



LARIMER COUNTY ENGINEERING DEPARTMENT

2019 TRAFFIC SAFETY REPORT



LARIMER
COUNTY

200 W. Oak St.
Fort Collins, CO 80501
970.498.7000
Larimer.org

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Introduction

This report covers the unincorporated roadways in Larimer County which the County has responsibility to maintain. Unincorporated Larimer County has nearly 890 miles of roadways - 105 miles in subdivisions, 82 in urban areas surrounding communities, and 703 in rural portions of the county.

Larimer County strives to make roadways as safe as possible. The Traffic Safety Program Goal is to **reduce the number and severity of crashes on our roadways.**



Colorado Health Information Dataset Mortality Statistics (2018)

Cause of Death:

Cardiovascular Disease¹

10,047

Influenza & Pneumonia¹

567

Motor Vehicle Crash¹

658

All Larimer County Roadway Fatalities, 2018¹

46

Unincorporated Larimer County Roadway Fatalities, 2018

5

Source: ¹www.colorado.gov/pacific/coepbt/death-data-statistics

Crashes are categorized into three classes by severity: Property Damage Only (PDO), Injury, and Fatal. A property damage only crash indicates that no one was injured or killed in the crash. In an injury crash at least one person was injured in the crash but no one was killed. In a fatal crash at least one person lost their life although there may also have been injuries sustained by other persons.

Property damage only crashes were down over 7% from 2018. Injury crashes were down slightly in 2019 compared to 2018. Larimer County saw 5 fatal crashes resulting in 5 fatalities in 2019, an increase of 2 over 2018.

Crashes and crash severity are often influenced by the choices people make. Examples of these choices include speeding, distracted driving, driving under the influence of alcohol or drugs, and seat belt or helmet use.

This report summarizes crashes in unincorporated Larimer County by a variety of factors that are focused on areas of interest and identification of trends to be addressed through safety improvements and education.

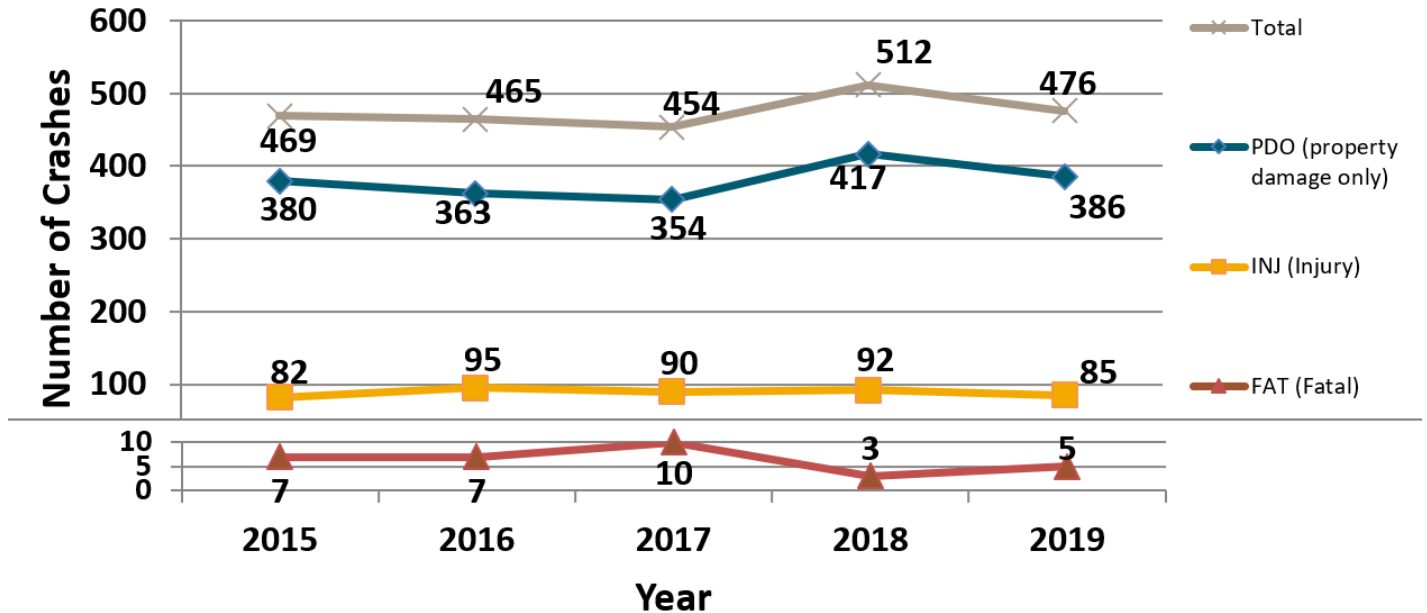
2019 Crash Trends

In 2019, there were 476 crashes on unincorporated roads in Larimer County which is a decrease of 7% from 2018 at 512 crashes and equals the 5 year average from 2015 to 2019 at 475.2 crashes.

There were 5 fatal crashes in 2019 which is a rise from 2018 of 3 deaths but below the 5 year average of 6.4 deaths per year.

There is generally a correlation between an increase in Vehicle Miles Traveled (VMT) and the number of crashes. Approximately 356 million miles were traveled on Larimer County roads in 2019 compared to 2018, a 3.5% increase. The 3.5% increase in miles traveled exceeds the 1.2% growth in the population of Larimer County reported by the Colorado Department of Health and Environment.

Total Number of Crashes (2015-2019)



Fatal crashes: 5 crashes (5 fatalities) **Increased 67%** from 2018

Injury crashes: **Decreased by 7.6%**

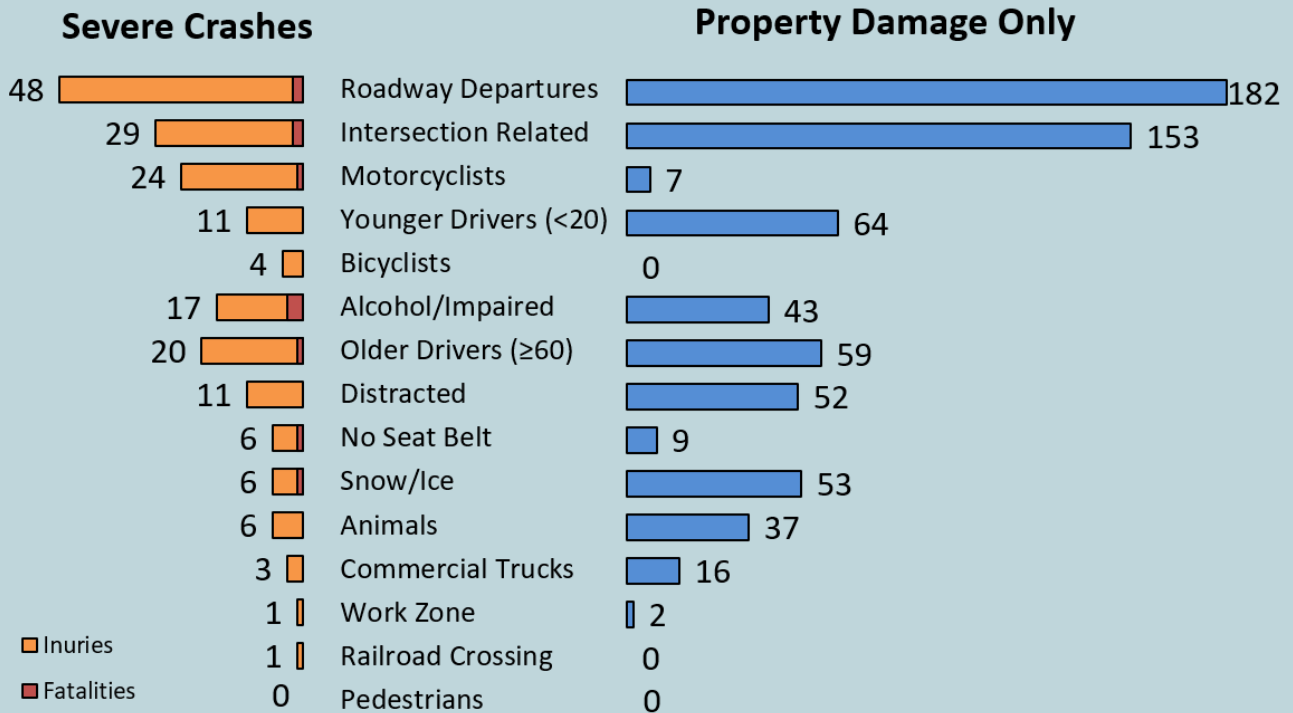
Property Damage Only: **Decreased by 7.4%**

Overall Crashes

This Traffic Safety Annual Report summarizes the general trends in roadway safety, analyzes specific areas of interest, and monitors ongoing traffic safety efforts in the County. Crash data are obtained directly from Colorado State Patrol crash reports and other law enforcement entities as needed.

Unincorporated Larimer County Crashes - 2019

Note: Crashes may be listed in more than one category



Compared to 2018:

Roadway Departure crashes continue to be the most common in Larimer County but decreasing by 9%.

