



Crash Analyses of Proposed Variable Speed Limit Corridors in Wyoming

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Hot Spots on WY I-80

- ▶ Elk Mountain (311–234 Mileposts, 77)
- ▶ Evanston – Sisters (6–29 Mileposts, 23 total)
- ▶ Rock Springs – Green River (87–112 Mileposts, 25 total)
- ▶ Laramie –Cheyenne (315–357 Mileposts, 42)
- ▶ US 287 between Laramie and State Line (400–425 Mileposts, 25 total)

Time Line: April 15, 2001– April 15, 2010
April 15, 2005–April 15, 2010

Crash Data (2001–2010)

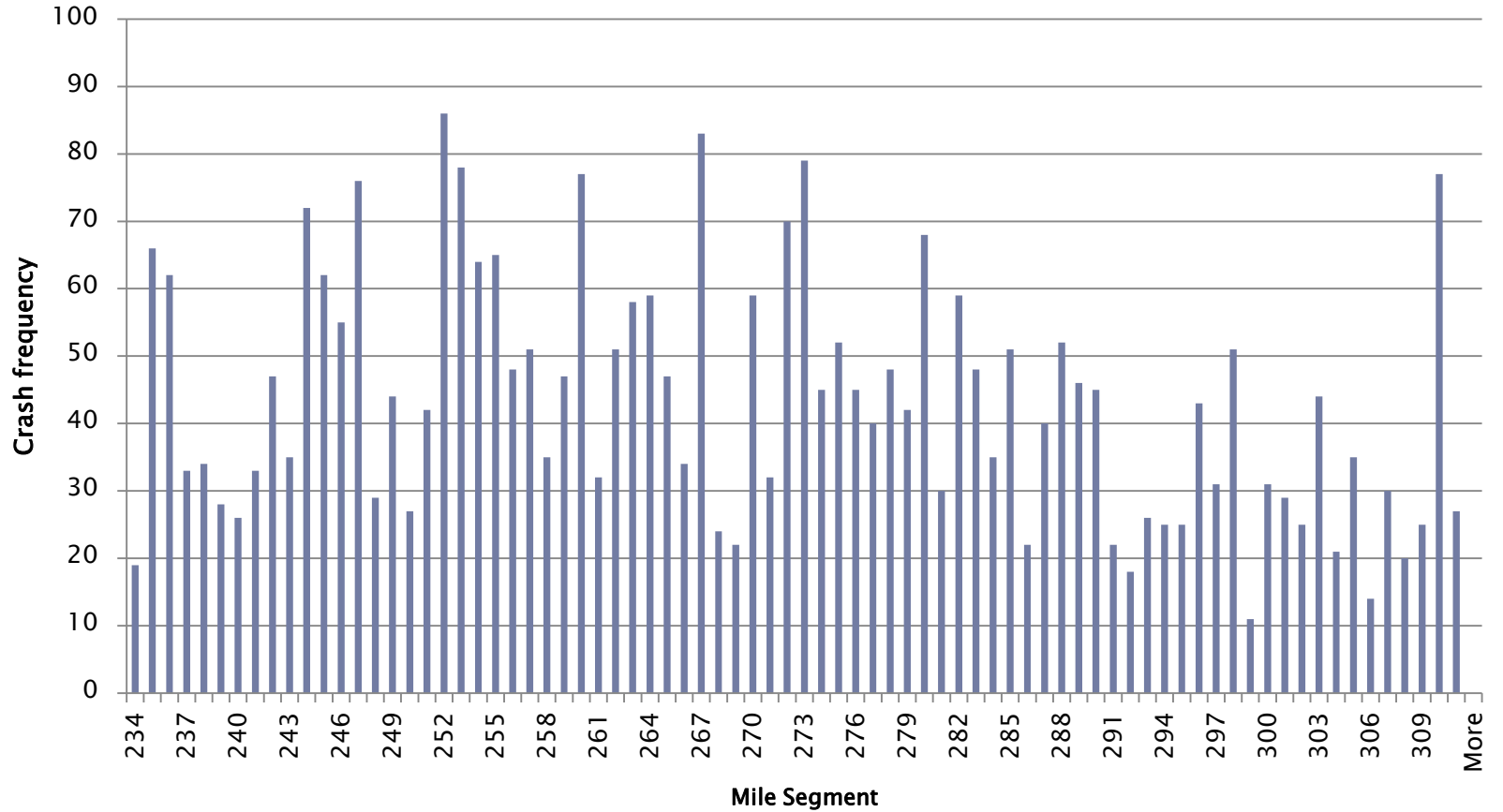
| | Miles | #Accidents | Accidents per mile |
|----------------------------------|-------|------------|-----------------------|
| Elk Mountain | 78 | 2467 | 32 |
| Evanston Sisters | 24 | 1516 | 63 |
| Rock Springs Green River | 26 | 2119 | 82 |
| Laramie Cheyenne | 42 | 2566 | 61 |
| US 287 Laramie and State Line | 16 | 235 | 15 |

Crash Analysis:

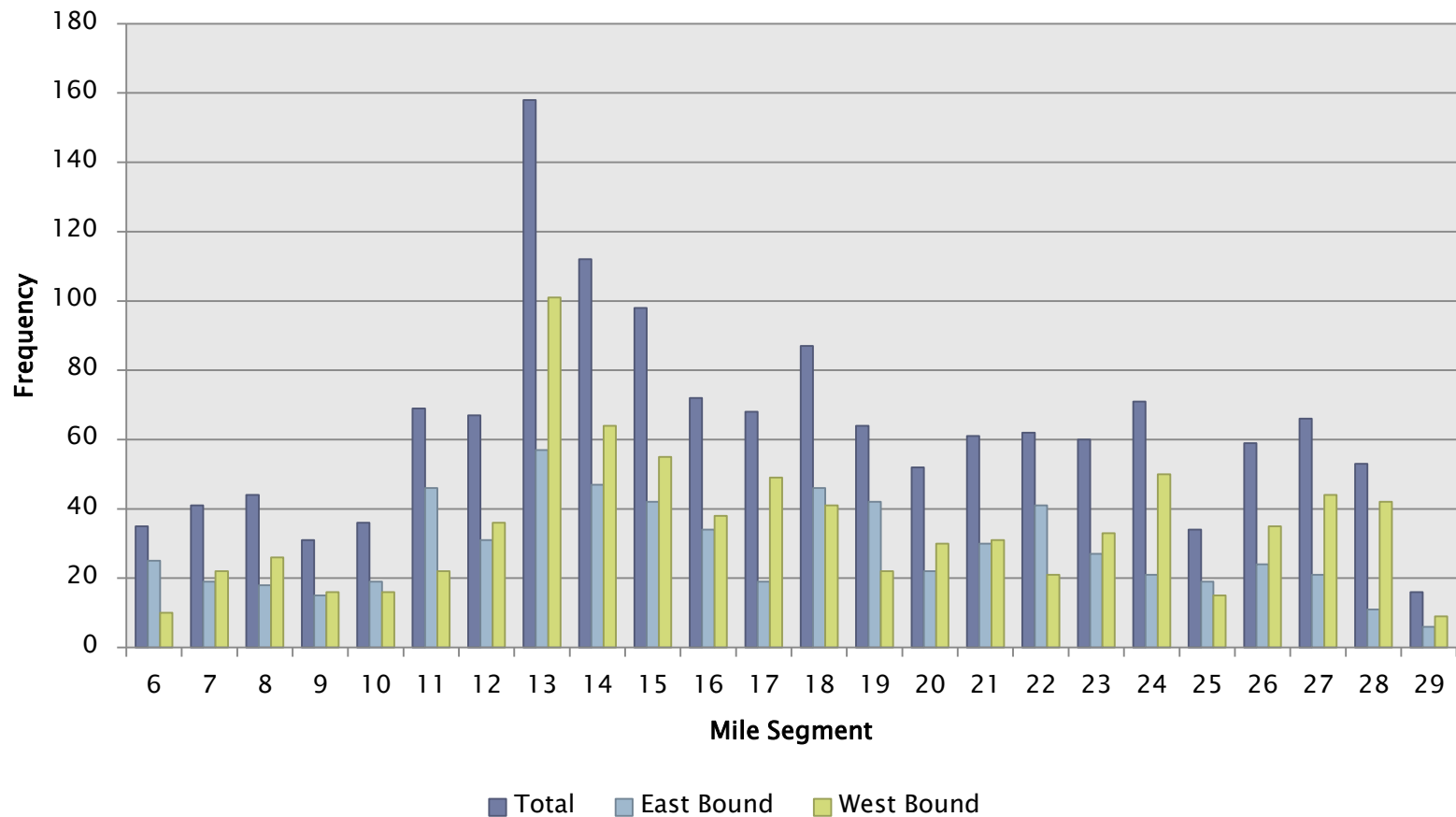
- ▶ Accidents per mile segment, per 5 mile segment
- ▶ Crash Rates
- ▶ Number of Fatal, Injury, and PDO Crashes
- ▶ Lighting Condition
- ▶ Weather Condition
- ▶ Pavement Condition
- ▶ Crash Type
- ▶ Grade
- ▶ Alignment
- ▶ Horizontal Alignment



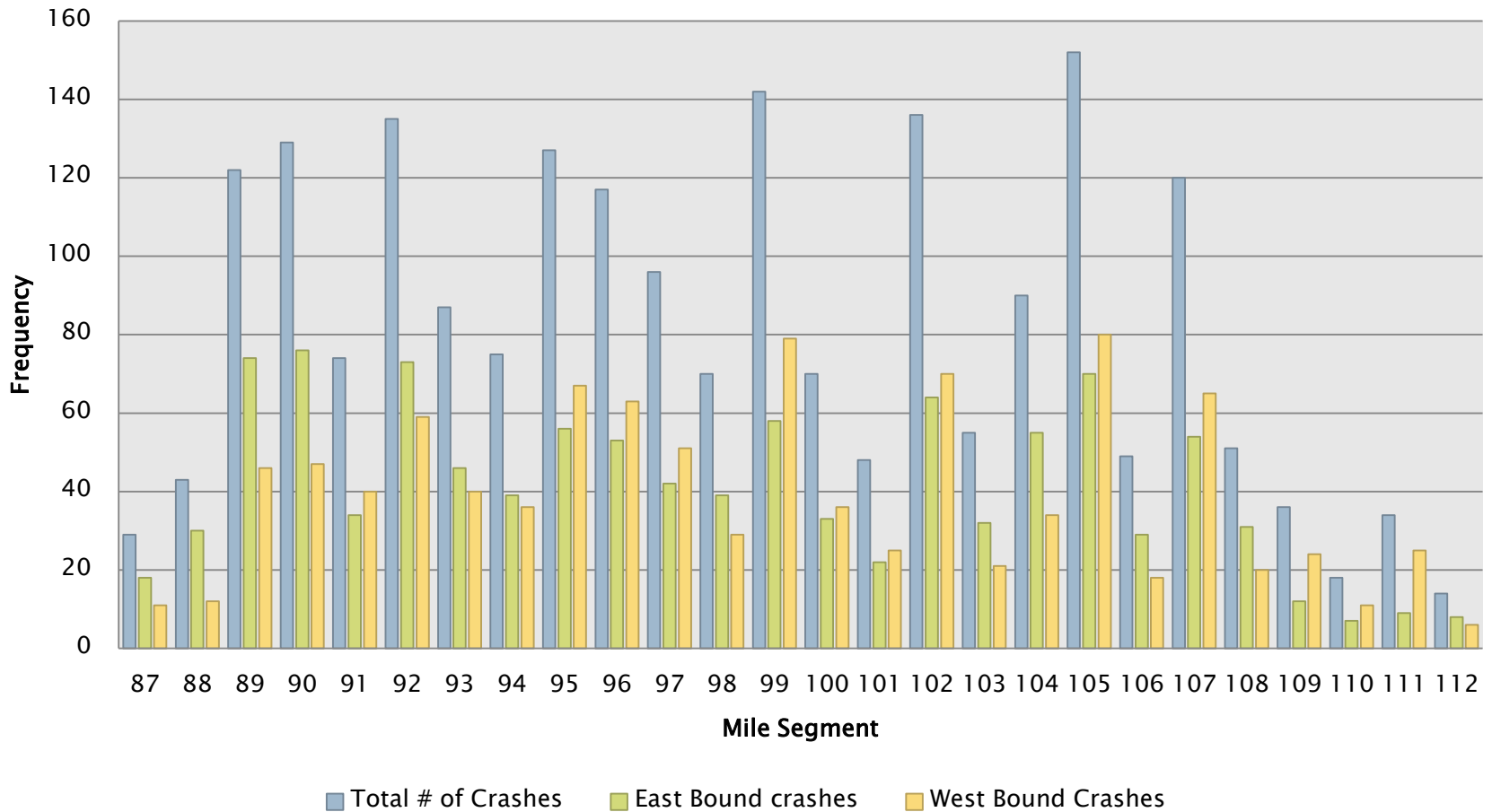
Elk Mountain Corridor. Reported Crashes by Milepost (Jan 1, 2001 – Apr 15, 2010)



