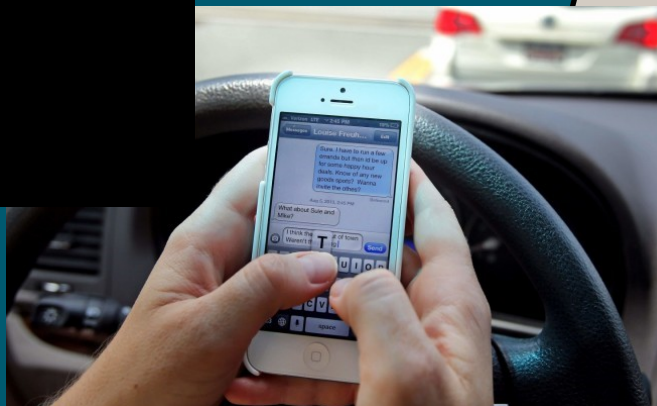


2016 Traffic Safety Report



Engineering Department



2016 Traffic Safety Report

Introduction

This report covers the unincorporated roadways in Larimer County that the County has responsibility to maintain. Unincorporated Larimer County has more than 900 miles of roadways, 80 in urban areas surrounding communities, and 820 in the 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.**

Focus on Fatal Crashes: The Federal Highway Administration (FHWA) adopted a policy formulated in 2009 called *Toward Zero Deaths: A National Strategy on Highway Safety*. The goal of zero



2016 Colorado Deaths

Caused by...

Cardiovascular Disease¹
9,564

Influenza & Pneumonia²
659

Motor Vehicle Crash³
607

Avalanche⁴
5

***Unincorporated Larimer County
Roadway Crashes***
7

Lightning Strike⁵
2

Sources:

¹<http://www.chd.dphe.state.co.us/Resources/vs/2015/Colorado.pdf>;

²<http://wonder.cdc.gov/ucd-icd10.html>; ³<https://www.codot.gov/library/traffic/safety-crash-data/fatal-crash-data-city-county/2016-monthly-fatals/view>; ⁴<http://www.avalanche.org/accidents.php?date=2015-2016>; ⁵<http://www.lightningsafety.noaa.gov/fatalities.shtml>

deaths was set for something to strive towards. In 2014 the national fatality rate did drop by 2.7 percent compared to the year before. However, that trend has not prevailed in 2015 which saw fatalities rise 6%.

The Colorado Department of Transportation (CDOT) also adopted this national policy and set performance measures to achieve this goal. The Colorado Strategic Highway Safety Plan, October 2014, sites that “Colorado has made tremendous progress in reducing the deaths and preventable injuries caused by traffic crashes. In the last 10 years (2002 to 2012), traffic-related fatalities in Colorado dropped 36 percent and serious injuries declined 35%.” However, since 2013, fatal crashes have steadily increased with a 10% increase between 2015 and 2016.

Larimer County saw 7 fatal crashes resulting in 7 fatalities, in 2016. While the number of fatalities in Larimer County has remained flat over the last two years, this has not been the Federal and State trend.

Larimer County injury crashes increased by nearly 16% in 2016 moving away from the Traffic Safety Program Goal.

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

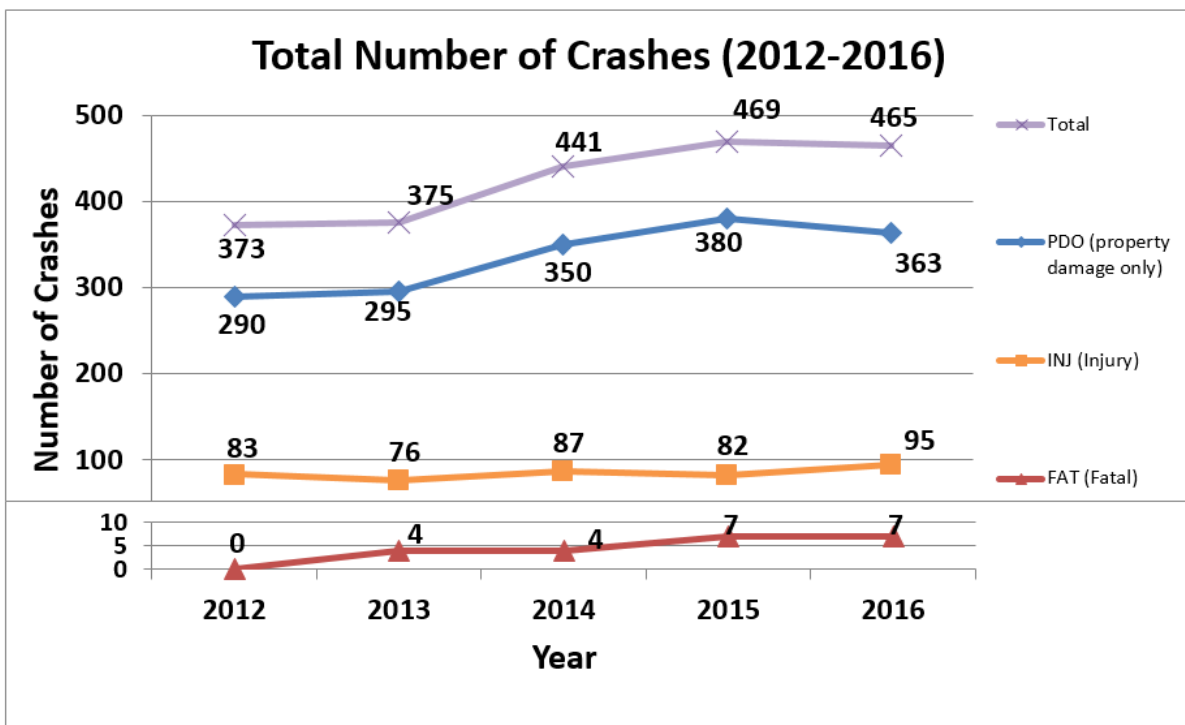
2016 CRASH TRENDS

There were an average of 425 crashes on unincorporated roads in Larimer County between 2012 and 2016. The 2016 **crashes increased** by about **9%** compared to the **5 year average**. In 2016, the total number of **crashes decreased slightly** by about 1% compared to 2015, flattening out the upward trend since 2012.

There is generally a correlation between an increase in Vehicle Miles Traveled (VMT) and the number of crashes. Approximately 8 million more miles were traveled in 2016 compared to 2015, a 2.7% increase. The 2.7% increase in miles traveled exceeded the 0.8% growth in population, estimated by the Colorado Department of Local Affairs. However, the rate of growth for both population and VMT are less than previous years.