Driving Under the Influence (DUI) crashes are up **40%**.

Distracted driving crashes are down 11%.

Crashes involving **motorcycles** decreased 18% in 2019 following a decrease from 2018 of 28% after several years of increasing crashes.

There were 3 **Work Zone** related crashes and 0 **Pedestrian** involved crashes in 2019 compared to 4 work zone and 2 pedestrian crashes in 2018.

Crash Characteristics	% Change between 2018 and 2019	2019 Total Crashes
Roadway Departures	-9%	230
Intersection Related	5%	182
Motorcyclists	-18%	31
Younger Drivers	-1%	75
Bicyclists	-60%	4
Alcohol/Impaired	40%	60
Older Drivers	-10%	79
Distracted	-11%	63
No Seat Belt	0%	15
Snow/Ice	-6%	59
Animals	19%	43
Commercial Trucks	-21%	19
Work Zone	-25%	3
Railroad Crossing	100%	1
Pedestrians	-100%	0

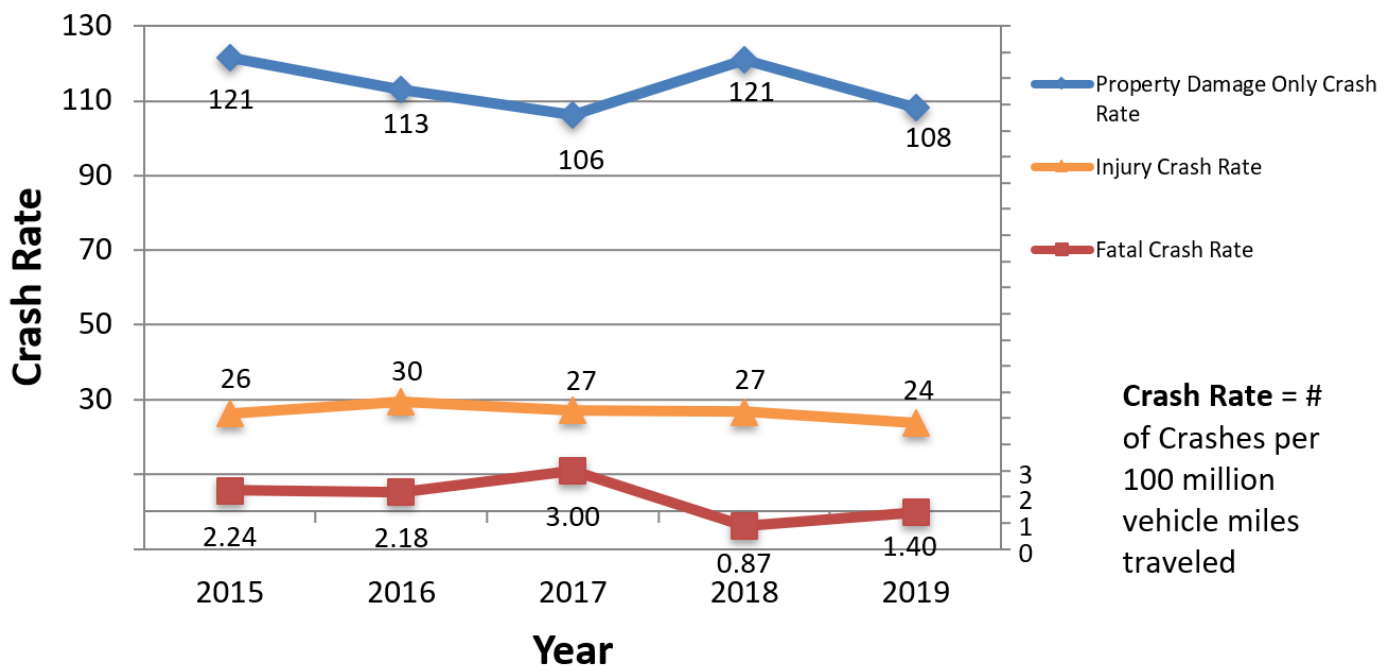
Crash Rates

To account for varying amounts of traffic, a measure of crash *RATE* is used in addition to crash *NUMBERS*. A crash rate is expressed in the number of crashes per 100 million vehicles miles traveled.

The Colorado Problem Identification Report, Colorado Department of Transportation, Fiscal Year 2019, shows the 2017 statewide fatal and injury crash rate per 100 million VMT was 23.0 while Larimer County was 25.2 in 2019.

Crash rates on the unincorporated County road system are higher than the Colorado rates. Several factors contribute to these elevated rates including higher speeds, sharp curves, narrow shoulders, and no medians.

Crash Rate by Severity (2015-2019)



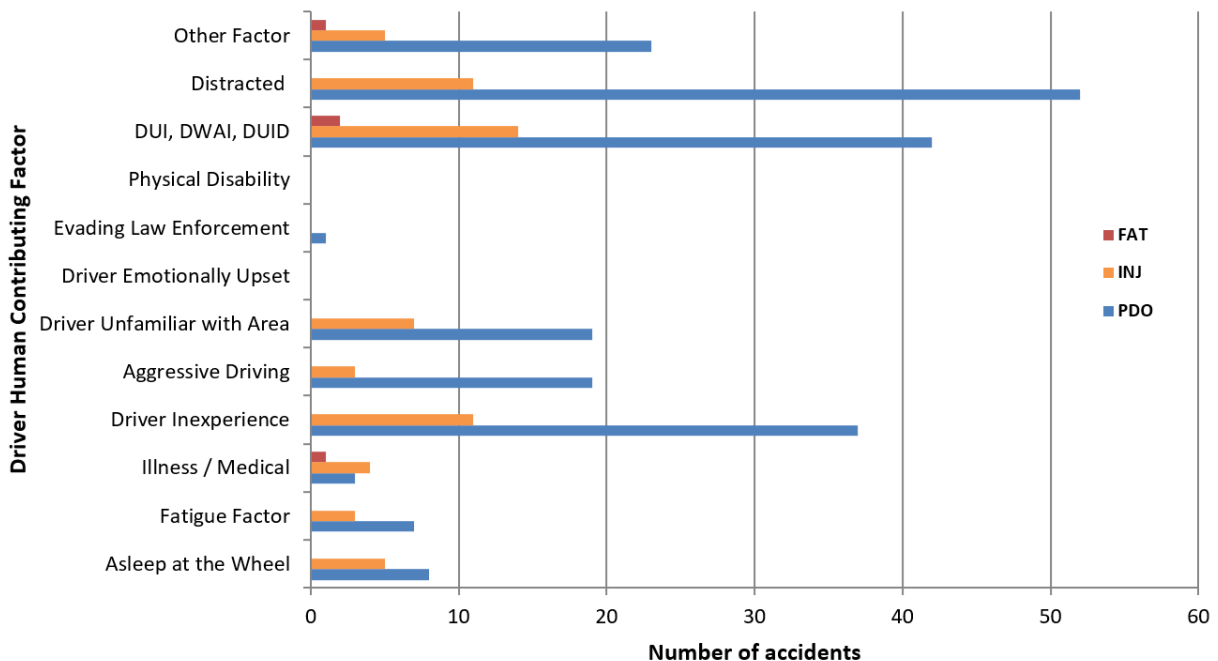
Human Contributing Factor

Driving is about human interaction with the vehicle, the natural elements and other drivers on the roads. In 2019, 58% of all crashes in unincorporated Larimer County had a human contributing factor.

Breakdown of Crashes with a Human Contributing Factor for 2019:

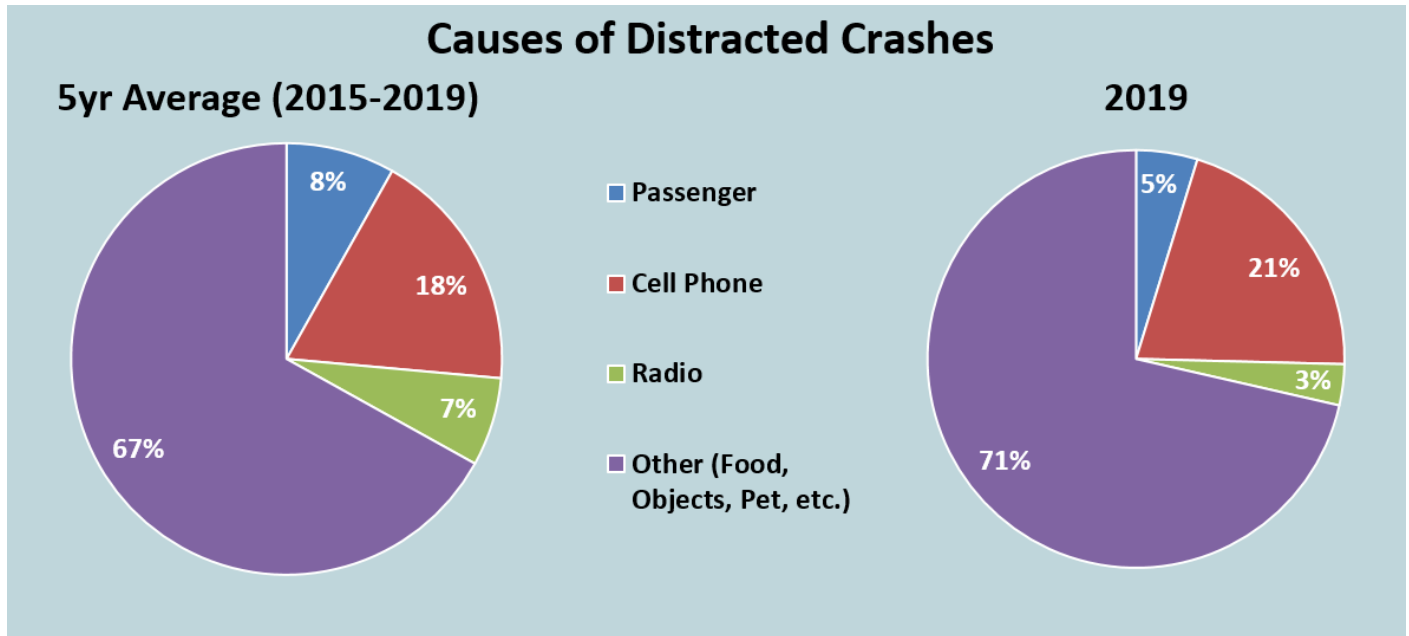
- 5 out of 5 fatalities in 2019 were directly caused by Human Factors
 - 3 were driving under the influence
 - 1 was illness/medical
 - 1 was a motorcyclist driving twice the speed limit of 35 mph
- 63 injuries were caused by Human factors
- Top 5 Human Factors of all crashes
 - Distracted (63)
 - Driving Under the Influence (58)
 - Drivers Inexperience (48)
 - Driver unfamiliar with area (26)
 - Aggressive Driving (22)

2019 Crashes with a Human Contributing Factor (By Crash Severity)

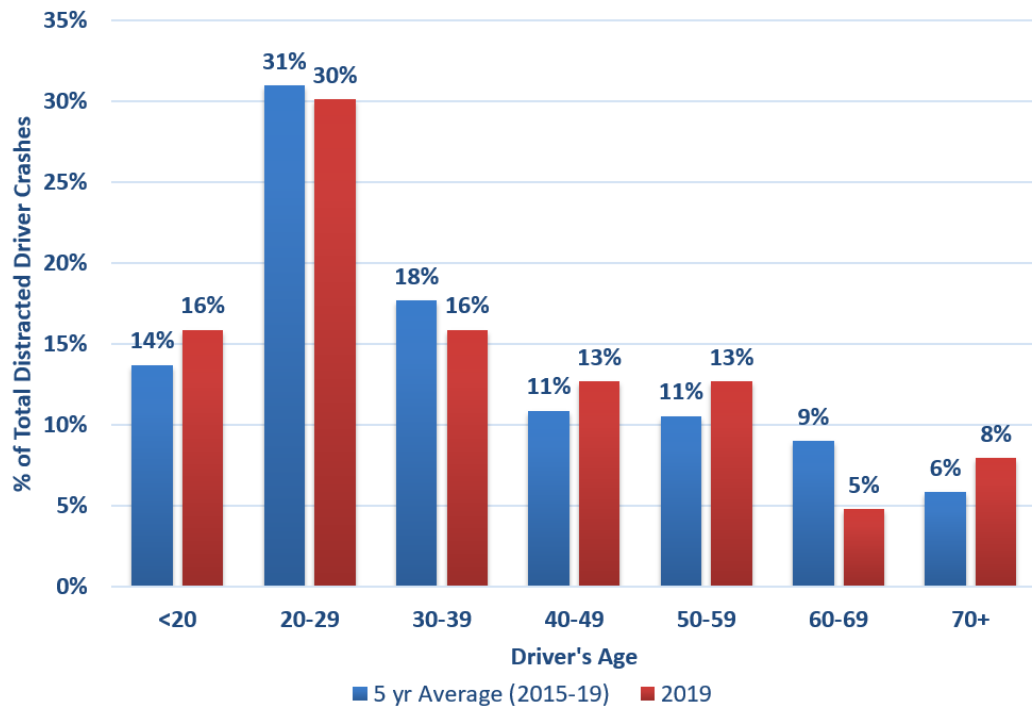


Crashes Caused by Distracted Drivers

Distracted Drivers accounted for 63 crashes (12% of total crashes) in 2019; 11 of the 63 (12%) were injury related crashes with 0 fatalities. The number of cell phone user caused crashes were down from 2018, decreasing from 19 to 13, but exceeded the 5 year average by 3%.



Distracted Driver Age Demographics



The age group to commit the most distracted driving offenses continues to be 20-29 year old's at 30%.

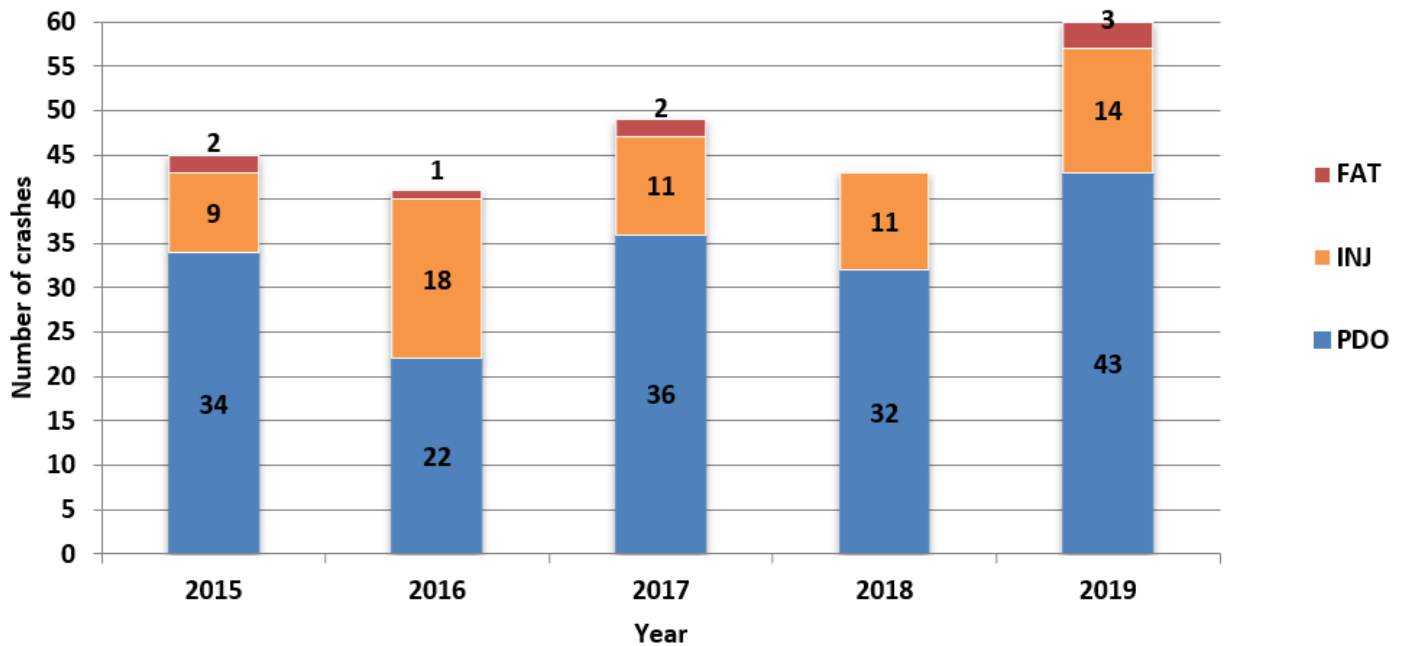
Nationally, according to the latest U.S. Department of Transportation Safety Facts (2018), Distracted Drivers caused 2,841 deaths.

Source: <https://www.nhtsa.gov/risky-driving/distracted-driving>

Crashes Caused by Impaired Drivers

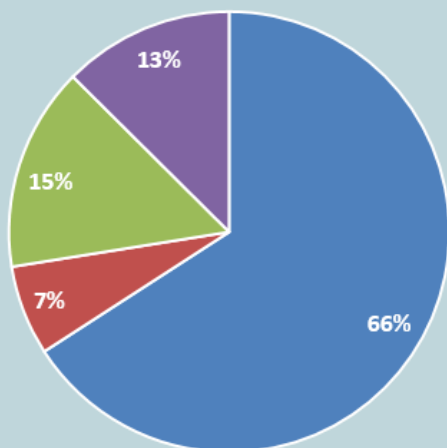
There were 60 crashes (11% of overall crashes) on Unincorporated Larimer County Road System in 2019 that were caused by Impaired Drivers, up from 43 crashes in 2018. Of those crashes, 14 caused injuries while another 3 resulted in death, in which 2 of the 3 deaths were passengers aged 1 and 92.

