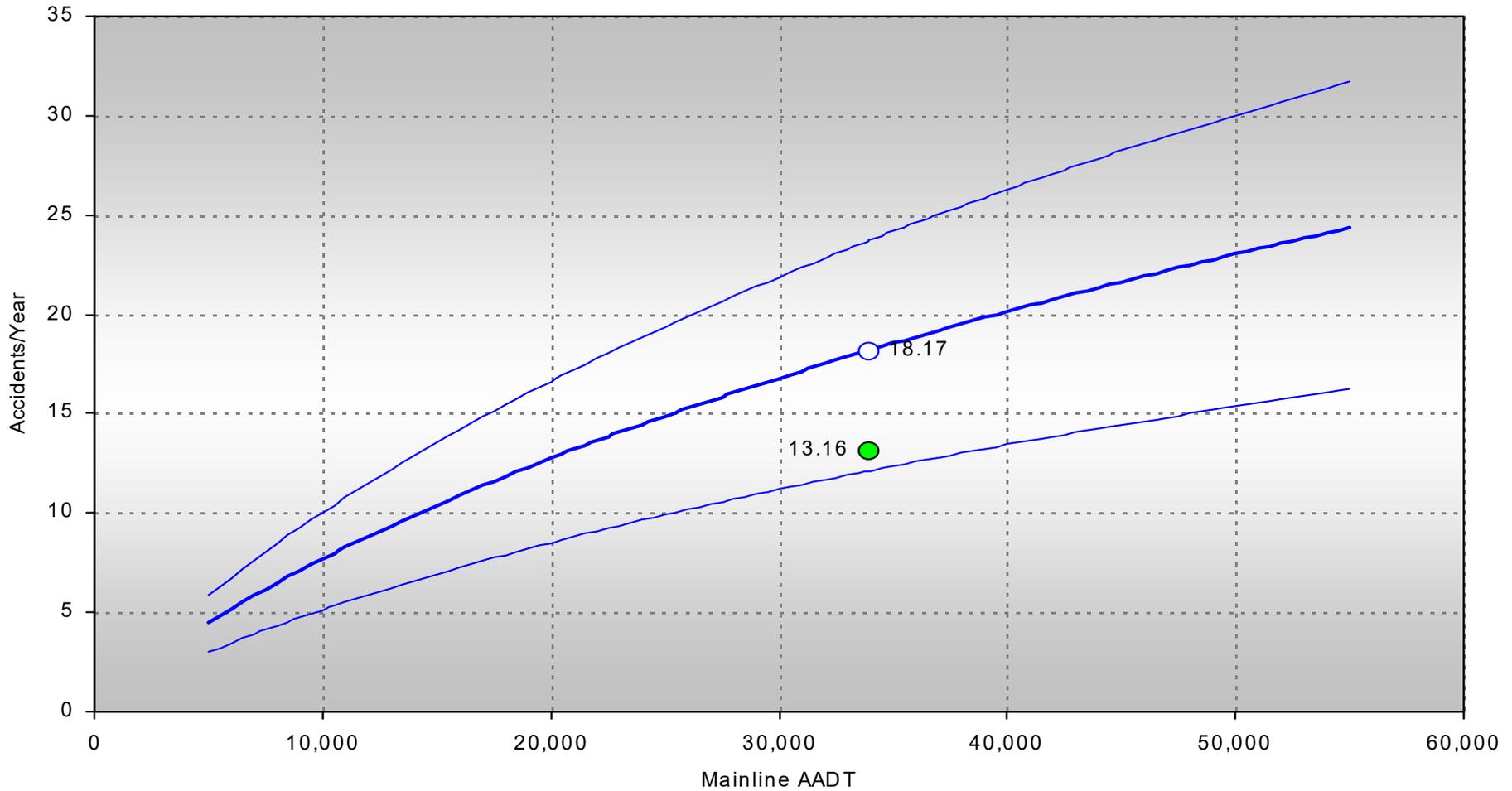
Begin: 35.96

End: 36.00

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — Total — Upper Limit (80%) ● Observed (EB) ○ Expected



Location: 000000036B

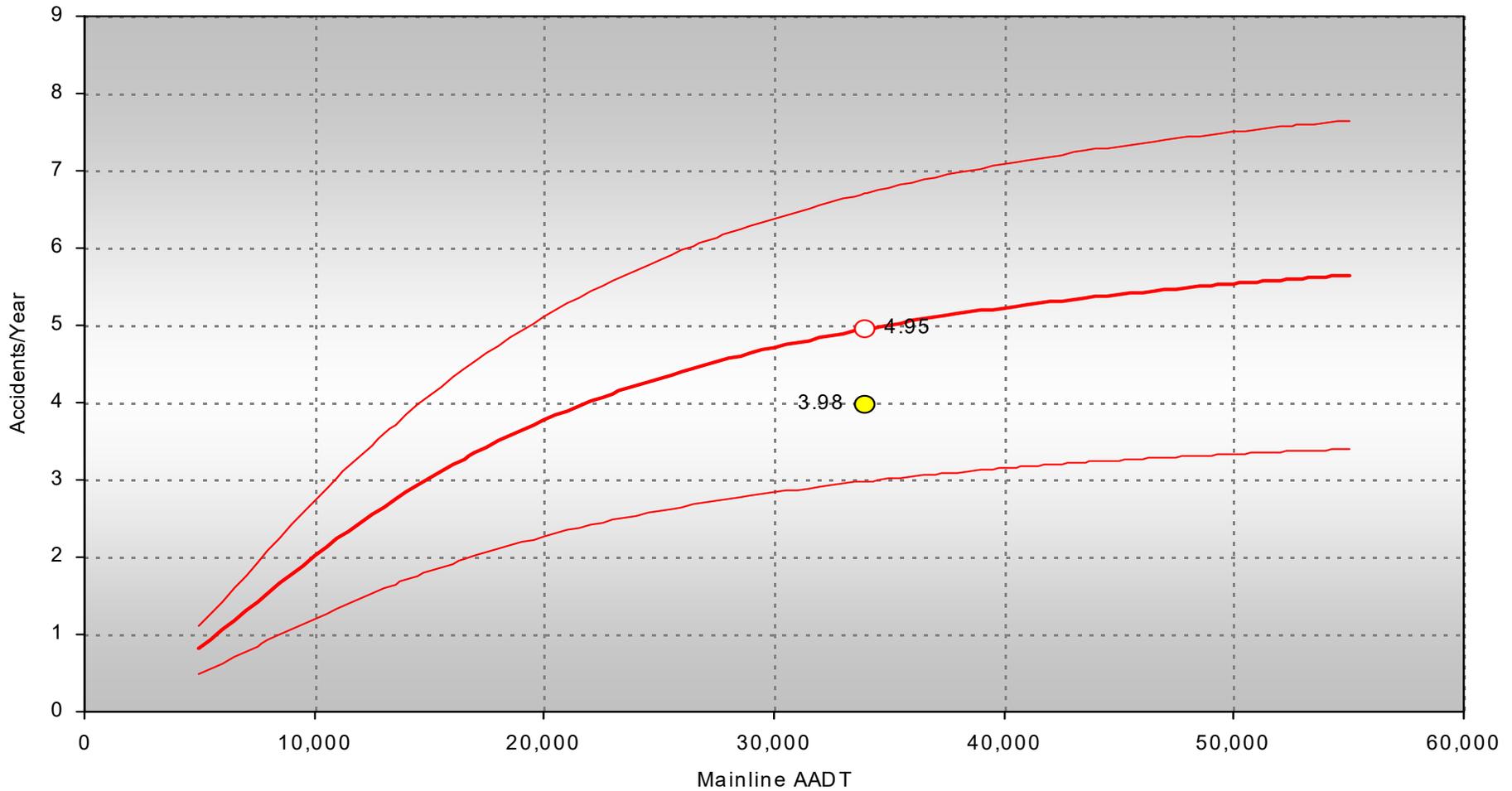
Begin: 35.96

End: 36.00

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — INJ + FAT — Upper Limit (80%) ● Observed (EB) ○ Expected



Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03596_03600 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Property Damage Only (PDO)	3,039	73.69%	45	70.31%	31.25%
	Injury (INJ)	1,074	26.04%	19	29.69%	79.24%
	Fatal (FAT)	11	0.27%	0	0.00%	N/A
	Persons Injured	1,524		22		
	Persons Killed	11		0		N/A
	Single Vehicle Accidents	165	4.00%	3	4.69%	74.65%
	Two Vehicle Accidents	3,519	85.33%	55	85.94%	60.84%
	Three or More Vehicle Accidents	440	10.67%	6	9.38%	46.84%
	Unknown Number of Vehicles	0	0.00%	0	0.00%	N/A
	On Road	3,974	96.36%	62	96.88%	68.11%
	Off Road	150	3.64%	2	3.13%	58.71%
	Off Road Left	74	1.79%	1	1.56%	68.09%
	Off Road Right	71	1.72%	1	1.56%	69.80%
	Off Road at Tee	0	0.00%	0	0.00%	N/A
	Off Road in Median	5	0.12%	0	0.00%	N/A
	Unknown Road Location	0	0.00%	0	0.00%	N/A
	Overtaking	17	0.41%	0	0.00%	N/A
	Other Non Collision	3	0.07%	1	1.56%	99.90%
	Vehicle Cargo or Debris	6	0.15%	0	0.00%	N/A
	Pedestrian	51	1.24%	0	0.00%	N/A
	Broadside	427	10.35%	13	20.31%	99.48%
	Head On	10	0.24%	0	0.00%	N/A
	Rear End	2,311	56.04%	28	43.75%	3.23%
	Sideswipe (Same Direction)	387	9.38%	7	10.94%	75.02%
	Sideswipe (Opposite Direction)	29	0.70%	1	1.56%	92.51%
	Approach Turn	650	15.76%	9	14.06%	43.53%
	Overtaking Turn	19	0.46%	0	0.00%	N/A
	Parked Motor Vehicle	7	0.17%	0	0.00%	N/A
	Railway Vehicle	0	0.00%	0	0.00%	N/A
	Bicycle or Pedal Cycle	50	1.21%	3	4.69%	99.23%
	Motorized Bicycle	0	0.00%	0	0.00%	N/A
	Domestic Animal	3	0.07%	0	0.00%	N/A
	Wild Animal	7	0.17%	0	0.00%	N/A
	Light or Utility Pole	15	0.36%	0	0.00%	N/A
	Traffic Signal Pole or Equipment	21	0.51%	0	0.00%	N/A
	Traffic Sign or Post or Overhead Sign Structure	30	0.73%	1	1.56%	92.06%
	Bridge Rail	0	0.00%	0	0.00%	N/A
	Guard Rail	2	0.05%	0	0.00%	N/A
	Cable Rail	0	0.00%	0	0.00%	N/A
	Concrete Barrier	1	0.02%	0	0.00%	N/A
	Bridge Abutment	0	0.00%	0	0.00%	N/A
	Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
	Culvert or Headwall	1	0.02%	0	0.00%	N/A
	Embankment or Ditch	2	0.05%	0	0.00%	N/A
	Curb or Island	48	1.16%	1	1.56%	82.90%
	Delineator Post	4	0.10%	0	0.00%	N/A
	Fence or Fence Part	0	0.00%	0	0.00%	N/A
	Trees or Shrubs	3	0.07%	0	0.00%	N/A
	Large Boulders or Rocks	1	0.02%	0	0.00%	N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT >32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03596_03600 Cutoff: 5 Acc's @ 95%

