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PUBLIC SAFETY

MOTORCYCLE IMPACT ANALYSIS

A Comparative Study of Motorcycle Crash Records

<http://www.safehomealabama.gov>

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THE UNIVERSITY OF
ALABAMA

Web Page Access

<http://www.safehomealabama.gov>

To get to the Motorcycle Page:

- Click the Safety Topics drop down
- Click Vehicle Specific (at bottom of list)
- Click Motorcycles

Study Approach

Goal

To obtain as much information as we can from the crash records on the following subjects:

- Motorcycle Driver Caused Crashes
- Motorcycle Involved but Not MC Caused
 - ✓ Called “Motorcycle Victim” crashes
 - ✓ Because the motorcyclist is the victim
- Present Information Most Critical to Training

General Extent of the Problem

Overall Numbers

Over the past ten years (2003-2012) the number of motorcycle involved crashes (regardless of cause) has increase by what percentage?

30%

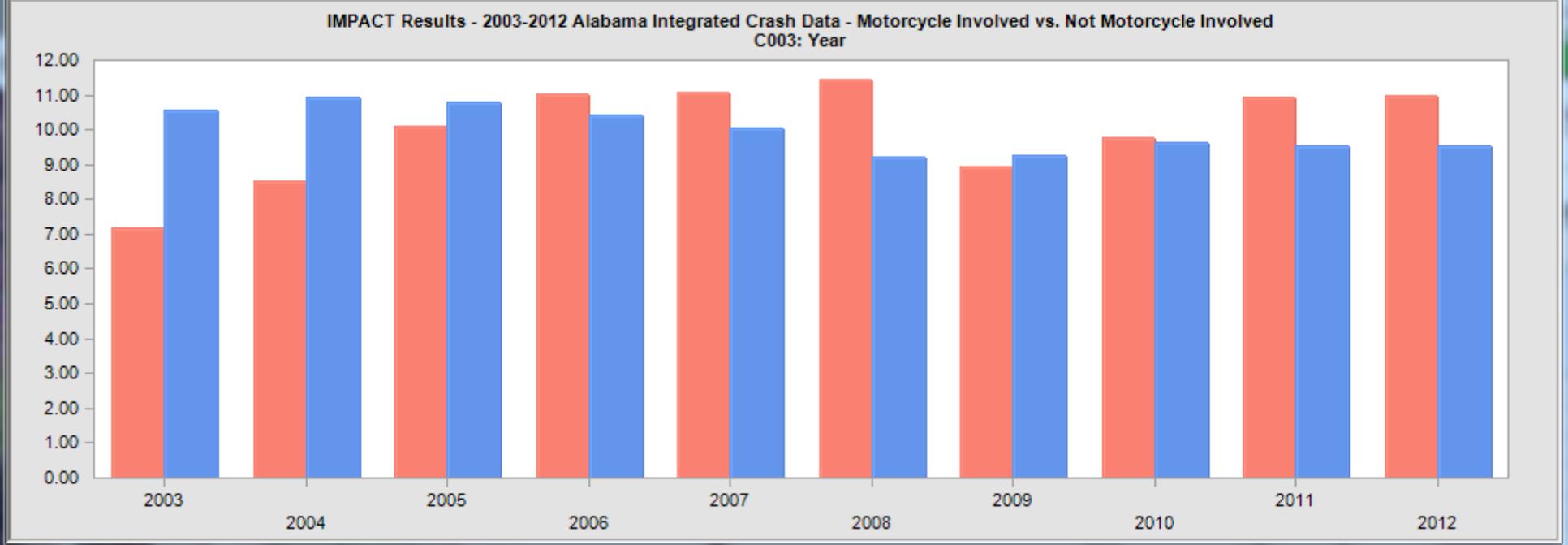
40%

50%

- Red = MC Involved Crashes
- Blue = Crashes that Did Not Involve MC

C003: Year								C003: Year	
	Value	Subset Freq.	Subset Per.	Other Freq.	Other Per.	Over Rep.	Max Gair		
▶	2003	0.09%	1254	7.190	139813	10.562	0.681*	-588.086	<input type="checkbox"/> Sort by Sum of Max Gain
	2004		1483	8.503	144875	10.944	0.777*	-425.780	
	2005	Average:	1758	10.080	142679	10.778	0.935*	-121.847	
	2006	1744/year	1925	11.037	137855	10.414	1.060*	108.711	
	2007	1.3% of all crashes	1931	11.072	133325	10.072	1.099*	174.395	
	2008		1998	11.456	121993	9.216	1.243*	390.698	
	2009		1563	8.962	122408	9.247	0.969	-49.769	
	2010		1707	9.787	127818	9.656	1.014	22.952	
	2011		1910	10.951	126589	9.563	1.145*	242.144	
	2012	1.51%	1912	10.963	126404	9.549	1.148*	246.582	

Increase from 1254 to 1912 is 52.5%



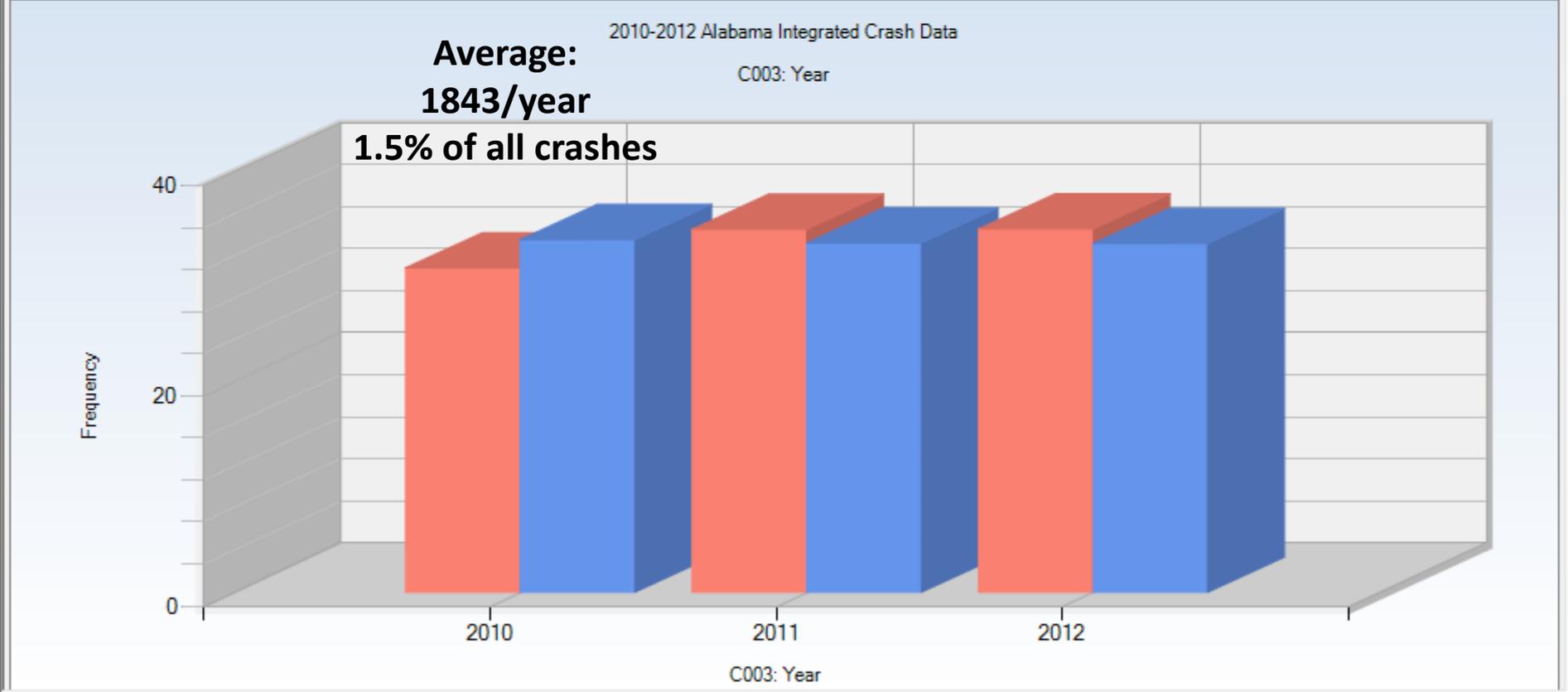
	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	2010	1707	30.87	127827	33.56	0.920*	-148.610
	2011	1910	34.55	126600	33.24	1.039	72.202
	2012	1912	34.58	126448	33.20	1.042	76.408

C003: Year

Sort by Sum of Max Gain

Most Recent Three Years (2010-2012)

Display Filter Name



General Extend of the Problem

Severity

Of all MC involved (not necessarily caused) crashes, 267 resulted in one or more fatalities.

How much more likely is a MC involved crash to be fatal than a crash that does not involve a MC?

2 times more likely

4 times more likely

8 times more likely

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Fatal Injury	267	4.83	2160	0.57	8.515*	235.644
	Incapacitating Injury	1644	29.73	20508	5.38	5.522*	1346.294
	Non-Incapacitating Injury	1673	30.26	30686	8.06	3.756*	1227.544
	Possible Injury	411	7.43	29019	7.62	0.976	-10.256
	Property Damage Only	1393	25.19	288613	75.78	0.332*	-2796.672
	Unknown	141	2.55	9889	2.60	0.982	-2.554

C025: Crash Severity

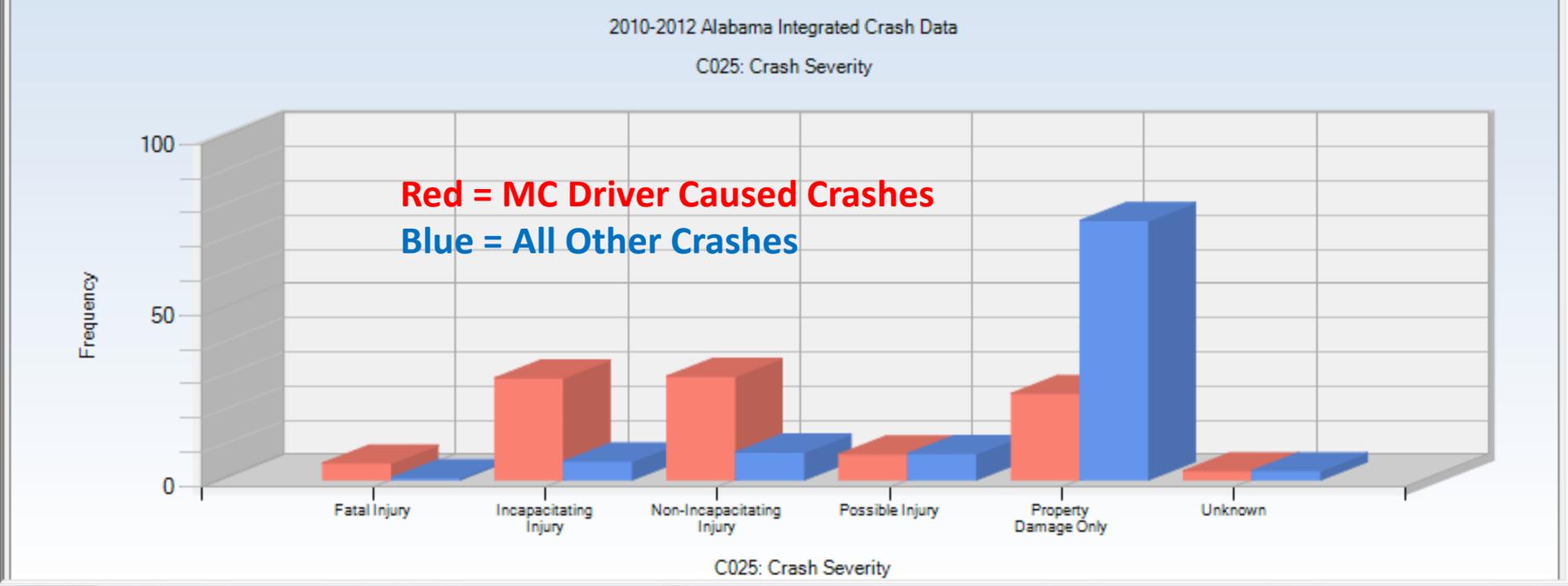
Over 8 for all MC crashes

Over 12 for MC-Caused Crashes

Sort by Sum of Max Gain

Three-Year Severity Summary (Crashes)

Display Filter Name



“OVER-REPRESENTATED”

Over-Represented means that the summary of a particular value of an entry on the MC crash report form averages out significantly higher than is seen for crashes in general.

