



Jackson Hole Wildlife Foundation - Nature Mapping Jackson Hole

Wildlife-Vehicle Collision Database: 2016



Summary:

2016 Data Update

The Jackson Hole Wildlife Foundation's Wildlife-Vehicle Collision (WVC) database increased by 335 collisions with the 2016 data update (Table 1). Data for the 2016 update was acquired from the following data sources: Wyoming Department of Transportation - Carcass (141), Wyoming Department of Transportation – Crash (79), Wyoming Game and Fish Wildlife Observation System (51) and Nature Mapping Jackson Hole (64) (Table 2). In total, the WVC database contains 46 total species with mule deer, white-tailed deer, elk and moose being the most prominent species involved in WVCs (Table 3).

Methods

The WVC database is updated annually using an automated process. This process stores all wildlife-vehicle collisions in a SQL database where it can be accessed in ArcMap, via an SDE connection, and in Program R, via a remote database connection. The SQL database allows all raw data to be stored in one place. Then, with saved queries, the data is formatted and combined into one large database. This database is then run through an iterative loop in R that eliminates duplicates based on distance (<0.25mi) from other observations entered on the same day of the same species. Additional observations are easily added to the SQL database and queried to eliminate duplicates.

WYDOT maintains spatial dataset for all major travel routes in Wyoming. These spatial datasets use linear-referenced system (LRS) geometry that contain route and measure attributes. Before raw WVC data is queried in a SQL database, a field locating each observation to the nearest LRS WYDOT route is added and populated with a value using the "Locate Feature Along Route" tool in ArcMap. This value is used to when identifying duplicates.

When duplicates are identified in the R script, optimal observations are selected based on the data source. The following table indicates the ranking of the data sources included in Wildlife-Vehicle Collision database (observations with a lower source rank are selected over a higher source rank):

DATASOURCE	Source Rank
JHWF_NATURE_MAPPING_2010_2012	1
JHWF_NATURE_MAPPING_2013	1
JHWF_NATURE_MAPPING_2014	1
JHWF_NATURE_MAPPING_2015	1
JHWF_NATURE_MAPPING_2016	1
JHWF_ROADKILLHOTLINE_2012	2
WGFD_WOS_2014	2
WGFD_WOS_2015	2
WGFD_WOS_2016	2
WYDOT_TETON_CRASH_2013	3
WYDOT_TETON_CRASH_1994_2012	3
WYDOT_TETON_CRASH_2014	3
WYDOT_TETON_CRASH_2015	3
WYDOT_TETON_CRASH_2016	3
WYDOT_TETON_CARCASS_2013	4
WYDOT_TETON_CARCASS_2006_2012	4
WYDOT_TETON_CARCASS_1999_2005	4
WYDOT_TETON_CARCASS_2014	4
WYDOT_TETON_CARCASS_2015	4
WYDOT_TETON_CARCASS_2016	4
JHWF_1990_2002	5
JHWF_2003_2009	5
WGFD_WOS_1976_2012	6
WGFD_WOS_2013	6

Wildlife-Vehicle Collision Database, 1990-2016

- No records included within GTNP at park's request. The park maintains its own database.
- Mix of data collected in different ways with different accuracies; may want to consider dissolving data to the nearest mile marker, depending on your goal. Some observers are trained biologists while some are relatively untrained WYDOT employees.
- Large effort to remove potential duplicates among different sources.
- Date/time usually does not record actual time of death, but rather when the dead animal was observed (often a day or two later).
- Heavily biased by ungulates, especially mule deer. These are the animals that WYDOT picks up and that cause crashes large enough to call Police. Also easier to observe by citizen-scientists.
- This database is likely a significant underestimate of road kill occurrences in Teton County, even for ungulates. Many road kill events go unreported or animals are hit and die out of sight from roads.
- Probably biased by larger roads (more observers).

- Biased by year; WYDOT has been collecting data since 1990, but other groups started later. WYDOT has also improved their documentation in recent years.
- Road kill numbers are influenced by winter conditions, with high numbers occurring during more severe winters when ungulates are concentrated close to roads.

Hotspot Maps:

Hotspots were identified using the Kernel Density tool in ArcMap 10.3.1. The colors represent the probability density of WVCs' occurring based on the search radius. Two raster layers were created for each analysis (All species, Moose, Deer, Elk). The coarse resolution layer, which appears smoother by generalizing hotspots, identifies searches for WVCs' within 300 m of each 50 m pixel. The finer resolution layer identifies WVCs' with 100 m of each 50 m pixel resulting in a more accurate hotspot depiction.