CATEGORY	Statewide Average		This Location		Probability
	# Crashes	%	# Crashes	%	%
Rocks in Roadway	0	0.00%	0	0.00%	N/A
Barricade	1	0.02%	0	0.00%	N/A
Wall or Building	1	0.02%	0	0.00%	N/A
Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
Mailbox	0	0.00%	0	0.00%	N/A
Other Fixed Object	11	0.27%	0	0.00%	N/A
Other Object	4	0.10%	0	0.00%	N/A
Road Maintenance Equipment	2	0.05%	0	0.00%	N/A
Unknown Accident Type	0	0.00%	0	0.00%	N/A
Total Fixed Objects	141	3.42%	2	3.13%	62.50%
Total Other Objects	12	0.29%	0	0.00%	N/A
Daylight	2,971	72.04%	36	56.25%	0.49%
Dawn or Dusk	167	4.05%	6	9.38%	98.53%
Dark - Lighted	942	22.84%	21	32.81%	97.62%
Dark - Unlighted	36	0.87%	1	1.56%	89.21%
Unknown Lighting	8	0.19%	0	0.00%	N/A
No Adverse Weather	3,674	89.09%	58	90.63%	71.19%
Rain	179	4.34%	2	3.13%	47.06%
Snow or Sleet or Hail	201	4.87%	4	6.25%	79.88%
Fog	8	0.19%	0	0.00%	N/A
Dust	0	0.00%	0	0.00%	N/A
Wind	12	0.29%	0	0.00%	N/A
Unknown Weather	50	1.21%	0	0.00%	N/A
Dry Road	3,534	85.69%	55	85.94%	57.64%
Wet Road	321	7.78%	4	6.25%	43.67%
Muddy Road	0	0.00%	0	0.00%	N/A
Snowy Road	100	2.42%	4	6.25%	98.04%
Icy Road	96	2.33%	0	0.00%	N/A
Slushy Road	22	0.53%	0	0.00%	N/A
Foreign Material Road	1	0.02%	0	0.00%	N/A
With Road Treatment	0	0.00%	0	0.00%	N/A
Dry with Icy Road Treatment	12	0.29%	0	0.00%	N/A
Wet with Icy Road Treatment	3	0.07%	0	0.00%	N/A
Snowy with Icy Road Treatment	14	0.34%	1	1.56%	97.98%
Icy with Icy Road Treatment	3	0.07%	0	0.00%	N/A
Slushy with Icy Road Treatment	1	0.02%	0	0.00%	N/A
Unknown Road Condition	17	0.41%	0	0.00%	N/A
Driver 1 - No Apparent Contributing Factor	1,777	43.09%	35	54.69%	97.67%
Driver 1 - Asleep at the Wheel	17	0.41%	0	0.00%	N/A
Driver 1 - Illness	27	0.65%	1	1.56%	93.38%
Driver 1 - Distracted by Passenger	56	1.36%	0	0.00%	N/A
Driver 1 - Driver Inexperience	360	8.73%	1	1.56%	2.06%
Driver 1 - Driver Fatigue	29	0.70%	0	0.00%	N/A
Driver 1 - Driver Preoccupied	656	15.91%	11	17.19%	68.50%
Driver 1 - Driver Unfamiliar with Area	106	2.57%	3	4.69%	91.74%
Driver 1 - Driver Emotionally Upset	16	0.39%	0	0.00%	N/A
Driver 1 - Evading Law Enforcement Officer	8	0.19%	0	0.00%	N/A
Driver 1 - Physical Disability	7	0.17%	0	0.00%	N/A
Driver 1 - Unknown Contributing Factor	1,065	25.82%	13	20.31%	19.52%

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT >32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03596_03600 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Driver 1 - No Impairment Suspected	3,917	94.98%	63	98.44%	96.30% 
	Driver 1 - Alcohol Involved	165	4.00%	0	0.00%	N/A
	Driver 1 - RX, Medication, or Drugs Involved	20	0.48%	0	0.00%	N/A
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	22	0.53%	1	1.56%	95.39%
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	4,124		64		
	Total Number of Records	59		0		N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT >32000 ADT (2018)



28th Street & Walnut Street

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection
Major Street:	28 th Street AADT: 33,300 vpd
Minor Street:	Walnut Street AADT: 9,400 vpd
2016-2020 Crash History	32 total crashes (7 injury crashes)
LOSS:	LOSS I (Total), LOSS I (Severe)
Diagnostic Patterns:	No crash type diagnostic patterns

28th Street has six general purpose travel lanes and Walnut Street has two general purpose travel lanes. Between 2016 and 2020, 32 total crashes were recorded at the intersection. This is consistent with LOSS I conditions, indicating a low potential for crash reduction. Rear end crashes were most common (53%), followed by sideswipe (same direction) (16%), approach turn (13%), broadside (9%), and bicycle (6%).

Injury Crashes

7 injury crashes were recorded at the intersection, consistent with LOSS I conditions, indicating low potential for crash reduction. Severe crash types included rear end (5 crashes), approach turn (1 crash), and bicycle (1 crash). All 7 crashes occurred during dry road conditions. Driver preoccupation (driver preoccupied) was cited in 2 of 7 crashes.

Rear End Crashes

17 rear end crashes occurred at the intersection, including 5 that resulted in injury.

- For total crashes, 11 involved north/northwest-bound vehicles and 6 involved southbound vehicles
- For injury crashes, 2 involved north/northwest-bound vehicles and 2 involved southbound vehicles

Approach Turn Crashes

4 approach turn crashes occurred at the intersection, including 1 that resulted in injury. 2 crashes involved southbound vehicles and 1 crash each involved northbound and westbound vehicles.

Sideswipe (Same Direction) Crashes

5 sideswipe (same direction) crashes occurred at the intersection, none resulting in injury. 3 involved northbound vehicles and 2 involved southbound vehicles.

