



2014 Traffic Safety Report

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INTRODUCTION

Larimer County strives to make the roadways as safe as possible which includes engineering improvements at site specific locations. This report covers the unincorporated areas of Larimer County that are predominately rural roadways. The Traffic Safety Program Goal is to **reduce the number and severity of crashes on our roadways.**

Unincorporated Larimer County has more than 1,000 miles of roadways, 150 in the urban area surrounding communities, and 900 in the rural portions of the county, see map on next page. In 2014 there were 441 crashes with 4 of those crashes resulting in 5 fatalities and 87 injury crashes. Annual societal cost of these crashes is in excess of \$10.4 million dollars.

Federal Highway Administration (FHWA) has a newly adopted policy formulated in 2009 called *Toward Zero Deaths: A National Strategy on Highway Safety*. This policy was adopted as an outcome of a workshop, where there was strong agreement that even one death is unacceptable. While this may seem unattainable, the goal is set for something to strive towards and in fact the national fatality rate did drop in 2013 by 3.1 percent compared to the year before. Nationwide, the number of people who died in alcohol impaired driving crashes decreased by 2.5 percent.

What are the Odds?

Dying From...

Lightning Strike

1:136,011

Air Transport Incident

1:8,357

Firearms Discharge

1:6,509

Unintentional Drowning

1:1,043

Motor Vehicle Crash

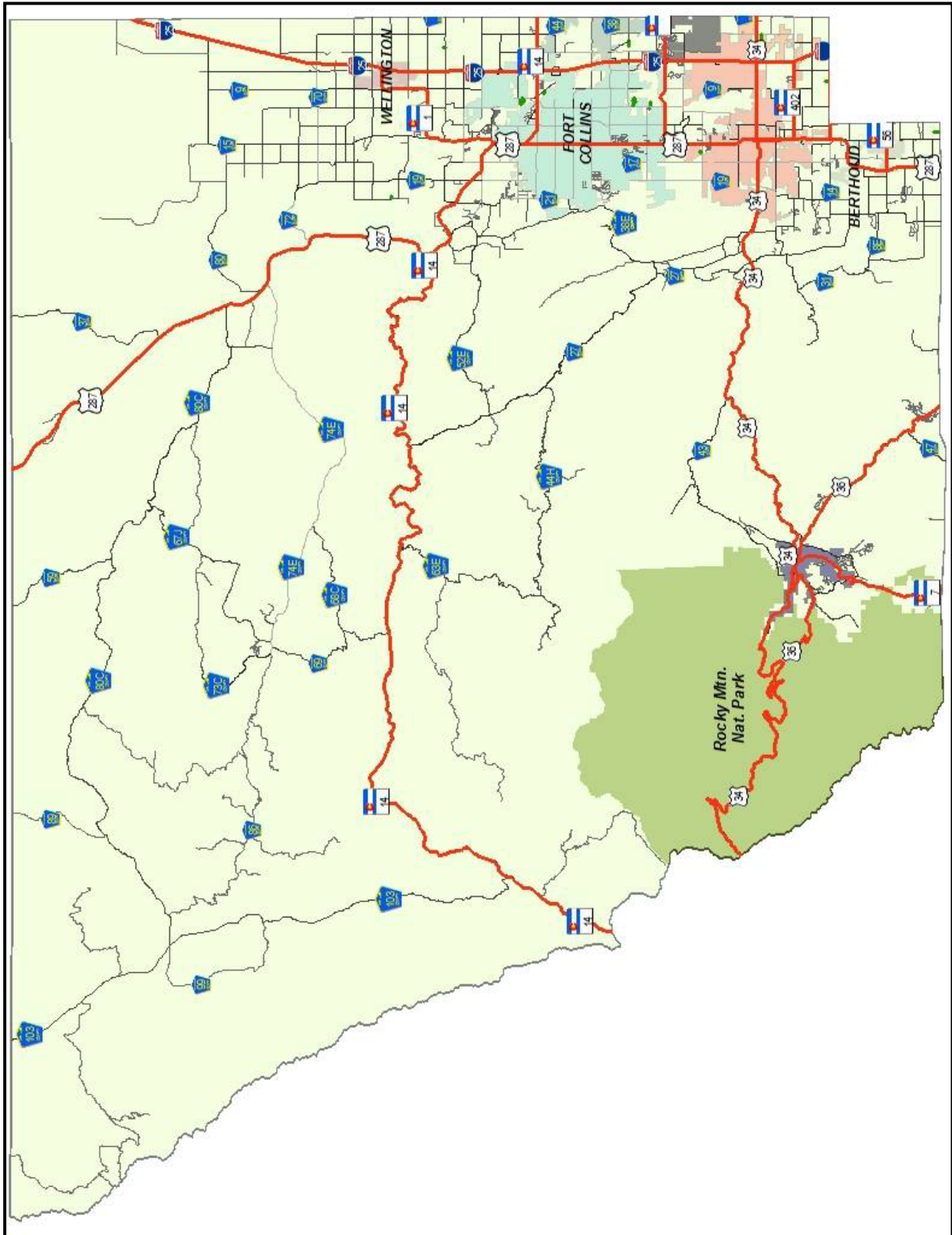
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Source: National Safety Council, Injury Facts 2014

Colorado Department of Transportation (CDOT) has 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%."

If you are in a crash, the chances of it being fatal are over 3 times higher on a county road than on city streets or state highways. County roads continue to have higher fatal crash rates compared to non-county roads.

