

Montana Elk Harvests Analysis

By Landon Sielaff

Montana Elk Hunting by the Numbers

- Every year over 100,000 people purchase elk tags in Montana
- More than 2 million people have elk hunted in Montana in the last 18 years



\$250M

Montana Elk Hunting has generated over \$250M in the past 18 years

Elk Economics

RESIDENT and NONRESIDENT HUNTER Prerequisites

Prerequisites	Resident Cost	Resident Youth and Senior	Resident Disabled	Non-resident Cost	Additional Information
Aquatic Invasive Species Prevention pass (AISPP)	\$2.00 (ages 16+)	\$2.00	\$2.00	\$7.50 (ages 16+)	Required in addition to a fishing license to fish in Montana. Supports the aquatic invasive species prevention and inspection program. Learn more at CleanDrainDryMT.com .
Base Hunting License	\$10.00	\$10.00	\$10.00	\$15.00	Prerequisite for hunting or applying for a permit or license.
Conservation License	\$8.00	\$4.00	\$8.00	\$10.00	Prerequisite.
Bow and Arrow License	\$10.00	\$10.00	\$10.00	\$10.00	Required during the Archery Only Season for any species or to archery hunt in an Arch-Equip only area or hunting district.

RESIDENT License and Permit Availability Chart

Individual License/Permit	Resident 18-61 years Cost	Resident Youth (12-17) or Senior (62+)	Resident Disabled	Deadline to apply	Additional Information
DEER					
General License	\$16.00	\$8.00	\$8.00	-	
Deer Permit - Drawing only	\$5.00	\$5.00	\$5.00	April 1	Application fee only. Permit must be used in conjunction with General deer license. Residents must have current year General deer license to apply.
Deer B License - Drawing only	\$15.00	\$15.00	\$15.00	June 1	Antlerless only.
Deer B License - OTC	\$10.00	\$10.00	\$10.00	-	Over-the-counter. Antlerless only. Valid in specific district(s). Purchase beginning August 8.
ELK					
General License	\$20.00	\$10.00	\$10.00	-	
Elk Permit - Drawing only	\$9.00	\$9.00	\$9.00	April 1	Residents must have current year General Elk License to apply. A permit must be used in conjunction with a General Elk License.
Elk B License - Drawing only	\$25.00	\$25.00	\$25.00	June 1	Antlerless only
Elk B License - OTC	\$20.00	\$20.00	\$20.00	-	Over-the-counter. Antlerless only. Valid in specific district(s). Purchase beginning August 8.