DUI Crash Severity (2015-2019)

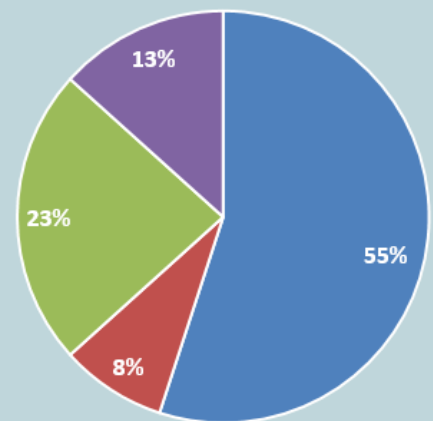


Impaired Driving Type

5 Year Average (2015-2019)



2019



According to the latest U.S Department of Traffic Safety Facts, Nationally, 10,511 deaths (29% of overall fatalities) were the result of Impaired Driving in 2018, which is a decrease of 3.6% from 2017.

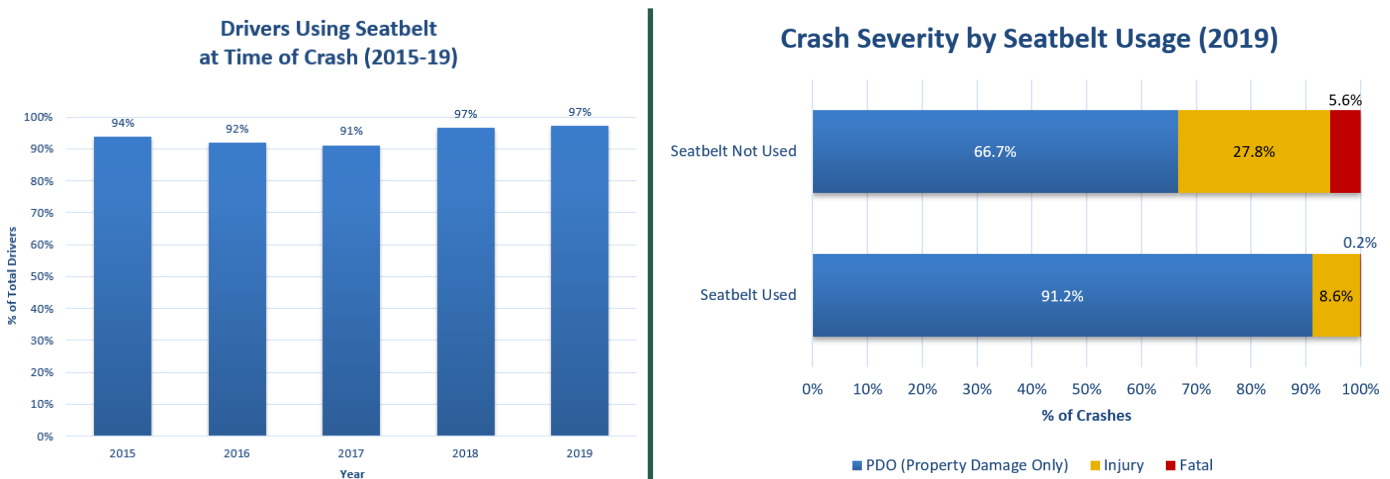
Source: <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812826>

Serious Crash Review

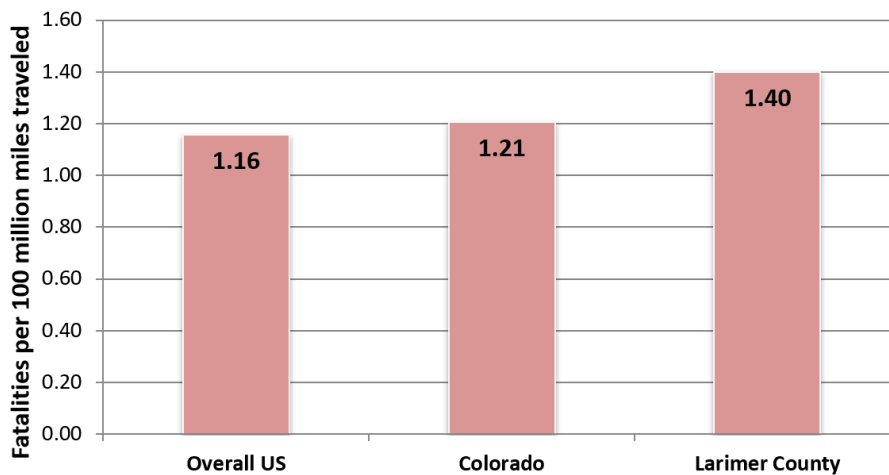
A serious crash is defined as a crash resulting in evident injury or death. There were 97 serious crashes (18% of overall crashes) on the Unincorporated Larimer County Road System in 2019 resulting in 111 injuries and 5 fatalities. Specific details of the fatal crashes which occurred in 2019 are presented in Appendix A.

The national estimate of seat belt use has slightly increased to 90.7% in 2019 from the previous year of 89.6%. The 2019 crash reports for the Unincorporated Larimer County Road system indicate that 97% of drivers were using a seatbelt at the time of the crash

Source: www.nhtsa.gov/risky-driving/seat-belts



Comparison of Overall Fatality Rates



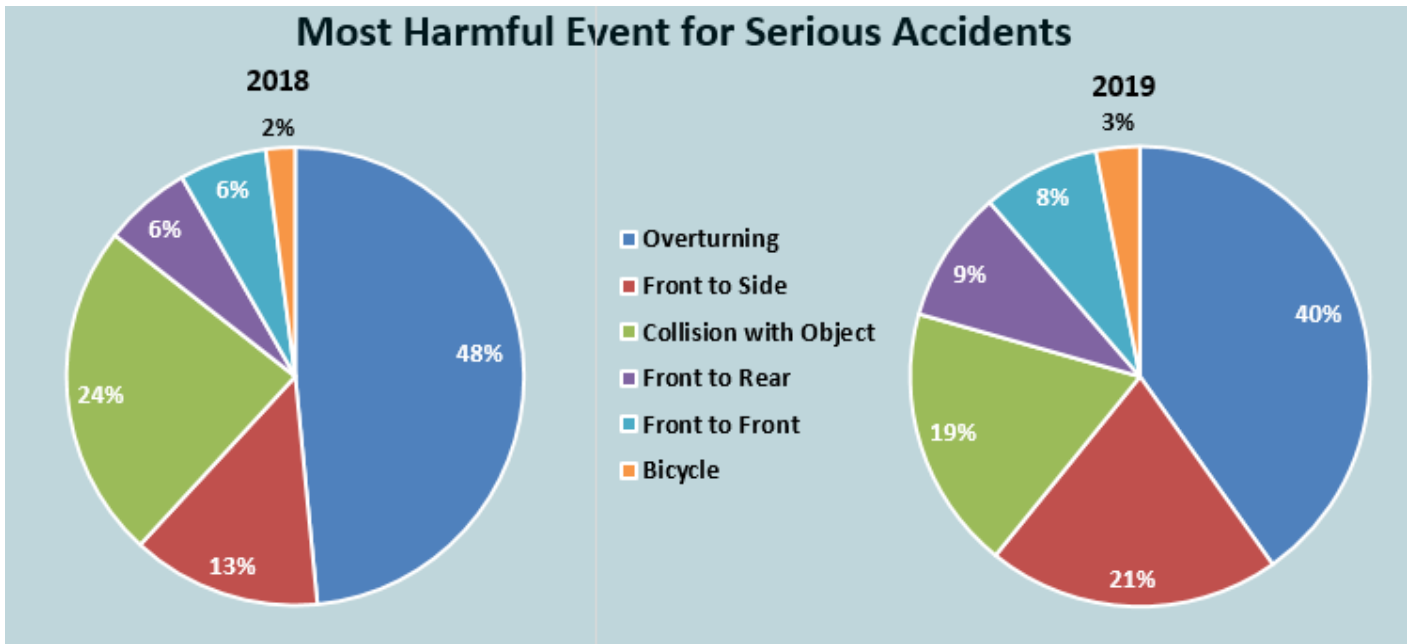
Sources: US - National Highway Traffic Safety Administration (2018)
 Colorado - Federal Highway Administration, Office of Highway Policy Information, Traffic Volume; CDOT 2018 Fatalities by Region (2018)
 Larimer County - County records (2019)

Serious Crash Review (continued)