Larimer County Roadway System

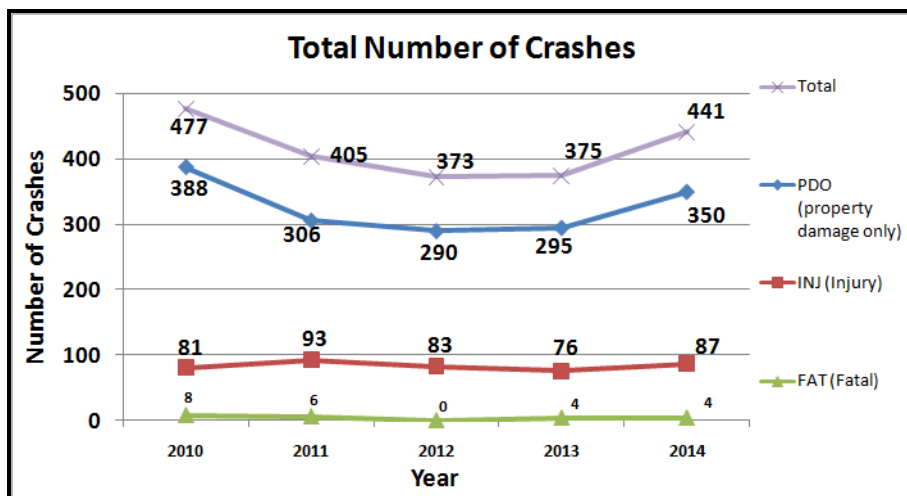




2014 CRASHES INCREASE

There was an average of 414 crashes on the unincorporated roads in Larimer County between 2010 and 2014. The 2014 **crashes increased** by almost **7%** compared to the **5 year average**. In 2014, the total number of **crashes increased** by almost **18%** over 2013 reversing the downward trend since 2011.

There is generally a correlation between the increase in Vehicle Miles Traveled (VMT) and the number of crashes. Approximately 9 million more miles were traveled in 2014 compared to 2013, a 2.3% increase. This increase in travel may be due, in part, to an improving economy and lower gas prices towards the end of the year.

General Trends - Crash Information



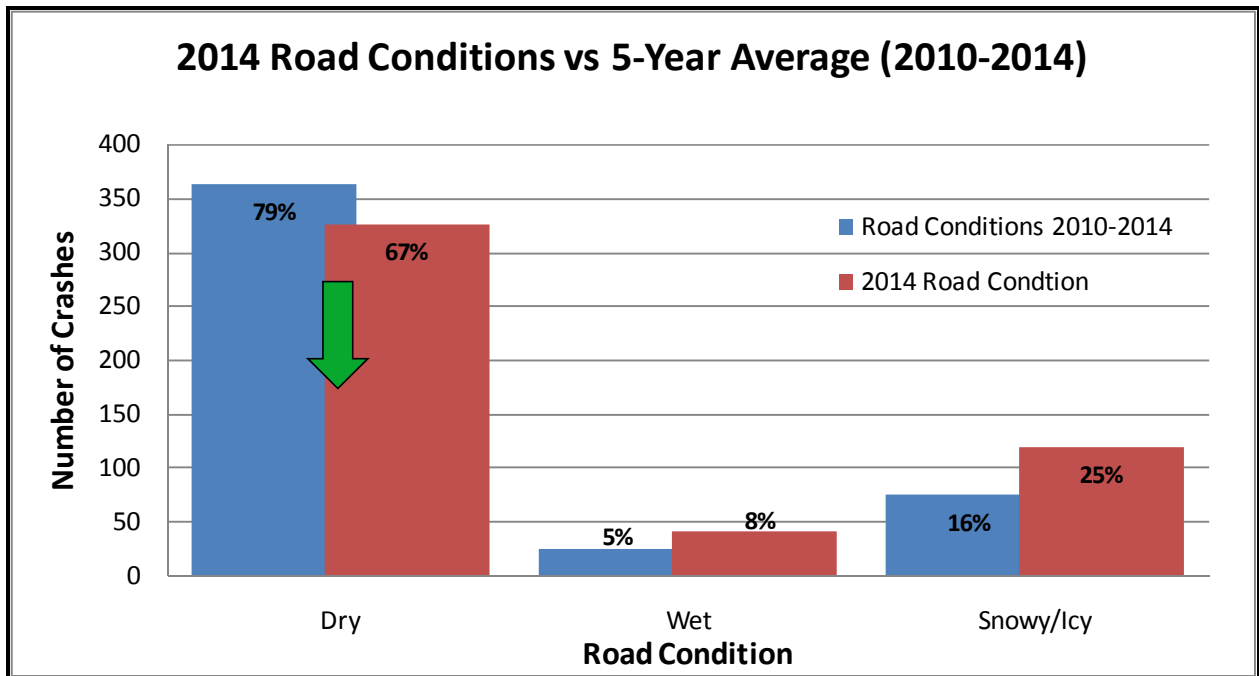
- Fatal crashes: Same as 2013 with 4
- Injury crashes: 14% increase 
- Property Damage Only: 19% increase 

*Vehicle miles traveled on Larimer County roads increased by 3% while the overall **population** increased by 1.7%, indicating people are driving more miles on average in 2014 than in 2013.*

An additional factor contributing to the higher number of crashes was the **increase in snow/ice related crashes by 48%** over 2013.



There was an **increase of 9%** on snowy/icy roads compared to the **5 year average** as shown below.