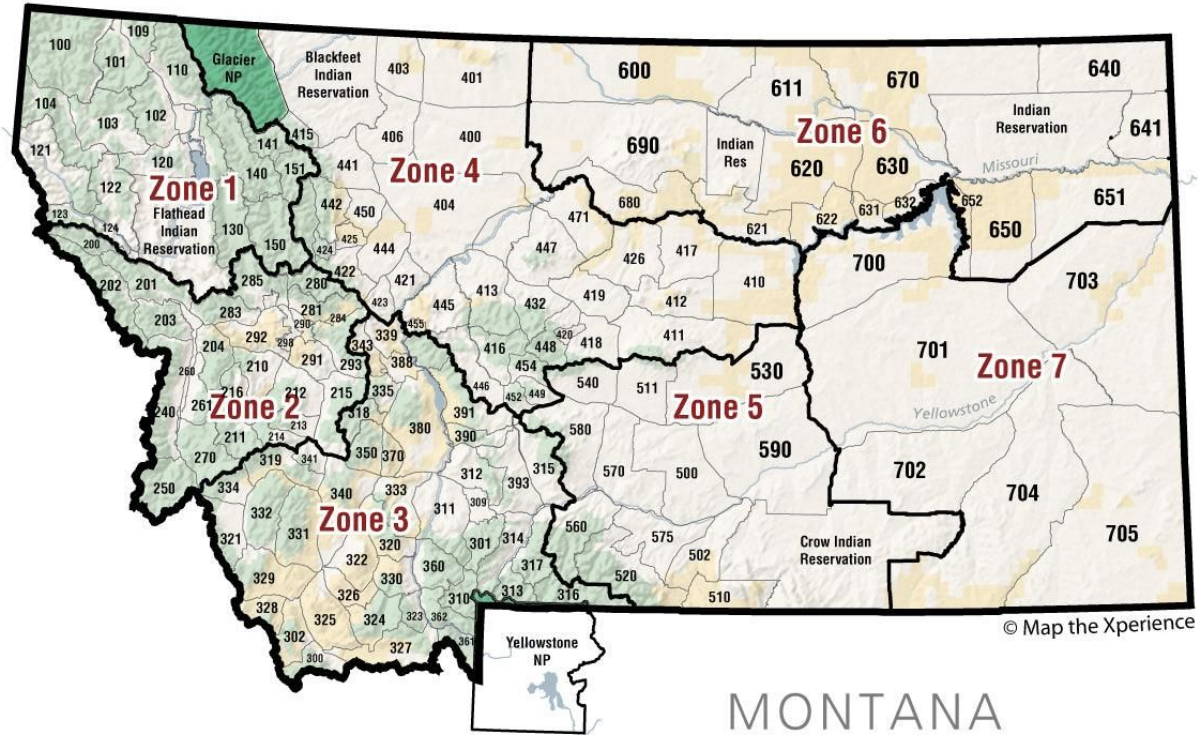
~ \$40 for Residents

~ \$966.50 for Non-Residents

NONRESIDENT License and Permit Availability Chart

Opportunities	Non-resident Cost	Deadline to apply	Additional Information
Nonresident Native (NR)			
NR Big Game Combination License	\$554.00	-	For Montana native born with current Montana resident relative; other qualifications apply. For information call 406-444-2950. The NR Big Game Combination includes General Deer, General Elk, Upland Bird (excluding turkey), and Season Fishing Licenses. The NR Elk Combination has everything except Deer, and the NR Deer Combo has everything except Elk.
NR Elk Combination License	\$467.00	-	
NR Deer Combination License	\$323.00	-	
Season Fishing License	\$50.00	-	\$15 AISPP fee also required.
Bird License	\$55.00	-	Conservation License and a Base Hunting License also required.
Deer B (OTC)	\$37.50	-	Antlerless deer
Elk B (OTC)	\$135.00	-	Antlerless elk
Big Game Combination: Includes General Deer, General Elk, Upland Bird (excluding turkey), and Season Fishing Licenses. For information call 406-444-2950.			
Big Game Combination- Drawing	\$1108.00	April 1	
Big Game Combination- Youth (12-17) - Sponsored	\$554.00	-	For information call 406-444-2950.
Big Game Combination- College Student	\$554.00	-	Certification required for nonresident students attending a Montana college full-time. For information call 406-444-2950. License available at any FWP office after September 14.
Deer Deer Combination: Includes General Deer, Upland Bird (excluding turkey), and Season Fishing Licenses. For information call 406-444-2950.			
Deer Combination- Drawing	\$646.00	April 1	
Deer Combination- Youth (12-17) - Sponsored	\$323.00	-	For information call 406-444-2950.
Deer Combination- College Student	\$323.00	-	Certification required for nonresident students attending a Montana college full-time. For information call 406-444-2950. License available at any FWP office after September 14.
Deer Permit- Drawing	\$5.00	April 1	Nonresidents must also apply for a Deer License when applying for a Deer Permit. A permit must be used in conjunction with a General Deer License.
Deer B- Drawing	\$80.00	June 1	Antlerless deer
Deer B- OTC	\$75.00	-	Purchase beginning August 8.
Elk Elk Combination: Includes General Elk, Upland Bird (excluding turkey), and Season Fishing Licenses. For information call 406-444-2950.			
Elk Combination- Drawing	\$934.00	April 1	
Elk Combination- Youth (12-17) - Sponsored	\$467.00	-	For information call 406-444-2950.
Elk Combination- College Student	\$467.00	-	Certification required for nonresident students attending a Montana college full-time. For information call 406-444-2950. License available at any FWP office after September 14.
Elk Permit - Drawing	\$9.00	April 1	Non-residents must also apply for an Elk License when applying for an Elk Permit. A permit must be used in conjunction with a General Elk License.
Elk B - Drawing	\$275.00	June 1	Antlerless elk- includes drawing fee
Elk B - OTC	\$270.00	-	Over-the-counter. Antlerless only. Valid in specific district(s).