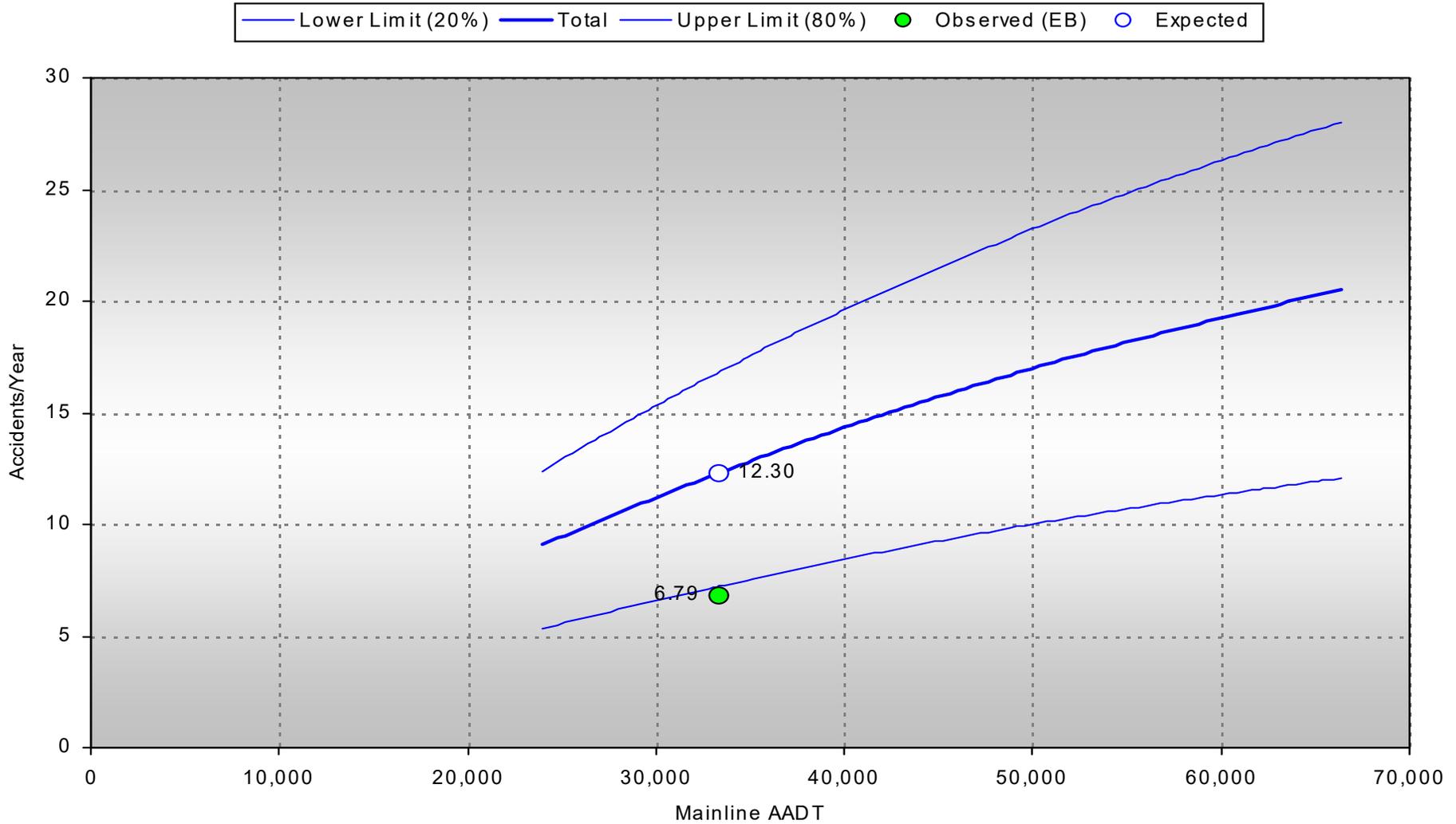
Location: 000000036B

Begin: 36.10

End: 36.14

From: 01/01/2016

To: 12/31/2020



Location: 000000036B

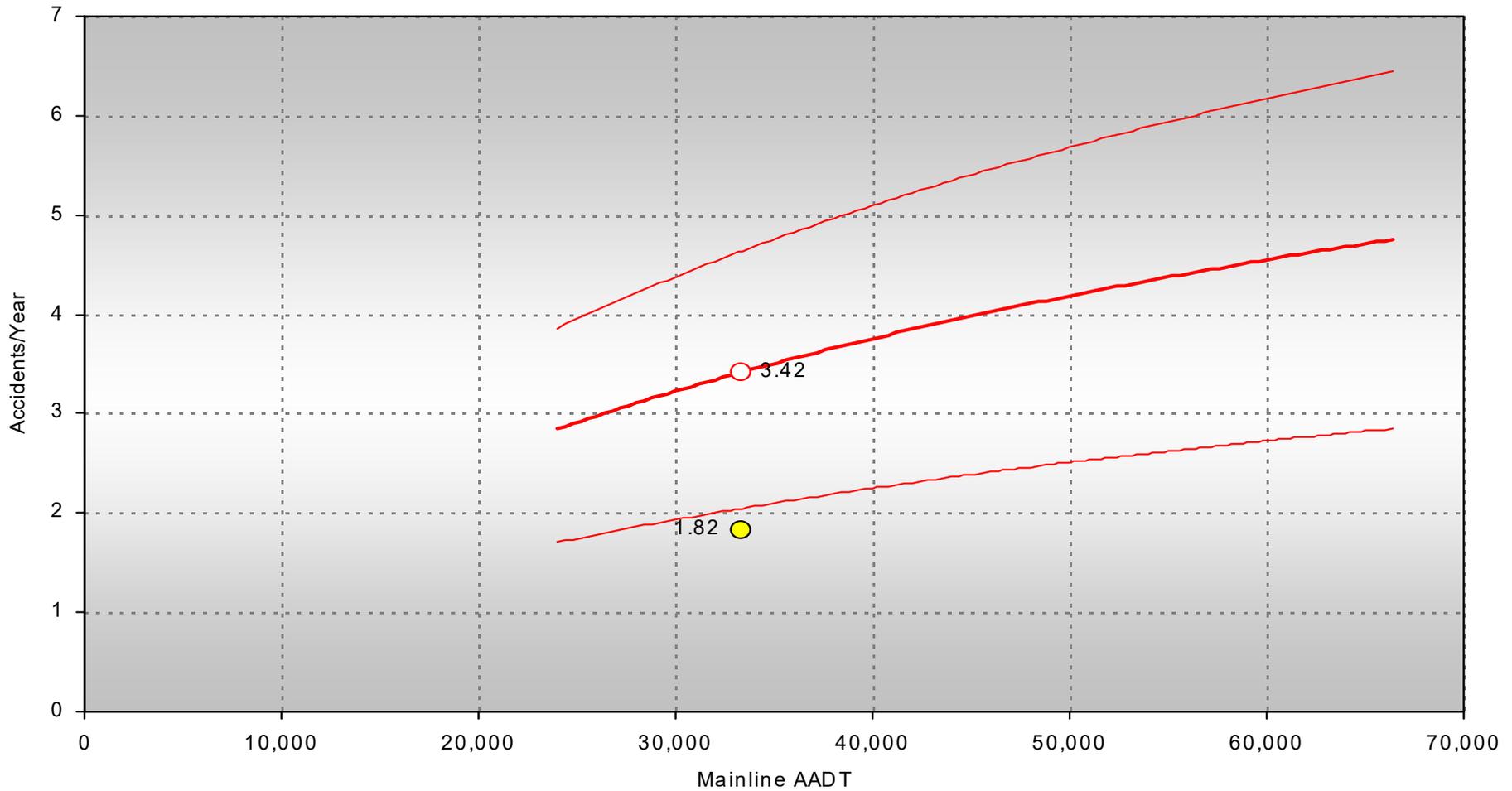
Begin: 36.10

End: 36.14

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — INJ + FAT — Upper Limit (80%) ● Observed (EB) ○ Expected



Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03610_03614 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Property Damage Only (PDO)	3,688	74.88%	25	78.13%	72.72%
	Injury (INJ)	1,227	24.91%	7	21.88%	43.69%
	Fatal (FAT)	10	0.20%	0	0.00%	N/A
	Persons Injured	1,720		9		
	Persons Killed	11		0		N/A
	Single Vehicle Accidents	170	3.45%	1	3.13%	69.67%
	Two Vehicle Accidents	4,289	87.09%	28	87.50%	60.68%
	Three or More Vehicle Accidents	466	9.46%	3	9.38%	64.09%
	Unknown Number of Vehicles	0	0.00%	0	0.00%	N/A
	On Road	4,770	96.85%	31	96.88%	64.06%
	Off Road	154	3.13%	1	3.13%	73.56%
	Off Road Left	65	1.32%	1	3.13%	93.34%
	Off Road Right	83	1.69%	0	0.00%	N/A
	Off Road at Tee	1	0.02%	0	0.00%	N/A
	Off Road in Median	5	0.10%	0	0.00%	N/A
	Unknown Road Location	1	0.02%	0	0.00%	N/A
	Overtaking	26	0.53%	0	0.00%	N/A
	Other Non Collision	10	0.20%	0	0.00%	N/A
	Vehicle Cargo or Debris	9	0.18%	0	0.00%	N/A
	Pedestrian	98	1.99%	0	0.00%	N/A
	Broadside	557	11.31%	3	9.38%	50.33%
	Head On	8	0.16%	0	0.00%	N/A
	Rear End	2,527	51.31%	17	53.13%	64.80%
	Sideswipe (Same Direction)	520	10.56%	5	15.63%	88.48%
	Sideswipe (Opposite Direction)	29	0.59%	0	0.00%	N/A
	Approach Turn	845	17.16%	4	12.50%	33.69%
	Overtaking Turn	29	0.59%	0	0.00%	N/A
	Parked Motor Vehicle	11	0.22%	0	0.00%	N/A
	Railway Vehicle	7	0.14%	0	0.00%	N/A
	Bicycle or Pedal Cycle	93	1.89%	2	6.25%	97.78%
	Motorized Bicycle	0	0.00%	0	0.00%	N/A
	Domestic Animal	0	0.00%	0	0.00%	N/A
	Wild Animal	6	0.12%	0	0.00%	N/A
	Light or Utility Pole	19	0.39%	0	0.00%	N/A
	Traffic Signal Pole or Equipment	19	0.39%	0	0.00%	N/A
	Traffic Sign or Post or Overhead Sign Structure	32	0.65%	0	0.00%	N/A
	Bridge Rail	2	0.04%	0	0.00%	N/A
	Guard Rail	3	0.06%	0	0.00%	N/A
	Cable Rail	0	0.00%	0	0.00%	N/A
	Concrete Barrier	5	0.10%	0	0.00%	N/A
	Bridge Abutment	0	0.00%	0	0.00%	N/A
	Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
	Culvert or Headwall	0	0.00%	0	0.00%	N/A
	Embankment or Ditch	0	0.00%	0	0.00%	N/A
	Curb or Island	30	0.61%	1	3.13%	98.37%
	Delineator Post	3	0.06%	0	0.00%	N/A
	Fence or Fence Part	3	0.06%	0	0.00%	N/A
	Trees or Shrubs	2	0.04%	0	0.00%	N/A
	Large Boulders or Rocks	1	0.02%	0	0.00%	N/A

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03610_03614 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Rocks in Roadway	0	0.00%	0	0.00%	N/A
	Barricade	3	0.06%	0	0.00%	N/A
	Wall or Building	3	0.06%	0	0.00%	N/A
	Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
	Mailbox	0	0.00%	0	0.00%	N/A
	Other Fixed Object	21	0.43%	0	0.00%	N/A
	Other Object	0	0.00%	0	0.00%	N/A
	Road Maintenance Equipment	4	0.08%	0	0.00%	N/A
	Unknown Accident Type	0	0.00%	0	0.00%	N/A
	Total Fixed Objects	146	2.96%	1	3.13%	75.50%
	Total Other Objects	13	0.26%	0	0.00%	N/A
	Daylight	3,540	71.88%	23	71.88%	56.65%
	Dawn or Dusk	180	3.65%	3	9.38%	97.16%
	Dark - Lighted	1,148	23.31%	6	18.75%	35.66%
	Dark - Unlighted	46	0.93%	0	0.00%	N/A
	Unknown Lighting	11	0.22%	0	0.00%	N/A
	No Adverse Weather	4,372	88.77%	26	81.25%	14.30%
	Rain	225	4.57%	5	15.63%	99.70%
	Snow or Sleet or Hail	290	5.89%	0	0.00%	N/A
	Fog	5	0.10%	0	0.00%	N/A
	Dust	0	0.00%	0	0.00%	N/A
	Wind	15	0.30%	0	0.00%	N/A
	Unknown Weather	18	0.37%	1	3.13%	99.38%
	Dry Road	4,143	84.12%	27	84.38%	58.99%
	Wet Road	421	8.55%	5	15.63%	94.87%
	Muddy Road	2	0.04%	0	0.00%	N/A
	Snowy Road	139	2.82%	0	0.00%	N/A
	Icy Road	144	2.92%	0	0.00%	N/A
	Slushy Road	26	0.53%	0	0.00%	N/A
	Foreign Material Road	0	0.00%	0	0.00%	N/A
	With Road Treatment	0	0.00%	0	0.00%	N/A
	Dry with Icy Road Treatment	6	0.12%	0	0.00%	N/A
	Wet with Icy Road Treatment	8	0.16%	0	0.00%	N/A
	Snowy with Icy Road Treatment	8	0.16%	0	0.00%	N/A
	Icy with Icy Road Treatment	9	0.18%	0	0.00%	N/A
	Slushy with Icy Road Treatment	5	0.10%	0	0.00%	N/A
	Unknown Road Condition	14	0.28%	0	0.00%	N/A
	Driver 1 - No Apparent Contributing Factor	2,379	48.30%	17	53.13%	76.50%
	Driver 1 - Asleep at the Wheel	11	0.22%	0	0.00%	N/A
	Driver 1 - Illness	28	0.57%	0	0.00%	N/A
	Driver 1 - Distracted by Passenger	66	1.34%	0	0.00%	N/A
	Driver 1 - Driver Inexperience	390	7.92%	2	6.25%	52.95%
	Driver 1 - Driver Fatigue	28	0.57%	0	0.00%	N/A
	Driver 1 - Driver Preoccupied	709	14.40%	4	12.50%	50.32%
	Driver 1 - Driver Unfamiliar with Area	114	2.31%	0	0.00%	N/A
	Driver 1 - Driver Emotionally Upset	11	0.22%	0	0.00%	N/A
	Driver 1 - Evading Law Enforcement Officer	6	0.12%	0	0.00%	N/A
	Driver 1 - Physical Disability	6	0.12%	0	0.00%	N/A
	Driver 1 - Unknown Contributing Factor	1,177	23.90%	9	28.13%	78.31%

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03610_03614 **Cutoff:** 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Driver 1 - No Impairment Suspected	4,725	95.94%	32	100.00%	100.00% 
	Driver 1 - Alcohol Involved	154	3.13%	0	0.00%	N/A
	Driver 1 - RX, Medication, or Drugs Involved	18	0.37%	0	0.00%	N/A
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	28	0.57%	0	0.00%	N/A
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	4,925		32		
	Total Number of Records	69		0		N/A

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)



28th Street & Canyon Boulevard

Classification:	Urban 6-Lane Divided Signalized 4-Leg Intersection
Major Street:	28 th Street AADT: 37,100 vpd
Minor Street:	Canyon Boulevard AADT: 21,100 vpd
2016-2020 Crash History	57 total crashes (11 injury crashes)
LOSS:	LOSS II (Total), LOSS I (Severe)
Diagnostic Patterns:	Rear End, Side Swipe (Same Direction)

28th Street has five general purpose travel lanes and Canyon Boulevard has four general purpose travel lanes (west of 28th Street). The 6-lane Safety Performance Function (SPF) was applied as a 5-lane SPF is not available. Between 2016 and 2020, 57 total crashes were recorded at the intersection. This is consistent with LOSS II conditions, indicating a low to moderate potential for crash reduction. Rear end crashes were most common (63%), followed by sideswipe (same direction) (19%), approach turn (7%), and broadside (4%).