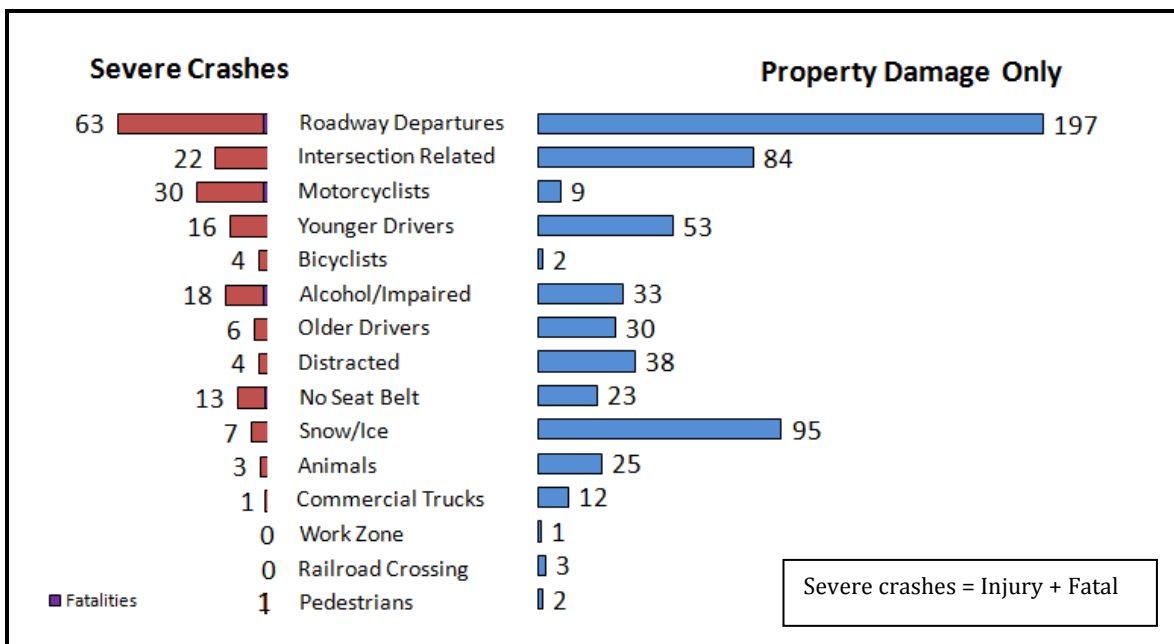


OVERALL

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 is obtained from Colorado State Patrol crash reports.

The chart below shows the number of crashes in 2014 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 – 2014



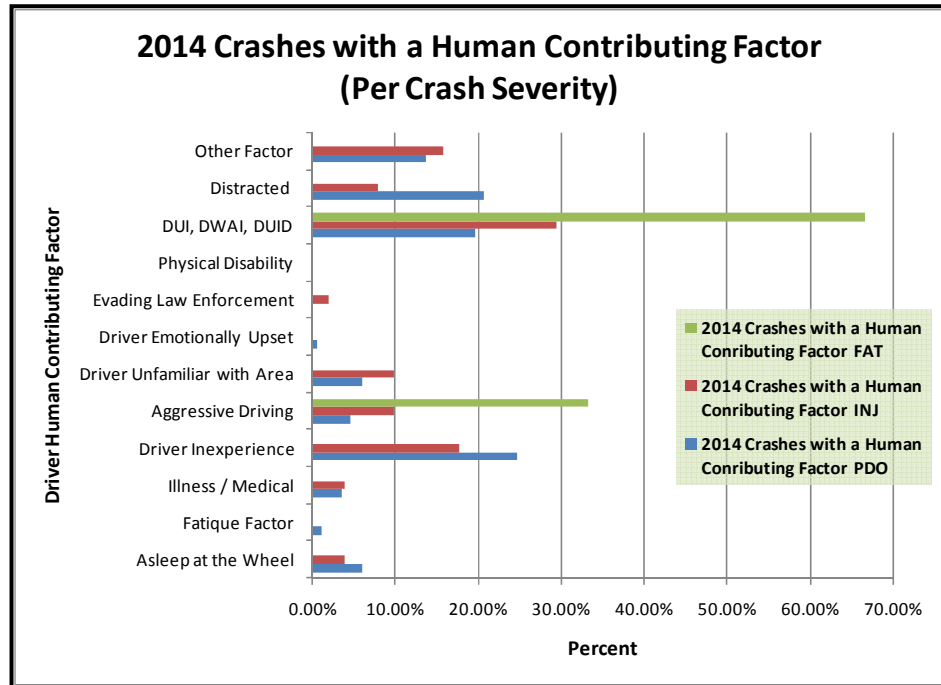
- **Roadway departure** crashes continue to be the most prevalent crash
- **Snow / ice conditions** contribute significantly but are usually less severe.
- **Bicycle** crashes dropped from last year but are still trending upward with a 20% increase over the past five years.
- Crashes involving **older drivers** has increased over the past 5 years by 15%
- Crashes that have an **animal** involved increased significantly, 22% in 5 years

Crash Characteristics	% Change between 2013 and 2014	5 Year Trend**
Roadway Departures	21%	-4%
Intersection Related	-14%	-30%
Motorcyclists	39%	-13%
Younger Drivers	38%	-34%
Bicyclists	-50%	20%
Alcohol/Impaired	28%	-16%
Older Drivers	44%	15%
Distracted	-2%	-21%
No Seat Belt	20%	-37%
Snow/Ice	48%	17%
Animals	0%	22%
Commercial Trucks	-13%	-18%
Work Zone	0%	100%
Railroad Crossing	200%	300%
Pedestrians	200%	-57%

**Percent Change between 2010, 2011 and 2013, 2014

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

There were 441 crashes in 2014 and 253 of those crashes that had human contributing factors, over 50%.



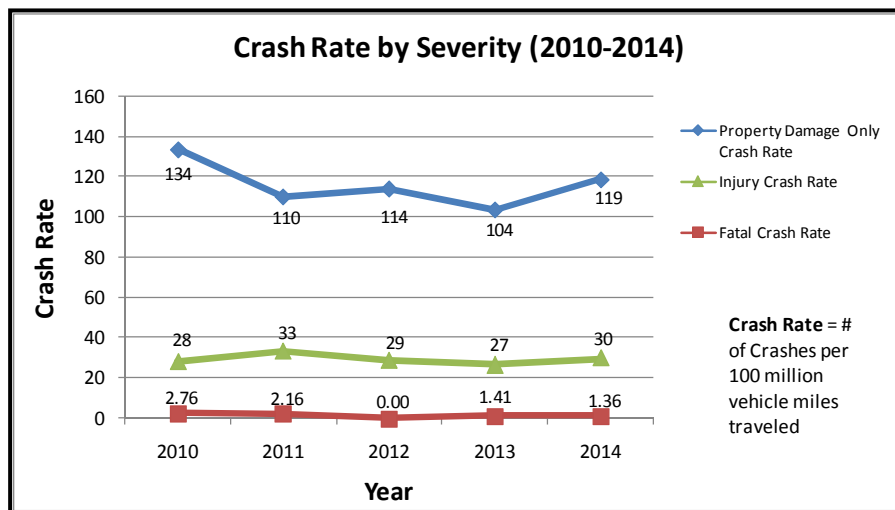
Out of those 253 crashes the leading causes of injury or death are:

- Driving under the influence
- Aggressive driving
- Driver inexperience
- Distracted

These top categories are consistent with the state as a whole.