Montana Hunting Districts



Project Proposal

Which hunting units provide the best
elk hunting in Montana?

Data

Montana Fish, Wildlife & Parks

- Elk Harvest Report Data (2004 - 2021)
- Deer and Elk Hunting Districts



Data

Montana Elk Harvest Report

(9,407 obs. of 15 variables)

"License.Year"	"Hunting.District"	"Residency"
"Hunters"	"Days"	"Days.per.Hunter"
"Total.Harvest"	"Bulls"	"Cows"
"Calves"	"Bow"	"Rifle"
"Spike.Bull.Elk"	"Less.than.6.Points"	
"X6.or.More.Points"		

Deer and Elk Hunting Districts

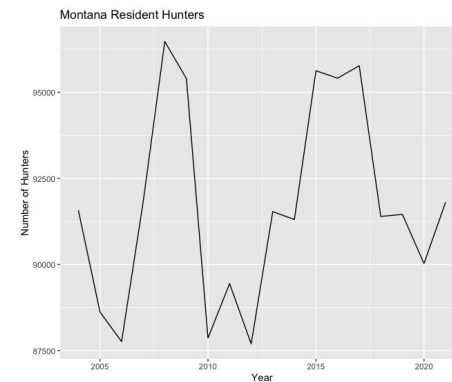
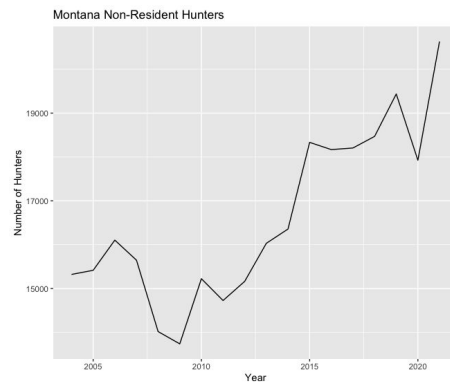
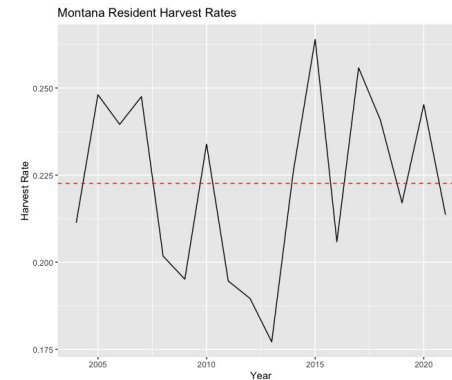
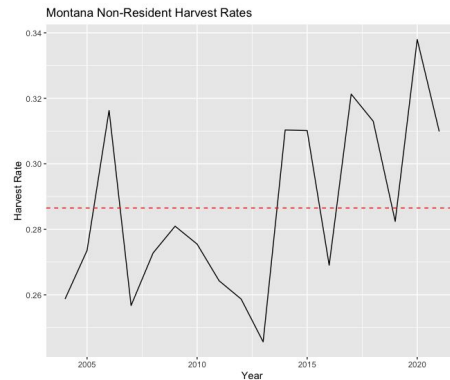
(148 obs. of 16 variables)