Injury Crashes

11 injury crashes were recorded at the intersection, consistent with LOSS I conditions, indicating low potential for crash reduction. Severe crash types included rear end (8 crashes), approach turn (2 crashes), and broadside (1 crash). 10 crashes occurred during dry road conditions. Driver inexperience, driver fatigue, and driver preoccupation (driver preoccupied) were cited in 4 of 11 crashes.

Rear End Crashes

36 rear end crashes occurred at the intersection, including 8 that resulted in injury.

- For total crashes, 19 involved southbound vehicles, 9 involved north/northwest-bound vehicles, and 7 involved eastbound vehicles
- For injury crashes, 4 involved southbound vehicles, 2 involved northbound vehicles, and 2 involved eastbound vehicles

Sideswipe (Same Direction) Crashes

11 sideswipe (same direction) crashes occurred at the intersection, none resulting in injury. 5 involved southbound vehicles, 3 involved north/northwest-bound vehicles, 2 involved eastbound vehicles, and 1 involved westbound vehicles.

Location: 000000036B 7B

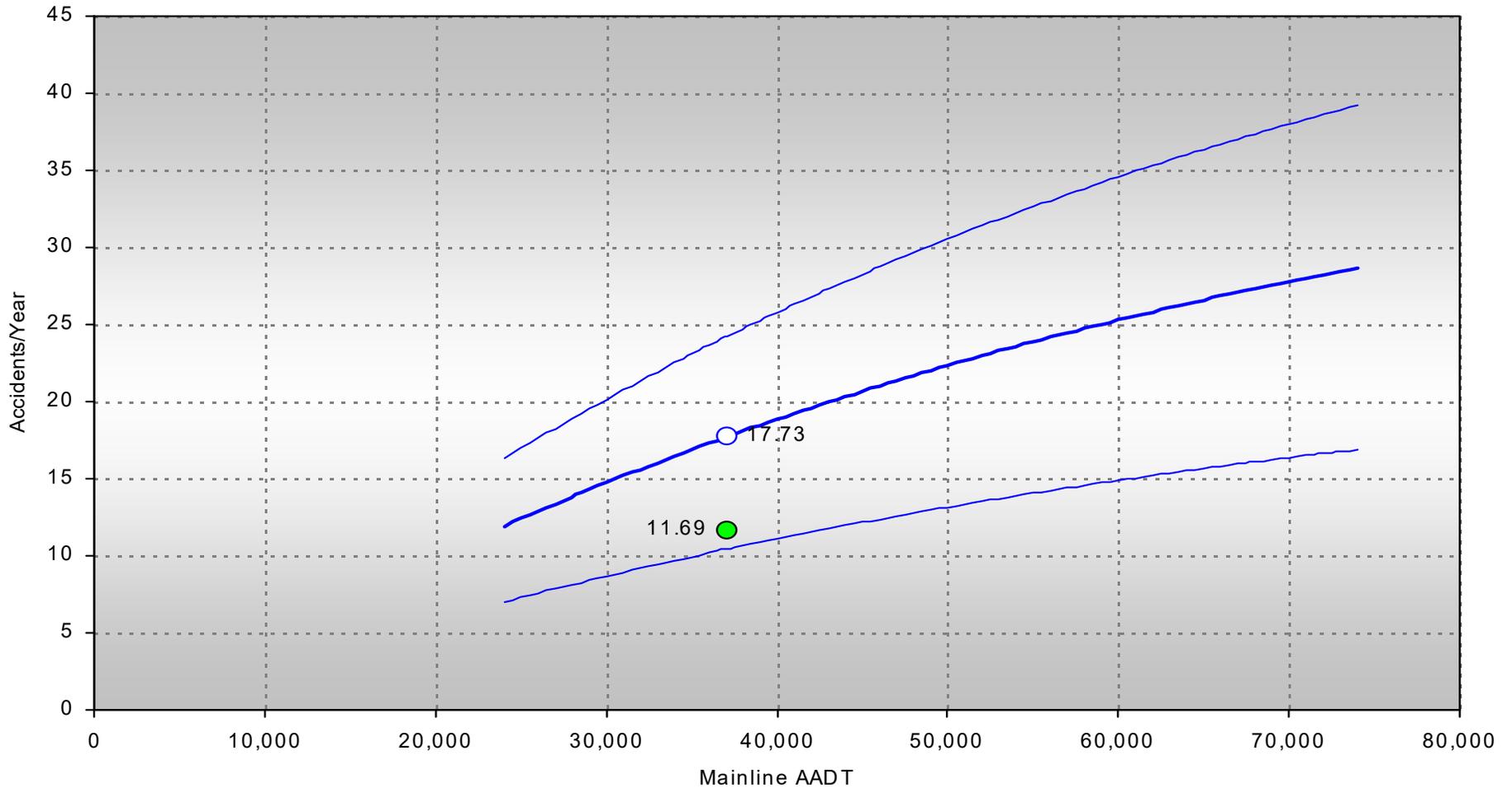
Begin: 36.32

End: 36.36

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — Total — Upper Limit (80%) ● Observed (EB) ○ Expected



Location: 000000036B 7B

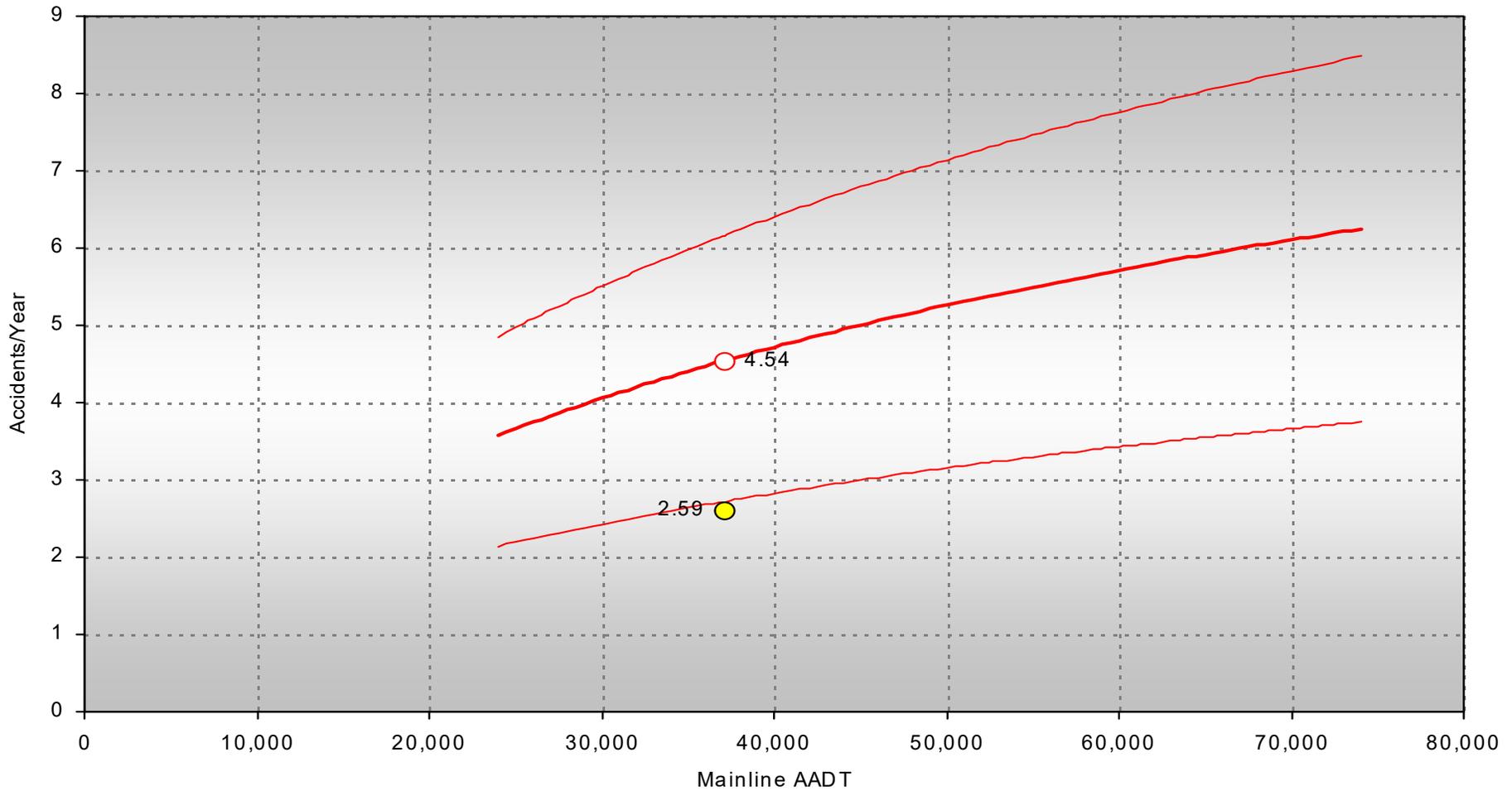
Begin: 36.32

End: 36.36

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — INJ + FAT — Upper Limit (80%) ● Observed (EB) ○ Expected



Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03632_03636 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Property Damage Only (PDO)	3,688	74.88%	46	80.70%	88.05%
	Injury (INJ)	1,227	24.91%	11	19.30%	20.65%
	Fatal (FAT)	10	0.20%	0	0.00%	N/A
	Persons Injured	1,720		14		
	Persons Killed	11		0		N/A
	Single Vehicle Accidents	170	3.45%	4	7.02%	95.33%
	Two Vehicle Accidents	4,289	87.09%	50	87.72%	61.59%
	Three or More Vehicle Accidents	466	9.46%	3	5.26%	20.01%
	Unknown Number of Vehicles	0	0.00%	0	0.00%	N/A
	On Road	4,770	96.85%	55	96.49%	53.91%
	Off Road	154	3.13%	2	3.51%	73.63%
	Off Road Left	65	1.32%	0	0.00%	N/A
	Off Road Right	83	1.69%	2	3.51%	92.84%
	Off Road at Tee	1	0.02%	0	0.00%	N/A
	Off Road in Median	5	0.10%	0	0.00%	N/A
	Unknown Road Location	1	0.02%	0	0.00%	N/A
	Overtaking	26	0.53%	0	0.00%	N/A
	Other Non Collision	10	0.20%	0	0.00%	N/A
	Vehicle Cargo or Debris	9	0.18%	0	0.00%	N/A
	Pedestrian	98	1.99%	0	0.00%	N/A
	Broadside	557	11.31%	2	3.51%	3.66%
	Head On	8	0.16%	0	0.00%	N/A
	Rear End	2,527	51.31%	36	63.16%	97.34% 
	Sideswipe (Same Direction)	520	10.56%	11	19.30%	98.54% 
	Sideswipe (Opposite Direction)	29	0.59%	0	0.00%	N/A
	Approach Turn	845	17.16%	4	7.02%	2.34%
	Overtaking Turn	29	0.59%	0	0.00%	N/A
	Parked Motor Vehicle	11	0.22%	1	1.75%	99.27%
	Railway Vehicle	7	0.14%	0	0.00%	N/A
	Bicycle or Pedal Cycle	93	1.89%	0	0.00%	N/A
	Motorized Bicycle	0	0.00%	0	0.00%	N/A
	Domestic Animal	0	0.00%	0	0.00%	N/A
	Wild Animal	6	0.12%	0	0.00%	N/A
	Light or Utility Pole	19	0.39%	1	1.75%	97.94%
	Traffic Signal Pole or Equipment	19	0.39%	0	0.00%	N/A
	Traffic Sign or Post or Overhead Sign Structure	32	0.65%	1	1.75%	94.67%
	Bridge Rail	2	0.04%	0	0.00%	N/A
	Guard Rail	3	0.06%	0	0.00%	N/A
	Cable Rail	0	0.00%	0	0.00%	N/A
	Concrete Barrier	5	0.10%	0	0.00%	N/A
	Bridge Abutment	0	0.00%	0	0.00%	N/A
	Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
	Culvert or Headwall	0	0.00%	0	0.00%	N/A
	Embankment or Ditch	0	0.00%	0	0.00%	N/A
	Curb or Island	30	0.61%	0	0.00%	N/A
	Delineator Post	3	0.06%	0	0.00%	N/A
	Fence or Fence Part	3	0.06%	0	0.00%	N/A
	Trees or Shrubs	2	0.04%	0	0.00%	N/A
	Large Boulders or Rocks	1	0.02%	0	0.00%	N/A

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03632_03636 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Rocks in Roadway	0	0.00%	0	0.00%	N/A
	Barricade	3	0.06%	0	0.00%	N/A
	Wall or Building	3	0.06%	0	0.00%	N/A
	Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
	Mailbox	0	0.00%	0	0.00%	N/A
	Other Fixed Object	21	0.43%	1	1.75%	97.52%
	Other Object	0	0.00%	0	0.00%	N/A
	Road Maintenance Equipment	4	0.08%	0	0.00%	N/A
	Unknown Accident Type	0	0.00%	0	0.00%	N/A
	Total Fixed Objects	146	2.96%	3	5.26%	91.13%
	Total Other Objects	13	0.26%	0	0.00%	N/A
	Daylight	3,540	71.88%	47	82.46%	97.73%
	Dawn or Dusk	180	3.65%	1	1.75%	37.87%
	Dark - Lighted	1,148	23.31%	9	15.79%	11.49%
	Dark - Unlighted	46	0.93%	0	0.00%	N/A
	Unknown Lighting	11	0.22%	0	0.00%	N/A
	No Adverse Weather	4,372	88.77%	53	92.98%	89.53%
	Rain	225	4.57%	1	1.75%	25.94%
	Snow or Sleet or Hail	290	5.89%	2	3.51%	34.02%
	Fog	5	0.10%	0	0.00%	N/A
	Dust	0	0.00%	0	0.00%	N/A
	Wind	15	0.30%	1	1.75%	98.68%
	Unknown Weather	18	0.37%	0	0.00%	N/A
	Dry Road	4,143	84.12%	53	92.98%	98.61%
	Wet Road	421	8.55%	2	3.51%	12.44%
	Muddy Road	2	0.04%	0	0.00%	N/A
	Snowy Road	139	2.82%	1	1.75%	51.93%
	Icy Road	144	2.92%	1	1.75%	50.06%
	Slushy Road	26	0.53%	0	0.00%	N/A
	Foreign Material Road	0	0.00%	0	0.00%	N/A
	With Road Treatment	0	0.00%	0	0.00%	N/A
	Dry with Icy Road Treatment	6	0.12%	0	0.00%	N/A
	Wet with Icy Road Treatment	8	0.16%	0	0.00%	N/A
	Snowy with Icy Road Treatment	8	0.16%	0	0.00%	N/A
	Icy with Icy Road Treatment	9	0.18%	0	0.00%	N/A
	Slushy with Icy Road Treatment	5	0.10%	0	0.00%	N/A
	Unknown Road Condition	14	0.28%	0	0.00%	N/A
	Driver 1 - No Apparent Contributing Factor	2,379	48.30%	20	35.09%	3.04%
	Driver 1 - Asleep at the Wheel	11	0.22%	0	0.00%	N/A
	Driver 1 - Illness	28	0.57%	2	3.51%	99.57%
	Driver 1 - Distracted by Passenger	66	1.34%	0	0.00%	N/A
	Driver 1 - Driver Inexperience	390	7.92%	9	15.79%	98.67%
	Driver 1 - Driver Fatigue	28	0.57%	2	3.51%	99.57%
	Driver 1 - Driver Preoccupied	709	14.40%	7	12.28%	41.18%
	Driver 1 - Driver Unfamiliar with Area	114	2.31%	1	1.75%	61.87%
	Driver 1 - Driver Emotionally Upset	11	0.22%	0	0.00%	N/A
	Driver 1 - Evading Law Enforcement Officer	6	0.12%	0	0.00%	N/A
	Driver 1 - Physical Disability	6	0.12%	0	0.00%	N/A
	Driver 1 - Unknown Contributing Factor	1,177	23.90%	16	28.07%	81.59%

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE36B_03632_03636 **Cutoff:** 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	
	Driver 1 - No Impairment Suspected	4,725	95.94%	56	98.25%	90.59%
	Driver 1 - Alcohol Involved	154	3.13%	1	1.75%	46.44%
	Driver 1 - RX, Medication, or Drugs Involved	18	0.37%	0	0.00%	N/A
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	28	0.57%	0	0.00%	N/A
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	4,925		57		
	Total Number of Records	69		0		N/A

Highway Class: CO - Urban 6-Lane Divided Signalized 4-Leg Intersections - AADT 0-48000 ADT (2018)



Arapahoe Avenue & Broadway

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection
Major Street:	Broadway AADT: 24,100 vpd
Minor Street:	Arapahoe Avenue AADT: 14,300 vpd
2016-2020 Crash History	42 total crashes (13 injury crashes)
LOSS:	LOSS II (Total), LOSS II (Severe)
Diagnostic Patterns:	No crash type diagnostic patterns

Broadway has four general purpose travel lanes and Arapahoe Avenue has two general purpose travel lanes. Between 2016 and 2020, 42 total crashes were recorded at the intersection. This is consistent with LOSS II conditions, indicating a low to moderate potential for crash reduction. Rear end crashes were most common (55%), followed by broadside (14%), sideswipe (same direction) (12%), approach turn (12%), and bicycle (7%).

Injury Crashes

13 injury crashes were recorded at the intersection, consistent with LOSS II conditions, indicating low to moderate potential for crash reduction. Severe crash types included rear end (5 crashes), approach turn (3 crashes), bicycle (3 crashes), and broadside (2 crashes). 9 crashes occurred during dry road conditions. Driver inexperience and driver preoccupation (driver preoccupied) were cited in 2 of 13 crashes.

Rear End Crashes

23 rear end crashes occurred at the intersection, including 5 that resulted in injury.

- For total crashes, 11 involved northbound vehicles, 9 involved southbound vehicles, 2 involved westbound vehicles, and 1 involved eastbound vehicles
- For injury crashes, 4 involved northbound vehicles and 1 involved westbound vehicles

Approach Turn Crashes

5 approach turn crashes occurred at the intersection, including 3 that resulted in injury. 2 crashes involved westbound vehicles and one crash each involved a northbound vehicle, eastbound vehicle, and southbound vehicle.

Broadside Crashes

6 broadside crashes occurred at the intersection, including 2 that resulted in injury. 3 involved a westbound vehicle, 2 involved a southbound vehicle, and 1 involved a northbound vehicle.



Sideswipe (Same Direction) Crashes

5 sideswipe (same direction) crashes occurred at the intersection, none resulting in injury. 2 involved northbound vehicles, 2 involved southbound vehicles, and 1 involved westbound vehicles.