Fatal crashes: 7 crashes and 7 fatalities same as 2015
 Injury crashes: Increased by 16%
 Property Damage Only: Decreased by 4.5%

General Trends - Crash Information

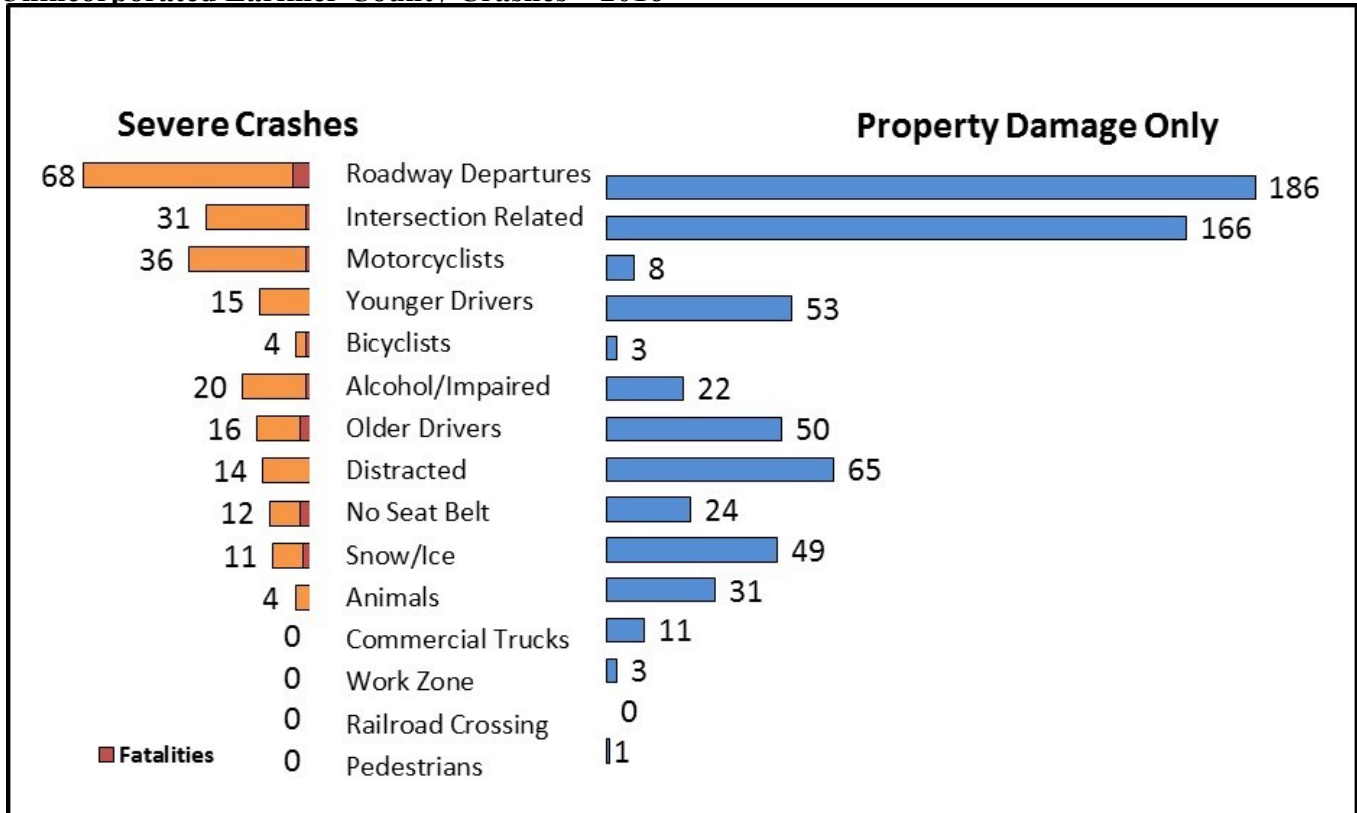


Overall

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 from Colorado State Patrol crash reports.

The chart below shows the number of crashes in 2016 relative to a variety of factors. Crashes may be listed in more than one category. The table below shows the trends in each category.

Unincorporated Larimer County Crashes – 2016



Compared to 2015,

Roadway Departure crashes continue to be the most common in Larimer County, and increased 4%

Driving Under the Influence (DUI) are down 7%

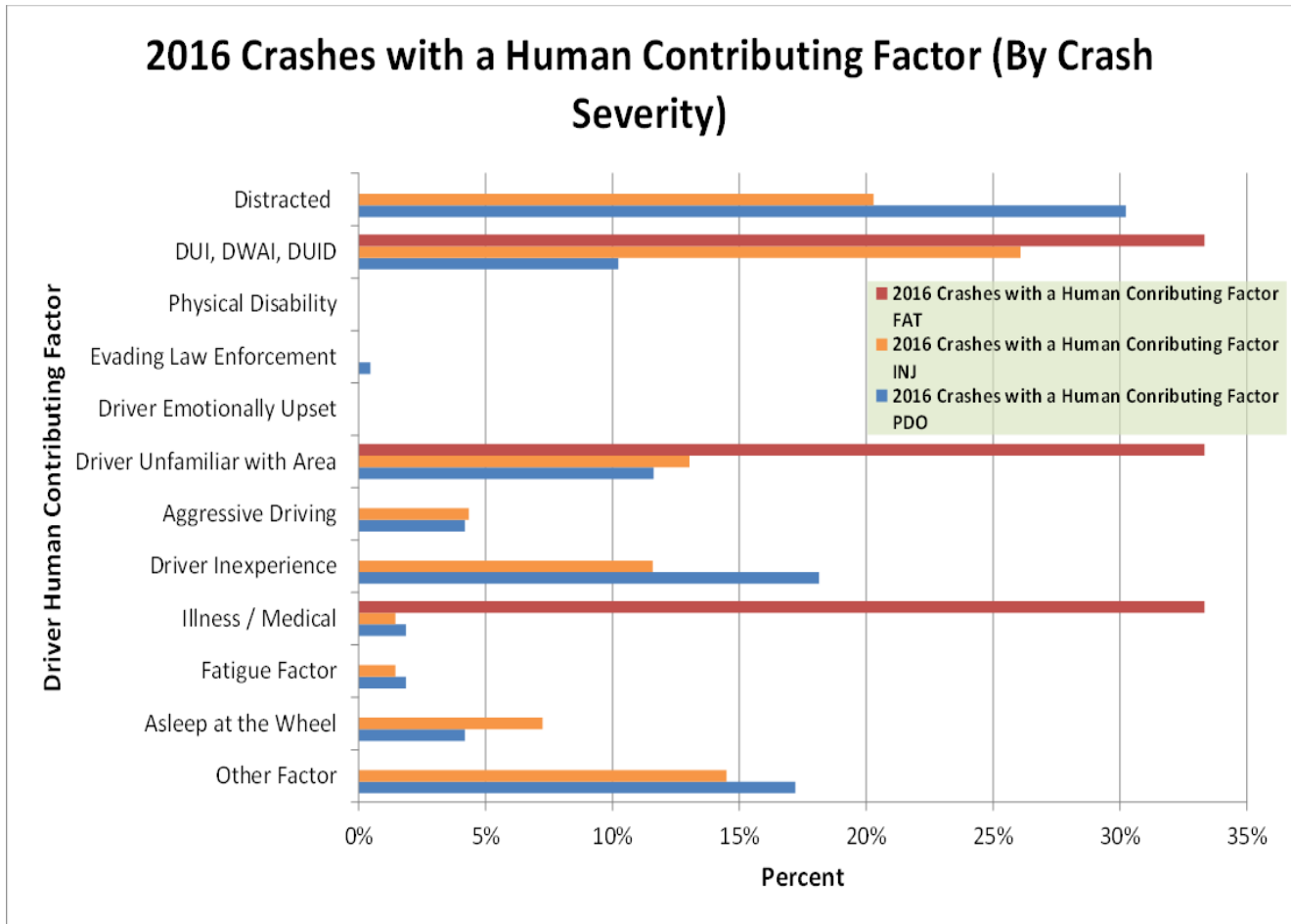
Distracted driving is up 4%

Crashes that have an **animal** involved increased 9%

Older Drivers (60+) were involved in 4% fewer crashes in 2016 than the previous year, going against the 5 year trend of steady increase.