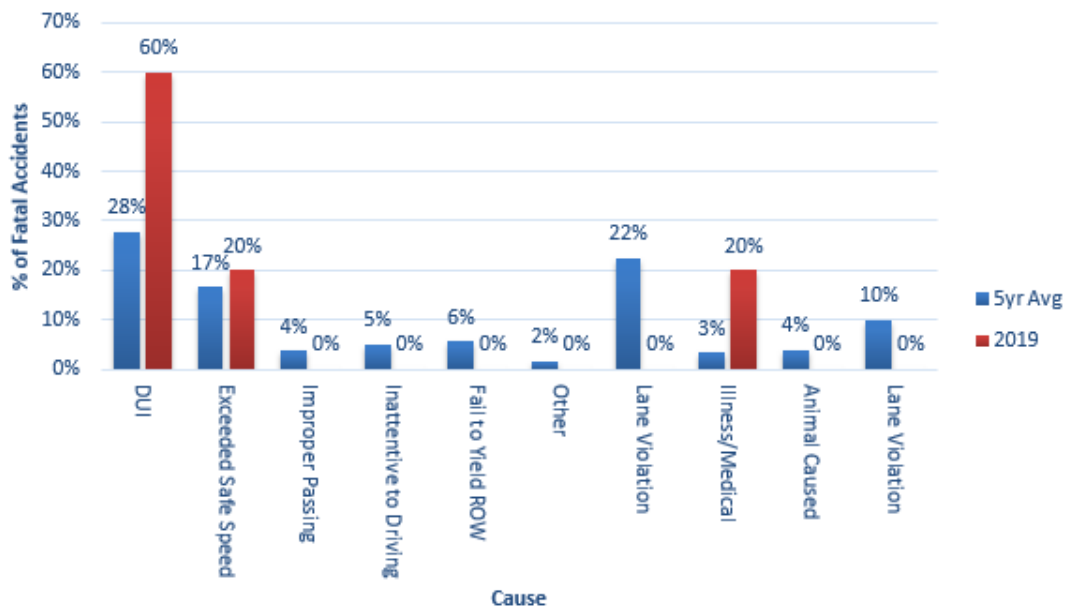
Overturning remains the most harmful event at 40% of all serious crashes and 74% of overturned vehicles were the result of roadway departures.

Most Harmful Event for Serious Accidents



60% (3 of 5) of all fatal crashes in 2019 were the result of impaired drivers which is double the 5yr average.

Fatal Accident Cause



Roadway Departure Crashes

In 2019, 44% of all crashes involved a vehicle leaving the roadway (roadway departure crash) as compared to 2018 at 45%.

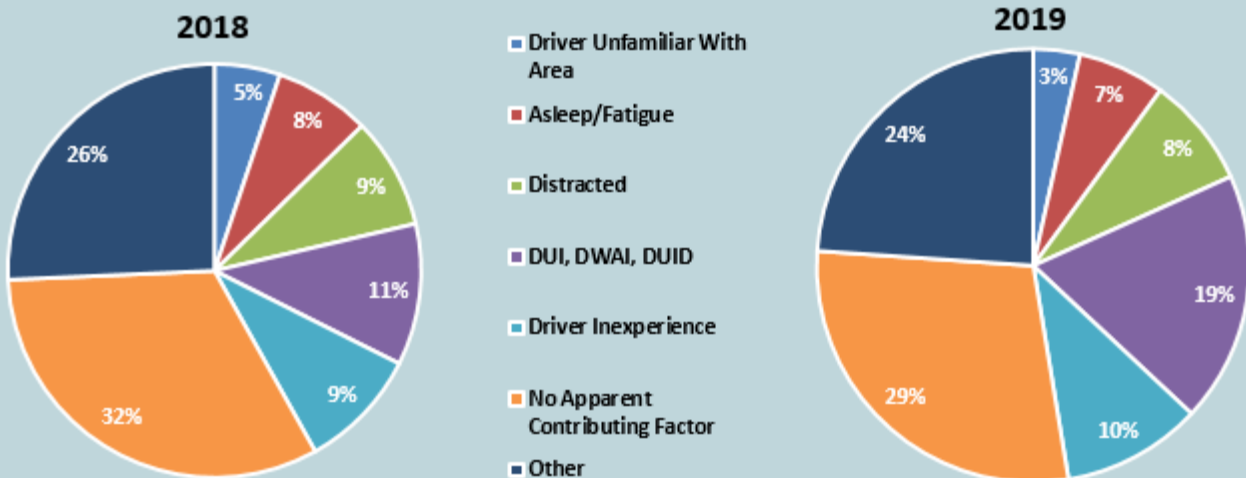
Larimer County is in the process of reviewing all horizontal curves and turns on the Larimer County road system. Safe advisory speeds are being reviewed and adjusted. Locations that would benefit from additional signing are being upgraded with additional chevron or large arrow warning signs at the curve locations.

2109 Roadway Departure Breakdown:

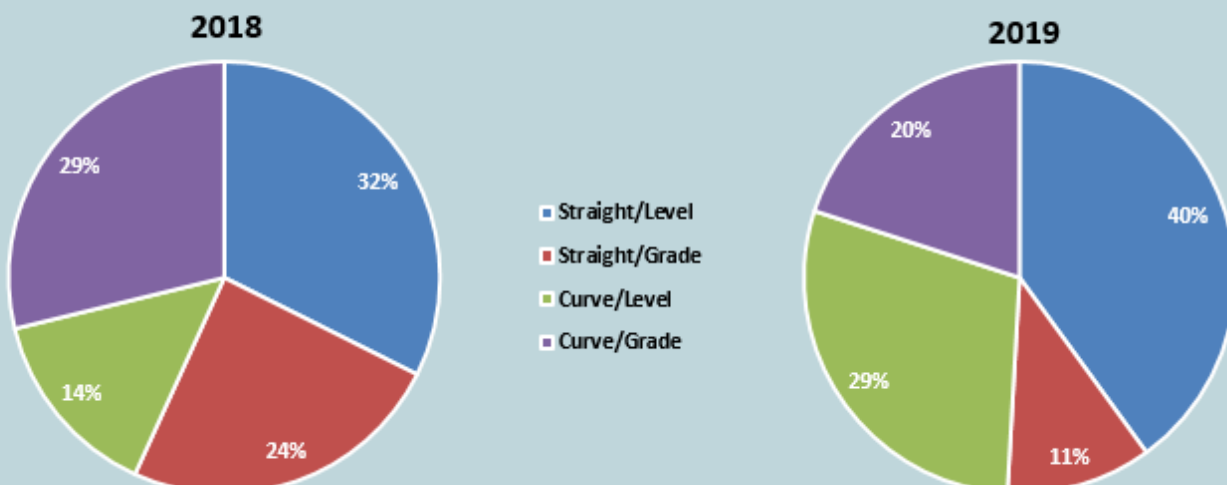
- 78% of Roadway Departures occurred on dry roads
- 51% of Roadway Departures occurred during daylight hours
- 2 out of the 5 fatal crashes in 2019 were roadway departures
- 19% of Roadway Departures were caused by Impaired Drivers, up from 11% in 2018



Roadway Departure Human Factor



Roadway Departure Road Contour



Motorcycle Crashes

Motorcycles were involved in 31 accidents (6% of total accidents) in 2019, this is down 18% from 2018 which was down 28% from 2017. However, the chance of injury or death in a motorcycle crash remains disproportionately higher at 74% compared to 19% in all other vehicles.

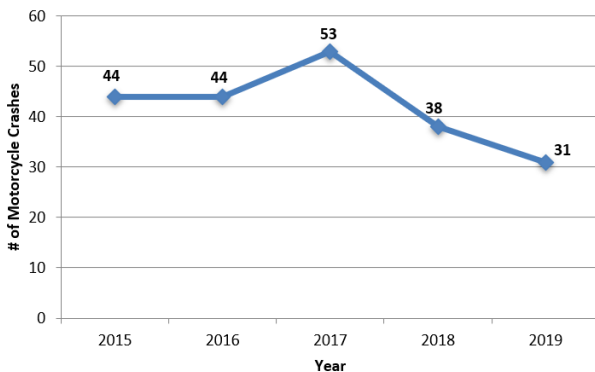
2019 Breakdown of Motorcycle Crashes:

- Exceeding safe/posted speed accounted for a majority of motorcycle crashes at 27% including 1 fatality
- 74% of motorcycle involved crashes were caused by the motorcyclist
- Males are the majority of drivers at 90%
- 56% of motorcycles ran off the roadway

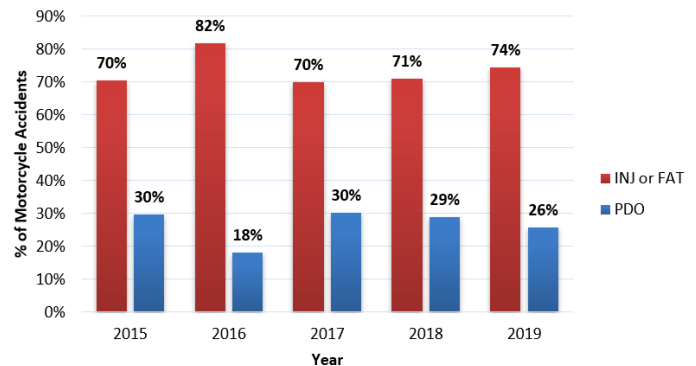
Motorcycles were involved in 23% of all serious crashes in Larimer County for 2019. Motorcycles are only 2.5% of registered vehicles in the State of Colorado.