Location: 000000093A

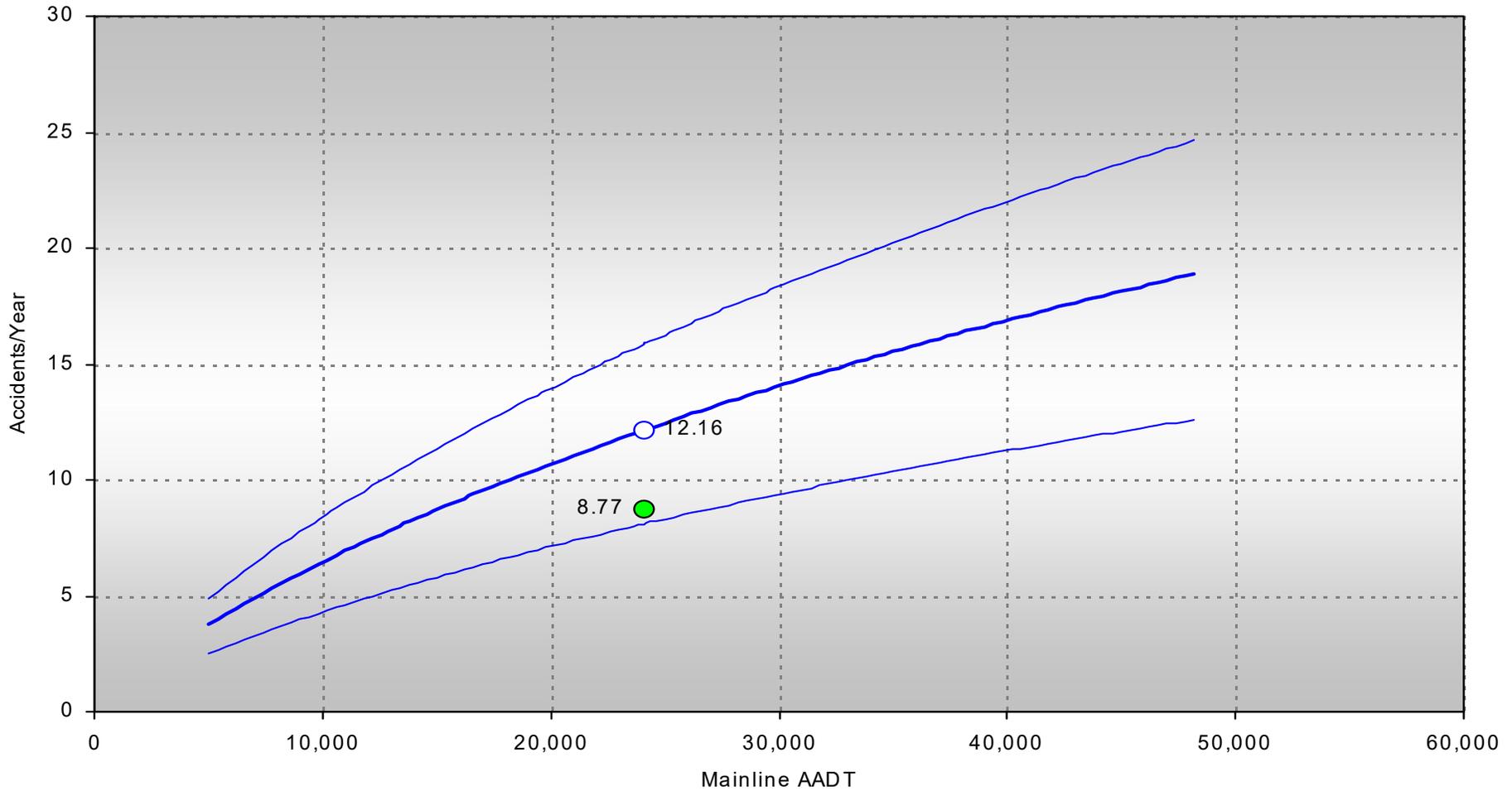
Begin: 18.70

End: 18.74

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — Total — Upper Limit (80%) ● Observed (EB) ○ Expected



Location: 000000093A

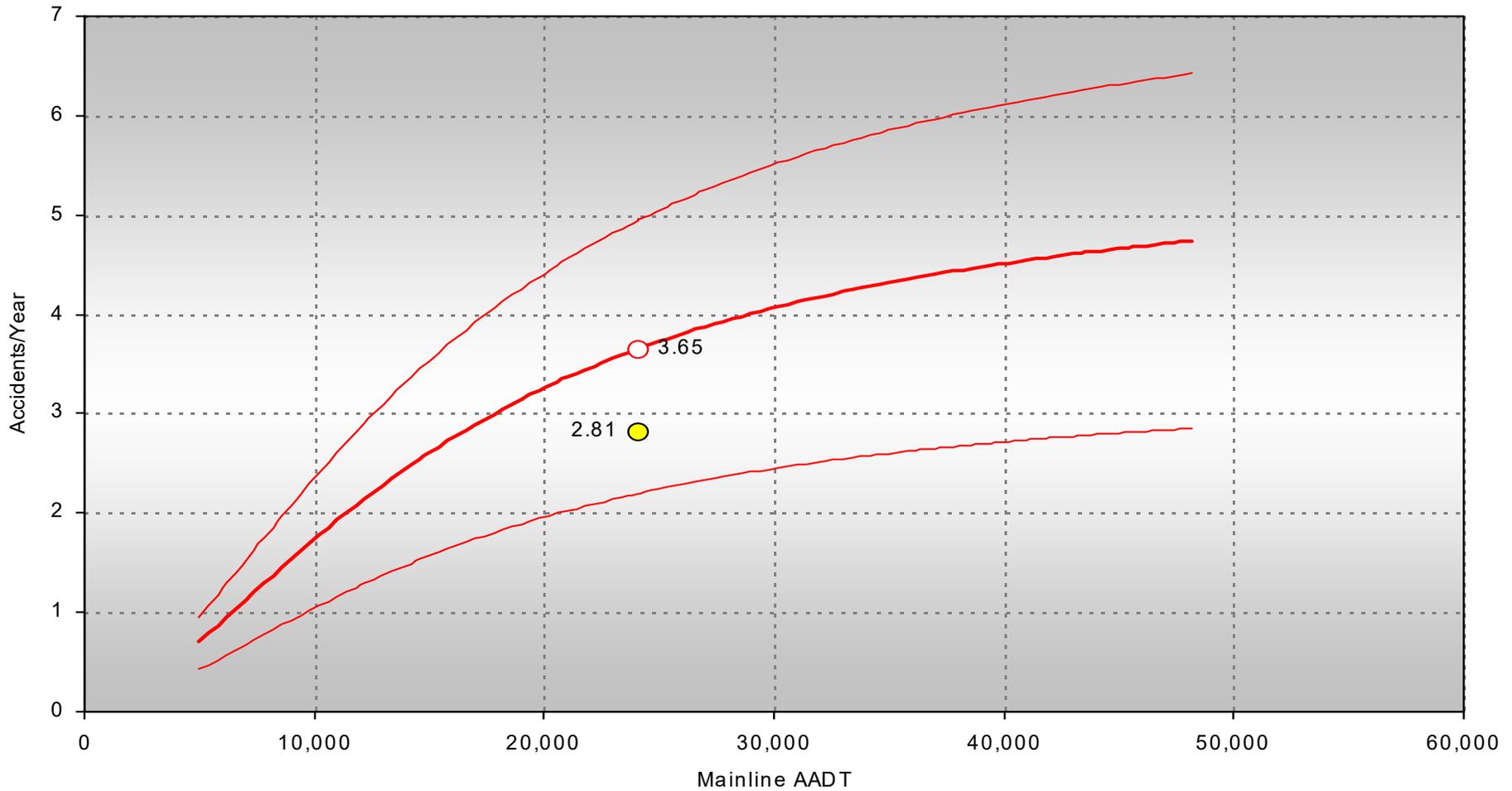
Begin: 18.70

End: 18.74

From: 01/01/2016

To: 12/31/2020

— Lower Limit (20%) — INJ + FAT — Upper Limit (80%) ● Observed (EB) ○ Expected



Location File: DIRECT_DIAGNOSTICS_FOR_RTE93A_01870_01874 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Property Damage Only (PDO)	4,301	71.16%	29	69.05%	43.81%
	Injury (INJ)	1,723	28.51%	13	30.95%	70.51%
	Fatal (FAT)	20	0.33%	0	0.00%	N/A
	Persons Injured	2,451		17		
	Persons Killed	21		0		N/A
	Single Vehicle Accidents	283	4.68%	0	0.00%	N/A
	Two Vehicle Accidents	5,298	87.66%	42	100.00%	100.00%
	Three or More Vehicle Accidents	462	7.64%	0	0.00%	N/A
	Unknown Number of Vehicles	1	0.02%	0	0.00%	N/A
	On Road	5,789	95.78%	42	100.00%	100.00%
	Off Road	254	4.20%	0	0.00%	N/A
	Off Road Left	111	1.84%	0	0.00%	N/A
	Off Road Right	130	2.15%	0	0.00%	N/A
	Off Road at Tee	3	0.05%	0	0.00%	N/A
	Off Road in Median	10	0.17%	0	0.00%	N/A
	Unknown Road Location	1	0.02%	0	0.00%	N/A
	Overtaking	29	0.48%	0	0.00%	N/A
	Other Non Collision	13	0.22%	0	0.00%	N/A
	Vehicle Cargo or Debris	8	0.13%	0	0.00%	N/A
	Pedestrian	112	1.85%	0	0.00%	N/A
	Broadside	873	14.44%	6	14.29%	59.51%
	Head On	20	0.33%	0	0.00%	N/A
	Rear End	3,015	49.88%	23	54.76%	78.40%
	Sideswipe (Same Direction)	528	8.74%	5	11.90%	84.33%
	Sideswipe (Opposite Direction)	36	0.60%	0	0.00%	N/A
	Approach Turn	968	16.02%	5	11.90%	31.61%
	Overtaking Turn	50	0.83%	0	0.00%	N/A
	Parked Motor Vehicle	13	0.22%	0	0.00%	N/A
	Railway Vehicle	0	0.00%	0	0.00%	N/A
	Bicycle or Pedal Cycle	114	1.89%	3	7.14%	99.20%
	Motorized Bicycle	0	0.00%	0	0.00%	N/A
	Domestic Animal	2	0.03%	0	0.00%	N/A
	Wild Animal	7	0.12%	0	0.00%	N/A
	Light or Utility Pole	36	0.60%	0	0.00%	N/A
	Traffic Signal Pole or Equipment	40	0.66%	0	0.00%	N/A
	Traffic Sign or Post or Overhead Sign Structure	51	0.84%	0	0.00%	N/A
	Bridge Rail	0	0.00%	0	0.00%	N/A
	Guard Rail	0	0.00%	0	0.00%	N/A
	Cable Rail	0	0.00%	0	0.00%	N/A
	Concrete Barrier	9	0.15%	0	0.00%	N/A
	Bridge Abutment	0	0.00%	0	0.00%	N/A
	Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
	Culvert or Headwall	0	0.00%	0	0.00%	N/A
	Embankment or Ditch	3	0.05%	0	0.00%	N/A
	Curb or Island	65	1.08%	0	0.00%	N/A
	Delineator Post	3	0.05%	0	0.00%	N/A
	Fence or Fence Part	6	0.10%	0	0.00%	N/A
	Trees or Shrubs	6	0.10%	0	0.00%	N/A
	Large Boulders or Rocks	0	0.00%	0	0.00%	N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE93A_01870_01874 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Rocks in Roadway	0	0.00%	0	0.00%	N/A
	Barricade	2	0.03%	0	0.00%	N/A
	Wall or Building	5	0.08%	0	0.00%	N/A
	Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
	Mailbox	0	0.00%	0	0.00%	N/A
	Other Fixed Object	16	0.26%	0	0.00%	N/A
	Other Object	7	0.12%	0	0.00%	N/A
	Road Maintenance Equipment	7	0.12%	0	0.00%	N/A
	Unknown Accident Type	0	0.00%	0	0.00%	N/A
	Total Fixed Objects	242	4.00%	0	0.00%	N/A
	Total Other Objects	22	0.36%	0	0.00%	N/A
	Daylight	4,337	71.76%	34	80.95%	93.77%
	Dawn or Dusk	271	4.48%	2	4.76%	70.90%
	Dark - Lighted	1,339	22.15%	5	11.90%	7.22%
	Dark - Unlighted	89	1.47%	1	2.38%	87.29%
	Unknown Lighting	8	0.13%	0	0.00%	N/A
	No Adverse Weather	5,371	88.86%	39	92.86%	86.10%
	Rain	242	4.00%	1	2.38%	49.46%
	Snow or Sleet or Hail	354	5.86%	2	4.76%	55.06%
	Fog	15	0.25%	0	0.00%	N/A
	Dust	1	0.02%	0	0.00%	N/A
	Wind	38	0.63%	0	0.00%	N/A
	Unknown Weather	23	0.38%	0	0.00%	N/A
	Dry Road	5,126	84.81%	35	83.33%	45.92%
	Wet Road	442	7.31%	3	7.14%	63.07%
	Muddy Road	2	0.03%	0	0.00%	N/A
	Snowy Road	184	3.04%	1	2.38%	63.29%
	Icy Road	178	2.95%	3	7.14%	96.53%
	Slushy Road	28	0.46%	0	0.00%	N/A
	Foreign Material Road	7	0.12%	0	0.00%	N/A
	With Road Treatment	0	0.00%	0	0.00%	N/A
	Dry with Icy Road Treatment	20	0.33%	0	0.00%	N/A
	Wet with Icy Road Treatment	9	0.15%	0	0.00%	N/A
	Snowy with Icy Road Treatment	25	0.41%	0	0.00%	N/A
	Icy with Icy Road Treatment	11	0.18%	0	0.00%	N/A
	Slushy with Icy Road Treatment	3	0.05%	0	0.00%	N/A
	Unknown Road Condition	9	0.15%	0	0.00%	N/A
	Driver 1 - No Apparent Contributing Factor	2,897	47.93%	21	50.00%	66.41%
	Driver 1 - Asleep at the Wheel	25	0.41%	0	0.00%	N/A
	Driver 1 - Illness	42	0.69%	0	0.00%	N/A
	Driver 1 - Distracted by Passenger	83	1.37%	0	0.00%	N/A
	Driver 1 - Driver Inexperience	506	8.37%	3	7.14%	52.83%
	Driver 1 - Driver Fatigue	55	0.91%	0	0.00%	N/A
	Driver 1 - Driver Preoccupied	788	13.04%	5	11.90%	52.74%
	Driver 1 - Driver Unfamiliar with Area	191	3.16%	0	0.00%	N/A
	Driver 1 - Driver Emotionally Upset	12	0.20%	0	0.00%	N/A
	Driver 1 - Evading Law Enforcement Officer	15	0.25%	0	0.00%	N/A
	Driver 1 - Physical Disability	15	0.25%	0	0.00%	N/A
	Driver 1 - Unknown Contributing Factor	1,415	23.41%	13	30.95%	90.60%