Crash Characteristics	% Change between 2015 and 2016	2016 Total Crashes
Roadway Departures	4%	254
Intersection Related	12%	197
Motorcyclists	0%	44
Younger Drivers	-7%	68
Bicyclists	0%	7
Alcohol/Impaired	-7%	42
Older Drivers	-4%	66
Distracted	4%	79
No Seat Belt	50%	36
Snow/Ice	-10%	60
Animals	9%	35
Commercial Trucks	83%	11
Work Zone	-25%	3
Railroad Crossing	-100%	0
Pedestrians	0%	1

Overall Continued



Out of those 287 crashes with Human Contributing factors, 3 were fatal and 69 had injuries. The leading causes of injury or death are:

- Drivers Inexperience (19)
- Distracted (14)
- Driver unfamiliar with area (10)

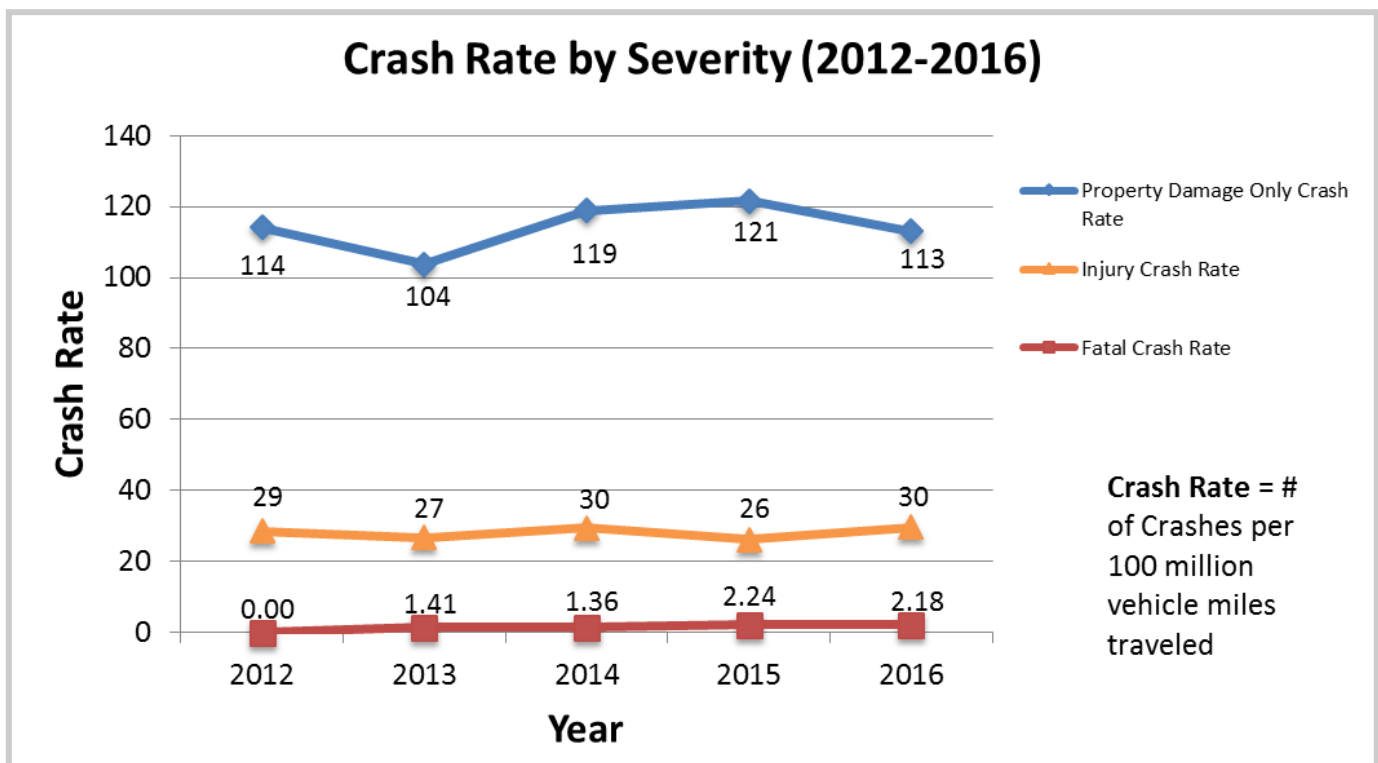
Driving is about human interaction with the vehicle, the natural elements and with other drivers on the roads.

There were 465 crashes in 2016 and 287 of those crashes, almost 62%, had human contributing factors

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.

This graphic shows the crash rate by severity, and indicates that the property damage only crash rate **decreased 8%** and the injury crash rate **increased 4%** respectively in the past year. Fatal crash rates decreased slightly from the previous year. This decrease is due to the higher number of vehicle miles traveled while the number of fatal crashes remained steady. This trend is contrary to state and national trends, where fatal crash rates have increased over the last few years.



Cities and towns do not report crash rates making it difficult to compare crash information within Larimer County. The Colorado Problem Identification Report, Colorado Department of Transportation, Fiscal Year 2016, shows the average 6 year (2009-2014) statewide injury crash rate per 100 million VMT is 20.92 while Larimer County (2011-2016) is 28.2.

The crash rates on the unincorporated County road system are higher than the State system that includes both interstate and state highway systems.

Distracted and Impaired Crashes

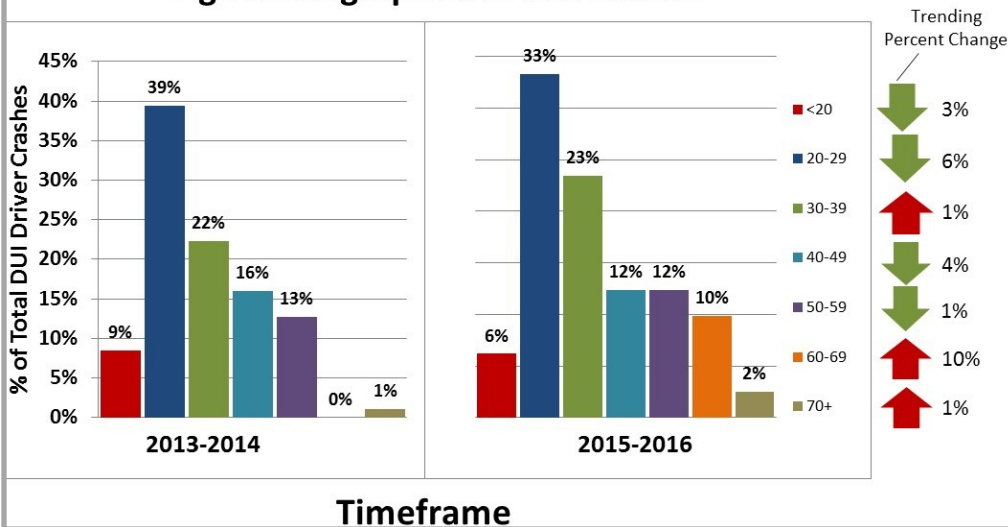
Ninety-eight percent of national survey respondents know distracted driving is dangerous; nearly 75 percent admit to having done it. —

Center for Internet and Technology Addiction



In 2016, **121** crashes were the result of distracted or impaired drivers, nearly identical to the previous year. These crashes resulted in **62** injuries and **1** fatality.