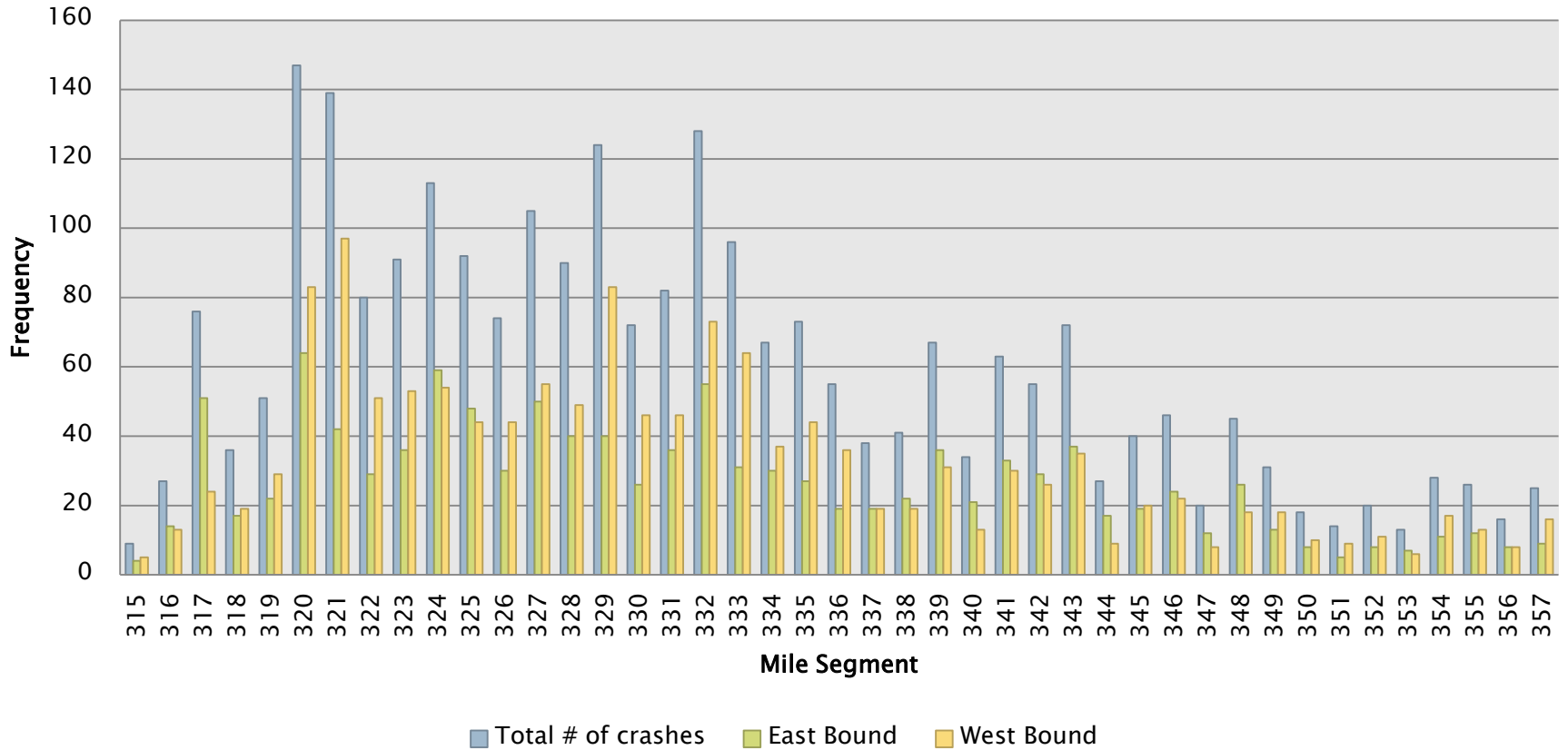
Evanston Sisters. Reported Crashes by Milepost (Apr 15, 2001 – Apr 15, 2010)



Green River –Rock Springs. Reported Crashes by Milepost (April 15, 2001 – Apr 15, 2010)



Laramie – Cheyenne. Reported Crashes by Milepost (Apr 15, 2001 – Apr 15, 2010)