CRASH RATES

This graphic shows the crash rate by severity, and indicates that property damage only and severe (injury or fatal) crash rates have **increased 15% and 3%** in the past year respectively. This increase is consistent with the overall increase in crashes in 2014 and shows a higher increase in property damage only as compared to the severe crashes.

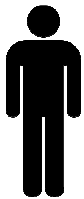


In order to account for varying amounts of traffic, a measure of crash *RATE* is used in addition to crash *NUMBERS*. A crash rate is expressed in the number of crashes per 100 million vehicles miles traveled.

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 2015, shows the average 5 year (2009-2013) **statewide injury crash rate** per 100 million VMT is **21.2 while Larimer County (2010-2014) is 29.4**. The unincorporated County road system is higher than the State that includes the interstate and state highway system.

FATAL CRASH REVIEW

The number of fatal crashes on the County road system in 2014 was four with 5 fatalities, the same as the previous year. While there was no increase, the goal is zero fatalities. The low number of fatalities makes it difficult to establish statistically significant details about the crashes. However, using the total number of fatalities in the **past five years (2010-2014)**, generalities or trends can be detected. These include:



91% are male



43% are DUIs



39% are ages 20-30



96% on dry roads



70% are single vehicle



22% involve a motorcycle



.65% are Run off the Road

Rural two-lane roads are the most dangerous part of the road system.

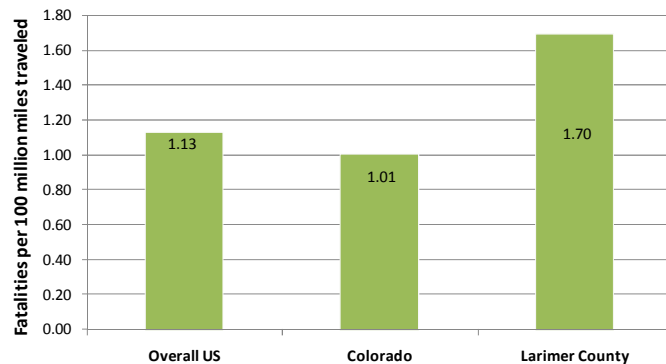
Larimer County's fatality rate is

57% higher

than the national average and **69% higher**

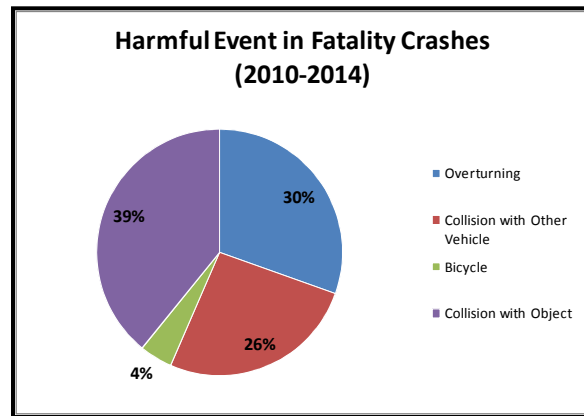
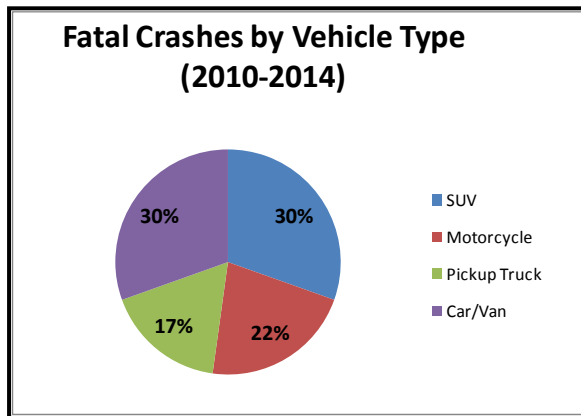
than the State average.

Comparison of Overall Fatality Rates



Sources: National Highway Traffic Safety Administration (2012) Colorado: CDOT Colorado CDOT Colorado Problem Identification (2014 report using 2013 data) Larimer County value from: County records (2014)

In combination, more than half (**52%**) of all fatal crashes involve a male driver in a single vehicle leaving the roadway.



2014 FATAL CRASH DESCRIPTIONS/LOCATIONS

- County Rd 73C** 0.32 miles north of County Rd 74E (Red Feather Lakes area) – 3/14/2014: Single vehicle (Pickup Truck) roadway departure followed by collision with large rocks; resulting in **one** fatality and **one** injury. This crash occurred during dark and unlighted conditions on a level roadway curve. The suspected cause of this fatal crash was driver DUI.
- County Rd 38E** 0.4 miles south of County Rd 23 (Horsetooth Reservoir) – 3/30/2014: Double motorcycle head on collision occurring on the roadway; resulting in **two** fatalities. This collision took place during daylight hours and is due to a lane violation while exceeding the safe/posted speed limit.
- County Rd 37** 3.3 miles northeast of US 287 – (Livermore area) 6/7/2014: Single vehicle (SUV) roadway departure, vehicle overturned resulting in **one** fatality and **two** injuries. This collision occurred at a curve on grade during dark and unlighted conditions. The suspected cause is aggressive driving and exceeding the safe/posted speed limit.
- County Rd 43** 1.31 miles north of County Rd 61 (Between Estes Park and Glen Haven) – 8/3/2014: Single motorcycle crash located on the roadway where the motorcycle overturned; resulting in **one** fatality. This collision occurred at a curve on grade during dark and unlighted conditions. The suspected cause of this fatal crash was driver DUI.