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE93A_01870_01874 **Cutoff:** 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Driver 1 - No Impairment Suspected	5,740	94.97%	41	97.62%	88.55%
	Driver 1 - Alcohol Involved	214	3.54%	1	2.38%	55.92%
	Driver 1 - RX, Medication, or Drugs Involved	46	0.76%	0	0.00%	N/A
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	44	0.73%	0	0.00%	N/A
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	6,044		42		
	Total Number of Records	165		0		N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)



Broadway & Canyon Boulevard

Classification:	Urban 4-Lane Divided Signalized 4-Leg Intersection
Major Street:	Broadway AADT: 24,100 vpd
Minor Street:	Canyon Boulevard AADT: 14,300 vpd
2016-2020 Crash History	59 total crashes (15 injury crashes)
LOSS:	LOSS II (Total), LOSS II (Severe)
Diagnostic Patterns:	Sideswipe (Same Direction)

Both Broadway and Canyon Boulevard have four general purpose travel lanes. Between 2016 and 2020, 59 total crashes were recorded at the intersection. This is consistent with LOSS II conditions, indicating a low to moderate potential for crash reduction. Rear end crashes were most common (42%), followed by sideswipe (same direction) (20%), approach turn (12%), and bicycle (5%).

Injury Crashes

15 injury crashes were recorded at the intersection, consistent with LOSS II conditions, indicating low to moderate potential for crash reduction. Severe crash types included rear end (5 crashes), approach turn (4 crashes), bicycle (3 crashes), broadside (1 crash), pedestrian (1 crash), and fixed object (1 crash). 11 crashes occurred during dry road conditions. Driver inexperience, driver preoccupation (driver preoccupied), and driver emotionally upset were cited in 3 of 15 crashes.

Rear End Crashes

25 rear end crashes occurred at the intersection, including 5 that resulted in injury.

- For total crashes, 7 involved southbound vehicles and 6 each involved northbound, eastbound, and westbound vehicles
- For injury crashes, 3 involved eastbound vehicles and 2 involved westbound vehicles

Sideswipe (Same Direction) Crashes

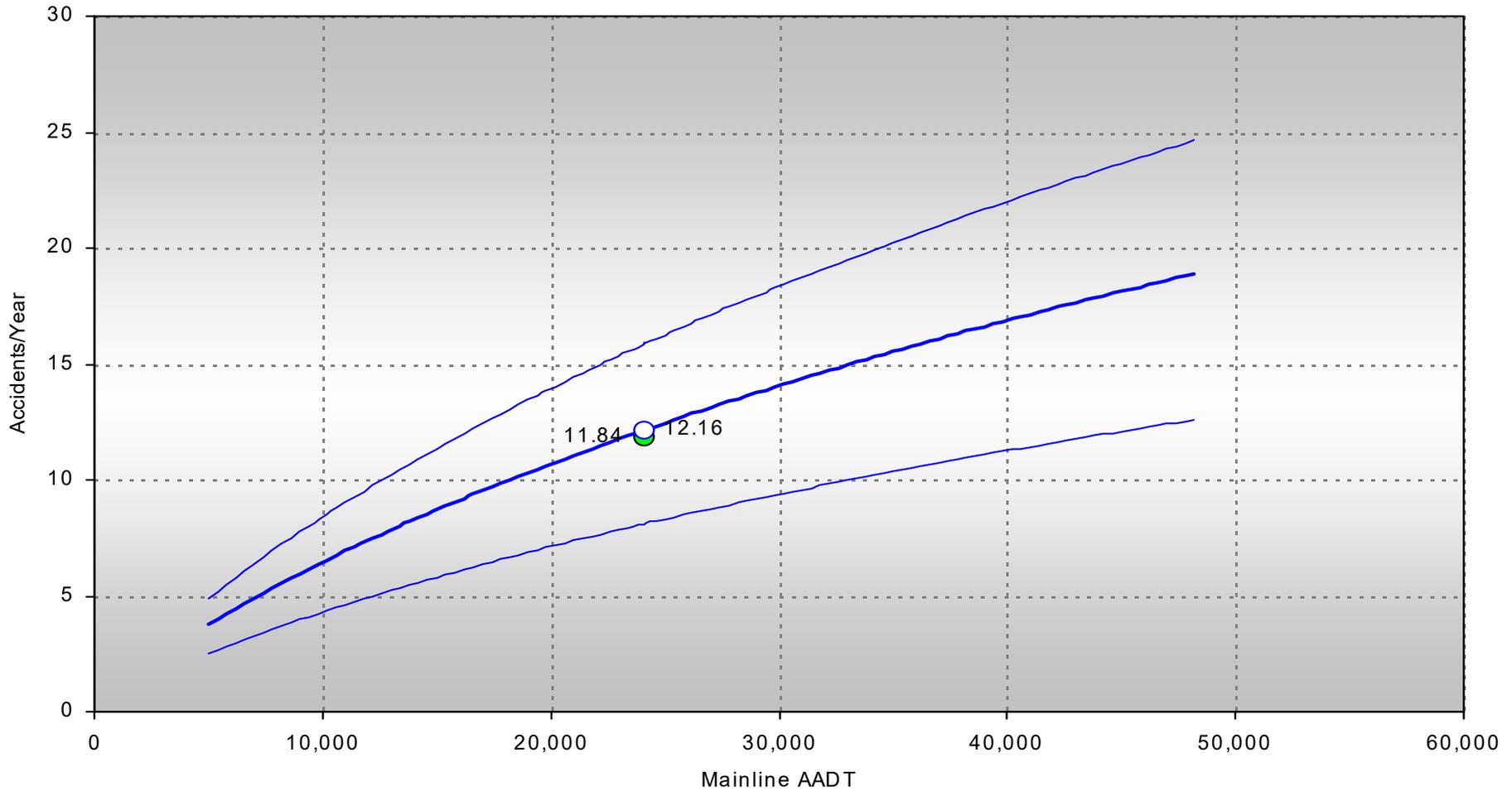
12 sideswipe (same direction) crashes occurred at the intersection, none resulting in injury. 6 involved northbound vehicles, 4 involved southbound vehicles, and one each involved eastbound and westbound vehicles.

Approach Turn Crashes

7 approach turn crashes occurred at the intersection, including **X** that resulted in injury. 3 crashes involved northbound vehicles, 2 crashes involved eastbound crashes, and one each involved southbound and westbound vehicles.