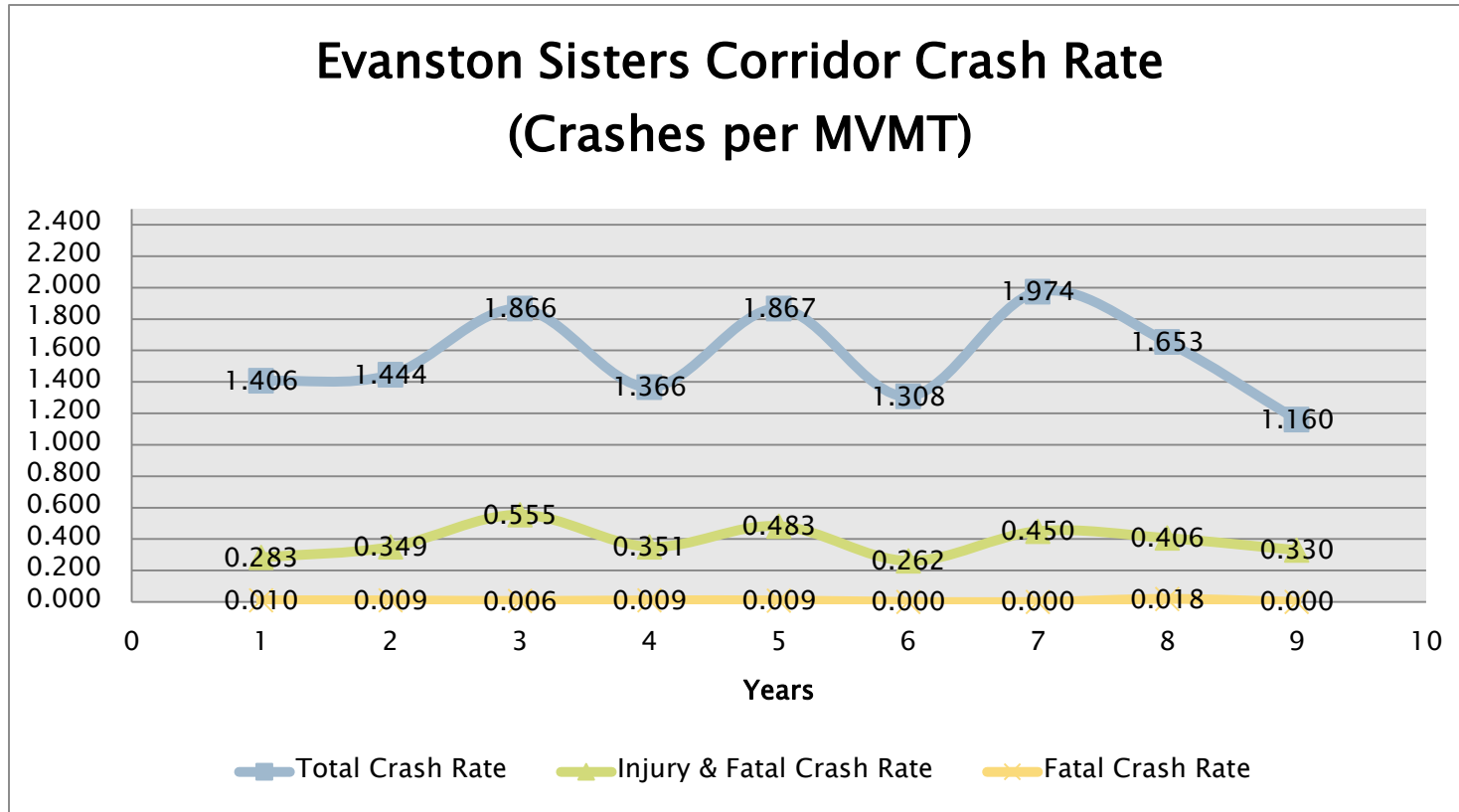
Crash Rate

is a measure of the safety of a particular roadway section. To determine crash rate we have to know: AADT, the length of the roadway section, and the number of crashes

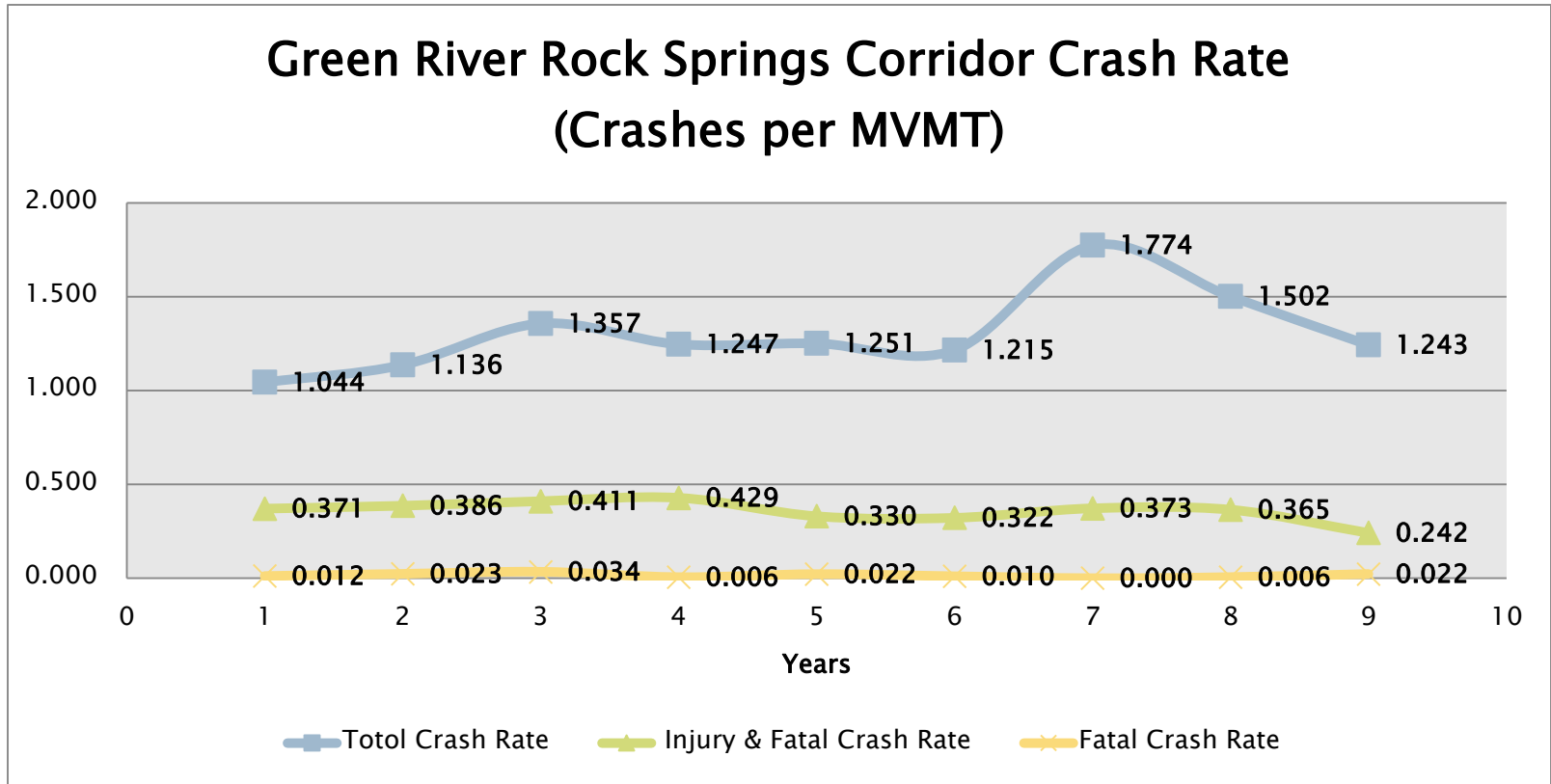
$$\textit{Crash Rate} = \frac{\textit{\# of crashes} * 1,000,000}{\textit{VMT}}$$

$$\textit{VMT} = \textit{AADT} * \textit{Length of corridor} * 365$$

Crash Rates



Crash Rate



Elk Mtn VSL Corridor Crash Rate (Crashes per MVMT)