Age Demographics of DUI Drivers

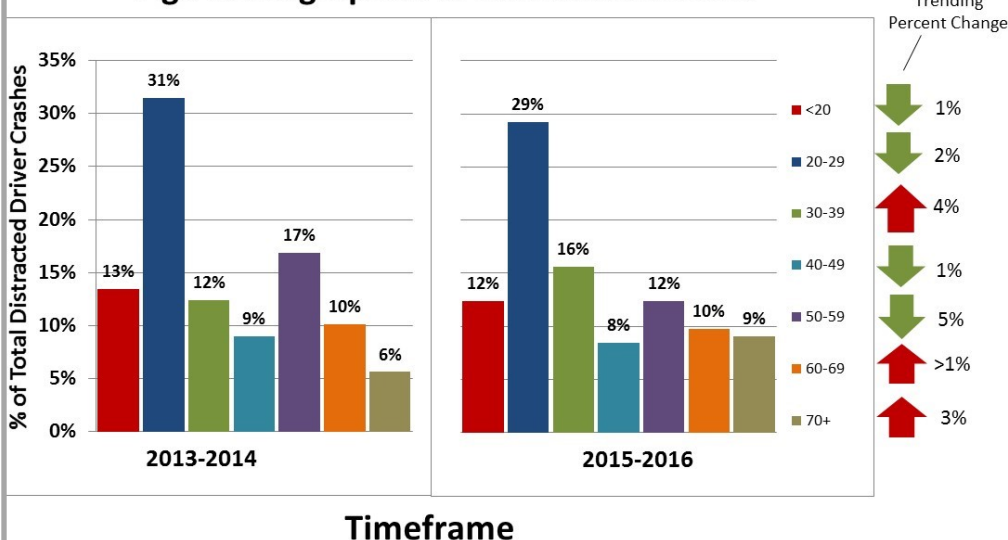


According to CDOT, Distracted driving fatalities are increasing in Colorado.

In 2015, 68 (13 percent) of the 546 Colorado traffic fatalities were caused by distracted driving.

Most notably, cell phone distraction increased by 26% over 2015.

Age Demographics of Distracted Drivers



Fatal Crash Review

There were seven fatal crashes on the unincorporated County road system in 2016 that resulted in 7 fatalities, matching 2015 numbers. The generally low number of fatalities makes it difficult to establish statistically significant details about the crashes. Using the total number of fatalities in the **past five years (2012-2016)**, generalities or trends can be noted.



Overturn
59%



DUI
32%



Male
86%



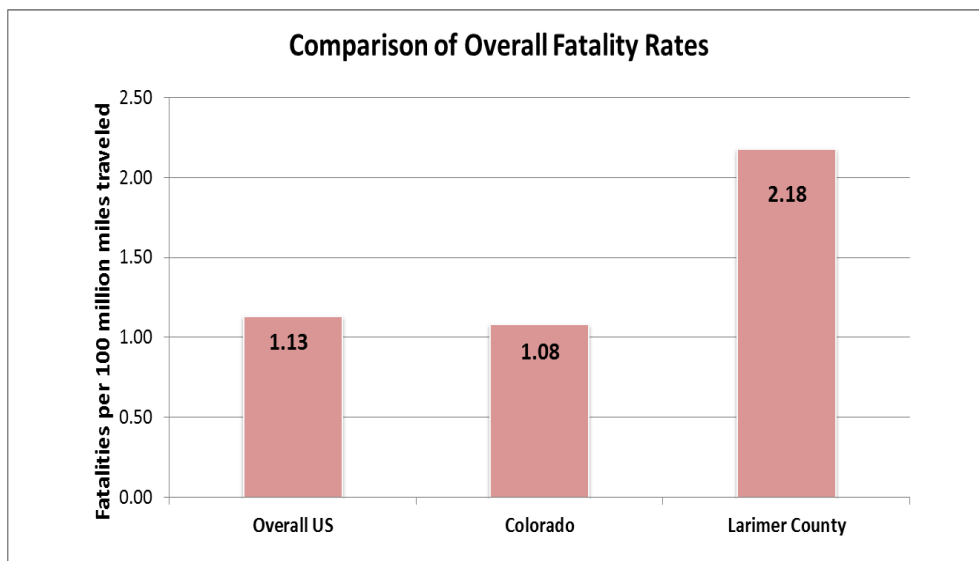
Motorcycles
32%

5 of the 7 fatal crashes involved **roadway departures**

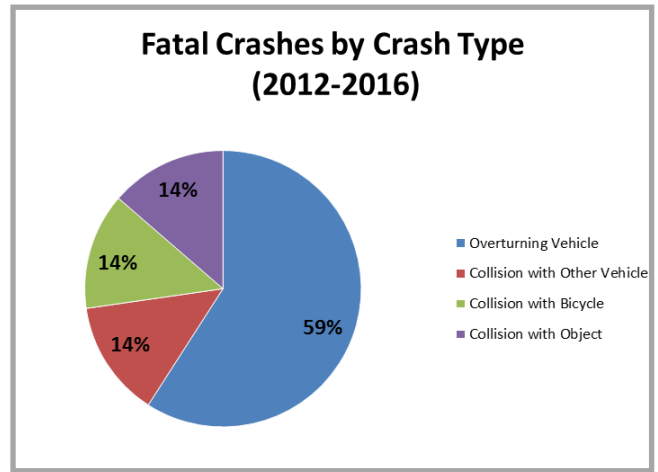
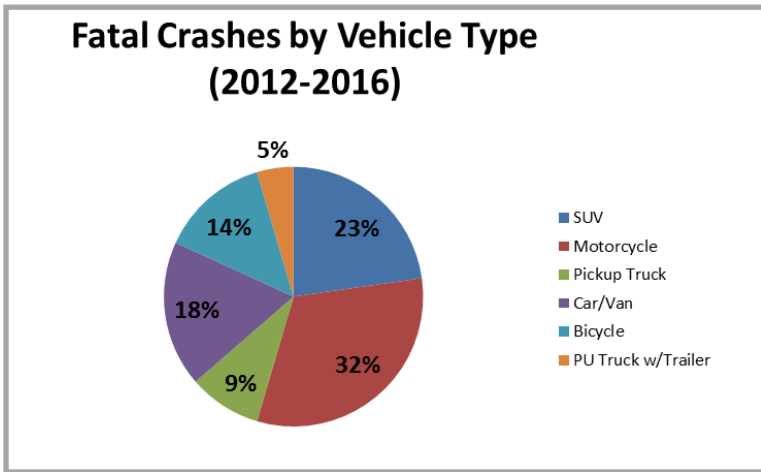
Overturning was the most harmful event in 5 of the 7 fatal crashes

58% are Exceeding a Safe Speed or Lane Violation

Note: Fatality rates are based on the most recently available data for a full calendar year. The US and Colorado rates are based on 2015 data. Larimer County's fatality rate is based on 2016 data.



Sources: National Highway Traffic Safety Administration (2015) Colorado: NHTSA Fatality Analysis Reporting System by State (2015) and CDOT Fatal Crash Data (2016)
Larimer County value from: County records (2016)



2016 Fatal Crash Descriptions/Locations

County Rd 25G 760 feet west of CR 23 - 1/13/2016: Driver of an SUV experienced a medical emergency, causing the vehicle to travel off the left side of the road, striking a tree, rock, and then overturning; resulting in one fatality. This crash occurred on a curve on-grade with dark and unlighted conditions.

County Rd 74E 0.34 miles west of Phantom Ranch Rd (Red Feather Lakes area) 2/22/2016: A single vehicle crash, the driver lost control in snowy conditions around a sweeping right hand curve on a downgrade. The vehicle traveled down an embankment, where the driver was ejected, and the vehicle rolled one and a half times, including rolling over the top of the driver; resulting in one fatality This crash occurred during dark and unlighted conditions with adverse weather including snow.