SUMMARY OF 2014 FATAL CRASHES

*50% were **DUI***

*3 of the 5 fatalities were on **motorcycles***

*3 of the 4 crashes were at **night***

*50% were roadway **departures***

ROADWAY DEPARTURE CRASHES

The two-lane rural roads are in fact the most dangerous part of the road system. In 2014, **56%** of all crashes involved a vehicle leaving the roadway (roadway departure crash). Here's what we know about those crashes:

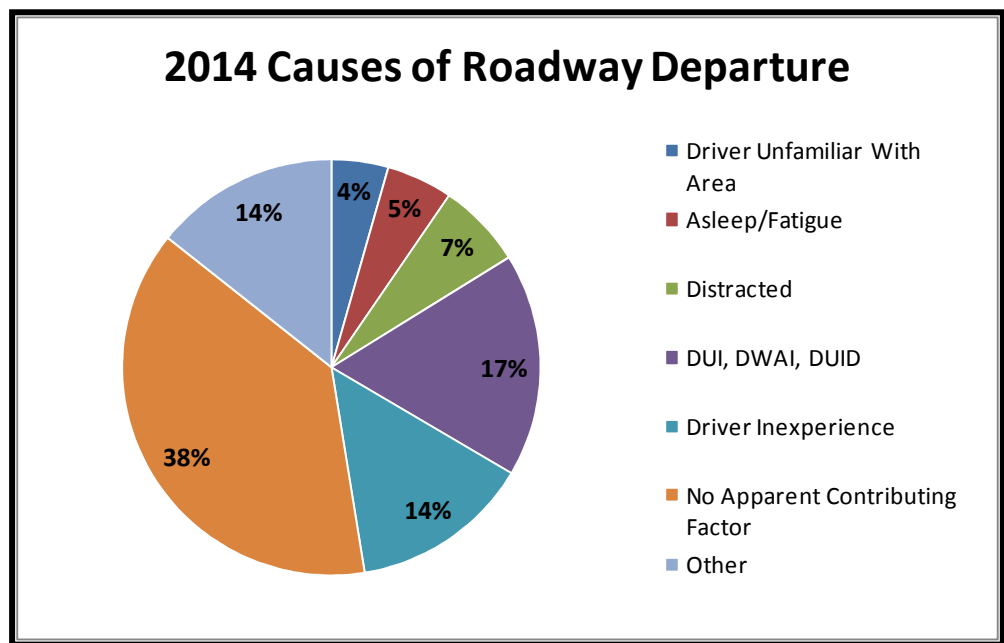
Road Condition: 60% of the crashes occurred on dry roads

Light Condition: 57% occurred during daylight hours

Fatal Crashes: 65% are Roadway Departures

There is no singular cause of roadway departure crashes; in fact most have no apparent contributing factor. This makes it more difficult to identify applicable mitigation measures.

Trends over the past five years have been very consistent with these statistics.



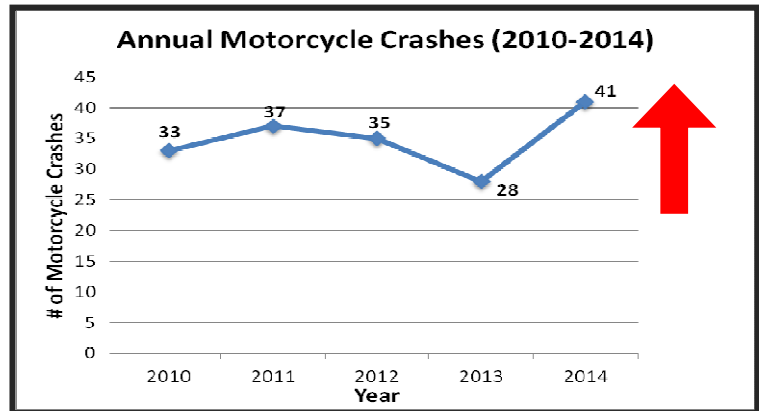
2014 ROADWAY DEPARTURE TOP 5 WORST LOCATIONS

- **CR 19** [19 Crashes Total] - Between CR 48(Vine Dr.) and CR 56 **8 Crashes**
- **CR 52E (Rist Canyon Rd)** [17 Crashes Total] - Between Davis Ranch Rd. and CR 27E **10 Crashes**
- **CR 13** [13 Crashes Total] - Between CR 28(57th Street) and SH 392(Carpenter Rd.) **11 Crashes**
- **CR 54G (Old US 287)** [10 Crashes Total] - Between CR 21C(Overland) and CR 19(Taft Hill) **7 Crashes**
- **CR 29** [10 Crashes Total] - Between CR 18E(Pole Hill Rd.) and US 34 **7 Crashes**

MOTORCYCLES CRASHES UP

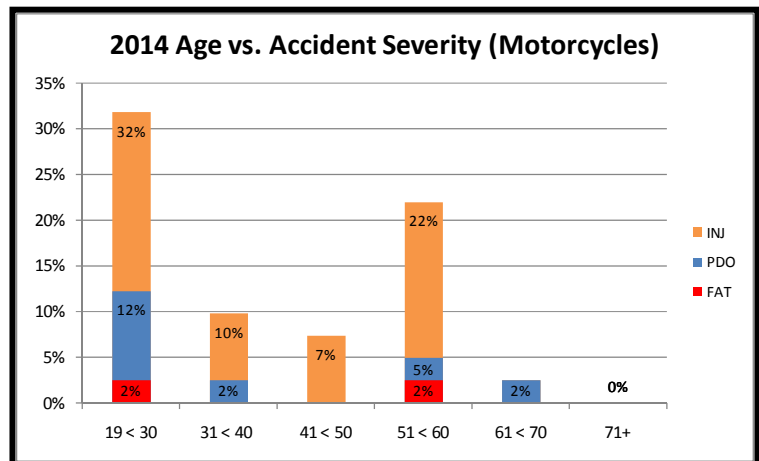
The percent of motorcycle crashes compared to the total number of crashes has remained fairly constant between 2010 and 2014 varying between 8 and 9%. However, the chance of injury or death is disproportionately higher. In 2014, **78% of crashes resulted in injury or death compared to 15% in vehicles**

Motorcycle crashes are **up by 46%** from 2013 and account for **2 of the 4 fatal crashes** on the County road system. The total number of motorcycle crashes in 2014 was also **17% higher** than the 5-year average.