Suggested Citation:

Jackson Hole Wildlife Foundation, Jackson, WY, Wildlife-Vehicle Collision Database, 2/18/2016

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Table 1. Wildlife-Vehicle Collisions by year

YEAR	COUNT
1990	67
1991	108
1992	81
1993	53
1994	105
1995	68
1996	147
1997	195
1998	96
1999	158
2000	184
2001	167
2002	105
2003	256
2004	174
2005	175
2006	263
2007	226
2008	177
2009	149
2010	241
2011	293
2012	211
2013	194
2014	264
2015	259
2016	335
Grand Total	4750

Table 2. Data sources included in the WVC Database in Teton County by year.

DATASOURCE	COUNT
tblJHWF_1990_2002	1025
tblJHWF_2003_2009	435
tblJHWF_NATURE_MAPPING_2010_2012	151
tblJHWF_NATURE_MAPPING_2013	41
tblJHWF_NATURE_MAPPING_2014	44
tblJHWF_NATURE_MAPPING_2015	38
tblJHWF_NATURE_MAPPING_2016	64
tblJHWF_ROADKILLHOTLINE_2012	22
tblWGFD_WOS_1976_2012	207
tblWGFD_WOS_2013	5
tblWGFD_WOS_2014	17
tblWGFD_WOS_2015	33
tblWGFD_WOS_2016	51
tblIWYDOT_TETON_CARCASS_1999_2005	208
tblIWYDOT_TETON_CARCASS_2006_2012	658
tblIWYDOT_TETON_CARCASS_2013	93
tblIWYDOT_TETON_CARCASS_2014	110
tblIWYDOT_TETON_CARCASS_2015	118
tblIWYDOT_TETON_CARCASS_2016	141
tblIWYDOT_TETON_CRASH_1994_2012	993
tblIWYDOT_TETON_CRASH_2013	55
tblIWYDOT_TETON_CRASH_2014	93
tblIWYDOT_TETON_CRASH_2015	70
tblIWYDOT_TETON_CRASH_2016	79
Grand Total	4750

Table 3. Wildlife-Vehicle Collision by month

MONTH	2016	All Years
January	31	655
February	33	434
March	31	395
April	16	332
May	21	297
June	40	379
July	31	337
August	23	253
September	23	248
October	24	356
November	22	387
December	40	677
Grand Total	335	4750

Table 4. Species count in the Wildlife-Vehicle Collision database.

Species	Count
American Marten	4
American Mink	2
American Robin	2
Barrows Goldeneye	1
Bighorn Sheep	6
Bison	1
Black Bear	8
Black Rosy-Finch	1
Black-billed Magpie	2
Boreal Toad	1
Brewers Blackbird	1
Canada Goose	1
Common Gartersnake	2
Common Raven	2
Coyote	12

Deer Mouse	1
Elk	845
Fox	2
Gray Wolf	2
Great Horned Owl	9
Greater Sage-Grouse	1
Grizzly Bear	2
Least Chipmunk	2
Long-tailed Weasel	1
Moose	407
Mountain Bluebird	1
Mountain Lion	2
Mule Deer	3303
North American Porcupine	24
Northern Goshawk	1
Northern Raccoon	30
Pronghorn	6
Red Fox	9
Red Squirrel	3
Rough-legged Hawk	1
Ruffed Grouse	2
Short-tailed Weasel (Ermine)	4
Short-tailed Weasel Red Fox	2
Snowshoe Hare	1
Striped Skunk	11
Wandering Gartersnake	1
Weasel	1
Western Tanager	1
White-tailed Deer	25
Wilson's Warbler	1
Yellow Warbler	2
Yellow-bellied Marmot	1
Grand Total	4750

Table 5. WVCs for all years by road name

Road Name	Count
17SA	2
BATCH PLANT RD	3
BOYLES HILL RD	2
BUDGE DR	1
BUFFALO VALLEY RD	5
CASHE ST	1
CORNER CREEK LN	1
COULTER AVE	5
DELONEY AVE	1
E BROADWAY AVE	1
FALL CREEK RD	16
FISH CREEK RD	22
FLAT CREEK DR	2
GAME CREEK RD	2
GLENWOOD AVE	1
HENRY'S RD	8
HIDDEN RANCH LN	1
HIGH SCHOOL RD	1
HOBACK JUNCTION SOUTH RD	1
JACKSON AVE	1
KELLY AVE	2
KING ST	1
MALLARD RD	1
MELODY CREEK LN	1
MILLWARD AVE	1
NATIONAL ELK REFUGE	1
NO NAME ST	1
PARK LOOP RD	10
PARK RANCH RD SO FORK	1
REDMOND ST	1
RYEGRASS RD	1
SADDLE BUTTE DR	2
SKI HILL RD	7
SNOW KING AVE	3
SOUTH PARK LOOP	6
SPRING GULCH RD	24
UPPER CACHE CREEK DR	1
US 189	1
US 189/US 191	349