County Rd 74E 0.9 miles east of Deer Meadow Way – (McNay Hill area) 3/17/2016: Single vehicle crash on a snow packed/icy road. The vehicle slid off the roadway, hit a fence and rolled 3/4 times; resulting in one fatality. The crash occurred during daylight and the suspected cause is exceeding a safe speed.

County Rd 21C 434 feet south of Island Place (Overland Trail) – 6/20/2016: A single vehicle DUI accident; The vehicle collided with a guardrail, then continued 0.5 mile at a high rate of speed. There, the vehicle traveled off the right side of the roadway, up an embankment, collided with a fence, went airborne for 38 feet, and finally rolled 2-1/2 times before coming to final rest; resulting in one fatality. This crash occurred on a dry roadway in daylight conditions.

County Rd 23 0.25 miles north of CR 38E (Horsetooth Reservoir area)– 9/15/2016: Single vehicle crash, a motorcycle traveling at a high rate of speed lost control and collided with a guardrail multiple times, ejecting the driver; resulting in one fatality. This crash occurred on a curve on-grade during daylight conditions. The suspected causes of this fatal crash were excessive speed and driver DUI.

County Rd 8E 0.244 miles west of CR 27E (Carter Lake area) – 9/20/2016: Multiple vehicle crash involving a bike; The bike was behind a non-contact vehicle that slowed suddenly, causing the bike to swerve to avoid a collision. The bike crossed into opposing traffic and was struck by a pickup, resulting in one fatality. This crash occurred on a straight on-grade roadway at dusk.

County Rd 8 At County Road 21 (Berthoud area) – 10/5/2016: Three vehicle crash at an intersection, a vehicle proceeded through a stop sign into traffic on the cross street. The vehicle was struck by an eastbound vehicle and spun before colliding with a westbound vehicle; resulting in one fatality. This crash occurred on a straight on-grade roadway during daylight conditions.

Roadway Departure Crashes

Roadway departure crashes are frequently severe and account for the majority of high-way fatalities. In the United States during 2015, there were 18,695 fatalities as a result of roadway departure, which is over 53% of all fatalities.*

In Larimer County, there is no singular cause of roadway departure crashes; in fact most have no apparent contributing factor. Trends over the past five years have been very consistent with about 50% of the causes classified as either not apparent or other.

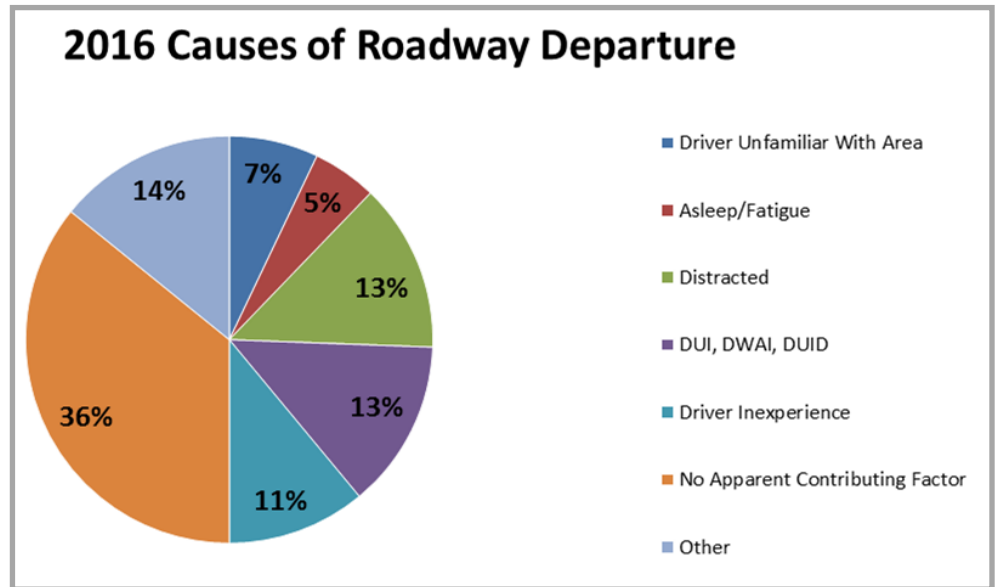
*https://safety.fhwa.dot.gov/roadway_dept/

Two-lane rural roads are the most dangerous part of the road system. In 2016, **50%** of all crashes involved a vehicle leaving the roadway (roadway departure crash). Here's what we know about those crashes:

Road Condition: 74% of the crashes occurred on dry roads

Light Condition: 56% occurred during daylight hours

Fatal Crashes: 71% are Roadway Departure Crashes



2016 Roadway Departure Top 5 Worst Locations

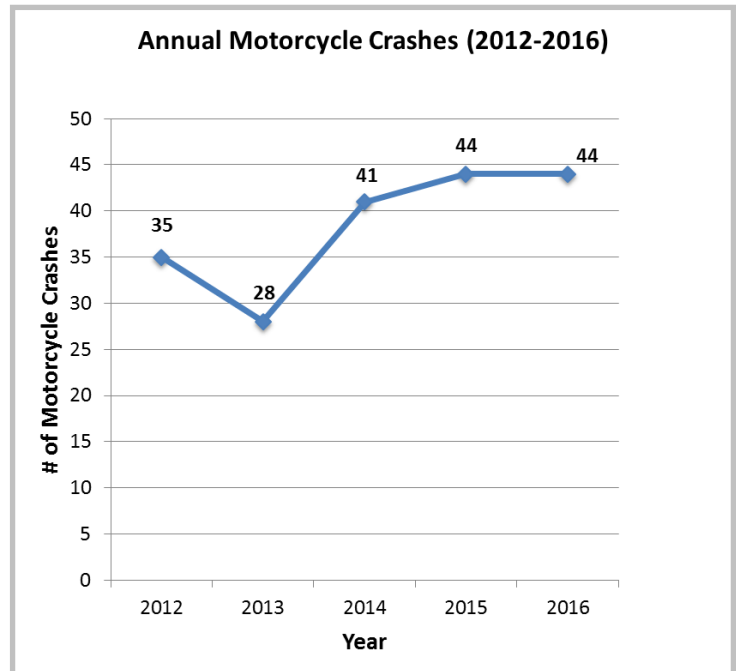
- **CR 27 [14 Crashes Total]** - Hotspots north of CR 44H and south of CO SH 14
- **CR 19 (Taft Hill Rd) [11 Crashes Total]** - Hotspots near CR 28 and Ideal Lane
- **CR 38E [11 Crashes Total]** - Hotspot near Lake View Drive (south end of Horsetooth Reservoir)
- **CR 52E [11 Crashes Total]** - Most concentrated between CR 25E and CR 54G
- **CR 29 [10 Crashes Total]** - Concentrated between CR 18E and US HWY 34