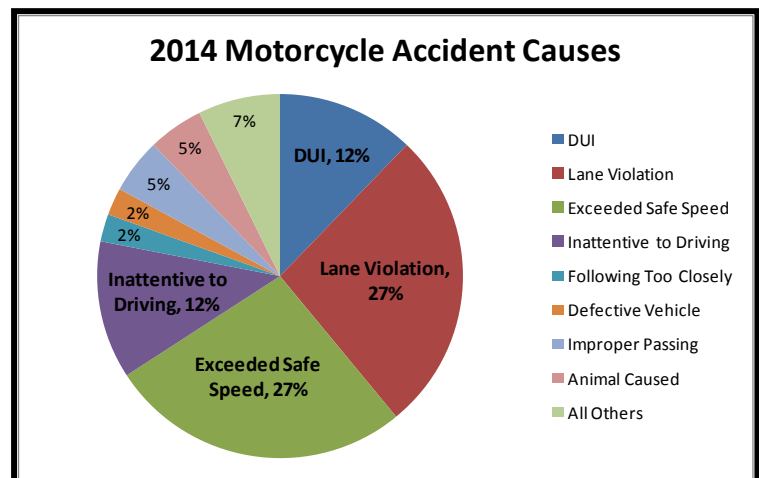


The majority of motorcycle crashes are:

- Male (only 2% Female)
- Ages 19 – 30 & 51 -60



The majority of crashes, 54%, are caused by speed and lane violation



DISTRACTED AND IMPAIRED CRASHES

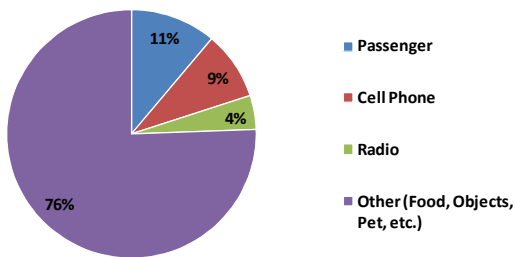
In 2014, **101** crashes were the result of distracted or impaired drivers **up 22%** from the previous year. These crashes produced **24** injuries and **2** fatalities.

Colorado legalized recreational marijuana for use by adults 21 and over in 2012. While the law prohibits driving while under the influence of marijuana, a sobriety check is not yet well established.



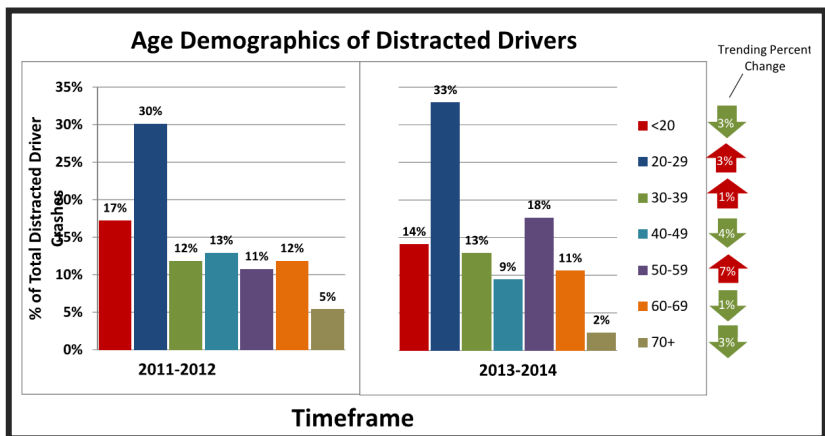
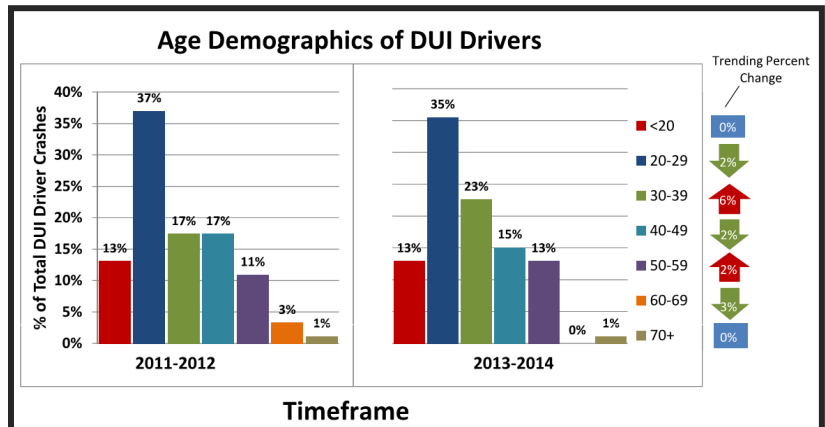
Distracted driving pulls the attention away from operating the vehicle. All distractions endanger drivers, passengers, and bystanders safety.

2014 Causes of Distracted Crashes



Nationally, driver distraction was the cause of 18% of all fatal crashes and Blood Alcohol Content (BAC) of .08 or higher accounts for 31% of total traffic fatalities.