Example entry: age of driver.

Example age value: 42

Probability of age 42 driver for all crashes = 1.373%

Probability of age 42 driver for MC crashes = 1.690%

Thus, MC Causal Driver Aged 42 is Over-Represented

Creating Information from Data

Making Comparisons

These comparisons will show how MC-caused crashes differ from traffic crashes in general.

- Red = MC Driver Caused Crashes
- Blue = All Other Crashes

MC Causal Driver Demographics

Age

Which ten-year age group is most consistently over-represented in causing MC crashes?

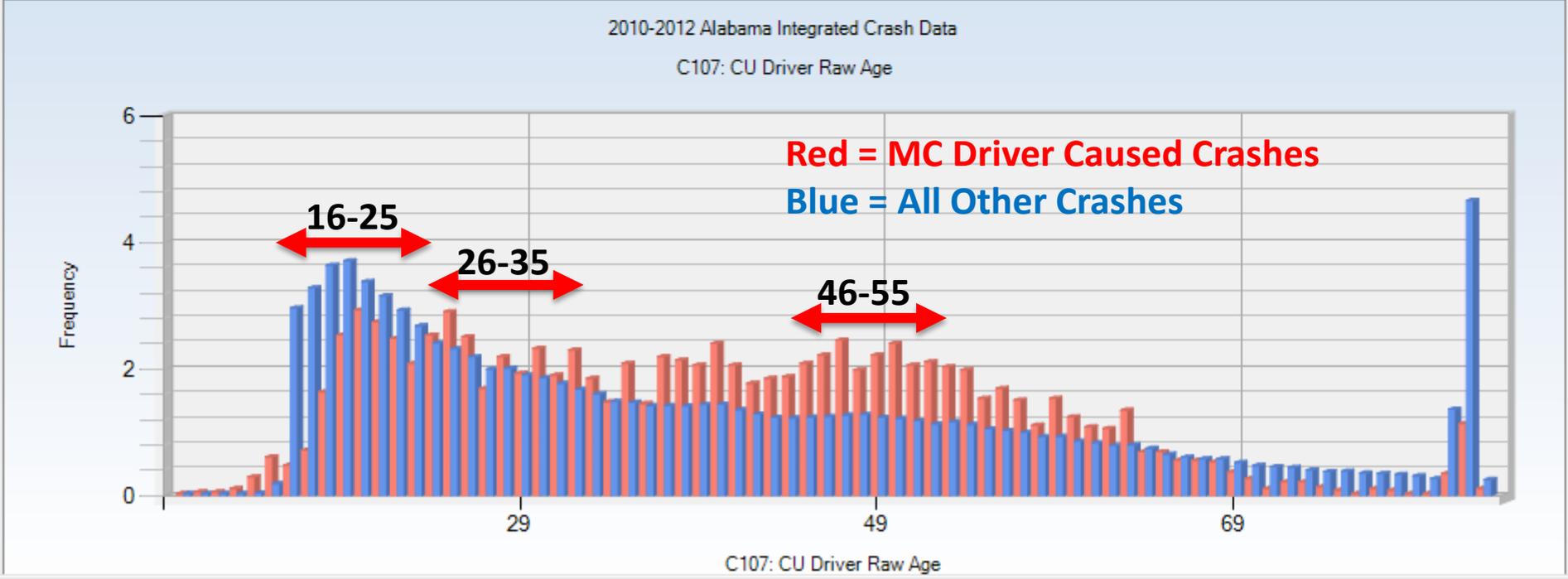
16-25

26-35

46-55

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
46	84	2.22	4770	1.25	1.777*	36.736
47	93	2.45	4855	1.27	1.933*	44.894
48	75	1.98	4884	1.28	1.550*	26.607
49	84	2.22	4712	1.23	1.799*	37.311
50	91	2.40	4655	1.22	1.973*	44.876
51	78	2.06	4512	1.18	1.745*	33.293
52	80	2.11	4310	1.13	1.873*	37.294
53	77	2.03	4459	1.17	1.743*	32.818
54	75	1.98	4285	1.12	1.766*	32.542

- C224: CU Estimated Speed at Impact
 - C043: Agency ORI
 - C233: CU Point of Initial Impact
 - C409: CU Traffic Control
 - C208: CU Model Year
 - C129: CU Vehicle Maneuvers
 - C107: CU Driver Raw Age**
 - C407: CU Roadway Curvature and Grade
 - C106: CU Driver Age
 - C325: CU Driver/Non-Motorist Age
 - C033: Locale
 - C227: CU Vehicle Towed
- Sort by Sum of Max Gain



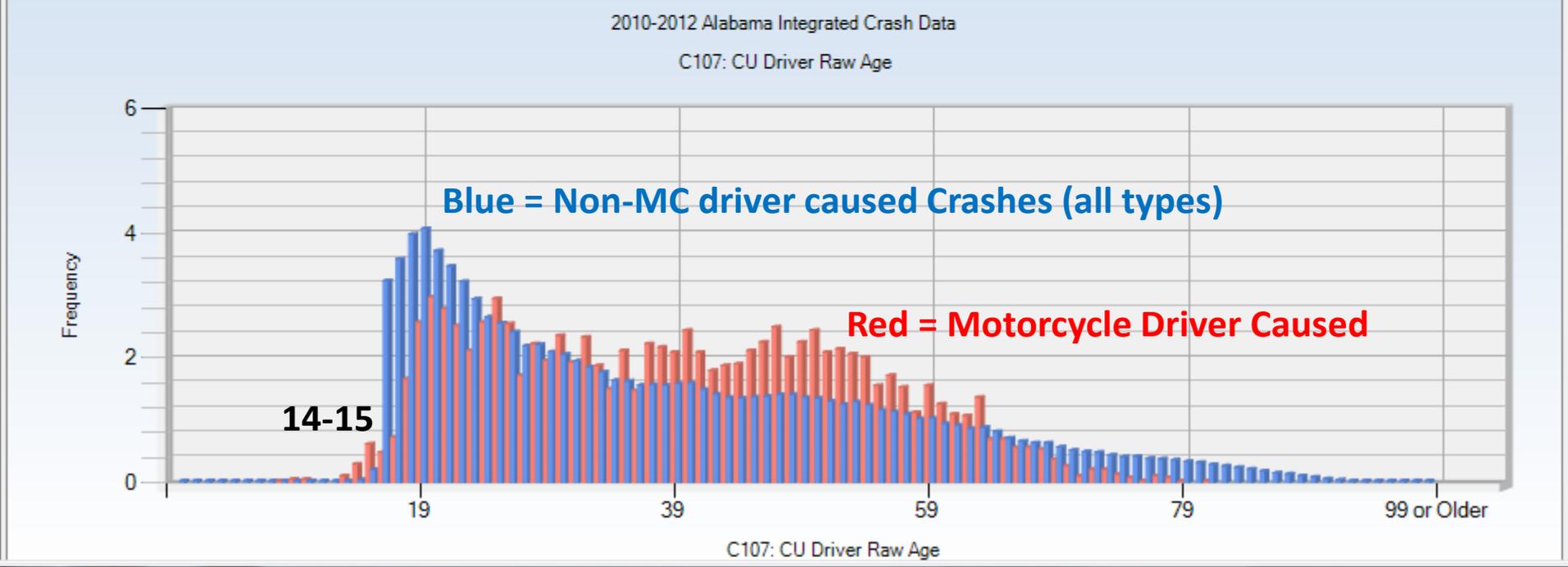
C107: CU Driver Raw Age

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	13	4	0.11	75	0.02	5.011	3.202
	14	11	0.29	157	0.04	6.583	9.329
	15	23	0.62	728	0.21	2.969*	15.252
	16	18	0.48	11347	3.24	0.149	-102.761
	17	27	0.72	12571	3.59	0.202*	-106.788
	18	62	1.66	13966	3.98	0.417*	-86.634
	19	96	2.57	14274	4.07	0.632*	-55.912

C107: CU Driver Raw Age

**14-15 Caused
34 Crashes
Involved in
49 Crashes**

Sort by Sum of Max Gain

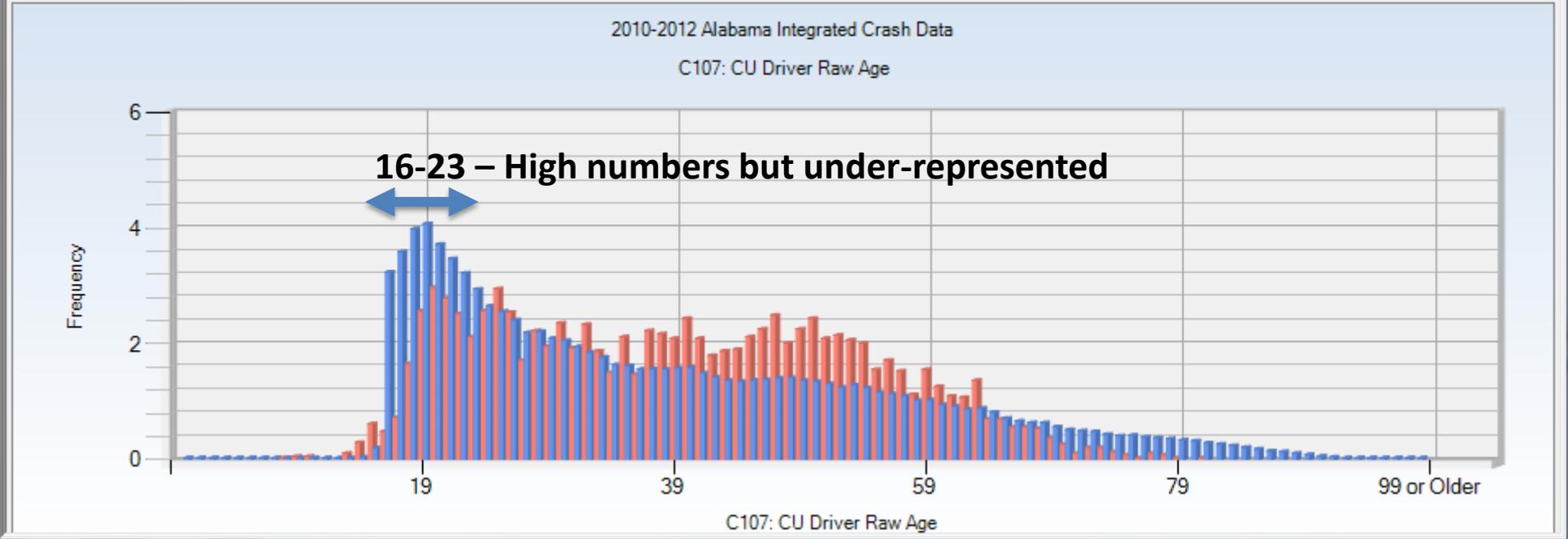


	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	16	18	0.48	11347	3.24	0.149	-102.761
	17	27	0.72	12571	3.59	0.202*	-106.788
	18	62	1.66	13966	3.98	0.417*	-86.634
	19	96	2.57	14274	4.07	0.632*	-55.912
	20	111	2.98	13031	3.72	0.800*	-27.683
	21	104	2.79	12168	3.47	0.803	-25.499
	22	94	2.52	11294	3.22	0.782*	-26.197
	23	79	2.12	10321	2.94	0.719*	-30.842