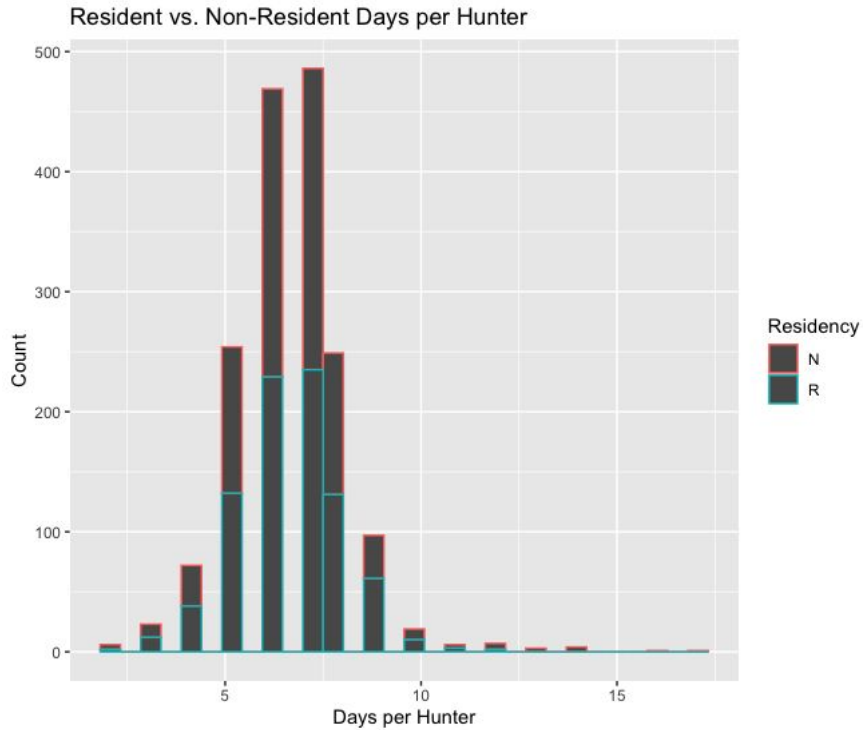
"OBJECTID"	"AREA_MI"
"REG"	"DEERWEBPAG"
"DISTRICT"	"ELKWEBPAGE"
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"EMU_NAME"	"Shape__Len"
"HARVTYPE"	"GlobalID"
"AREA_AC"	"MAPLINK"
"AREA_KM"	"geometry"

Descriptive Analysis

Harvest Rate = Elk Harvests / Total Hunters*

	Elk Harvests Rates	Bull Elk Harvest Rates	Mature Bull Elk Harvests Rates
Residents	22.26%	9.72%	4.07%
Non-Residents	28.65%	19.28%	9.04%
Total	23.25%	11.18%	4.83%





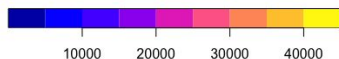
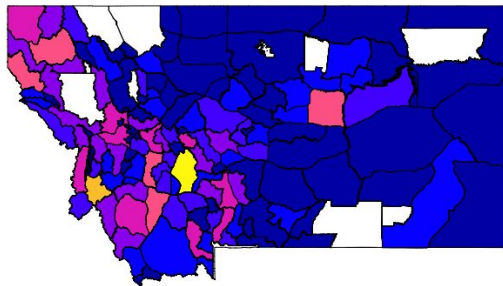
On average, non-resident hunters spend more days hunting per season compared to resident hunters

Data Cleaning & Processing

- Data was unorganized and inconsistent
- Generated **54 new data frames**, separated by **year and residency**
- **Index data frame** was created to allow interface between the two datasets
- Generated **8 additional data sets** to target units for analysis
 - **Resident & Non-Resident**
 - **Hunters, Total Harvest, Bulls & X6orMore**

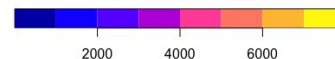
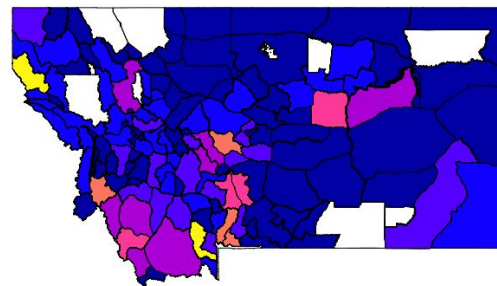
Montana Hunters Analysis

Montana Residents



hunting districts	resident hunters
380	43918
270	37279
121	29685
215	29626
103	26724
340	25243

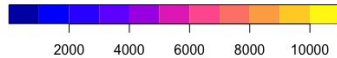
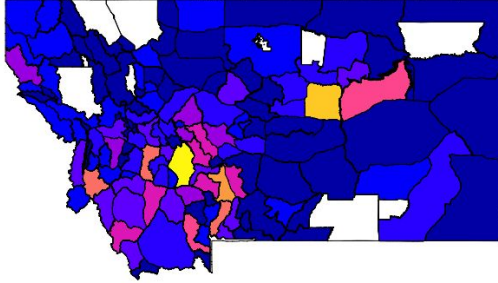
Montana Non-Residents



hunting districts	non-resident hunters
121	7491
360	7060
313	6000
270	5264
416	5217
314	5170