Source: www.colorado.gov/pacific/dmv/registration

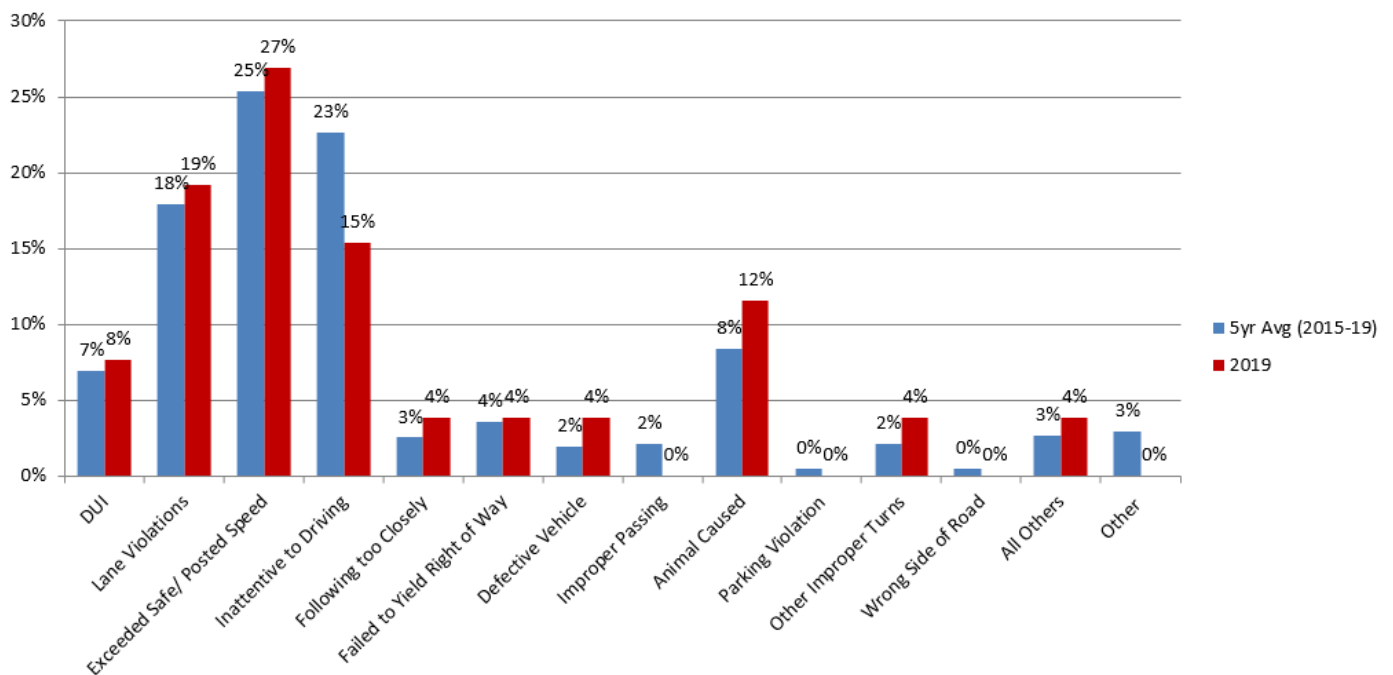
Annual Motorcycle Crashes (2015-2019)



Motorcycle Severity (2015-19)



2019 Motorcycle Accident Causes

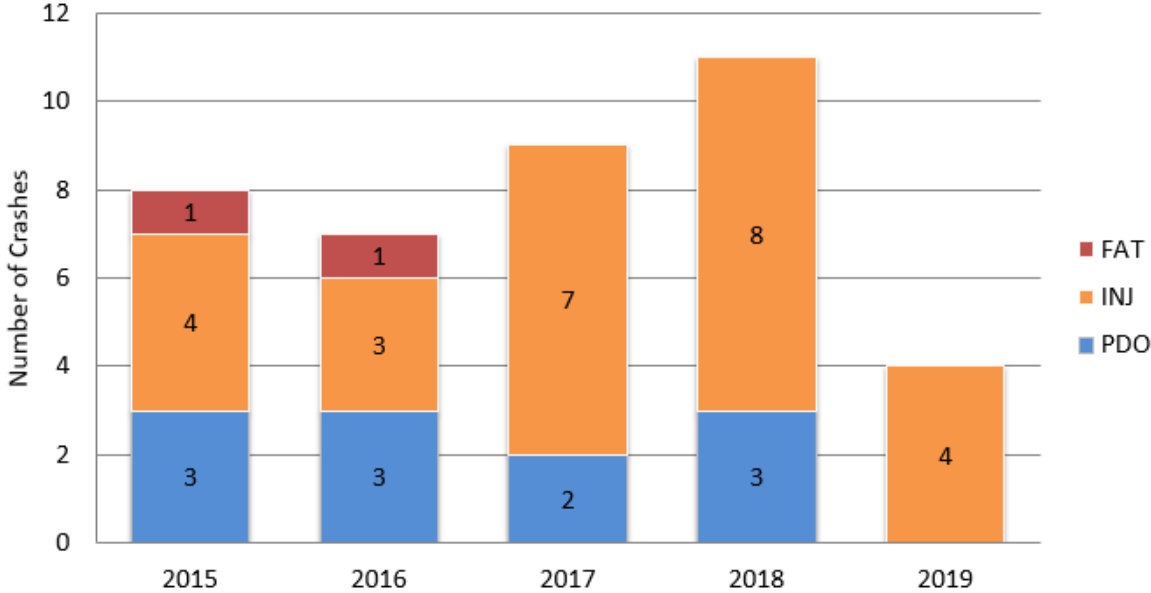


Bicycle & Pedestrian Crashes

Bicycle Crashes

There were 4 bicycle related crashes in 2019 on Unincorporated Larimer County Roadways in 2019, a decrease from 8 accidents during 2018. All 4 crashes involved injuries.

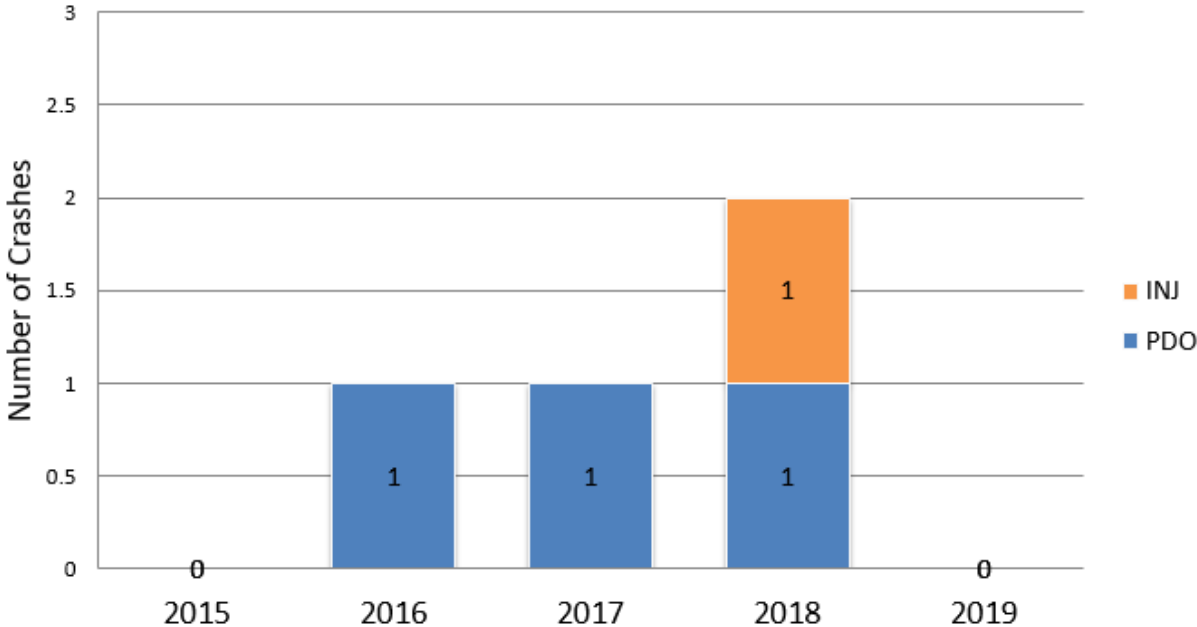
Bicycle Crashes (2015-2019)



Pedestrian Crashes

There were 0 crashes on Unincorporated Larimer County Road System in 2019. The low number of pedestrian crashes is due to the inherently low pedestrian traffic on rural roads. Locations with significant pedestrian traffic include parks, open spaces, trails, or near city development.