C107: CU Driver Raw Age

Sort by Sum of Max Gain

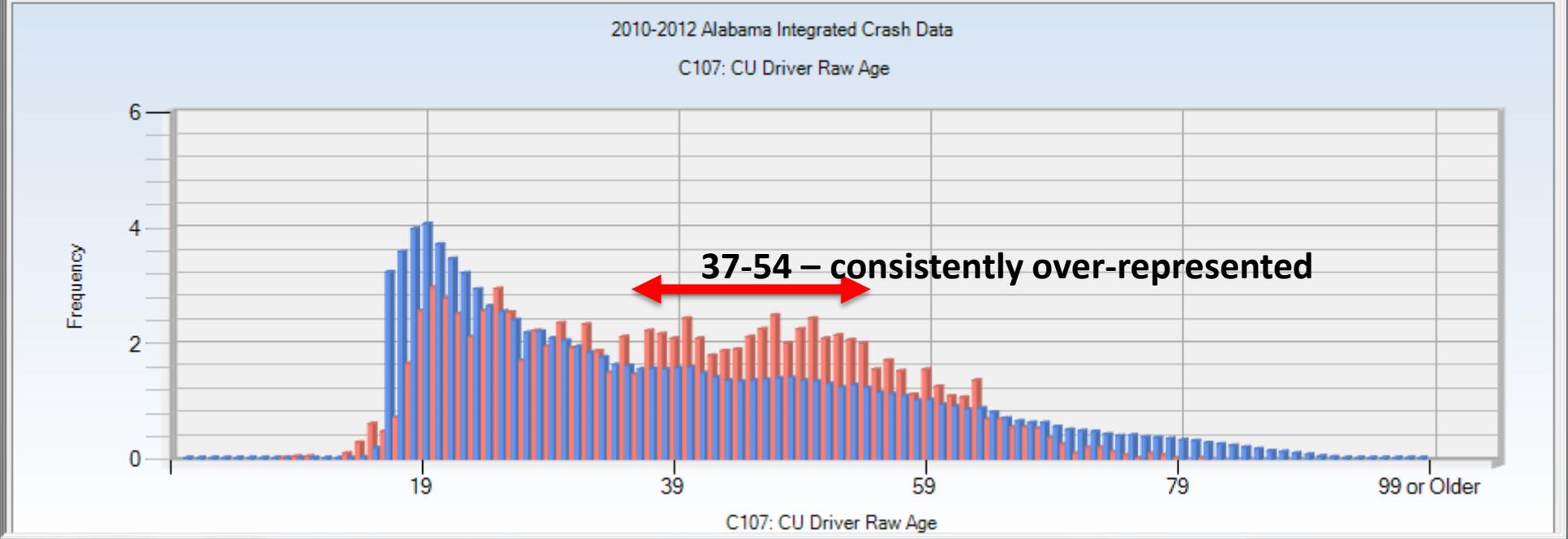
Display Filter Name



	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	47	93	2.49	4948	1.41	1.766*	40.341
	48	75	2.01	4959	1.41	1.421*	22.223
	49	84	2.25	4796	1.37	1.646*	32.958
	50	91	2.44	4746	1.35	1.802*	40.490
	51	78	2.09	4590	1.31	1.597*	29.151
	52	80	2.14	4390	1.25	1.712*	33.279
	53	77	2.06	4536	1.29	1.595*	28.725
	54	75	2.01	4360	1.24	1.616*	28.598

C107: CU Driver Raw Age

Sort by Sum of Max Gain



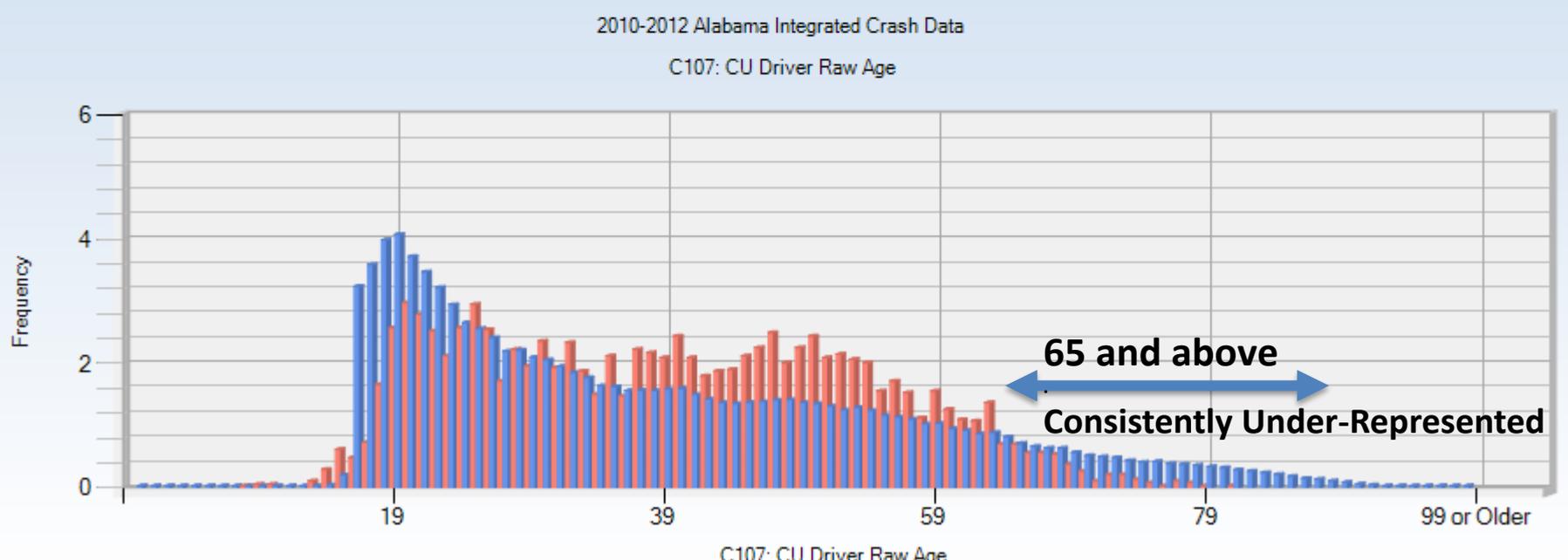
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
58	42	1.13	3591	1.02	1.099	3.783
59	58	1.55	3615	1.03	1.508*	19.527
60	47	1.26	3323	0.95	1.329	11.635
61	41	1.10	3222	0.92	1.196	6.710
62	40	1.07	3042	0.87	1.236	7.625
63	51	1.37	3103	0.89	1.544*	17.976
64	26	0.70	2869	0.82	0.852	-4.534
65	26	0.70	2508	0.72	0.974	-0.692

C107: CU Driver Raw Age

Sort by Sum of Max Gain

Display Filter Name



MC Causal Driver Characteristics

Gender



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Males cause how many more MC driver
caused crashes than females?

5 times

10 times

15 times

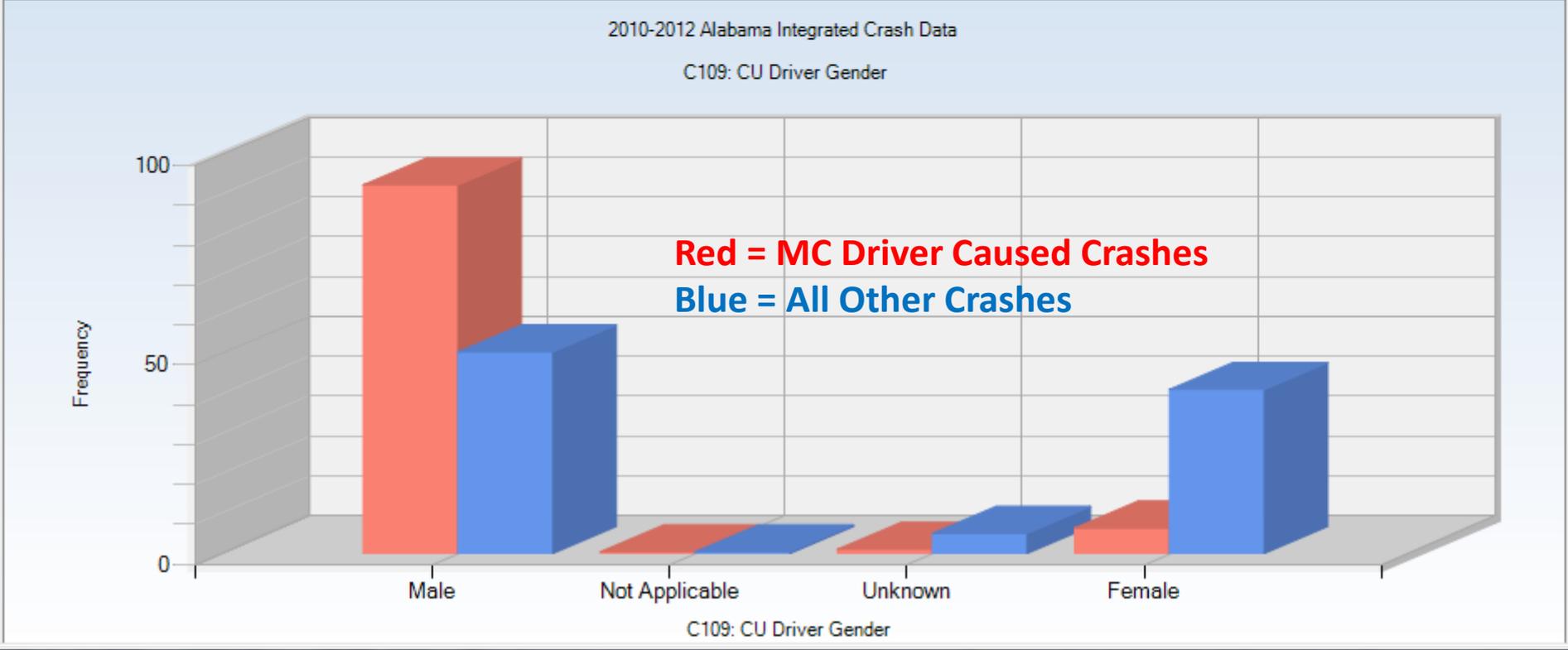
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C109: CU Driver Gender

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Male	3507	92.51	193560	50.59	1.829*	1589.102
Not Applicable	3	0.08	671	0.18	0.451	-3.649
Unknown	39	1.03	19174	5.01	0.205*	-150.986
Female	242	6.38	157425	41.15	0.155*	-1317.853

- C023: E Manner of Crash
 - C109: CU Driver Gender**
 - C326: CU Driver/Non-Motorist Gender
 - C015: Primary Contributing Circumstance
 - C202: CU Contributing Circumstance
 - C113: CU Driver Second License Class
 - C230: CU Areas Damaged #1
 - C205: E CU Sequence of Events #2
 - C231: E CU Areas Damaged #2
- Sort by Sum of Max Gain

3507/242 = 14.5



MC Caused Crash Characteristics

Number of Vehicles

How likely are MC driver caused crashes to be “single vehicle” as compared to other crashes?