The National Highway Traffic Safety Administration reported that in 2012



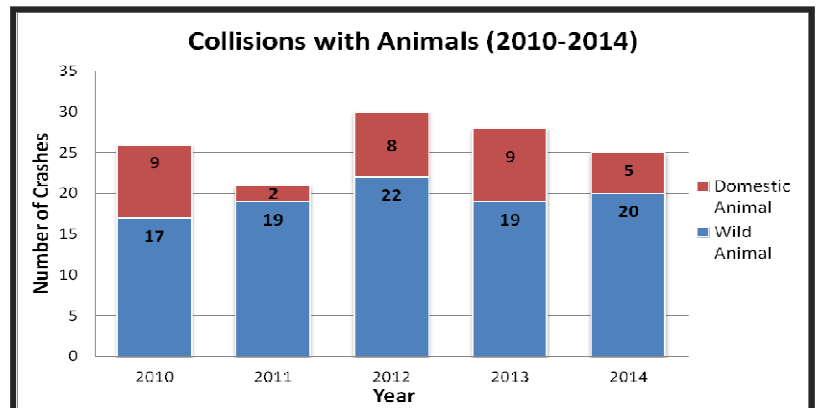
ANIMAL RELATED CRASHES



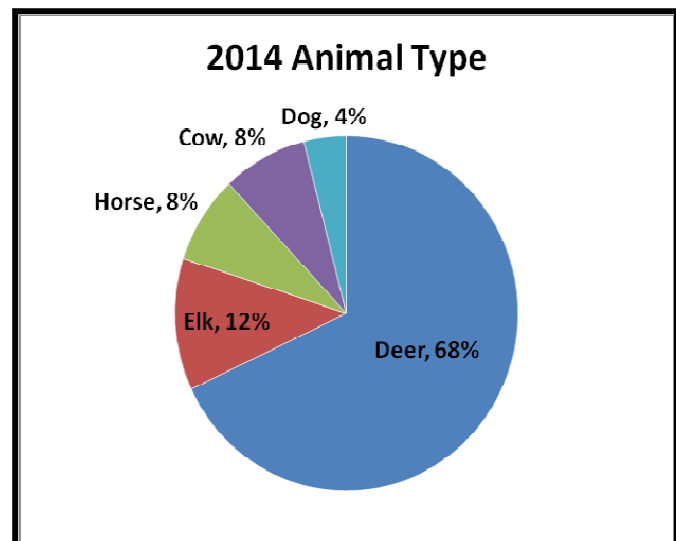
96% of animal crashes were with large animal that can result in extensive property damage.

There were only 3 injuries in 2014 as a result of an animal crash.

The total number of animal crashes decreased in 2014 to 25 from 27 the previous year. However, the number of elk collisions has increased predominately on the west side of Loveland due to a herd living in that proximity. These location specific crashes will be addressed by the low cost safety improvements in 2015.



The most common animal crash is with deer.



Traffic Safety Program Monitor

Larimer County implemented a Low Cost Safety Program that started in 2008 in conjunction with other improvements that are part of more extensive capital improvement projects. Safety is inherent in every project that the county undertakes and below is an excerpt of some non-intersection improvements that have been achieved.

NON INTERSECTION IMPROVEMENTS

Segment	Time Frame	Number Crashes Per Year						Date Improved	Notes
		PDO	INJ	FAT	Total Avg	Minor	Severe		
CR 50E (Near top of the hill)	Type of Improvement	Added turn and chevron warning signs, upgraded sign material						12/15/2009	Average 5 years before improvements and 5 years after
	Before Improvements	0.2	0.8	0	1	0.2	0.8		
	After Improvements	0.2	0	0	0.2	0.2	0		
	Change	0%	100%	0%	80%	0%	100%		
CR 38E (West of CR 19 (Taft))	Type of Improvement	Side slope reshaping, cleared vegetation to improve sight distance, upgraded sign material						11/1/2010	Average of 6 years before improvements and 4 years after
	Before Improvements	1	1.333	0.167	2.5	1	1.5		
	After Improvements	1.25	0	0	1.25	1.25	0		
	Change	-25%	100%	100%	50%	-25%	100%		
CR 16 (Between CR 21 and CR 19)	Type of Improvement	Relocated/Added signs (large arrows and chevrons), sign upgrades						6/1/2010	Average of 4.5 years before improvements and 4.5 years after
	Before Improvements	2.889	0.889	0.222	4.000	2.889	1.111		
	After Improvements	0.889	0	0	0.889	0.889	0		
	Change	69%	100%	100%	78%	69%	100%		
CR 27 (At turn north of CR 52E (Rist Canyon))	Type of Improvement	Relocated signs, upgraded sign material, added warning signs						10/20/2009	Average of 4 years before improvements and 2.5 years after
	Before Improvements	0.25	2	0	2.25	0.25	2		
	After Improvements	1.2	0.400	0	1.600	1.2	0.400		
	Change	-380%	80%	0%	29%	-380%	80%		
CR 27 (At turn north of CR 52E (Rist Canyon))	Type of Improvement	Hazard Elimination funded geometric roadway realignment						May, 2012	Average of 2 years before improvements and 2.5 years after
	Before Improvements	1.5	0.5	0	2	1.5	0.5		
	After Improvements	0	0.000	0	0.000	0	0.000		
	Change	100%	100%	0%	100%	100%	100%		