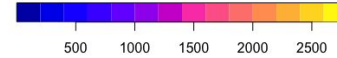
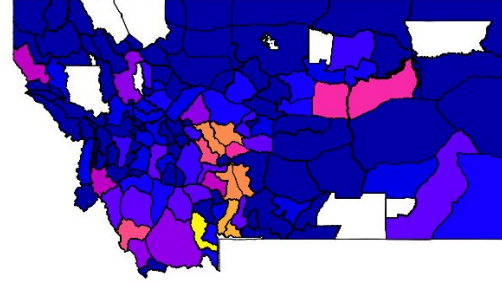
Montana Total Elk Harvests Analysis

Montana Residents



hunting districts	resident harvest
380	10554
410	9261
393	8202
215	7706
314	7369
270	7320

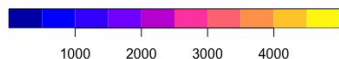
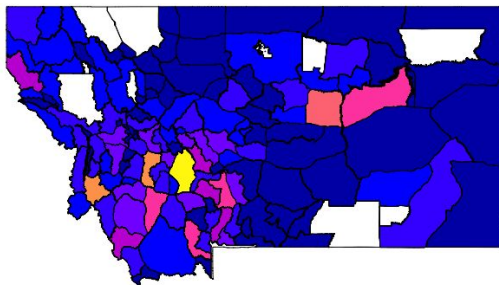
Montana Non-Residents



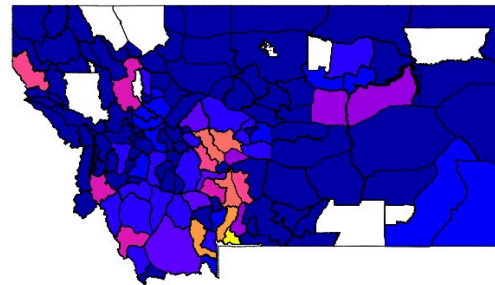
hunting districts	non-resident harvest
360	2729
313	2275
314	2225
446	2189
393	2159
416	2121

Montana Total Bull Elk Harvest Analysis

Montana Residents



Montana Non-Residents

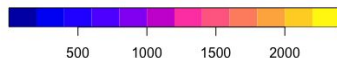
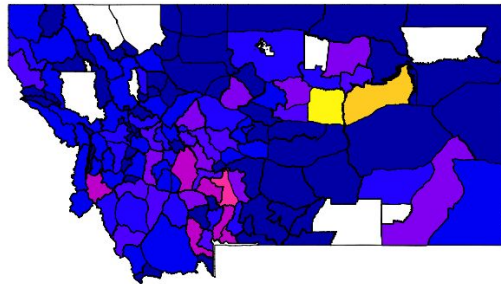


hunting districts	resident bull harvest
380	4944
215	3786
270	3734
410	3363
393	2906
700	2858

hunting districts	non-resident bull harvest
313	2149
360	1800
314	1603
393	1543
446	1508
416	1484

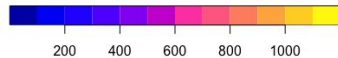
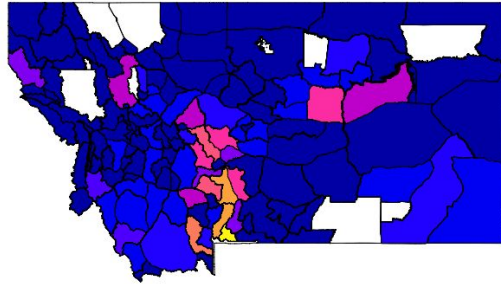
Montana Mature Bull Elk Harvest Analysis

Montana Residents



hunting districts	resident mature bull harvest
410	2375
700	2037
393	1370
314	1191
380	1159
360	1158

Montana Non-Residents



hunting districts	non-resident mature bull harvest
313	1163
314	941
393	920
360	884
312	799
446	786

Montana Hunting Unit Elk Harvest Rates

	Elk	Bull Elk	Mature Bull Elk
Residents Districts	455	455	455
Harvest Rates	58.02%	25.76%	17.5%
Non-Resident Districts	390	390	455
Harvest Rates	63.72%	48.92%	32.88%