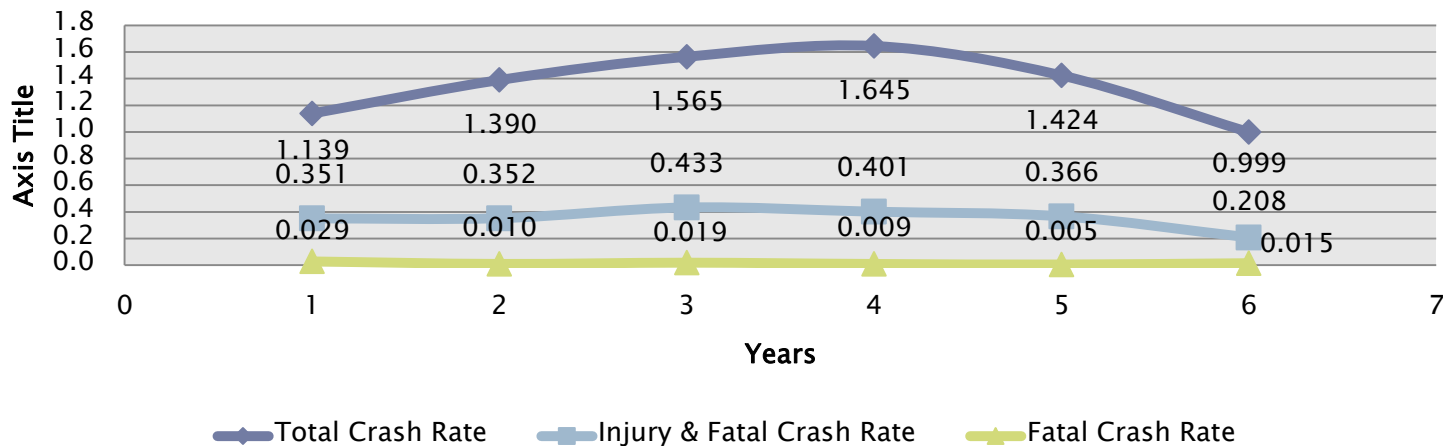
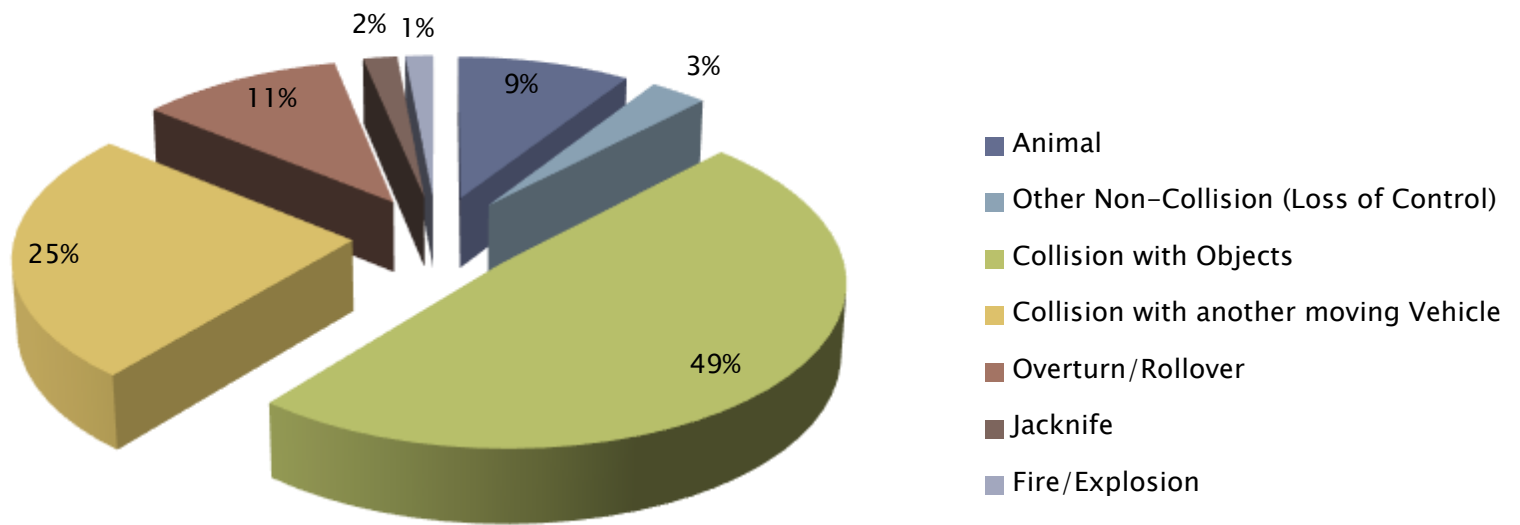


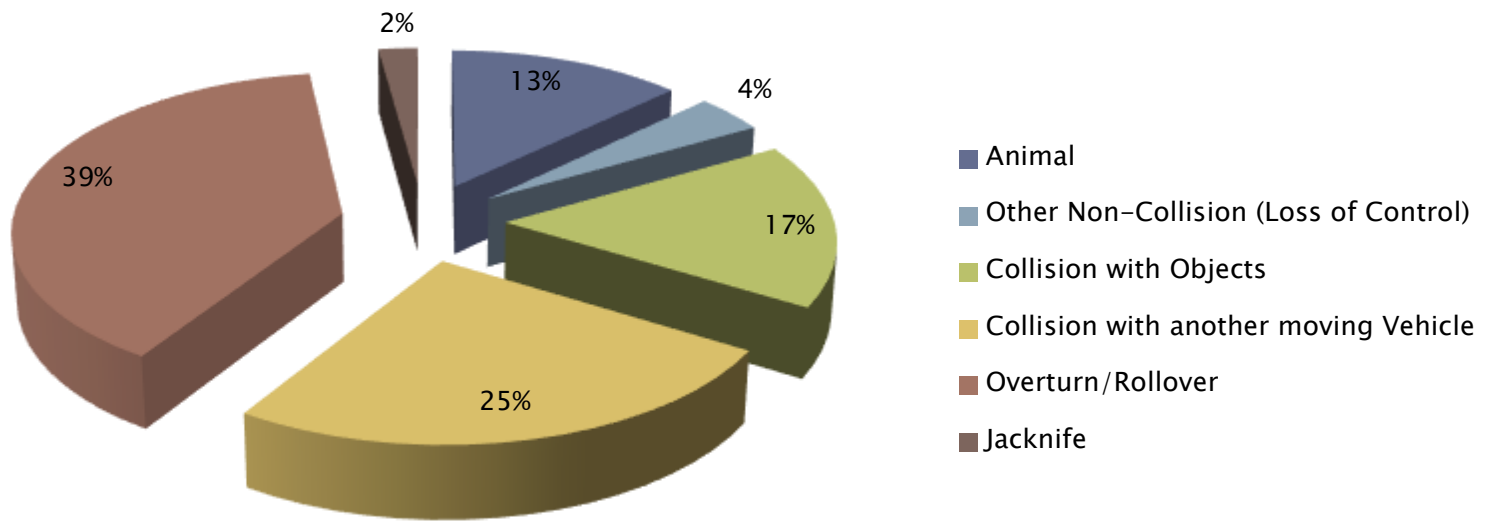
Table 4. Elk Mtn VSL Corridor Crash Rates (Feb 2004 - Feb 2010)

| | | Total Crash Rate | Total Injury & Fatal Crash Rate | Total Fatal Crash Rate |
|-------------|-----------------------------------|------------------|---------------------------------|------------------------|
| Yr 1 Before | Feb 18, 2004 -Feb 17, 2005 | 1.139 | 0.351 | 0.029 |
| Yr 2 Before | Feb 18, 2005 -Feb 17, 2006 | 1.390 | 0.352 | 0.010 |
| Yr 3 Before | Feb 18, 2006 -Feb 17, 2007 | 1.565 | 0.433 | 0.019 |
| Yr 4 Before | Feb 18, 2007 -Feb 17, 2008 | 1.645 | 0.401 | 0.009 |
| Yr 5 Before | Feb 18, 2008 -Feb 17, 2009 | 1.424 | 0.366 | 0.005 |
| | Avg Crash Rate (2004-2009) | 1.433 | 0.381 | 0.014 |
| Yr 1 After | Feb 18, 2009 -Feb 17, 2010 | 0.999 | 0.208 | 0.015 |