US 189/US 191/US 26/US 89	1597
US 191/US 26/US 89	763
US 26/US 287	150
US 26/US 89	502
VIRGINIAN LN	1
WY 22	964
WY 390	279
WY22	3
Grand Total	4750

Table 6. 2016 WVCs by road name

American Robin	1
WY 390	1
Bighorn Sheep	3
US 189/US 191	3
Black Bear	2
FALL CREEK RD	1
WY 390	1
Boreal Toad	1
BUFFALO VALLEY RD	1
Coyote	4
US 191/US 26/US 89	1
WY 22	3
Elk	51
FALL CREEK RD	1
US 189/US 191	9
US 189/US 191/US 26/US 89	15
US 191/US 26/US 89	4
US 26/US 287	1
US 26/US 89	10
WY 22	9
WY 390	2
Great Horned Owl	3
US 189/US 191/US 26/US 89	2
WY 22	1
Grizzly Bear	1
US 26/US 287	1
Long-tailed Weasel	1
SPRING GULCH RD	1

Moose	19
FALL CREEK RD	1
FISH CREEK RD	1
SNOW KING AVE	1
US 189/US 191/US 26/US 89	1
US 191/US 26/US 89	1
US 26/US 287	2
WY 22	8
WY 390	4
Mule Deer	233
FALL CREEK RD	3
US 189/US 191	16
US 189/US 191/US 26/US 89	94
US 191/US 26/US 89	20
US 26/US 287	4
US 26/US 89	45
WY 22	43
WY 390	8
North American Porcupine	4
SPRING GULCH RD	1
US 191/US 26/US 89	1
WY 22	2
Northern Raccoon	2
US 26/US 89	1
WY 22	1
Red Fox	1
US 189/US 191/US 26/US 89	1
Striped Skunk	6
BUFFALO VALLEY RD	1
WY 22	4
WY 390	1
White-tailed Deer	3
US 189/US 191	1
US 189/US 191/US 26/US 89	1
WY 390	1
Grand Total	335