About the same

Twice as likely

Three times as likely

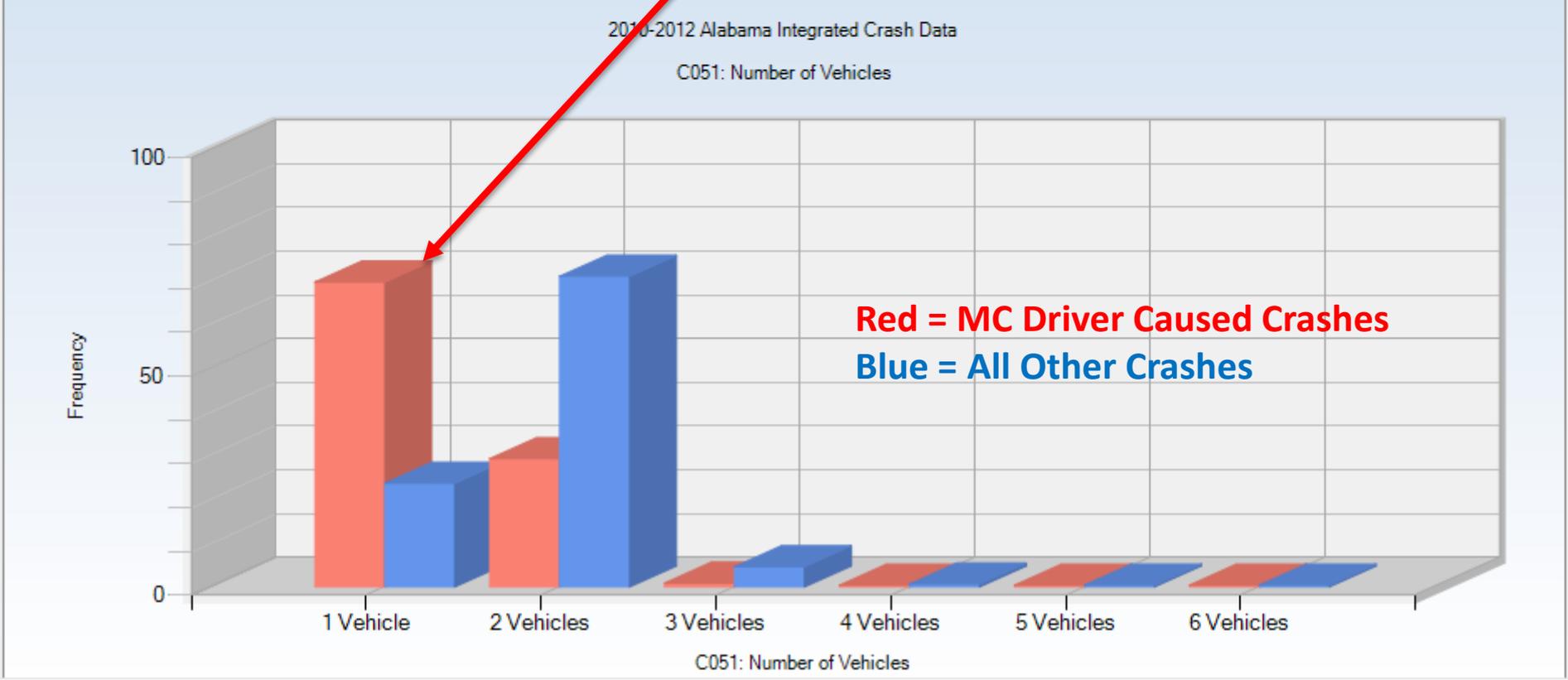
Order: Natural Order Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C051: Number of Vehicles

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	1 Vehicle	2641	69.66	90595	23.68	2.942*	1743.368
	2 Vehicles	1111	29.31	271567	70.98	0.413*	-1579.736
	3 Vehicles	33	0.87	17647	4.61	0.189*	-141.850
	4 Vehicles	3	0.08	2365	0.62	0.128	-20.433
	5 Vehicles	1	0.03	321	0.08	0.314	-2.181
	6 Vehicles	2	0.05	80	0.02	2.523	1.207

- C505: V2 Left Scene
 - C037: EMS Arrival Delay
 - C051: Number of Vehicles
 - C510: V2 Driver Residence Distance
 - C053: Number of Persons Recorded
 - C054: Number of Motorists Recorded
 - C052: Number of Drivers Recorded
 - C023: E Manner of Crash
- Sort by Sum of Max Gain

Display Filter Name



MC Caused Crash Characteristics

Primary Contributing Circumstance

Which of the following is the most often cited PCC for MC driver caused crashes?

Speed

Aggressive Driving

Swerve

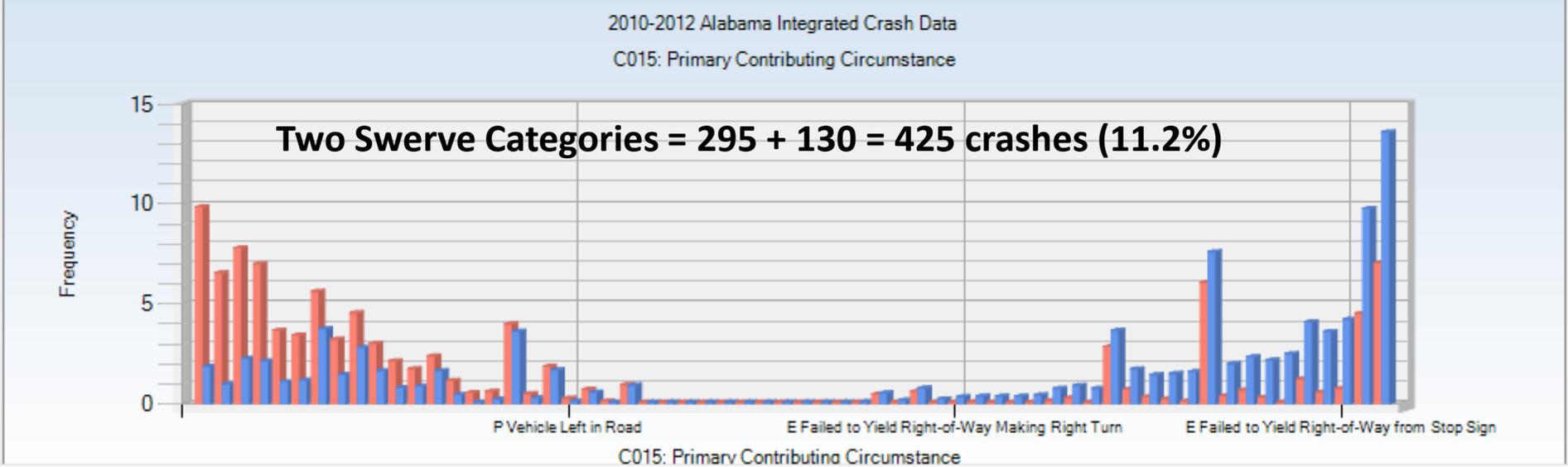
Run Off the Road

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C015: Primary Contributing Circumstance

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	Over Speed Limit	373	9.84	7153	1.87	5.263*	302.127
	E Aggressive Operation	248	6.54	3794	0.99	6.597*	210.408
→	E Swerved to Avoid Vehicle	295	7.78	8653	2.26	3.441*	209.264
	E Ran off Road	265	6.99	8206	2.14	3.259*	183.693
	E Other - No Improper Driving	139	3.67	4205	1.10	3.336*	97.336
→	E Swerved to Avoid Animal	130	3.43	4497	1.18	2.918*	85.443
	DUI	213	5.62	14349	3.75	1.498*	70.827
	E Other Improper Action	122	3.22	5599	1.46	2.199*	66.524
	Other	172	4.54	10755	2.81	1.614*	65.437
	Defective Equipment	114	3.01	6320	1.65	1.821*	51.380
	E Over Correcting/Over Ste...	81	2.14	3080	0.80	2.654*	50.483
▶	Improper Passing	66	1.74	3339	0.87	1.995*	32.917

- C023: E Manner of Crash
 - C109: CU Driver Gender
 - C326: CU Driver/Non-Motorist Gender
 - C015: Primary Contributing Circumstance**
 - C202: CU Contributing Circumstance
 - C113: CU Driver Second License Class
 - C230: CU Areas Damaged #1
 - C205: E CU Sequence of Events #2
 - C231: E CU Areas Damaged #2
 - C232: E CU Areas Damaged #3
 - C002: City
 - C224: CU Estimated Speed at Impact
 - C043: Agency ORI
 - C233: CU Point of Initial Impact
 - C409: CU Traffic Control
- Sort by Sum of Max Gain



MC Crash Characteristics

First Harmful Event

True or False:

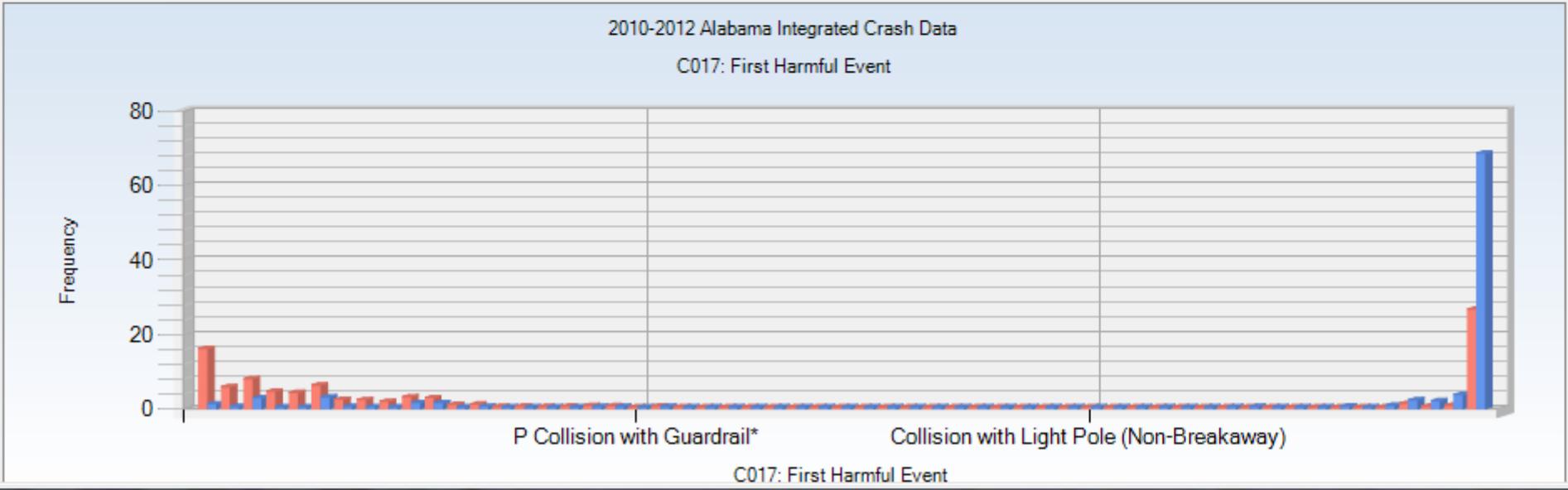
First harmful events for MC driver caused crashes are quite similar to those for non-MC crashes.