Pedestrian Crashes (2015-2019)



Animal Related Crashes

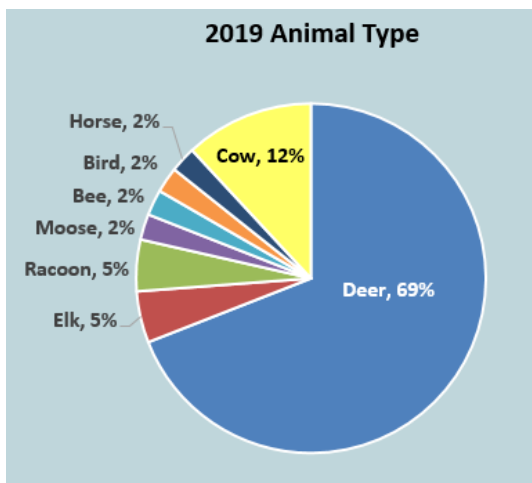
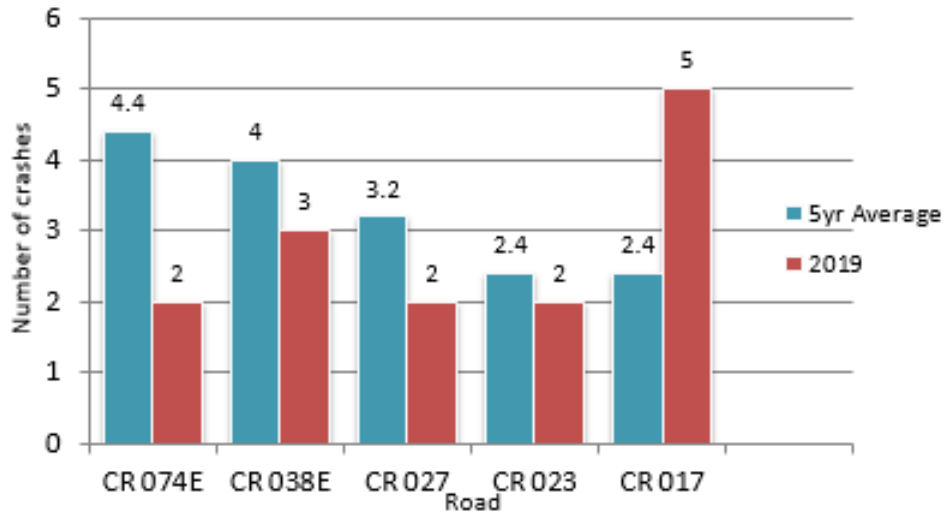
There were 43 Animal Related Crashes in 2019 up from 39 in 2018. These numbers do not include crashes where an animal was not hit but may have caused the crash.

2019 Breakdown of Animal Related Crashes:

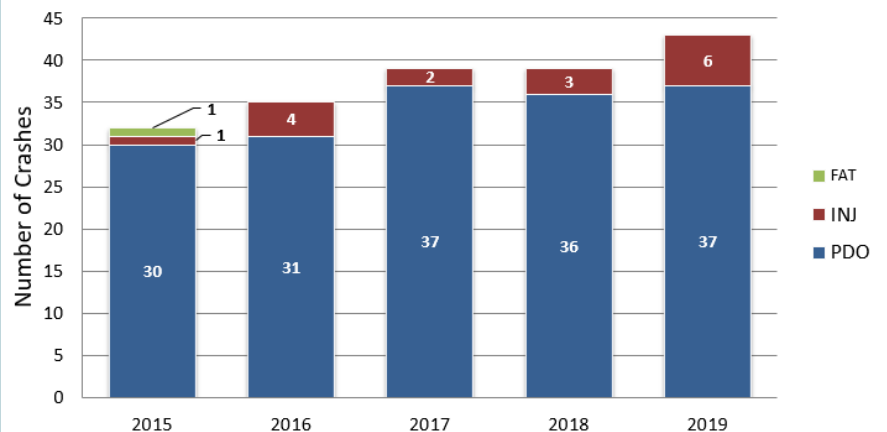
- 86% of reported animal crashes were with wild animals. 14% of the crashes involved domestic animals
- The most common animal crash was with a deer at 69% of all animal crashes
- 29 of all animal crashes in 2019 were at dawn, dusk or at night
- 6 of the 43 crashes were injury related which is an increase from 2018 of 3 crashes.



Top 5 Roads with Animal Accidents



Collisions with Animals (2015-2019)



Traffic Safety Mitigation

Safety improvements completed on the County Road system during 2019

CR 50E—Country Club Rd - Rapid Rectangular Flashing Beacon: The county received several requests from Country Club Rd area residents for a safer crossing to allow residents to access the recreation area at Long Pond..



CR 70 - Reconstruction and Widening: Larimer County Project 322 was completed during 2019. The project resulted in a new asphalt driving surface with 6—8 foot paved shoulders for 2 miles from CR 19 to



Traffic Safety Mitigation (continued)



The intersection of CR 28 (57th St) and CR 11C was reconstructed from a T-intersection to a roundabout during 2019. The new roundabout should increase traffic capacity at the intersection. Roundabout construction at other Larimer County intersections has greatly reduced the number of serious crashes at those intersections.

2019 Low Cost Safety Improvements

County Rd 43 eastbound east of Glen Haven



County Rd R 38E - Horseshoe Curve near Westridge Dr.

Traffic Safety Mitigation (continued)

Planned 2020 Low Cost Safety Work:

- Installation of a rapid rectangular flashing beacon crosswalk location on CR 38E at the south end of Horsetooth Reservoir near the South Bay recreation area. Campground and day use patrons are crossing CR 38E to access the convenience store on the south side of the road. Larimer County Parks estimates that on busy summer days hundreds of people cross the road in this area. With a speed limit of 40 MPH on CR 38E an active crossing is needed to help pedestrians safely cross the road.
- Installation of an active warning flasher school zone on County Rd 27 at Big Thompson Elementary School. As with many schools in the area, Big Thompson Elementary has seen an increase in “school of choice” students attending the school. This results in more parent drop offs and pick ups at the school. The increased traffic and pedestrian presence during drop off and pickup times drive the need for an active flasher system to replace the passive (signs only) school zone that is currently in place. The new active system will draw more attention from motorists to reduce traffic speeds on CR 27 in the area of the school.
- The Engineering Department will continue to review intersection and roadway locations that are experiencing increasing crash numbers to determine measures that may be taken to improve safety at those intersections.
- During 2020 the Engineering Department should complete the re-evaluation of the safe advisory speed on all significant horizontal curves and turns on the Larimer County maintained road system. An on board electronic ball-bank indicator is used while driving each curve to determine the safe advisory speed. Updated federal guidelines regarding advisory speeds require curves and turns on the county road system be re-evaluated using the new guidelines. Turns and curves will also be evaluated to see if additional chevron or large arrow signs need to be installed.

2020 Capital Projects:

There are two major construction projects that have significant safety components which will be constructed during 2020. CR 17 (Berthoud Parkway) between US 287 and County Rd 16 will be reconstructed as a wider roadway. The new roadway will be a three lane cross section including a continuous two-way center turn lane and will have six foot bike lanes on each side of the road. The continuous two-way center turn lane will allow vehicles that are making left turns onto driveways and intersections to separate from the main through traffic flow. This will improve capacity and safety along the roadway. The six foot bike lanes will give bicyclists an extra measure of safety on this busy roadway. This is a joint project between the Town of Berthoud and Larimer County. CR 17 (Berthoud Parkway) is located in the Town of Berthoud south of CR 14. CR 17 north of CR 14 is located in the county.

Larimer County Rd 14 between CR 23 and CR 21 will also be reconstructed to a wider cross section in 2020. The road will be rebuilt to a new 2 lane roadway with 4 foot paved bike lanes on each side of the road. Currently, there are no paved bike lanes on CR 14. Both CR 23 and CR 21 both have paved bike lanes. The work on CR 14 will give bicyclists an east / west connection with paved bike lanes between these two north / south segments of road which are part of a popular bicycling route.

Safety Improvement Monitoring and Evaluation

Seven sections of road that were experiencing higher numbers of run off the road crashes and have had low cost safety improvements implemented were reviewed to see how the improvements are performing.

- ◆ CR 30 east of CR 13: Along east side of Donath Lake
- ◆ CR 13 0.8 miles south of SH 392: Turn at the north side of Donath Lake
- ◆ CR 43: Reverse Turn near the intersection of West Creek Rd, southwest of Glen Haven
- ◆ CR 21 and Overland Tr: At the turn to CR 50 - Michaud Ln
- ◆ CR 16: At the turns located at and just west of CR 10 (2 Turns)
- ◆ CR 54G: At the Curve 0.2 miles east of CR 21C (Overland Tr)
- ◆ CR 19: The reverse curve located between CR 60E and CR 64

The locations compare average crashes per year before and after the low cost safety improvements. Overall there have been significant reductions in the total number of crashes and in serious crashes at these locations. There have been no fatal crashes at any of these seven locations since the low cost improvements were made. Average annual crash statistics for each location are listed in Appendix B of this report.