Evanston Sisters

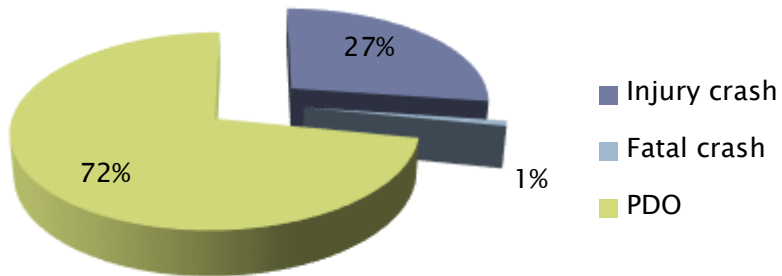


US 287

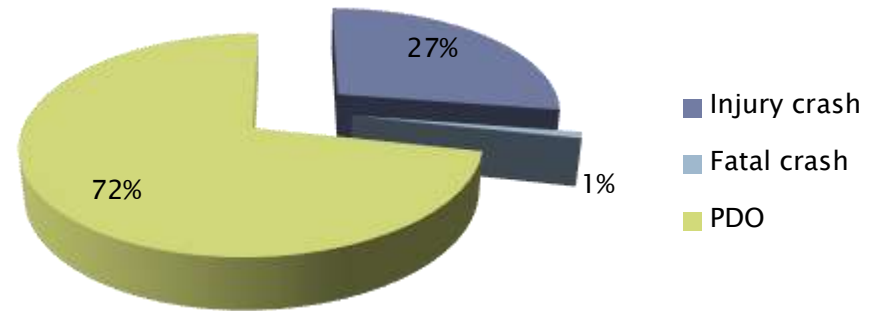


Crash Type

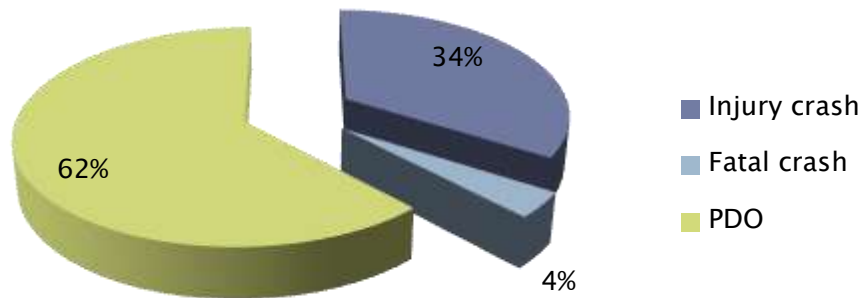
Elk-Mountain



Laramie Cheyenne

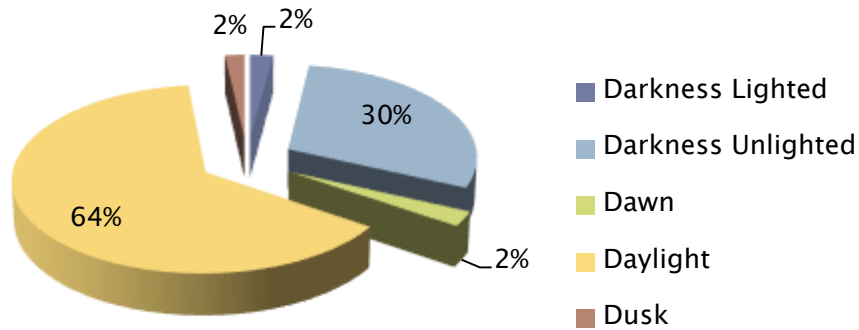


US287

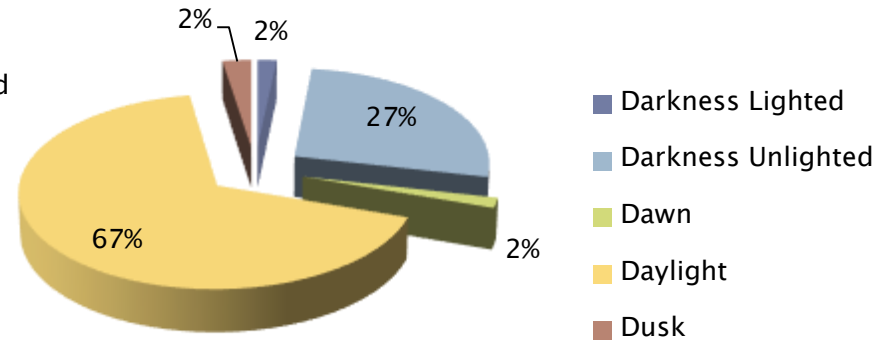


Lighting Condition

Elk Mountain



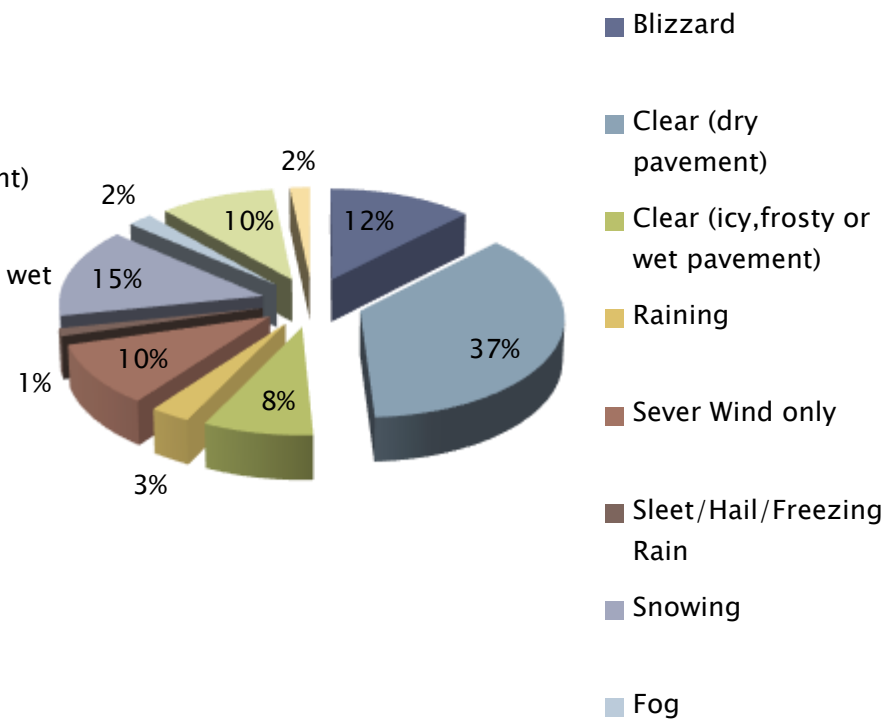
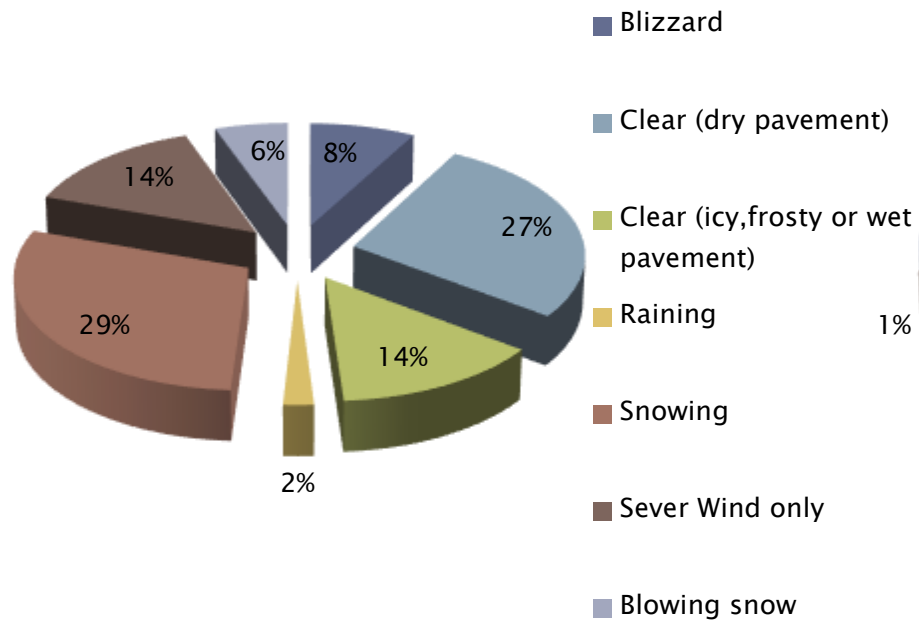
US287