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C017: First Harmful Event

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Overtum/Rollover	612	16.15	4968	1.30	12.430*	562.765
E Evasive Action (Swerve/...	222	5.86	2296	0.60	9.756*	199.246
E Ran Off Road Right	304	8.02	11056	2.89	2.774*	194.430
E Other Non-Collision	178	4.70	712	0.19	25.226*	170.944
E Fell/Jumped from Motor V...	165	4.35	102	0.03	163.227*	163.989
Collision with Ditch	240	6.33	11931	3.12	2.030*	121.759
Collision with Other Fixed O...	95	2.51	2354	0.62	4.072*	71.671
E Collision with Curb/Island/...	91	2.40	1959	0.51	4.687*	71.585
E Collision with Animal: Other	74	1.95	765	0.20	9.761*	66.419
E Ran Off Road Left	120	3.17	6136	1.60	1.973*	59.190
E Collision with Animal: Deer	112	2.96	6005	1.57	1.882*	52.488
Other	43	1.13	273	0.07	15.893*	40.294

- C025: Crash Severity
 - C330: CU Driver/Non-Motorist Transport Immedi
 - C058: Number Injured (Non-Fatal)
 - C017: First Harmful Event**
 - C201: CU Vehicle Most Harmful Event
 - C501: Vehicle 2 (V2) Type
 - C019: E Most Harmful Event
 - C204: E CU Sequence of Events #1
 - C505: V2 Left Scene
 - C037: EMS Arrival Delay
 - C051: Number of Vehicles
 - C510: V2 Driver Residence Distance
 - [C053: Number of Persons Recorded](#)
 - C054: Number of Motorists Recorded
 - C052: Number of Drivers Recorded
- Sort by Sum of Max Gain



MC Crash Characteristics

Vehicle Maneuver

True or False:

Curves seem to be particularly problematic for motorcycles.

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C407: CU Roadway Curvature and Grade

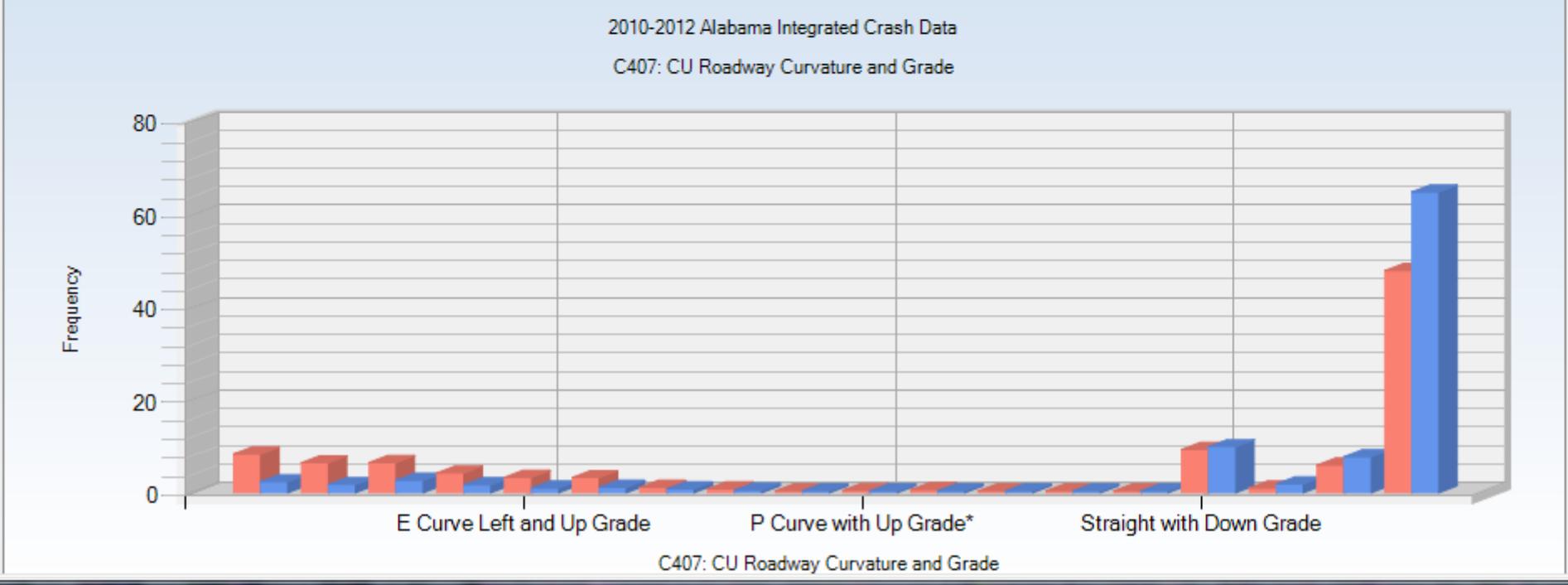
	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	E Curve Left and Level	316	8.34	9055	2.37	3.518*	226.174
	E Curve Left and Down Gra...	244	6.44	6681	1.75	3.682*	177.724
	E Curve Right and Level	246	6.49	10178	2.66	2.436*	145.034
	E Curve Right and Down Gr...	160	4.22	6410	1.68	2.516*	96.413
	E Curve Left and Up Grade	125	3.30	3808	1.00	3.309*	87.224
	E Curve Right and Up Grade	123	3.25	4406	1.15	2.814*	79.292
	Straight at Hillcrest	43	1.13	3012	0.79	1.439*	13.121
	P Curve and Level*	31	0.82	2024	0.53	1.544*	10.922
	E Curve Right at Hillcrest	14	0.37	352	0.09	4.009	10.508

C224: CU Estimated Speed at Impact
 C043: Agency ORI
 C233: CU Point of Initial Impact
 C409: CU Traffic Control
 C208: CU Model Year
 C129: CU Vehicle Maneuvers
 C107: CU Driver Raw Age
C407: CU Roadway Curvature and Grade
 C106: CU Driver Age
 C325: CU Driver/Non-Motorist Age
 C033: Locale
[C227: CU Vehicle Towed](#)

Sort by Sum of Max Gain



Display Filter Name





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MC Caused Crash Characteristics

Severity Causation

True or False:

Failure to wear MC helmets is the major cause of MC fatalities in Alabama.

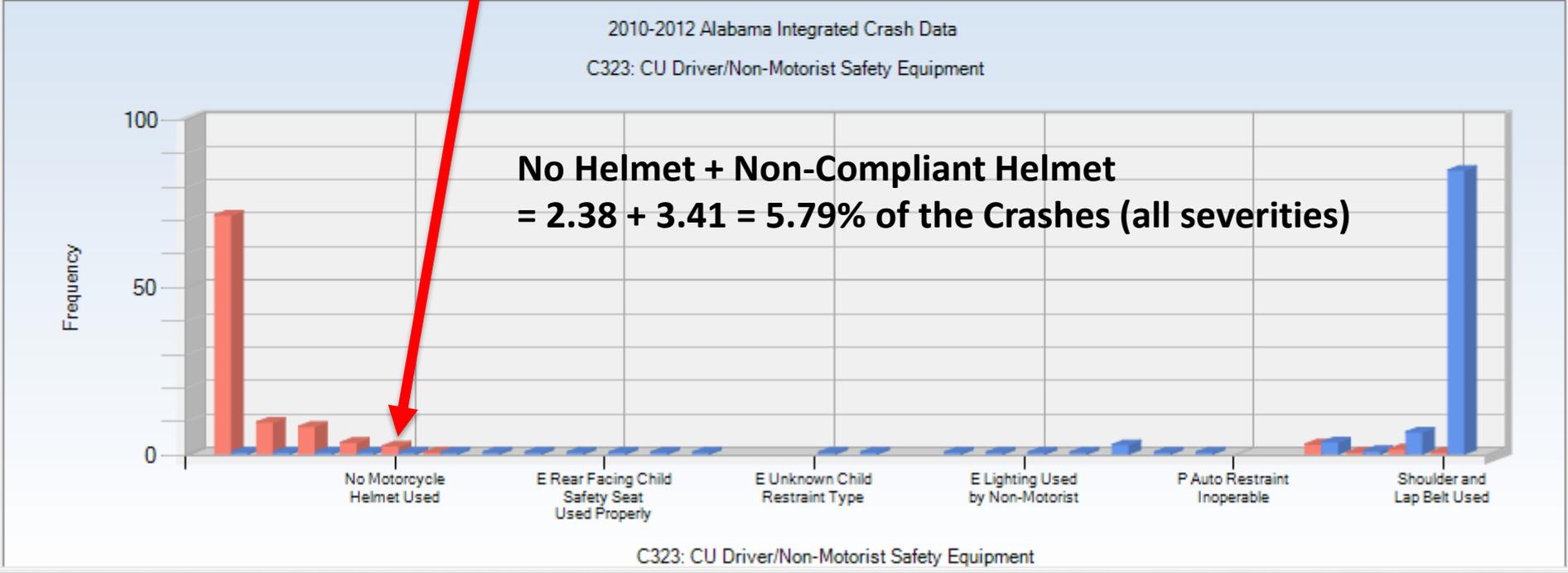
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C323: CU Driver/Non-Motorist Safety Equipment

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Dot-Compliant Motorcycle H...	2699	71.29	108	0.03	2496.031*	2697.919
E Helmet Used	358	9.46	25	0.01	1430.256*	357.750
Not Applicable	311	8.21	1838	0.49	16.900*	292.598
E Other Motorcycle Helmet ...	129	3.41	12	0.00	1073.691	128.880
No Motorcycle Helmet Used	90	2.38	132	0.03	68.099*	88.678
Other	12	0.32	815	0.22	1.471	3.840
Lap Belt Only Used	0	0.00	1323	0.35	0.000	0.000
Shoulder Belt Only Used	0	0.00	987	0.26	0.000	0.000
E Forward Facing Child Saf...	0	0.00	10	0.00	0.000	0.000

- C101: Causal Unit (CU) Type
 - C323: CU Driver/Non-Motorist Safety Equipment
 - C209: CU Make
 - C324: CU Driver Airbag Status
 - C321: CU Driver/Non-Motorist Seating Position
 - C210: CU Body (Passenger Cars Only)
 - C328: CU Driver/Non-Motorist Injury Type
 - C327: CU Driver Ejection Status
 - C331: E CU Driver/Non-Motorist Transport Type
 - C329: CU Driver/Non-Motorist First Aid By
 - C059: Number Injured (Includes Fatalities)
 - C025: Crash Severity
- Sort by Sum of Max Gain

Display Filter Name



CARE 10.0.0.23 - [Crosstab Results - 2010-2012 Alabama Integrated Crash Data - Filter = Motorcycle Caused]

File Dashboard Filters Analysis Crosstab Locations Tools Window Help

Data Source: 2010-2012 Alabama Integrated Crash Data Filter: Motorcycle Caused 1/ 1/2010

Suppress Zero Values: Rows and Columns Select Cells: Column: Crash Severity ; Row: CU Driver/Non-Motorist Safety Equipment

	Fatal Injury	Incapacitating Injury	Non-Incapacitating Inju	Possible Injury	Property Damage Only	Unknown	TOTAL
Null value	0	0	0	1	4	0	5
	0.00%	0.00%	0.00%	0.40%	0.48%	0.00%	0.13%
None Used - Motor Vehicle Occupant	4	27	37	8	29	6	111
	2.05%	2.32%	2.92%	3.23%	3.48%	7.59%	2.93%
Shoulder and Lap Belt Used	0	4	2	2	6	0	14
	0.00%	0.34%	0.16%	0.81%	0.72%	0.00%	0.37%
Dot-Compliant Motorcycle Helmet Used	128	878	922	167	567	37	2699
	65.64%	75.30%	72.66%	67.34%	67.99%	46.84%	71.19%
E Helmet Used	16	102	123	29	80	8	358
	8.21%	8.75%	9.69%	11.69%	9.59%	10.13%	9.44%
E Other Motorcycle Helmet Used	23	40	36	7	19	4	129
	11.79%	3.43%	2.84%	2.82%	2.28%	5.06%	3.40%
No Motorcycle Helmet Used	13	36	26	3	11	1	90
	6.67%	3.09%	2.05%	1.21%	1.32%	1.27%	2.37%
Other	1	1	4	2	3	1	12
	0.51%	0.09%	0.32%	0.81%	0.36%	1.27%	0.32%
Unknown	1	14	8	4	24	5	56
	0.51%	1.20%	0.63%	1.61%	2.88%	6.33%	1.48%
Not Applicable	9	63	110	25	89	15	311
	4.62%	5.40%	8.67%	10.08%	10.67%	18.99%	8.20%
E CU Driver Not Recorded	0	1	1	0	2	2	6
	0.00%	0.09%	0.08%	0.00%	0.24%	2.53%	0.16%
TOTAL	195	1166	1269	248	834	79	3791
	5.14%	30.76%	33.47%	6.54%	22.00%	2.08%	100.00%

Fatal Odds
1:21
1:22
1:5.6
1:7

Percent of Fatalities: None Used = 7.22%; Non-Compliant Used = 12.78%

MC Driver Caused Crash Locations

Rural/Urban

True or False:

MC driver caused crashes occur in the rural areas at almost twice their expected rate.