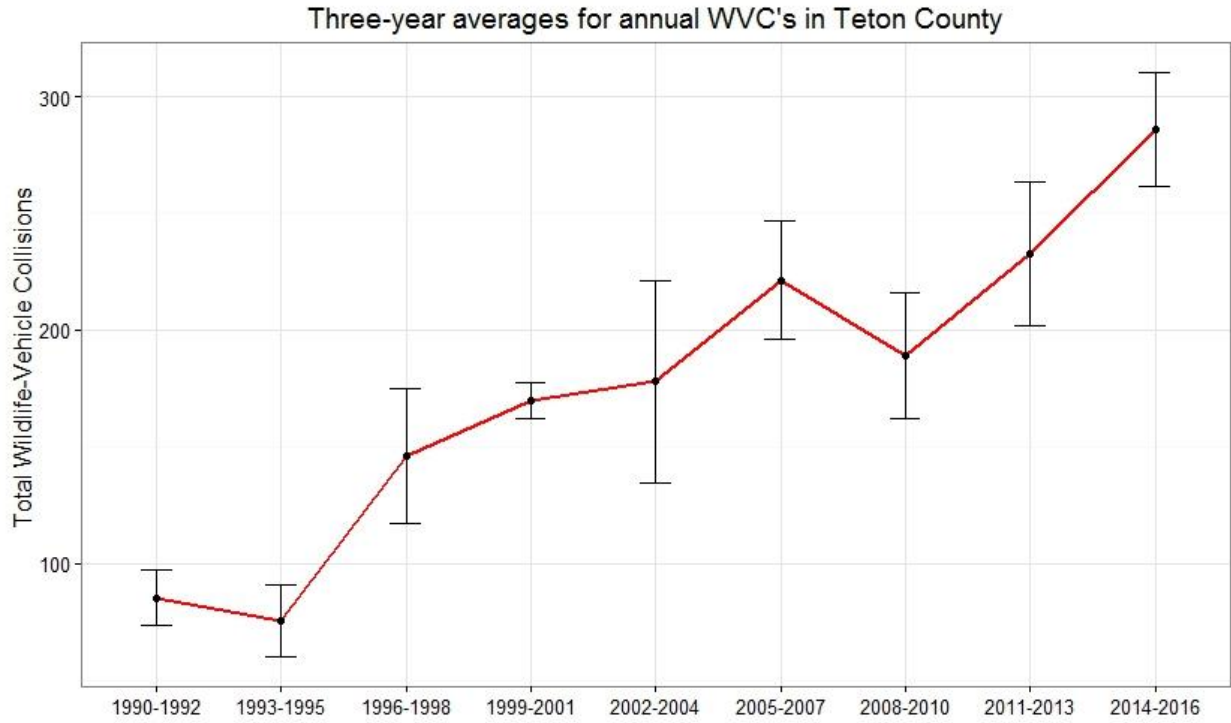


Figure 1. Three-year averages of annual wildlife-vehicle collisions in Teton County, 1990-2016.

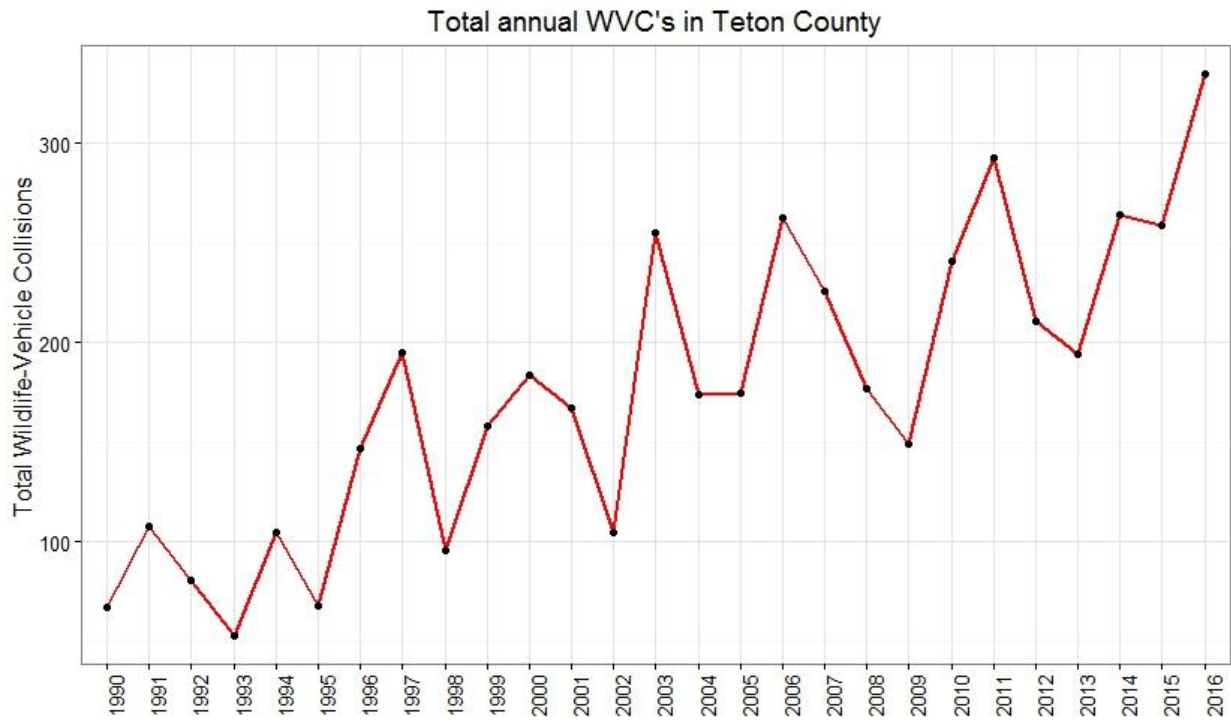


Figure 2. Total annual wildlife-vehicle collisions in Teton County, 1990-2016.