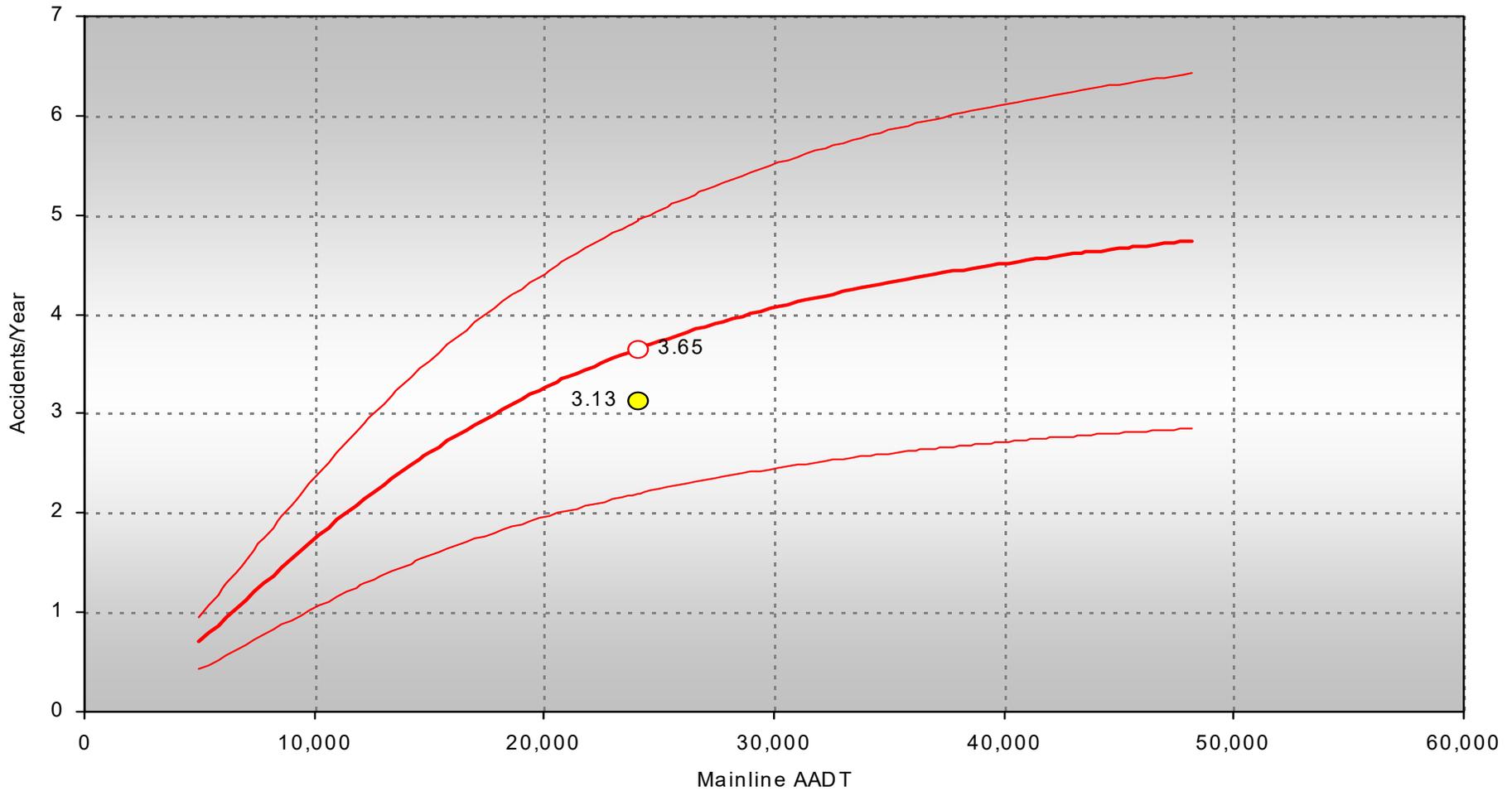
Location: 000000119A 93A/7B Begin:41.87 End:41.89 From:01/01/2016 To:12/31/2020

Lower Limit (20%) Total Upper Limit (80%) Observed (EB) Expected



Location: 000000119A 93A/7B Begin: 41.87 End: 41.89 From: 01/01/2016 To: 12/31/2020

Lower Limit (20%) INJ + FAT Upper Limit (80%) Observed (EB) Expected



Location File: DIRECT_DIAGNOSTICS_FOR_RTE119A_04187_04189 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Property Damage Only (PDO)	4,301	71.16%	44	74.58%	76.19%
	Injury (INJ)	1,723	28.51%	15	25.42%	35.87%
	Fatal (FAT)	20	0.33%	0	0.00%	N/A
	Persons Injured	2,451		26		
	Persons Killed	21		0		N/A
	Single Vehicle Accidents	283	4.68%	6	10.17%	98.00%
	Two Vehicle Accidents	5,298	87.66%	47	79.66%	5.45%
	Three or More Vehicle Accidents	462	7.64%	6	10.17%	83.76%
	Unknown Number of Vehicles	1	0.02%	0	0.00%	N/A
	On Road	5,789	95.78%	53	89.83%	3.78%
	Off Road	254	4.20%	6	10.17%	98.84%
	Off Road Left	111	1.84%	1	1.69%	70.48%
	Off Road Right	130	2.15%	5	8.47%	99.83%
	Off Road at Tee	3	0.05%	0	0.00%	N/A
	Off Road in Median	10	0.17%	0	0.00%	N/A
	Unknown Road Location	1	0.02%	0	0.00%	N/A
	Overtaking	29	0.48%	0	0.00%	N/A
	Other Non Collision	13	0.22%	0	0.00%	N/A
	Vehicle Cargo or Debris	8	0.13%	0	0.00%	N/A
	Pedestrian	112	1.85%	2	3.39%	90.35%
	Broadside	873	14.44%	2	3.39%	0.60%
	Head On	20	0.33%	0	0.00%	N/A
	Rear End	3,015	49.88%	25	42.37%	15.30%
	Sideswipe (Same Direction)	528	8.74%	12	20.34%	99.85%
	Sideswipe (Opposite Direction)	36	0.60%	0	0.00%	N/A
	Approach Turn	968	16.02%	7	11.86%	25.14%
	Overtaking Turn	50	0.83%	2	3.39%	98.70%
	Parked Motor Vehicle	13	0.22%	0	0.00%	N/A
	Railway Vehicle	0	0.00%	0	0.00%	N/A
	Bicycle or Pedal Cycle	114	1.89%	3	5.08%	97.47%
	Motorized Bicycle	0	0.00%	0	0.00%	N/A
	Domestic Animal	2	0.03%	0	0.00%	N/A
	Wild Animal	7	0.12%	0	0.00%	N/A
	Light or Utility Pole	36	0.60%	1	1.69%	95.15%
	Traffic Signal Pole or Equipment	40	0.66%	0	0.00%	N/A
	Traffic Sign or Post or Overhead Sign Structure	51	0.84%	1	1.69%	91.11%
	Bridge Rail	0	0.00%	0	0.00%	N/A
	Guard Rail	0	0.00%	0	0.00%	N/A
	Cable Rail	0	0.00%	0	0.00%	N/A
	Concrete Barrier	9	0.15%	0	0.00%	N/A
	Bridge Abutment	0	0.00%	0	0.00%	N/A
	Column or Pier or Bridge Structure	0	0.00%	0	0.00%	N/A
	Culvert or Headwall	0	0.00%	0	0.00%	N/A
	Embankment or Ditch	3	0.05%	0	0.00%	N/A
	Curb or Island	65	1.08%	1	1.69%	86.73%
	Delineator Post	3	0.05%	0	0.00%	N/A
	Fence or Fence Part	6	0.10%	0	0.00%	N/A
	Trees or Shrubs	6	0.10%	1	1.69%	99.84%
	Large Boulders or Rocks	0	0.00%	0	0.00%	N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE119A_04187_04189 Cutoff: 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	%
	Rocks in Roadway	0	0.00%	0	0.00%	N/A
	Barricade	2	0.03%	0	0.00%	N/A
	Wall or Building	5	0.08%	0	0.00%	N/A
	Crash Cushion or Sand Barrels or Impact Attenuator	0	0.00%	0	0.00%	N/A
	Mailbox	0	0.00%	0	0.00%	N/A
	Other Fixed Object	16	0.26%	1	1.69%	98.92%
	Other Object	7	0.12%	1	1.69%	99.78%
	Road Maintenance Equipment	7	0.12%	0	0.00%	N/A
	Unknown Accident Type	0	0.00%	0	0.00%	N/A
	Total Fixed Objects	242	4.00%	5	8.47%	96.96%
	Total Other Objects	22	0.36%	1	1.69%	98.02%
	Daylight	4,337	71.76%	44	74.58%	72.97%
	Dawn or Dusk	271	4.48%	1	1.69%	25.17%
	Dark - Lighted	1,339	22.15%	14	23.73%	68.11%
	Dark - Unlighted	89	1.47%	0	0.00%	N/A
	Unknown Lighting	8	0.13%	0	0.00%	N/A
	No Adverse Weather	5,371	88.86%	54	91.53%	80.04%
	Rain	242	4.00%	4	6.78%	91.29%
	Snow or Sleet or Hail	354	5.86%	1	1.69%	13.27%
	Fog	15	0.25%	0	0.00%	N/A
	Dust	1	0.02%	0	0.00%	N/A
	Wind	38	0.63%	0	0.00%	N/A
	Unknown Weather	23	0.38%	0	0.00%	N/A
	Dry Road	5,126	84.81%	48	81.36%	27.86%
	Wet Road	442	7.31%	9	15.25%	99.00%
	Muddy Road	2	0.03%	0	0.00%	N/A
	Snowy Road	184	3.04%	2	3.39%	73.25%
	Icy Road	178	2.95%	0	0.00%	N/A
	Slushy Road	28	0.46%	0	0.00%	N/A
	Foreign Material Road	7	0.12%	0	0.00%	N/A
	With Road Treatment	0	0.00%	0	0.00%	N/A
	Dry with Icy Road Treatment	20	0.33%	0	0.00%	N/A
	Wet with Icy Road Treatment	9	0.15%	0	0.00%	N/A
	Snowy with Icy Road Treatment	25	0.41%	0	0.00%	N/A
	Icy with Icy Road Treatment	11	0.18%	0	0.00%	N/A
	Slushy with Icy Road Treatment	3	0.05%	0	0.00%	N/A
	Unknown Road Condition	9	0.15%	0	0.00%	N/A
	Driver 1 - No Apparent Contributing Factor	2,897	47.93%	30	50.85%	71.88%
	Driver 1 - Asleep at the Wheel	25	0.41%	0	0.00%	N/A
	Driver 1 - Illness	42	0.69%	0	0.00%	N/A
	Driver 1 - Distracted by Passenger	83	1.37%	1	1.69%	80.56%
	Driver 1 - Driver Inexperience	506	8.37%	5	8.47%	62.72%
	Driver 1 - Driver Fatigue	55	0.91%	0	0.00%	N/A
	Driver 1 - Driver Preoccupied	788	13.04%	1	1.69%	0.26%
	Driver 1 - Driver Unfamiliar with Area	191	3.16%	3	5.08%	88.38%
	Driver 1 - Driver Emotionally Upset	12	0.20%	1	1.69%	99.37%
	Driver 1 - Evading Law Enforcement Officer	15	0.25%	0	0.00%	N/A
	Driver 1 - Physical Disability	15	0.25%	0	0.00%	N/A
	Driver 1 - Unknown Contributing Factor	1,415	23.41%	18	30.51%	92.18%

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)

Location File: DIRECT_DIAGNOSTICS_FOR_RTE119A_04187_04189 **Cutoff:** 5 Acc's @ 95%

Baseline Statistics	CATEGORY	Statewide Average		This Location		Probability
		# Crashes	%	# Crashes	%	
	Driver 1 - No Impairment Suspected	5,740	94.97%	54	91.53%	17.48%
	Driver 1 - Alcohol Involved	214	3.54%	3	5.08%	84.39%
	Driver 1 - RX, Medication, or Drugs Involved	46	0.76%	1	1.69%	92.54%
	Driver 1 - Illegal Drugs Involved	0	0.00%	0	0.00%	N/A
	Driver 1 - Alcohol and Drugs Involved	44	0.73%	1	1.69%	93.09%
	Driver 1 - Driver/Pedestrian not Observed	0	0.00%	0	0.00%	N/A
	Driver 1 - Unknown Condition of Driver/Pedestrian	0	0.00%	0	0.00%	N/A
	Total Accidents	6,044		59		
	Total Number of Records	165		0		N/A

Highway Class: CO - Urban 4-Lane Divided Signalized 4-Leg Intersections - AADT 0-32000 ADT (2018)