Average for all Seven Locations:

74% Reduction in All Crashes

79% Reduction in Severe Crashes



Appendix A

2019 Fatal Crash Descriptions/Locations

Five Fatal Crashes

County Rd 19 (Taft Hill Rd): The crash occurred 367 feet south of Horsetooth Rd on January 12, 2019. A southbound Dodge Ram pickup travelling in the southbound lane partially ran off the right side of the road for an unknown reason. The vehicle collided with a sign and then re-entered the roadway. The vehicle continued south for another 500+ feet crossing all lanes of traffic. The vehicle drove of the left side of the road, continued another 117 feet and collided with another sign and a driveway embankment, and then collided with three trees. One of the tree collisions sheared off the left side of the vehicle. The pickup came to rest on its wheels after hitting the third tree. Estimated vehicle speed was 70 MPH in a 40 MPH zone. The crash occurred on a dry roadway at 11:10am. Most apparent driver contributing factor is listed as medical/illness.

County Rd 80C: The crash occurred 0.6 miles west of Milepost 24 – approximately 24.6 miles west of US 287 on January 20, 2019. A 1995 Dodge Dakota pickup travelling west on the snow covered, non-paved roadway, braked to slow for a curve. The vehicle skidded with the rear of the vehicle turning clockwise. The front of the vehicle stuck a bush on the south embankment and then started rolling down the embankment, driver side first. The driver was partially ejected and the right side of the vehicle rolled over the driver. The vehicle continued down the embankment, rolled three times and the left side struck a tree. The vehicle came to rest on its wheels. The 54 year old male driver ended up being fully ejected and was killed in the crash and the 53 year old male passenger was seriously injured. Vehicle speed was estimated at 40 MPH in a 40 MPH speed zone, but was too fast for the snowy road conditions. Crash occurred at 3:30pm. Impairment due to alcohol was suspected.

County Rd 27 (Buckhorn Rd): The crash occurred at the Patience Way intersection northwest of Masonville on July 28, 2019. A 2004 Ford Ranger pickup was northbound on CR 27 south of Patience Way. A BMW motorcycle was southbound in the southbound lane of CR 27 north of Patience Way. The northbound pickup attempted a left turn onto Patience Way and entered the southbound lane. The southbound motorcycle tried to avoid a collision by steering to the right. The pickup collided with the motorcycle front to side at the edge of road. The motorcycle driver was fully ejected at point of impact. The pickup continued north and collided with a wooden parcels box. The motorcycle came to rest on its left side. The pickup had an estimated speed of 15 MPH in a 35 MPH speed zone. The motorcycle had an estimated speed of 70 MPH in a 35 MPH zone. Driver actions were listed as Improper turn for the northbound pickup and exceeded safe/posted speed for the southbound motorcycle. The crash occurred on a dry road at 2:15pm. Agency Code for the crash was M-05 – Improper left turn into traffic. The pickup driver was a 22 year old male and the motorcycle driver was 34 year old male.

2019 Fatal Crash Descriptions—continued

County Rd 9 at State Highway 392 (Carpenter Rd): The crash occurred at the intersection of CR 9 at SH 392 also known as Carpenter Rd on August 22, 2019. Vehicle No. 1, a 1998 Ford Explorer, pulled out from a stop sign on NB CR 9 in front of eastbound Vehicle No. 2, an F350 Ford pickup pulling a trailer. The front of Vehicle 2 collided with the driver's side of Vehicle No. 1. Vehicle 1 continued north into the northside ditch of SH 392. Vehicle No. 2 jack knifed and spun approximately 180 degrees facing west on it's wheels. The driver of Vehicle Bo. 1 and two children in the back seat, ages 1 and 6 were injured. The 1 year old later died on August 25th from injuries sustained in the crash.

Driver No. 1, a 27 year old female, was listed with driver action of careless driving and human factor as DUI, DWAI, DUID. Driver no. 1 was cited for Vehicular Homicide – DUI. Driver No. 2, a 33 year old male was cited for driving while his driver's license was revoked. The crash report was completed by the City of Fort Collins Police Services. The crash location is a split jurisdiction between the county and the Colorado Department of Transportation (CDOT – SH 392) and the City of Fort Collins, as that portion of the Highway has been annexed into the city.

County Rd 54G: The crash occurred 557 feet west of County Rd 19 (Taft Hill Rd) on November 10, 2019. A 2013 Hyundai Elantra was eastbound on CR 54G. A 2014 Toyota Sienna was westbound on CR 54G. The Elantra crossed over the double yellow centerline and fully into the westbound lane of CR 54G. The EB Elantra struck the WB Sienna head on in the westbound lane. Both vehicles came to rest on their wheels on the roadway. Both vehicles were estimated to be travelling at 45 MPH in a 45 MPH speed zone. The crash occurred on a dry road at 9:30am. Both drivers were injured. A 92 year old female riding in the back seat of the Sienna was killed. The Elantra driver, a 20 year old female, was listed with driver action of careless driving and human factor as DUI, DWAI, DUID and was cited for Vehicular Homicide – DUI.

Appendix B

Monitoring of Low Cost Safety Improvements at Run off the Road Locations with Crash History

Segment	Time Frame	Number Crashes Per Year						Date Improved	Notes
		PDO	INJ	FAT	Total Avg	Minor	Severe		
CR 30 east of CR 13 at turn around east side of Donath Lake	Type of Improvement	Upgraded panel size and sheeting to Day Glo Hi Intenstiy, increased number of chevrons.						11/2/2017	Average of 5 years before improvements and 2 years after
	Before Improvements	2.20	0.60	0.00	2.80	2.20	0.60		
	After Improvements	1.00	0.00	0.00	1.00	1.00	0.00		
	Change	-55%	-100%	0	-64%	-55%	-100%		
CR 13 0.8 miles south of SH 392, turn on north side of Donath Lake	Type of Improvement	Upgraded signing, sheeting, increased number of chevrons and added two southbound pre-formed thermoplastic rumble bars.						11/15/2011	Average of 5 years before improvements and 8 years after
	Before Improvements	1.56	0.400	0.00	1.80	1.56	0.40		
	After Improvements	1.00	0.13	0.00	1.13	1.00	0.13		
	Change	-36%	-68%	0	-37%	-36%	-68%		
CR 43 - Reverse Turn near West Creek Rd, SW of Glen Haven	Type of Improvement	Placed advance Reverse Turn warning signs with 25 MPH advisory plates and installed two SW bound 24" x 30" Chevron signs.						5/10/2018	Average of 4 years before improvements and 1.8 years after
	Before Improvements	0.250	0.250	0.00	0.500	0.250	0.250		
	After Improvements	0.00	0.00	0.00	0.00	0.00	0.00		
	Change	-100%	-100%	0	-100%	-100%	-100%		
CR 21— Overland Tr Turn at CR 50— Michaud Ln	Type of Improvement	Upgraded advance warning signs and installed 24" x 30 Chevrons through the turn.						11/10/2010	Average of 6 year before improvements and 9 years after
	Before Improvements	0.67	0.17	0.17	1.00	0.67	0.33		
	After Improvements	0.22	0.11	0.00	0.33	0.22	0.11		
	Change	-67%	-35%	-100%	-67%	-67%	-67%		
CR 16 - Turns at CR 10 and west of CR 10 (2 Turns)	Type of Improvement	Upgraded advance warning signs and added chevrons through both turns						6/13/2011	Average of 5 years before improvements and 8 years after
	Before Improvements	2.00	0.00	0.200	2.20	2.00	0.20		
	After Improvements	0.25	0.13	0.00	0.38	0.25	0.13		
	Change	-88%	100%	-100%	-83%	-88%	-35%		
CR 54G - 0.2 mi east of CR 21C Overland Tr	Type of Improvement	Upgraded advance warning signs and installed 6 pairs of 24" x 30" Chevron signs through the curve						12/12/2018	Average of 5 years before improvements and 1 year after
	Before Improvements	0.60	0.40	0.20	1.20	0.60	0.60		
	After Improvements	0.00	0.00	0.00	0.00	0.00	0.00		
	Change	-100%	-100%	-100%	-100%	-100%	-100%		

Appendix B (continued)

Monitoring of Low Cost Safety Improvements at Run off the Road Locations with Crash History

Segment	Time Frame	Number Crashes Per Year						Date Improved	Notes
		PDO	INJ	FAT	Total Avg	Minor	Severe		
CR 19 S curves between CR 60E and CR 64	Type of Improvement	Upgraded sign materials and added stop ahead pavement markings						5/17/2008	Average of 3 years before improvements and 11 years after
	Before Improvements	0.33	0.67	0.33	1.33	0.33	1.00		
	After Improvements	0.27	0.18	0.00	0.45	0.27	0.18		
	Change	-18%	-73%	100%	-66%	-18%	-82%		

Contact Us

Larimer County Engineering Department

Address

200 West Oak Street, Suite 3000
Fort Collins, CO 80521

Mailing Address

PO Box 1190
Fort Collins, CO 80522-1190

Email

Eng-Traffic@larimer.org

Phone

(970) 498-5700
(970) 498-7986 (Fax)

Office Hours

8:00 a.m. - 4:30 p.m.
Monday - Friday

On The Web At:

www.larimer.org/engineering