Motorcycles Crashes

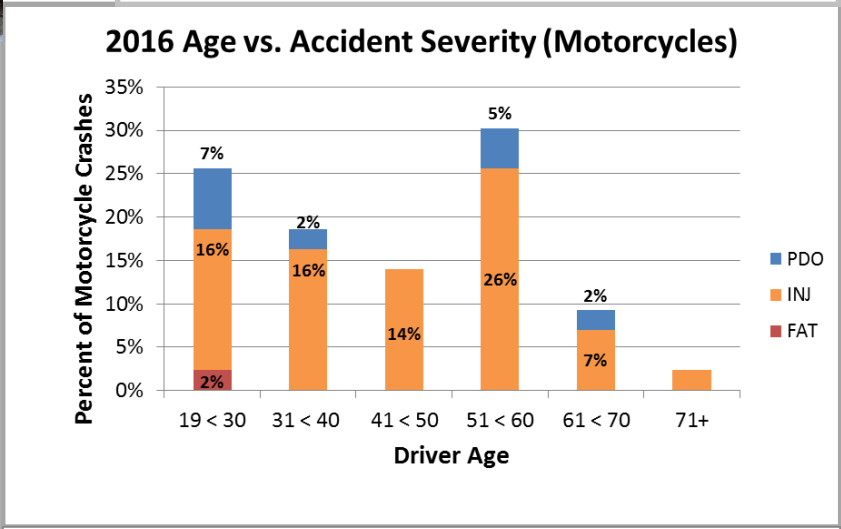
The total number of motorcycle crashes and the percent of motorcycle crashes compared to the total number of crashes has remained fairly constant over the last few years, typically around 9%. However, the chance of injury or death is disproportionately higher. In 2016, **82% of motorcycle crashes resulted in injury or death compared to 16% in other vehicles.**



Coloradoan, 2014

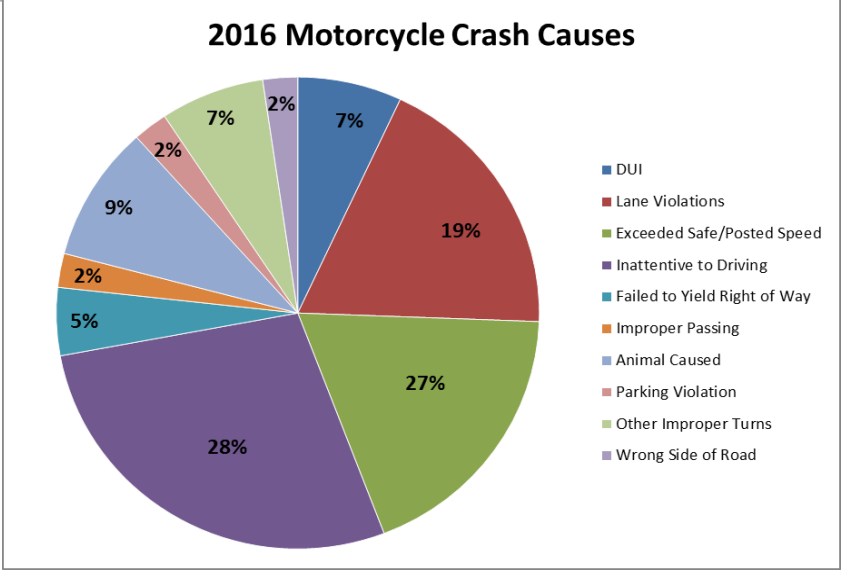


Similar to 2015, 2016 saw an increase in motorcycle crashes with drivers in the 51-60 age group. The number of crashes grew from 6 to 13 in this age group for the year. Also, there were fewer crashes in the 18-30 age group, with 11 in 2016 versus 17 in 2015



Most crashes are in the foothills and speed contributes to nearly half of all crashes.

The majority of motorcycle crashes are caused by Inattentive Driving, Speed, or Lane Violations, accounting for 74% between these three causes.



Bicycle Crashes

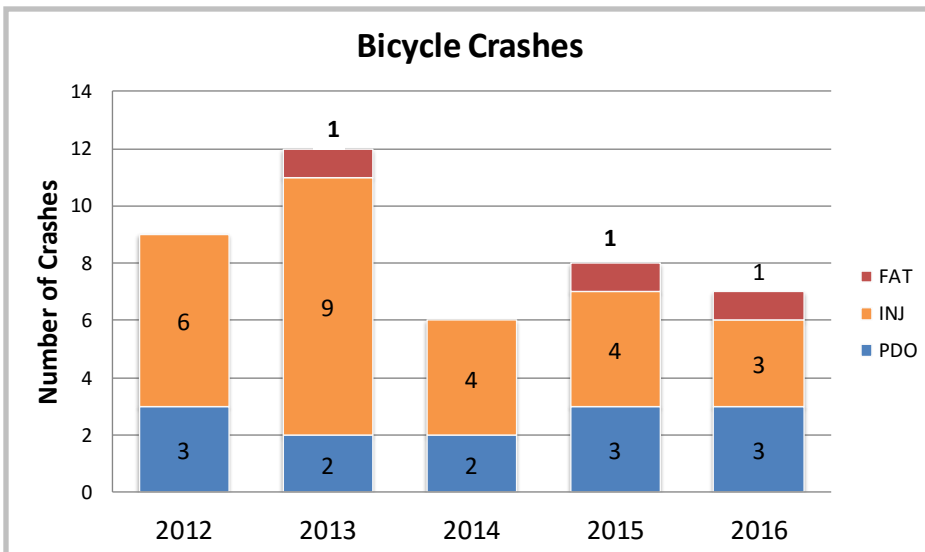
Bicycling is a popular activity in Larimer County whether riding for commuting or pleasure. Many of the cities and towns actively promote bicycling and many events are requested and held on county roads in the summertime.

The number of bicycle crashes has remained fairly steady over the past three years. However, similar to motorcycles, the severity of the crashes is much higher than for a motor vehicle.

57% of the bicycle crashes resulted in injury or death.



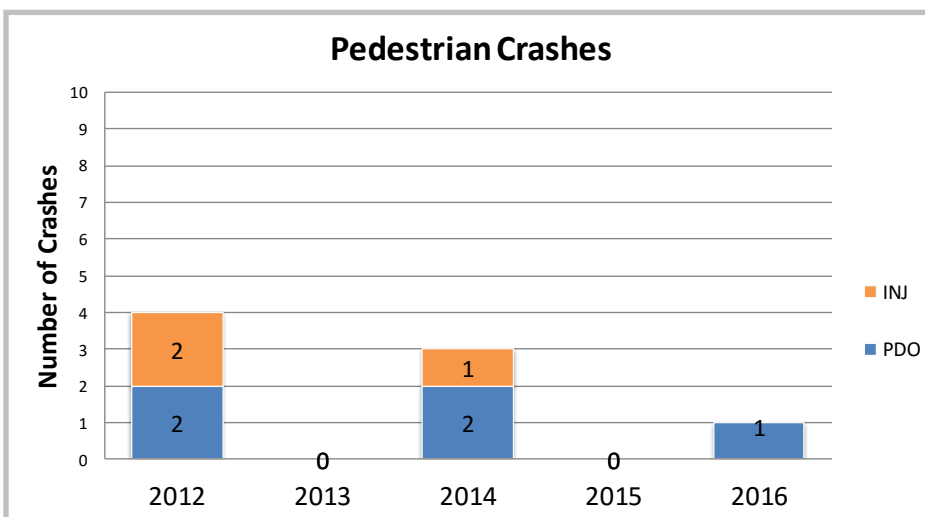
Coloradoan June 2015



Pedestrian Crashes

The number of pedestrian crashes is low in Larimer County with 8 during the last five years. As the crashes reported here are in the unincorporated area of the county there are generally fewer pedestrians.

The City of Fort Collins averages 45 total pedestrian crashes per year. The majority of these crashes occur at signalized intersections or non-designated pedestrian crossing locations in areas with high pedestrian volumes. Larimer County does not have many areas with high volume pedestrian traffic; which reflects the low number of pedestrian crashes.