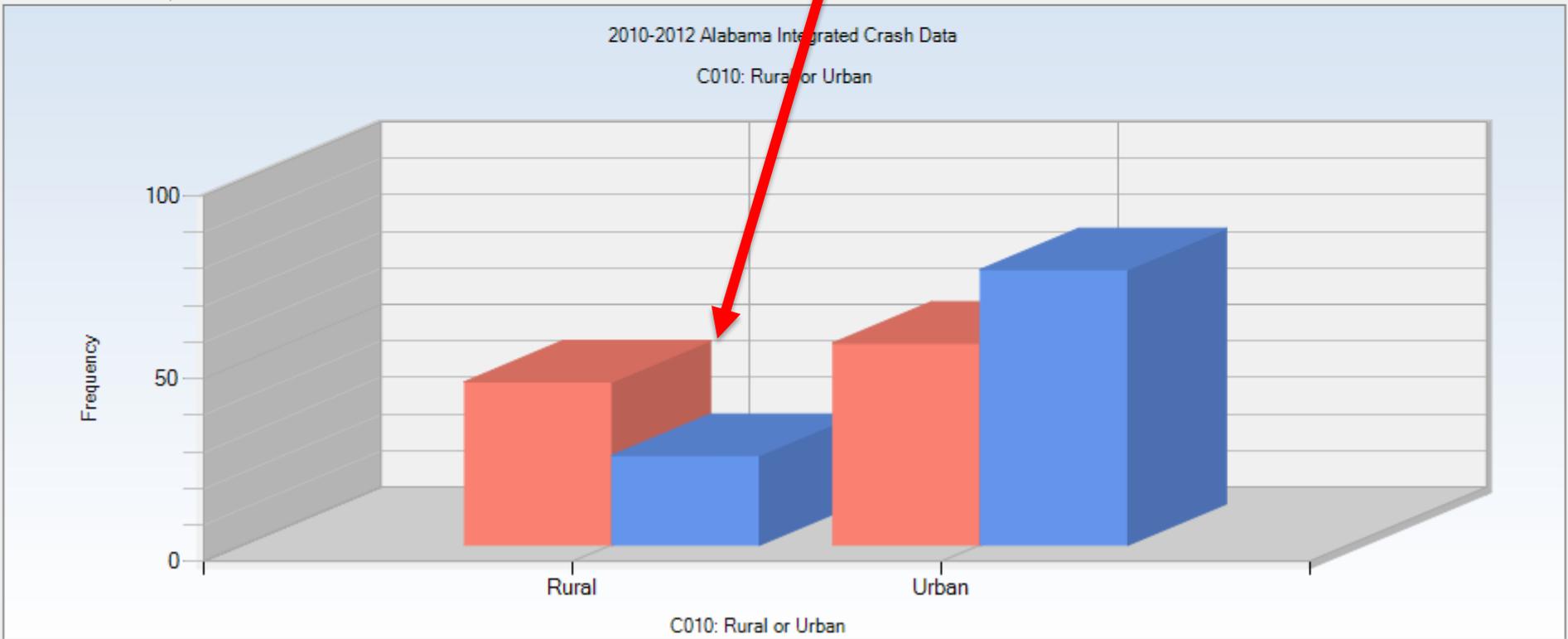
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C010: Rural or Urban

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Rural	1694	44.68	94019	24.57	1.818*	762.442
	Urban	2097	55.32	288594	75.43	0.733*	-762.442

- C407: CU Roadway Curvature and Grade
 - C106: CU Driver Age
 - C325: CU Driver/Non-Motorist Age
 - C033: Locale
 - C227: CU Vehicle Towed
 - C211: E CU Owners State
 - C413: E CU Turn Lanes
 - C010: Rural or Urban**
 - C412: CU Trafficway Lanes
 - C045: HasGPS
- Sort by Sum of Max Gain

Display Filter Name



Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

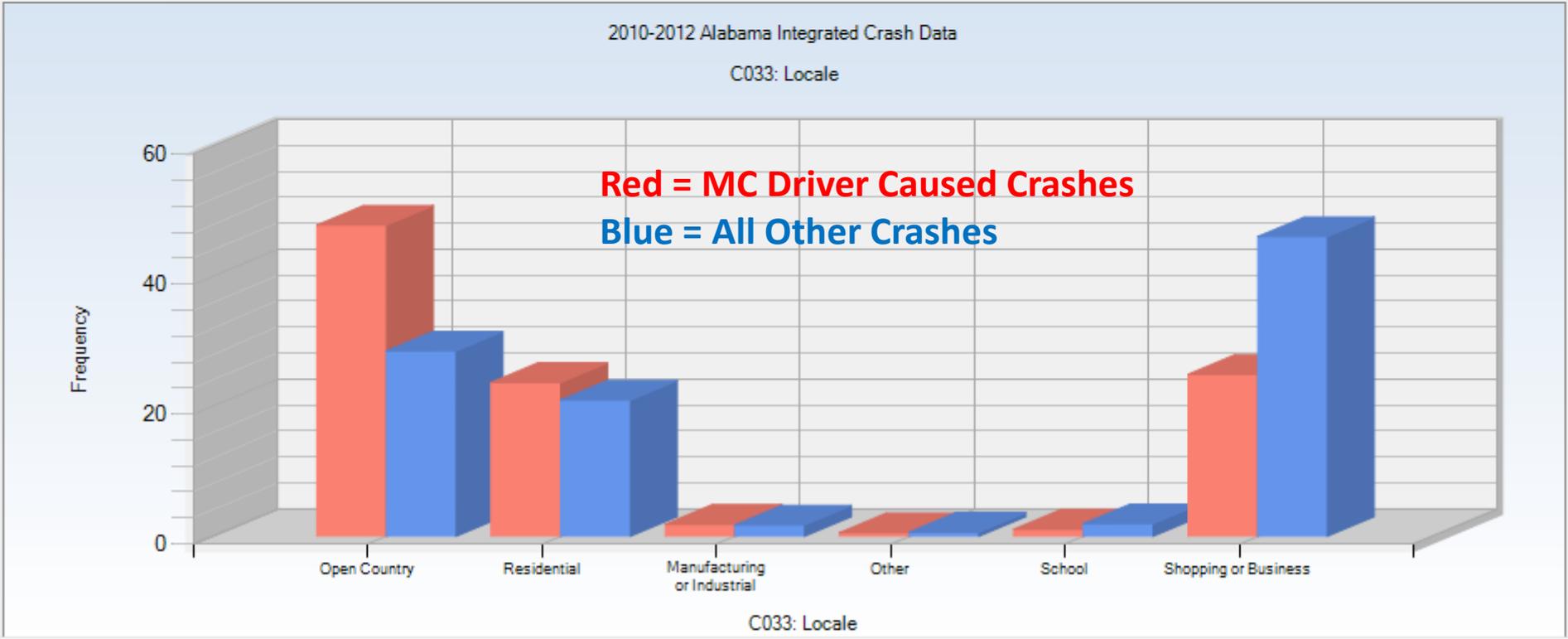
C033: Locale

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	Open Country	1811	47.95	108505	28.55	1.679*	732.498
	Residential	895	23.70	79709	20.98	1.130*	102.720
	Manufacturing or Industrial	69	1.83	6523	1.72	1.064	4.164
	Other	20	0.53	2323	0.61	0.866	-3.090
	School	40	1.06	7311	1.92	0.550*	-32.669
	Shopping or Business	942	24.94	175439	46.17	0.540*	-801.803

- C407: CU Roadway Curvature and Grade
 - C106: CU Driver Age
 - C325: CU Driver/Non-Motorist Age
 - C033: Locale
 - C227: CU Vehicle Towed
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 - C045: HasGPS
- Sort by Sum of Max Gain



Display Filter Name

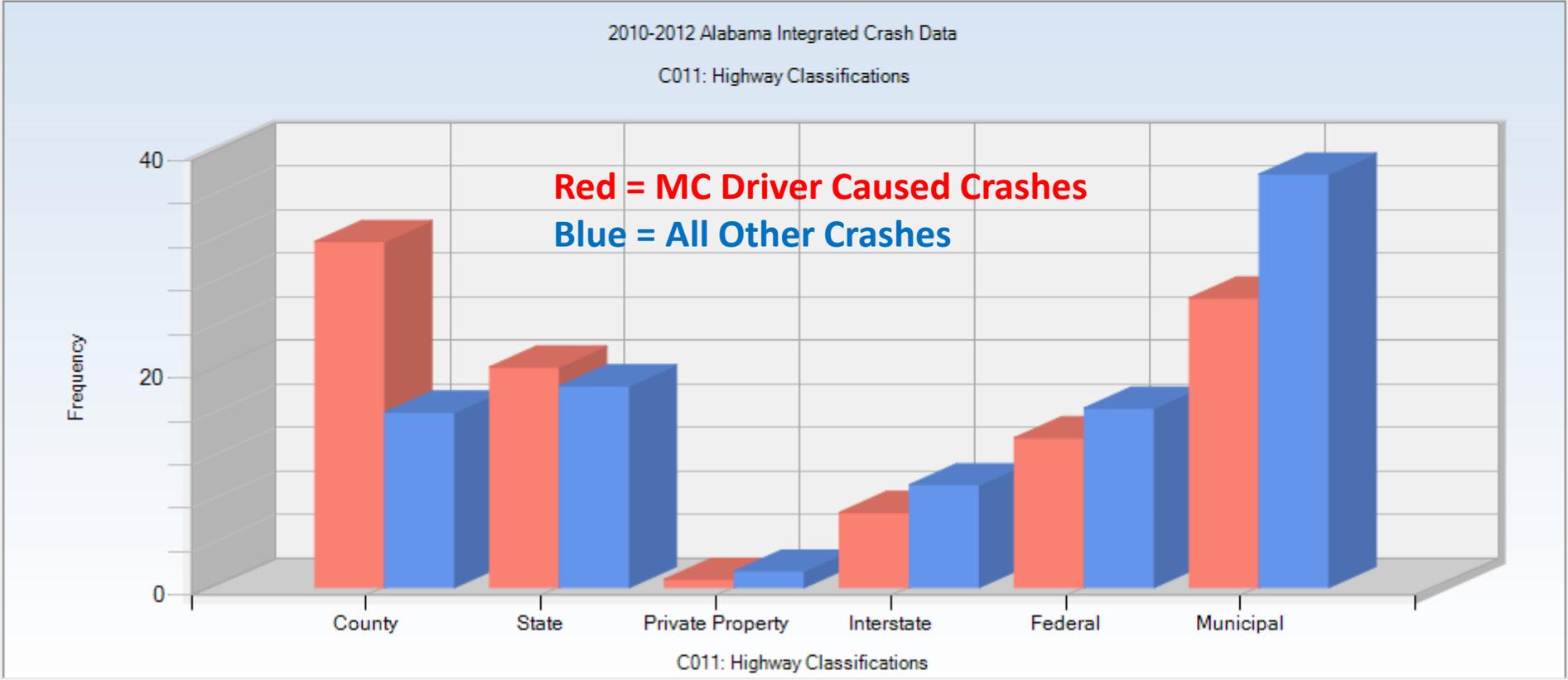


Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C011: Highway Classifications