Weather Conditions

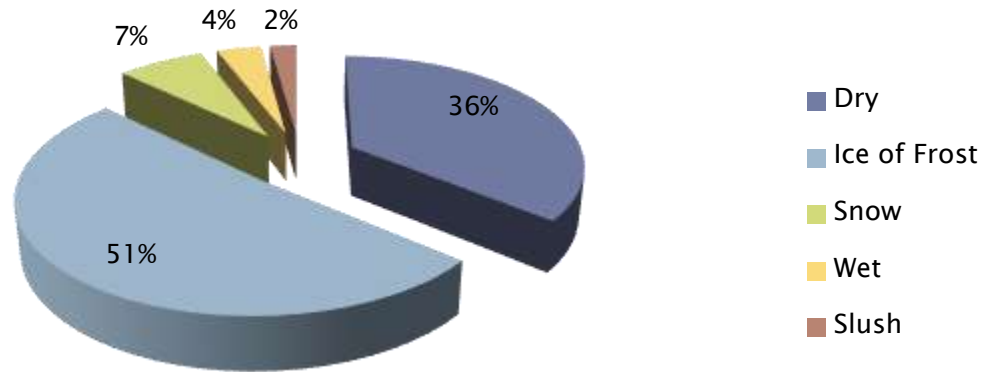
Elk-Mountain

US287

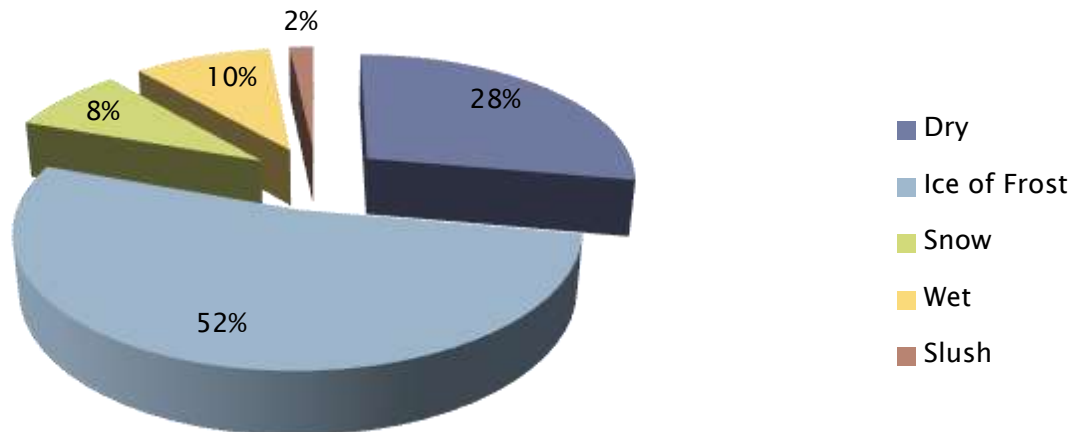


Pavement Condition

Elk-Mountain

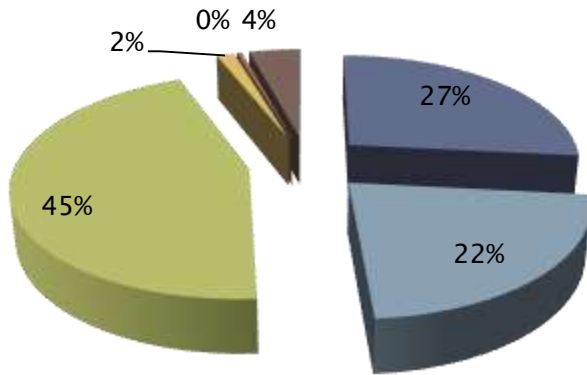


Laramie Cheyenne



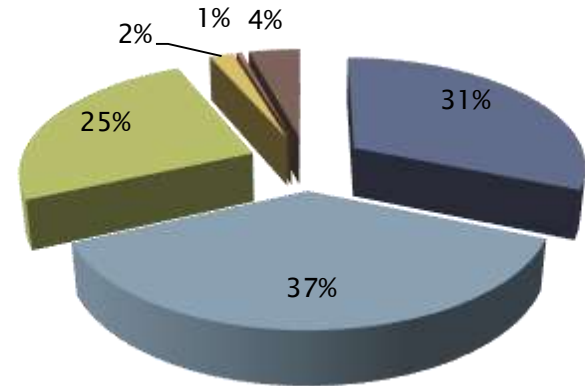
Grade

Laramie Cheyenne

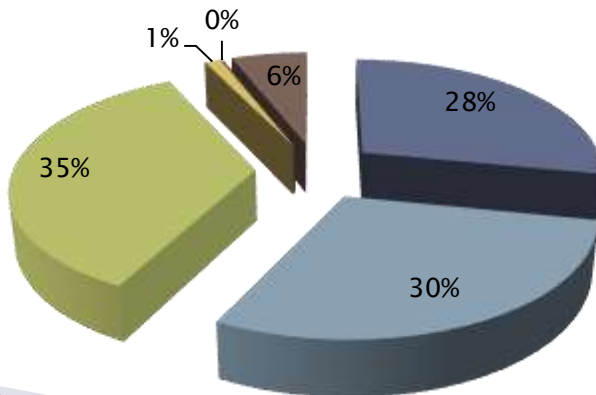


Evanston Sisters

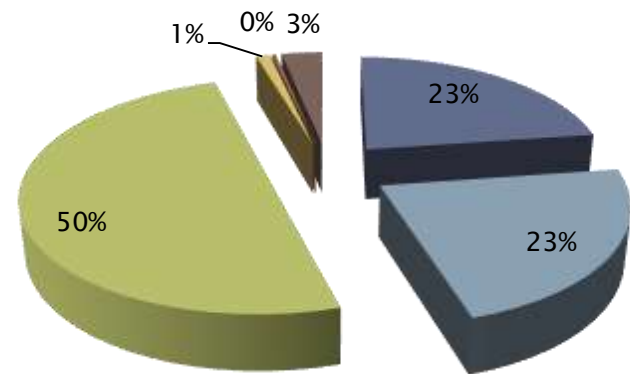
- Uphill
- Downhill
- Level
- Hillcrest
- Sag
- Unknown



US287

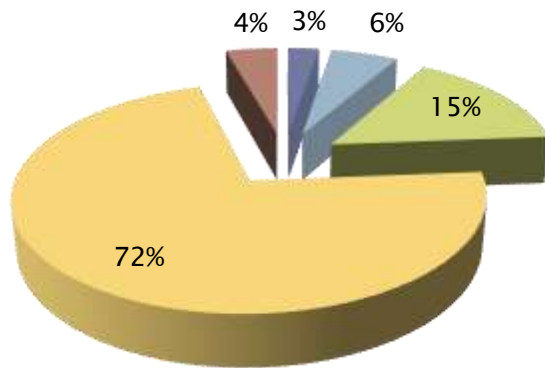


Green River Rock Springs

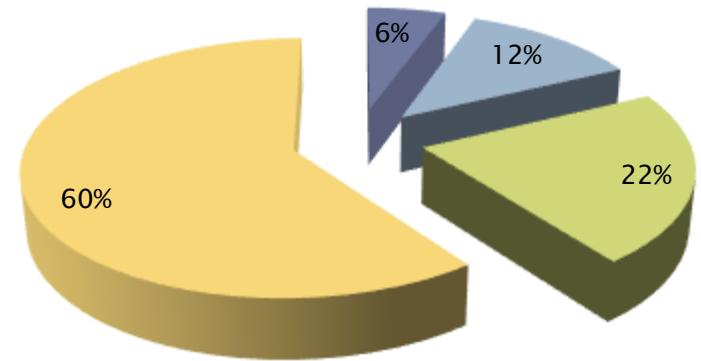


Horizontal Alignment

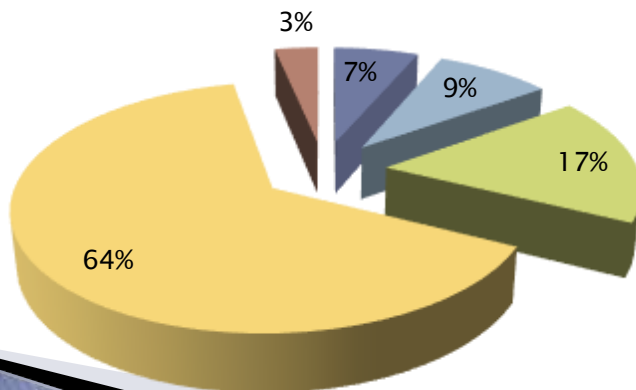
Evanston Sisters



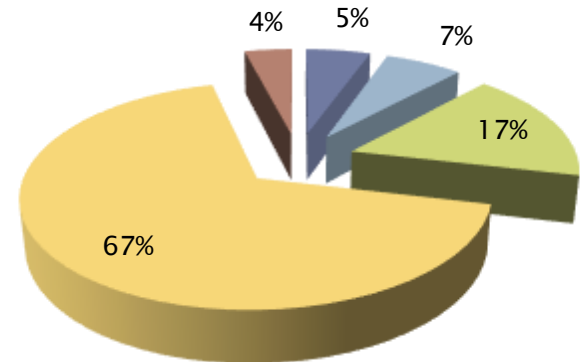
US287



Green River Rock Springs



Cheyenne Laramie



Conclusion

- ▶ Crash factors are similar throughout I-80.
- ▶ There are serious safety concerns along the corridors
- ▶ Weather and Road Conditions are determinant factors (ideal weather is observed in only 30% of all cases on I-80)
- ▶ On I-80 in 30 %-50% cases a vehicle collides with an object, and only in 25% cases with another vehicle
- ▶ About 70 % of all crashes result in damage to the vehicle and another 30 % in injuries. Only 1 % percent result in fatalities along I-80 corridors
- ▶ US 287 has higher percentage of fatal and injury crashes than I-80 corridors. And often there is more than one fatality and/or injury in one single crash
- ▶ Approx. half of accidents happen on a downhill or uphill part of the road
- ▶ Approx. 70 % of all crashes happen on level surface

Thank you!