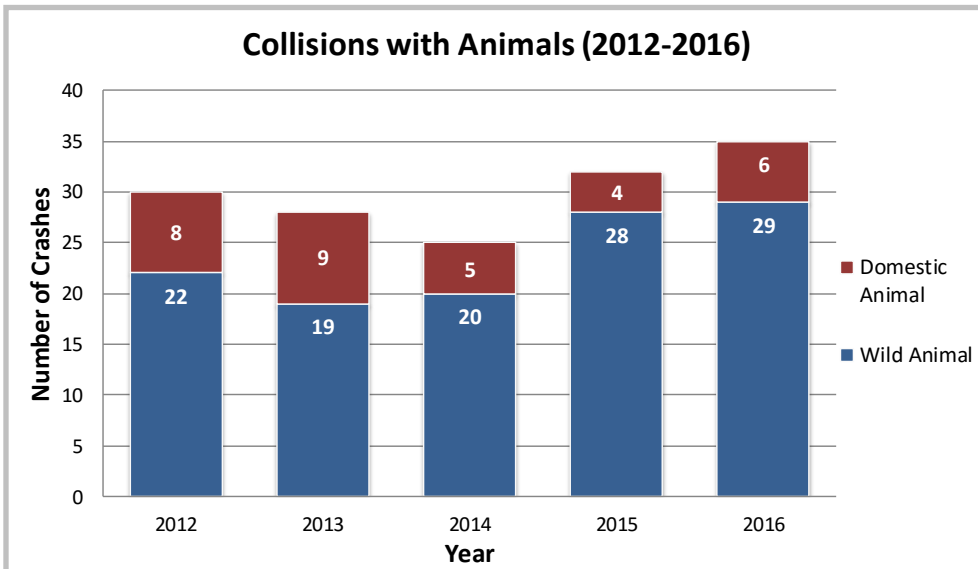


Animal Related Crashes

The total number of animal collisions in 2016 was 35, up from 2015. This is an increase in animal related crashes from the previous year of 9%, all but one crash involved large animals, both wild and domestic, that can cause more damage and injury



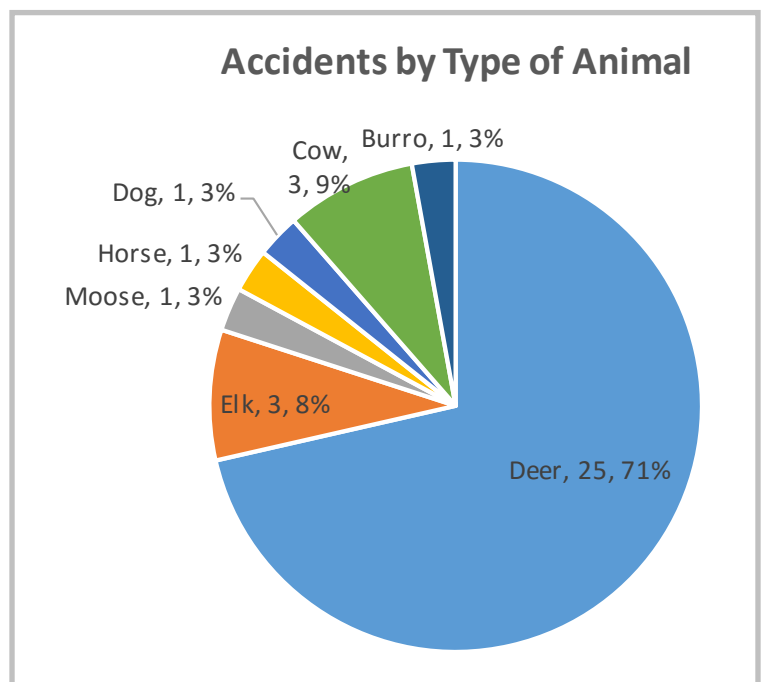
Coloradoan, Oct 25, 2014



October & November have the most frequent collisions, about 50%. Most occur at night on unlit roads.

The total number of animal crashes in 2016 was 35, an increase from 32 the previous year.

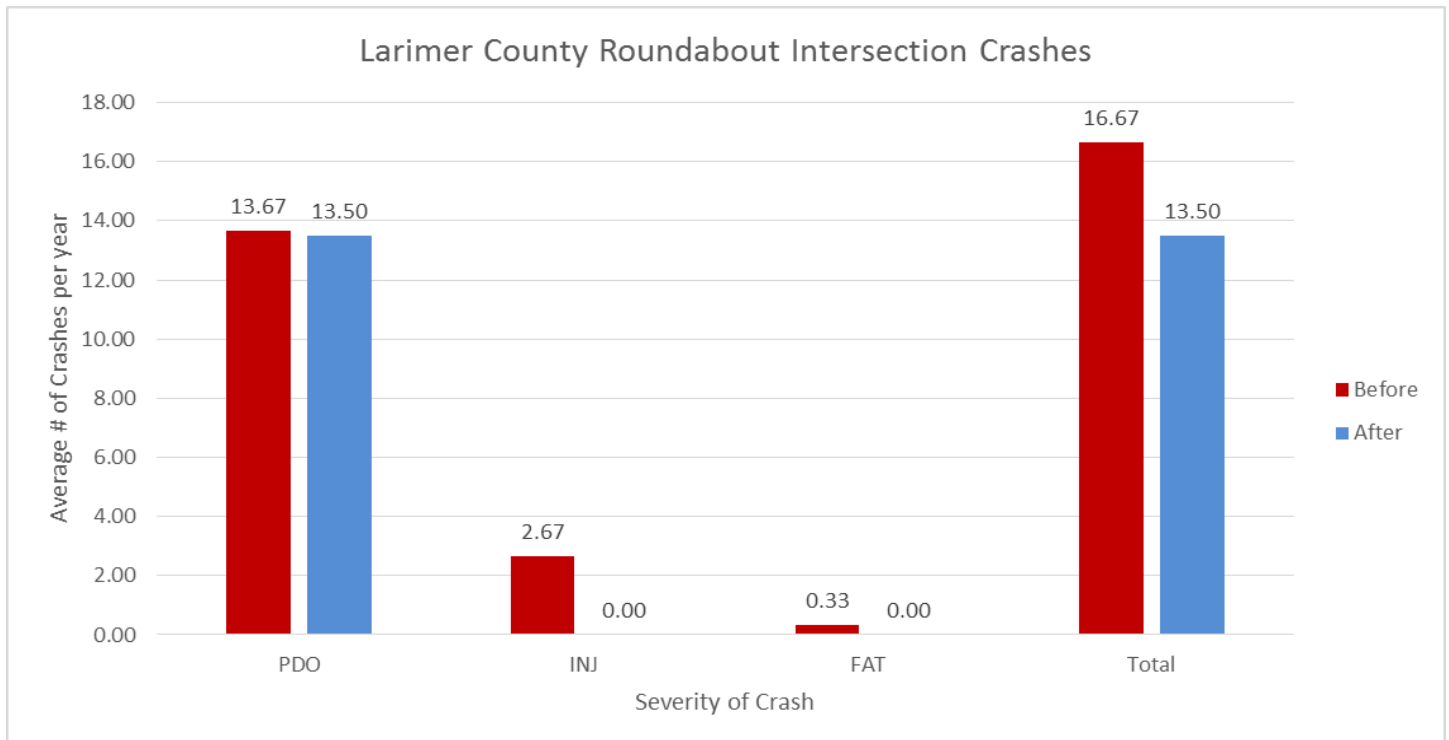
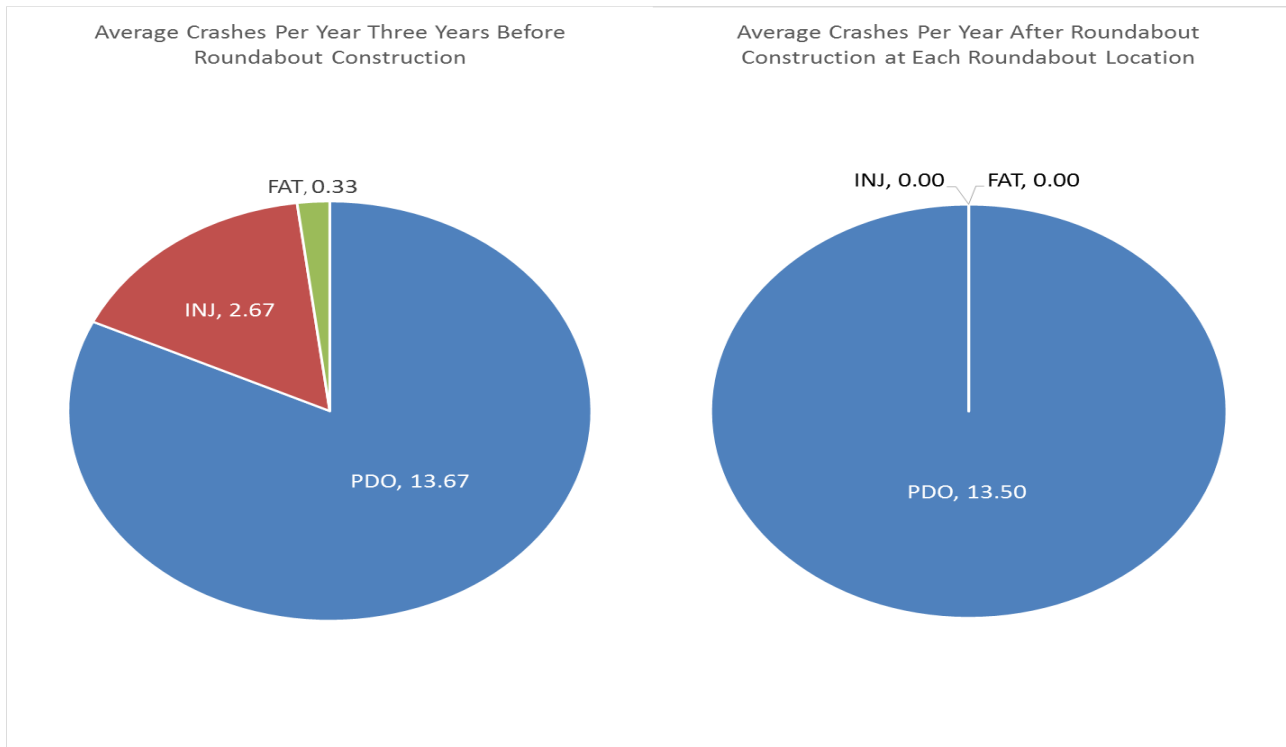
The most common animal crash was with deer, 71% of all animal crashes.