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	County	1205	31.79	61590	16.10	1.975*	594.755
	State	768	20.26	70851	18.52	1.094*	65.995
▶	Private Property	28	0.74	5717	1.49	0.494*	-28.645
	Interstate	261	6.88	36055	9.42	0.731*	-96.240
	Federal	521	13.74	63053	16.48	0.834*	-103.741
	Municipal	1008	26.59	145298	37.98	0.700*	-431.639

- C010: Rural or Urban
 - C412: CU Trafficway Lanes
 - C045: HasGPS
 - C011: Highway Classifications**
 - C226: CU Vehicle Damage
 - C027: At Intersection
 - C014: Distance from Node 1
 - C108: CU Driver Race
- Sort by Sum of Max Gain



MC Driver Caused Crash Locations Intersections

True or False:

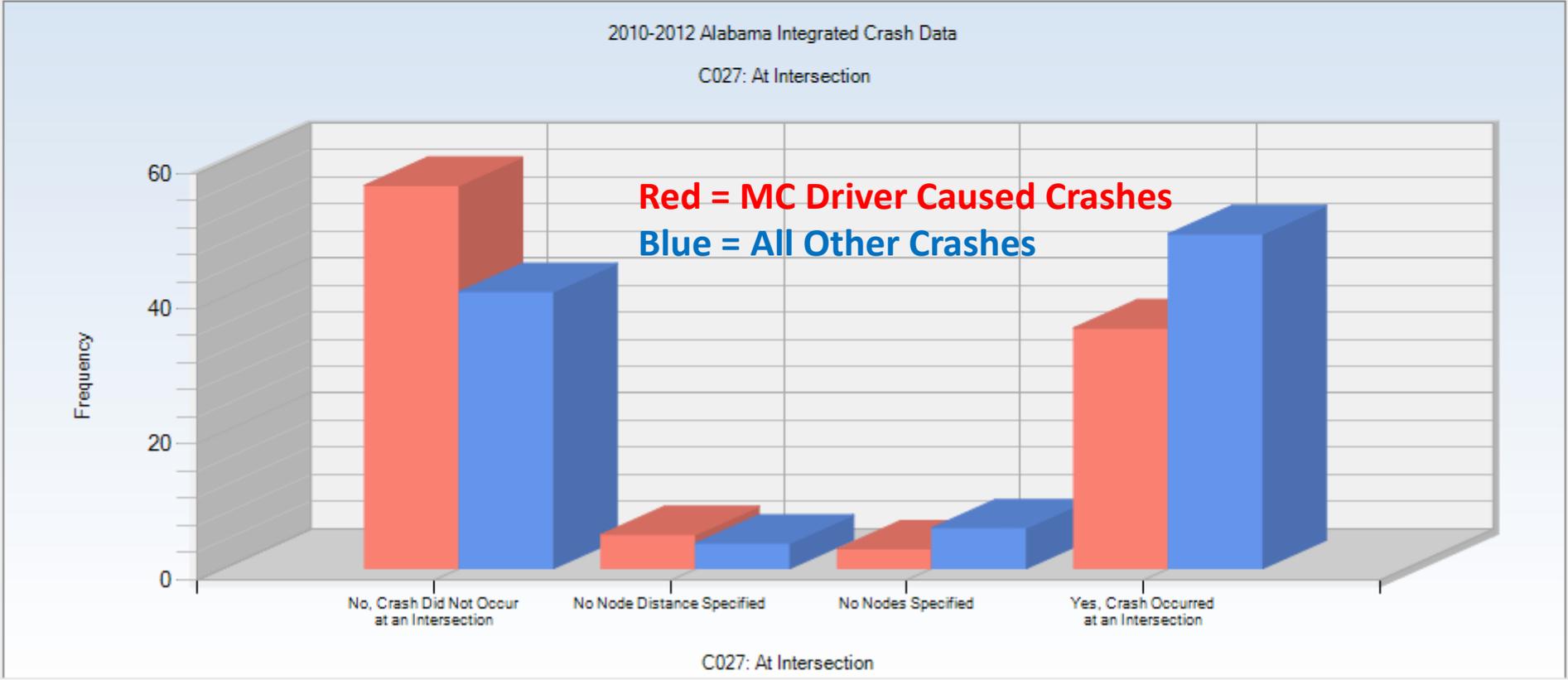
MC driver caused crashes tend to occur at intersections more than non-MC crashes do.

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C027: At Intersection

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	No, Crash Did Not Occur at ...	2146	56.61	156438	40.89	1.385*	595.984
	No Node Distance Specified	189	4.99	14210	3.71	1.342*	48.205
▶	No Nodes Specified	109	2.88	22855	5.97	0.481*	-117.452
	Yes, Crash Occured at an In...	1347	35.53	189110	49.43	0.719*	-526.737

- C010: Rural or Urban
 - C412: CU Trafficway Lanes
 - C045: HasGPS
 - C011: Highway Classifications
 - C226: CU Vehicle Damage
 - C027: At Intersection**
 - C014: Distance from Node 1
 - C108: CU Driver Race
- Sort by Sum of Max Gain



MC Driver Caused Crash Locations

Location WRT the Roadway

True or False:

Many more MC driver caused crashes occur off the roadway than would be expected.

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

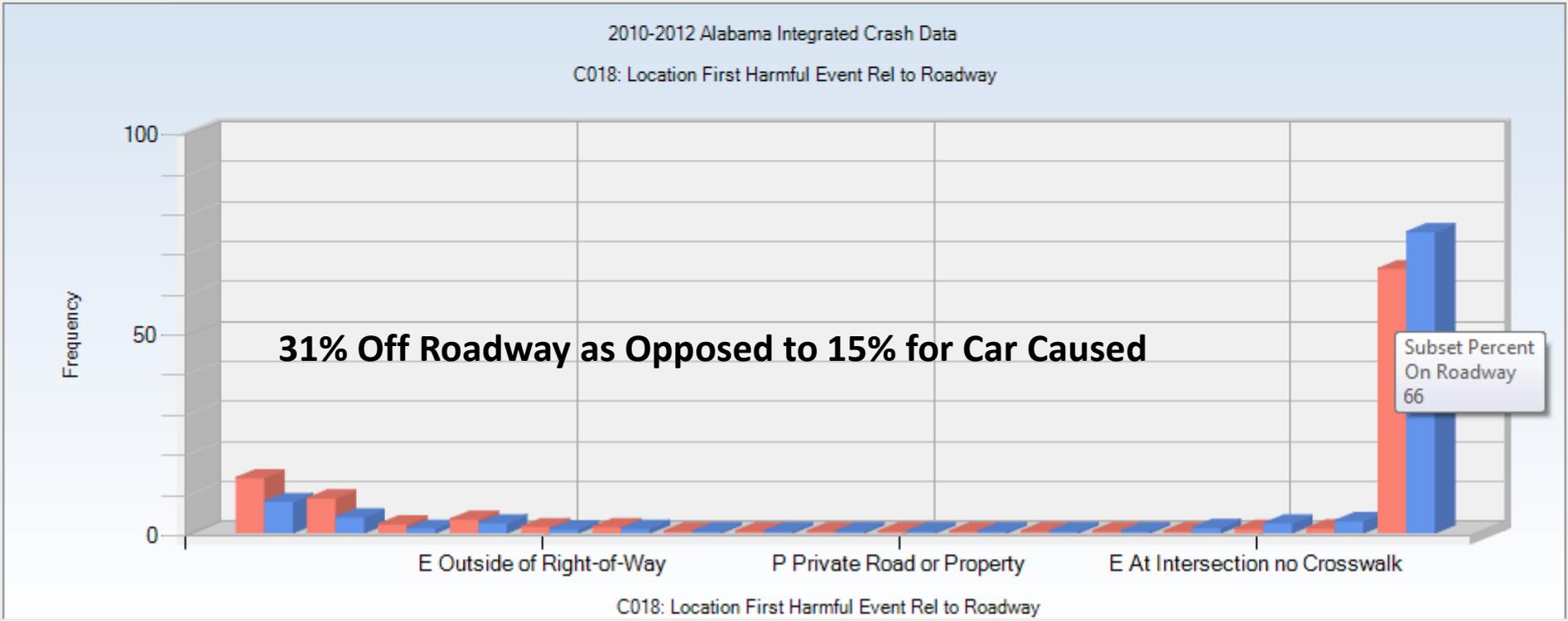
C018: Location First Harmful Event Rel to Roadway

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Roadside	521	13.74	29821	7.79	1.763*	225.528
E Shoulder	327	8.63	14936	3.90	2.210*	179.011
E Off Roadway - Location U...	83	2.19	4313	1.13	1.942*	40.266
Off Roadway	128	3.38	9343	2.44	1.383*	35.428
E Outside of Right-of-Way	58	1.53	3543	0.93	1.652*	22.895
Median	56	1.48	4264	1.11	1.325	13.752
Other	12	0.32	855	0.22	1.417	3.529
Unknown	3	0.08	115	0.03	2.633	1.861

C032: Weather

- C018: Location First Harmful Event Rel to Roadway
 - C203: CU First Harmful Event Location
 - C410: CU Traffic Control Functioning
 - C223: CU Speed Limit
 - C036: Police Arrival Delay
 - C022: E Type of Roadway Junction/Feature
 - C028: Mileposted Route
 - C213: CU Vehicle Usage
 - C215: E CU Placard Required
- Sort by Sum of Max Gain

Display Filter Name



MC Caused Crash Special Issues

Alcohol/Drug – Impaired Driving

True or False:

MC driver caused crashes involved impaired driving close to twice that of other vehicle caused crashes.