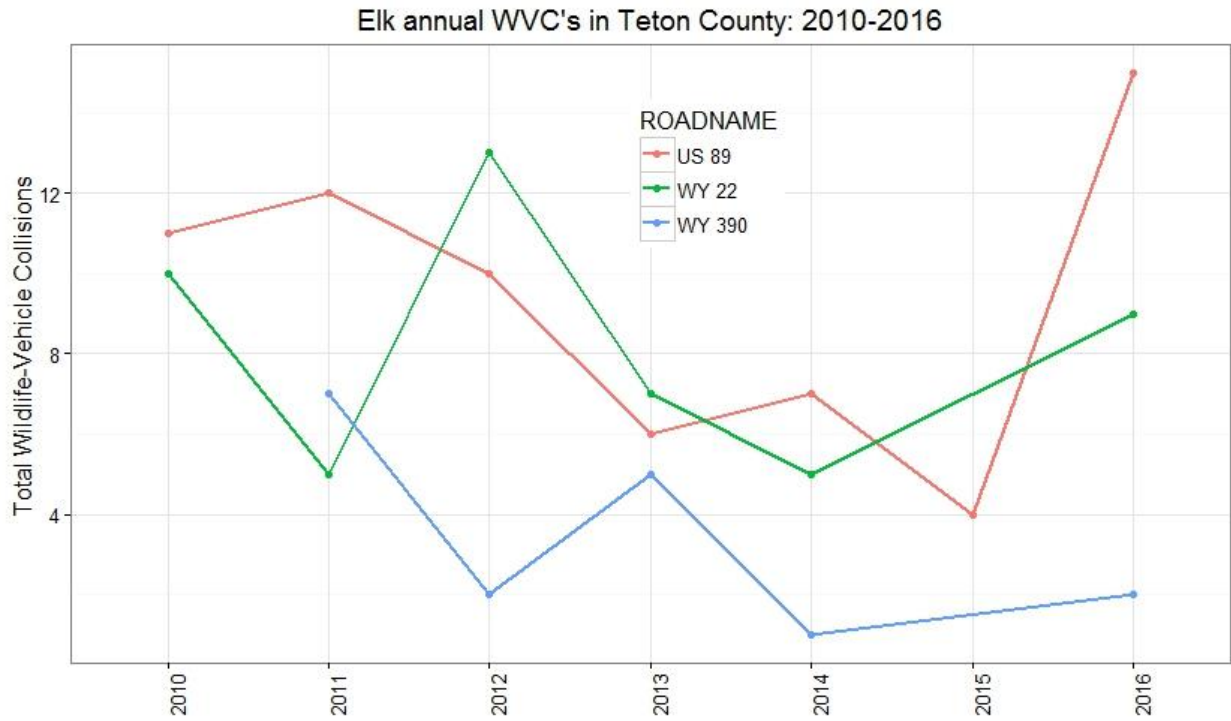


Figure 3. Elk wildlife-vehicle collision occurring on US 89 (Hoback Junction to south Grand Teton National Park boundary), WY 22 and WY 390 from 2010-2016.