Sixteenmile Creek District 390

Landcover	Square Miles	Percent
Alpine	0.0	0.0
Forest and Woodland	32.2	9.5
Grassland	94.2	27.7
Human Land Use	52.5	15.4
Open Water / Wetland and Riparian	17.0	5.0
Recently Disturbed or Modified	54.4	16.0
Shrubland, Steppe and Savanna	89.5	26.3
Sparse and Barren	0.5	0.1

Ownership	Square Miles	Percent
Private	306.9	90.2
Public	33.4	9.8
Reservation	0.0	0.0
Water	0.0	0.0

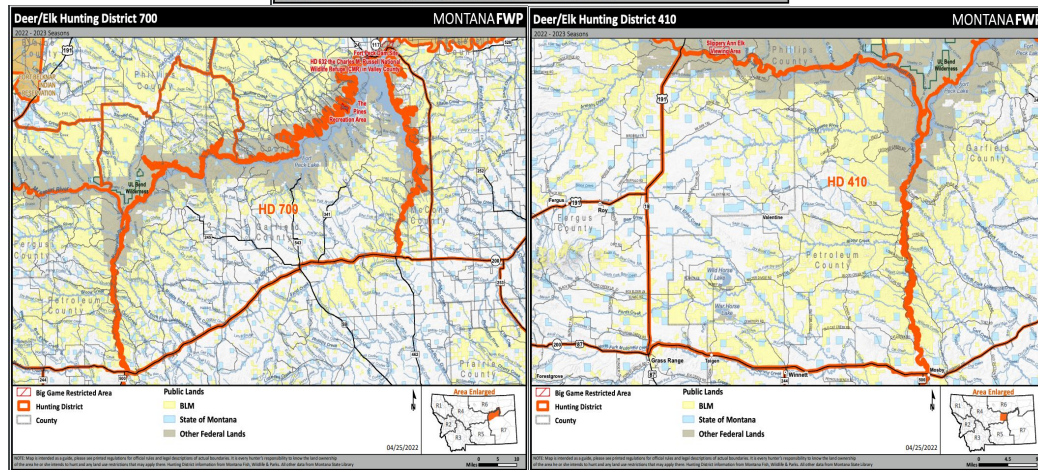
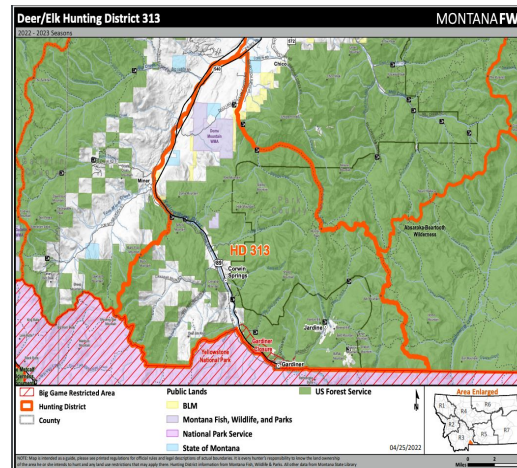
Beartooth Wildlife Management Area District 455

Landcover	Square Miles	Percent
Alpine	0.0	0.0
Forest and Woodland	9.4	14.3
Grassland	15.4	23.5
Human Land Use	0.1	0.2
Open Water / Wetland and Riparian	2.1	3.2
Recently Disturbed or Modified	28.3	43.1
Shrubland, Steppe and Savanna	9.8	14.9
Sparse and Barren	0.5	0.7

Ownership	Square Miles	Percent
Private	0.1	0.1
Public	65.2	99.4
Reservation	0.0	0.0
Water	0.3	0.4

Conclusion

- For non-residents, the **Gardiner District 313** is the best district for all around quality elk hunting, while the **Sixteenmile Creek District 390** proved to have outstanding harvest rates.
- For residents on the other hand is hands down the **Missouri Breaks Districts 410 and 700** due to the abundance of public land and amazing mature bull harvest numbers. Other notable units to mention are the **Beartooth Wildlife Management Area District 455** due to the large harvest rates.



Thank you, any questions?