Traffic Safety Program Review

During the past 10 years Larimer County has converted 5 crossroad intersections to roundabouts. The locations are CR 19 at CR 48 (Vine Dr), CR 9 at CR 30, CR 19 at CR 70, CR 11C at CR 30 and CR 11 at CR 30. A composite—comparison of crashes before and after the roundabout installations is displayed below. There has been a small drop in the number of overall crashes even with increased traffic at each of the roundabouts. The biggest benefit is the huge reduction in serious crashes at these 5 locations.

Intersection to Roundabout Crash Comparison



Traffic Safety Mitigation

Safety improvements completed on the County Road system during 2016

CR 11C - Pedestrian Hybrid Beacon: A pedestrian / bicycle crossing on County Rd 11C located approximately 0.5 mi south of CR 30 was upgraded from a simple flasher system to a pedestrian hybrid beacon. The conversion was started at the end of 2016 and completed in early 2017. Advance flashers located 750 feet in advance of the beacon are coordinated to operate with the beacon upon pedestrian activation. The new beacons require a stop by vehicles on CR 11C and new pedestrian countdown displays were added which should improve the pedestrian and bicycle safety at this crossing.

CR 13E - Monroe Ave and CR 28 - 57th St Traffic Signal: A new traffic signal was installed at the CR 13E and CR 28 intersection during 2016. Traffic studies had shown the intersection was meeting several of the Manual on Uniform Traffic Control Devices (MUTCD) warrants for a traffic signal including an ongoing problem with right angle crashes. The permanent mast arm signal includes pedestrian push buttons and count down displays to enhance pedestrian safety at the intersection. The project also included the addition of a northbound right turn lane on CR 13E to improve overall traffic flow at the intersection. The signal was completed just before the start of the road reconstruction project on CR 11C. With some peak hour signal timing adjustments, the signal significantly improved detour traffic flow.

CR 11C - Road Reconstruction: CR 11C was reconstructed from the Horseshoe Lake outlet to Boyd Lake to just south of CR 28 - 57th St. The road was widened to include 6 foot paved bike shoulders on each side of the road. This is a big safety improvement for a heavily traveled commuter roadway that is also popular with bicyclists and handles a lot recreational vehicle traffic. The portion of the road from the outlet south to CR 24E will be reconstructed in 2017.

Low Cost Safety improvements during 2016 included:

- On CR 5 south of State Highway 392 a cooperative project was completed with the Poudre Valley Rural Electric Association (REA) and the county. An access to the REA property just south of SH 392 that was located very close to the SH 392 intersection was closed off and a new main entrance to the REA property to the south was created. The county provided striping removal, installed thermoplastic markings and painted new pavement markings to create a new dedicated southbound left turn lane into the new entrance.
- CR 25E — at the intersection of CR 52E (Rist Canyon Rd) there have been a couple of recent crashes involving vehicles running the southbound stop sign on CR 25E. Residents reported several near misses at the intersection. Signing was upgraded approaching the intersection and at the intersection on CR 25E and preformed Thermoplastic Stop Bars were placed on CR 25E to emphasize the stop condition to drivers on CR 25E.
- Pavement markings were upgraded and replaced using preformed thermoplastic markings at various locations throughout the county.

Traffic Safety Mitigation 2017

The following section highlights some of the safety projects that the Engineering Department will be focusing on in 2017.

Low Cost Safety:

- County wide evaluation of all crash data and select locations for individual safety audits. This includes the top 5 worst roadway departure crashes to determine potential mitigation measures and estimated cost.
- Installation of speed radar signs on County Rd 23 and County Rd 52E approaching the Bellvue area
- Additional measures at the County Rd 8 and County Rd 21 intersection to include solar flashing beacons.

2017 Safety Projects:

- The installation and upgrade of mile markers on many of the county roads in the foothills and mountainous areas of Larimer County. Markers were installed and upgraded on several county roads in 2016. The remaining roads will be completed in 2017. The milepost markers will have geographically referenced locations on the Larimer County GIS road inventory system. Milepost markers are used for reference in emergency response situations, crash locations and road maintenance.
- The southern portion of County Rd 11C between County Rd 24E and County Rd 28 will be reconstructed during 2017. Improvements include a new entrance to Boyd Lake State Park with a dedicated left turn lane on CR 11C and the addition of 6 foot paved bike lanes on each side. This will complete project no. 305, reconstruction of CR 11C.

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