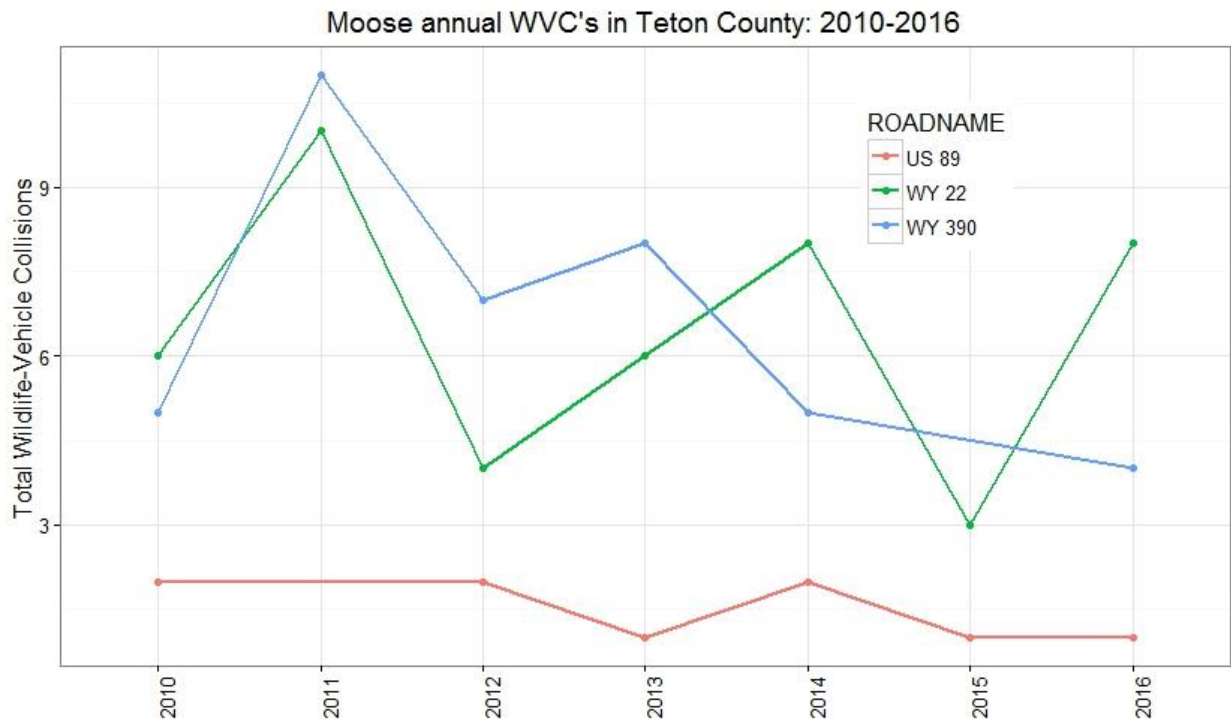


Figure 4. Moose wildlife-vehicle collision occurring on US 89 (Hoback Junction to south Grand Teton National Park boundary), WY 22 and WY 390 from 2010-2016.

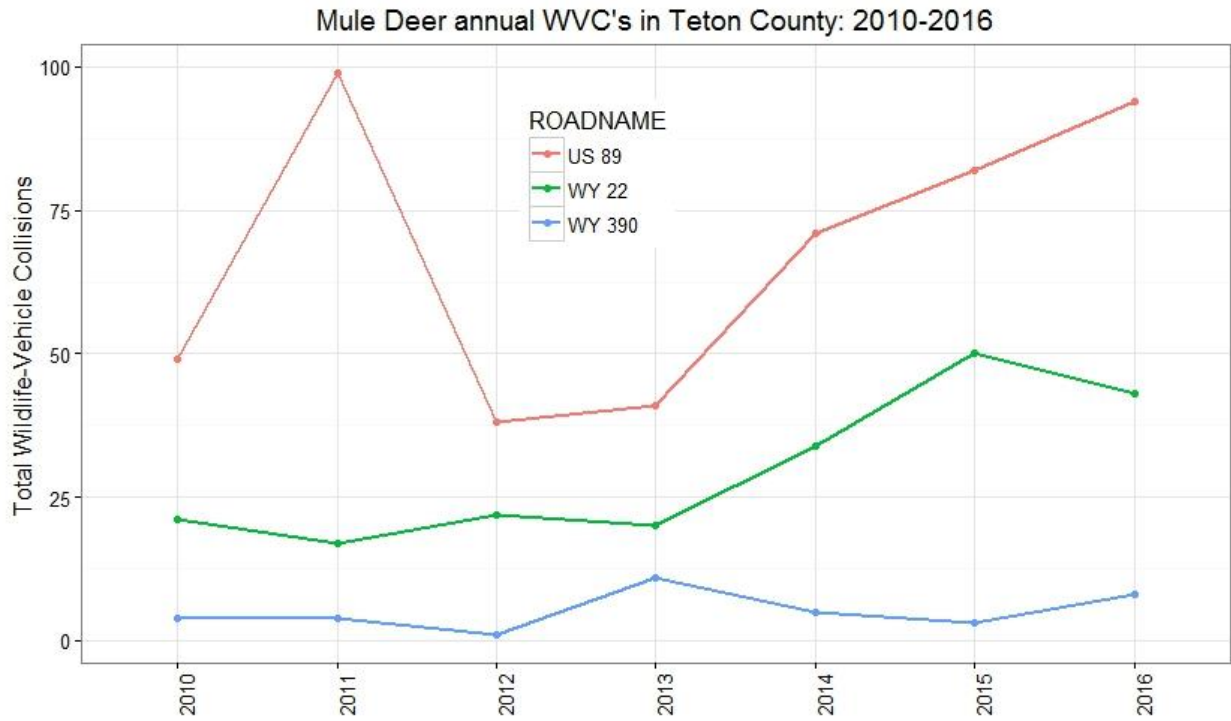


Figure 5. Deer wildlife-vehicle collision occurring on US 89 (Hoback Junction to south Grand Teton National Park boundary), WY 22 and WY 390 from 2010-2016.