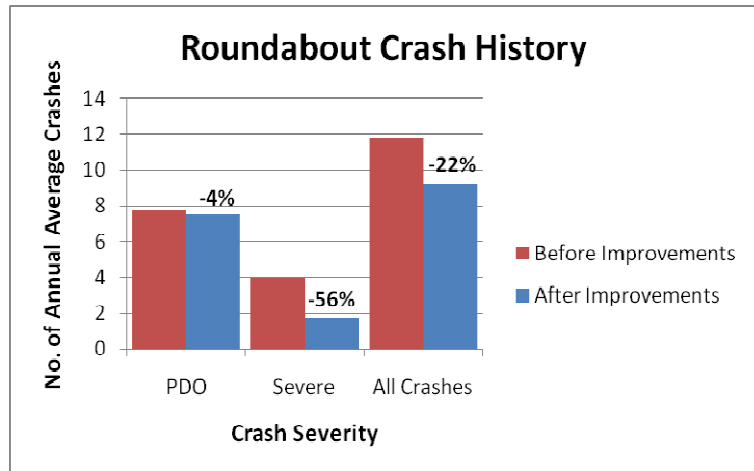
Segment	Time Frame	Number Crashes Per Year						Date Improved	Notes
		PDO	INJ	FAT	Total Avg	Minor	Severe		
CR 19 (between CR 38E (Harmony) and CR 40 (Horsetooth))	Type of Improvement	Added 2-way center turn lane						2006	Average of 1 year before improvements and 8 years after
	Before Improvements	10	3	0	13	10	3		
	After Improvements	3.75	0.88	0	5	3.75	0.88		
	Change	63%	71%	0%	64%	63%	71%		
CR 19 (S-Curve between CR 60E and CR 64)	Type of Improvement	Added warning signs and chevrons, upgraded sign material						5/17/2008	Average of 3 year before improvements and 5.5 years after
	Before Improvements	0.333	0.667	0.333	1.333	0.333	1		
	After Improvements	0.364	0.182	0.000	0.545	0.364	0.182		
	Change	-9%	73%	100%	59%	-9%	82%		
CR 13 Northwest of CR 30 - Sharp Turn near irrigation ditch	Type of Improvement	Upgrades to existing signing and additional signing						11/15/2011	Average of 4.5 year before improvements and 3 years after
	Before Improvements	1.556	1	0	2.22	1.556	1		
	After Improvements	2.26	0.00	0	2.26	2.26	0.00		
	Change	-45%	100%	0%	-2%	-45%	100%		
CR 27 south of SH 14 at cattleguard on curve	Type of Improvement	Upgrade signing and additional warning to motorcycles						March, 2011	Average of 3.5 year before improvements and 3.75 years after
	Before Improvements	0.571	2.29	0	2.86	0.571	2.29		
	After Improvements	0	0.52632	0	0.526316	0	0.526316		
	Change	57%	77%	0%	82%	57%	77%		

Overall, there was a significant drop in total crashes at each location, in particularly severe crashes, after the safety improvements were implemented. The one exception is CR 13 northwest of CR 30. Property damage only crashes are still a problem at that location and need further evaluation.

CR 27 at a horseshoe turn north of CR 52E is an example of a location where low cost safety measures, relocated signs, upgraded sign material, added warning signs, were implemented and the number of crashes actually increased. Although the number of severe crashes declined at this location, the total number of crashes went up after the signing improvements. In 2011, as part of a major safety project a turn was reconstructed and realigned which has dramatically decreased the number of crashes at this location.

ROUNDAOBOUTS

Larimer County installed two roundabouts with the intent to decrease the number of crashes as well as the severity at intersections. The overall number of crashes has gone down by 22% and the severe crashes by 56%, since the roundabouts became operational.



Below is crash data for the County's two roundabout intersections, CR 19 (Taft Hill Rd) at CR 48 (Vine Dr) and CR 30 at CR 9 (Boyd Lake Ave). Property Damage Only (PDO) crashes are up slightly at the CR 19 (Taft) and CR 48 (Vine) roundabout, however severe crashes are down 86%.

Intersection	Time Frame	Number Crashes Per Year						Date Improved	Notes
		PDO	INJ	FAT	Total Avg	Minor	Severe		
Intersection of CR 19 (Taft) and CR 48 (Vine)	Type of Improvement	Replaced 4-way stop with modern roundabout						8/1/2007	Average of 2 years before improvements and 7 years after
	Before Improvements	3.50	1.00	0.00	4.50	3.50	1.00		
	After Improvements	3.71	0.14	0.00	3.86	3.71	0.14		
	Change	-6%	86%	0%	14%	-6%	86%		
Intersection of CR 9 (Boyd Lake) and CR 30	Type of Improvement	Replaced 2-way stop with modern roundabout						8/1/2009	Average of 3 years before improvements and 5 years after
	Before Improvements	4.33	3.00	0.00	7.33	4.33	3.00		
	After Improvements	3.80	1.60	0.00	5.40	3.8	1.60		
	Change	12%	47%	0%	26%	12%	47%		

TRAFFIC SAFETY MITIGATION

Listed below are some of the safety improvements completed on the County Road system during 2014.

New Roundabouts:

As part of capital construction projects, three new roundabouts were constructed during 2014. Roundabouts were constructed at the intersections of County Rd 11 and County Rd 30, County Rd 11C and County Rd 30 and County Rd 19 and County Rd 70. It is expected the number of severe crashes occurring at these intersections will be reduced with the new roundabouts.

Low Cost Safety improvements during 2014 included:

The traffic signal at County Rd 14 and County Rd 17 (S. Taft Ave) was upgraded from standard bulbs to LED bulbs. The signal lights are now much brighter and more visible to drivers approaching the signal and less susceptible to burn out.

Safety improvements that involved traffic sign upgrades and pavement marking improvements were made at these locations:

- County Rd 18 and County Rd 23E intersection
- County Rd 1 and County Rd 48 intersection
- County Rd 8 and County Rd 21 intersection
- Turn on County Rd 23 north of County Rd 42C

Also pavement markings were upgraded using preformed thermoplastic markings throughout the county.





LOW COST TRAFFIC SAFETY MITIGATION

Low Cost Safety in 2015:

- County wide evaluation of all crash data and select locations for individual safety audits
- Evaluate animal crashes and mitigation efforts throughout the county and in particular the west Loveland area.
- Perform safety audits involving run off the road crashes including the top 5 run off the road locations identified in this report.
- Convert the County Rd 11C south of County Rd 30 pedestrian / bike crossing warning flasher system to a Pedestrian Hybrid Beacon.