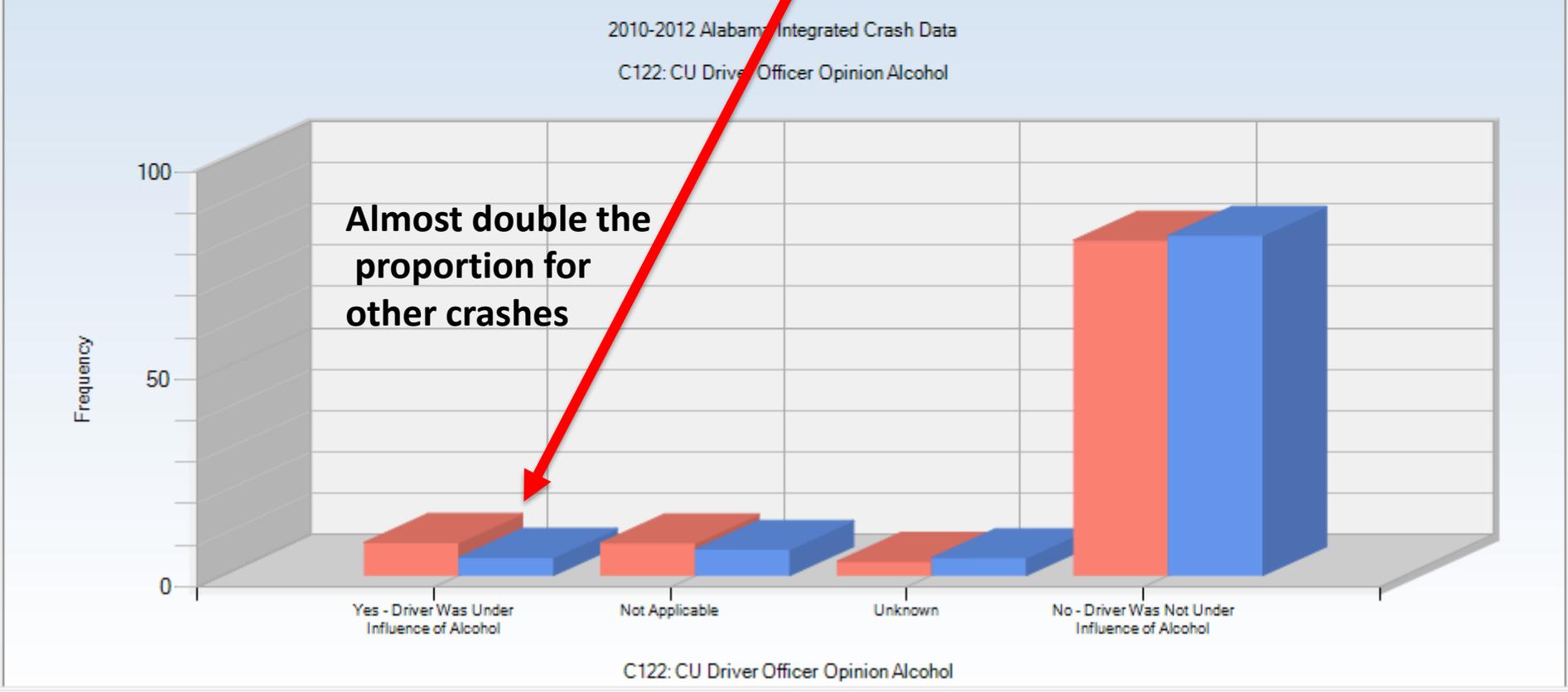
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C122: CU Driver Officer Opinion Alcohol

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	Yes - Driver Was Under Infl...	300	7.92	16567	4.33	1.829*	135.932
	Not Applicable	296	7.81	23977	6.27	1.247*	58.548
▶	Unknown	127	3.35	16189	4.23	0.792*	-33.325
	No - Driver Was Not Under I...	3066	80.92	314002	82.07	0.986	-43.662

- C016: Primary Contributing Unit Number
 - C021: Distance to Fixed Object
 - C012: Controlled Access
 - C122: CU Driver Officer Opinion Alcohol**
 - C080: CMV Involved
 - C005: Day of Month
 - C034: E Police Present at Time of Crash
 - C009: Data Source
- Sort by Sum of Max Gain

Display Filter Name





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MC Caused Crash Special Issues

Stuff on the Road

True or False:

MC crashes in general are highly sensitive to things on the roadway.

Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

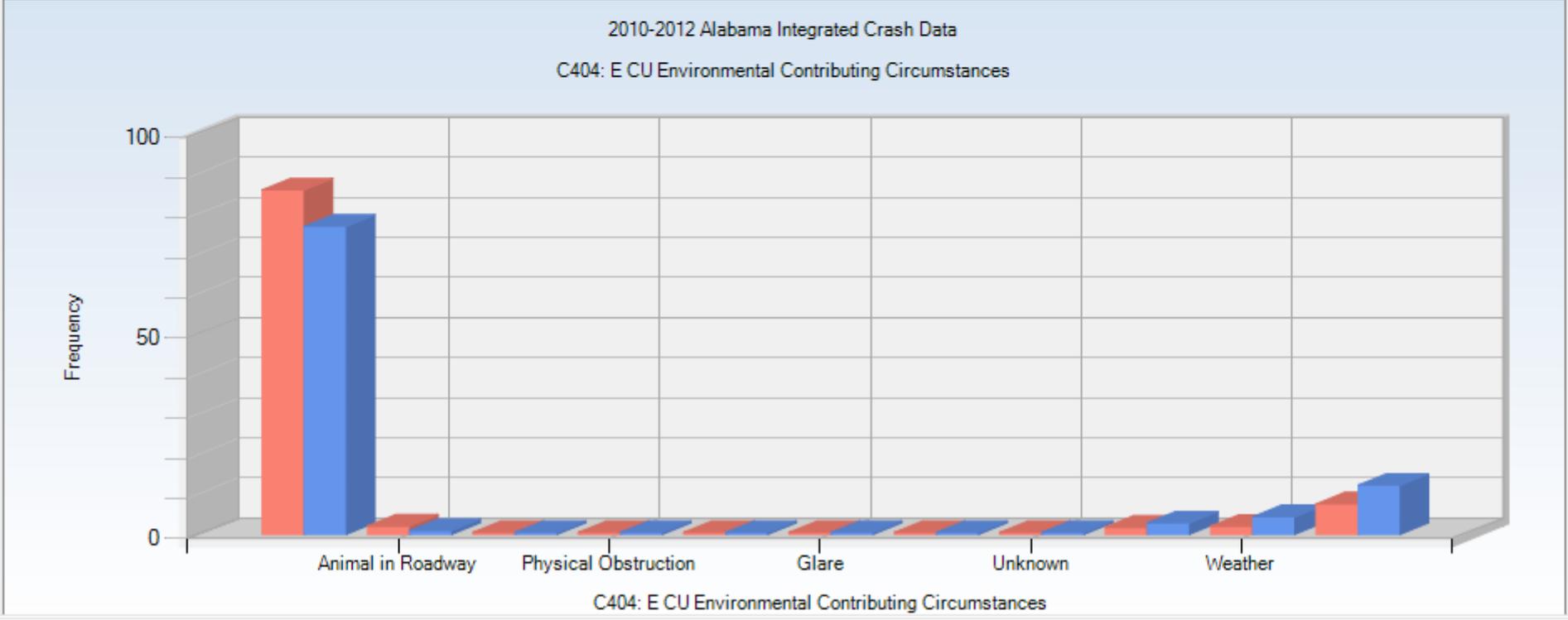
C404: E CU Environmental Contributing Circumstances

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	None Apparent	3256	85.89	293834	76.80	1.118*	344.639
	Animal in Roadway	77	2.03	3478	0.91	2.234*	42.539
	Other	15	0.40	325	0.08	4.658	11.780
	Physical Obstruction	4	0.11	253	0.07	1.596	1.493
	Non-Highway Work	2	0.05	53	0.01	3.809	1.475
	Glare	8	0.21	973	0.25	0.830	-1.641
	Previous Crash	1	0.03	313	0.08	0.322	-2.101
	Unknown	2	0.05	619	0.16	0.326	-4.133

- C215: E CU Placard Required
 - C411: CU Opposing Lane Separation
 - C212: CU License Tag State
 - C404: E CU Environmental Contributing Circumstances**
 - C049: ALDOT Division
 - C120: E CU Driver Employment Status
 - [C456: E CU CMV Cargo Type](#)
 - C465: E CU CMV Motor Carrier Type
 - C455: E CU CMV Vehicle Configuration
 - C457: E CU CMV Cargo Body Type
- Sort by Sum of Max Gain



Display Filter Name



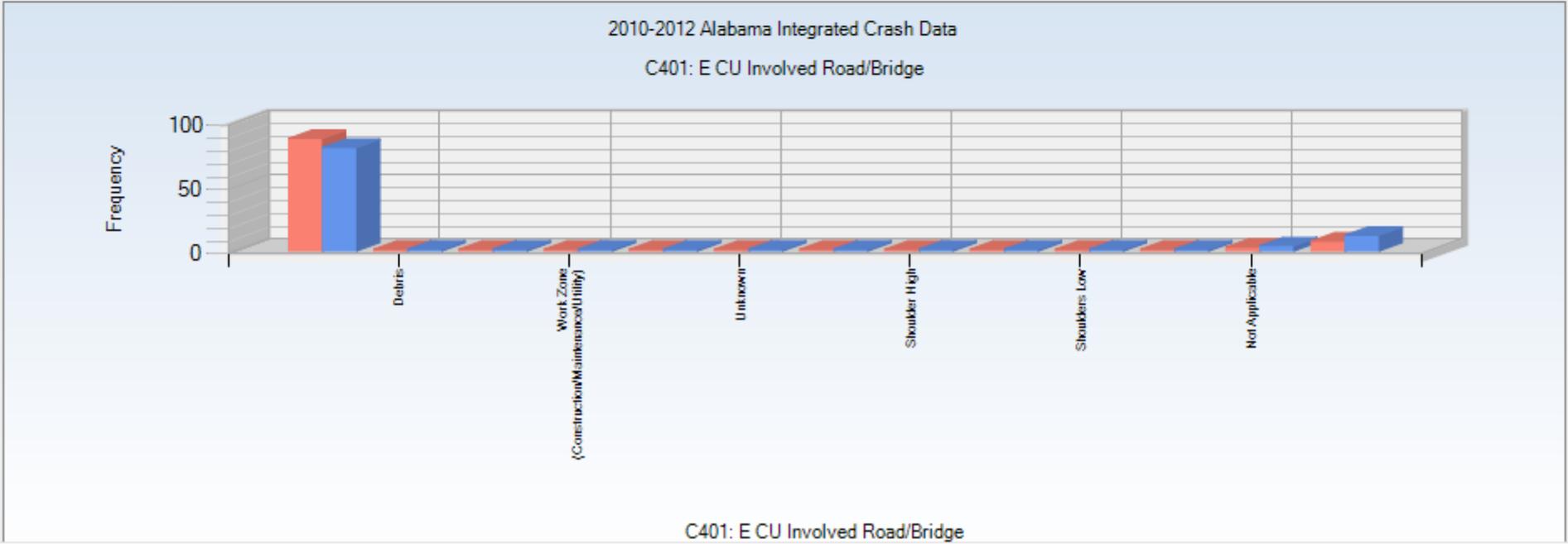
Order: Max Gain Descending Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

C401: E CU Involved Road/Bridge

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	None Apparent	3326	87.73	308812	80.71	1.087*	266.234
	Debris	18	0.47	124	0.03	14.651	16.771
	Ruts/Holes/Bumps	15	0.40	133	0.03	11.383	13.682
	Work Zone (Construction/M...	11	0.29	673	0.18	1.650	4.332
	Non-Highway Work	2	0.05	60	0.02	3.364	1.406
	Unknown	2	0.05	82	0.02	2.462	1.188
	Road Surface Condition (W...	17	0.45	1603	0.42	1.070	1.117
	Shoulder High	1	0.03	21	0.01	4.806	0.792
	Wom/Travel-Polished Surfa...	1	0.03	28	0.01	3.605	0.723
	Shoulders Low	1	0.03	55	0.01	1.835	0.455

C105: CU Left Scene

- C401: E CU Involved Road/Bridge**
 - C207: E CU Sequence of Events #4
 - C050: ADECA CTSP Region
 - C216: E CU Placard Status
 - C110: CU Driver Residence Distance
 - C416: E CU Workzone Type
 - C220: CU Oversized Load Requiring Permit
 - C417: E CU Workers Present
 - C217: CU Hazardous Cargo
 - C214: E CU Emergency Status
 - C013: E Highway Side
 - C116: CU DL Restriction Violations #1
- Sort by Sum of Max Gain

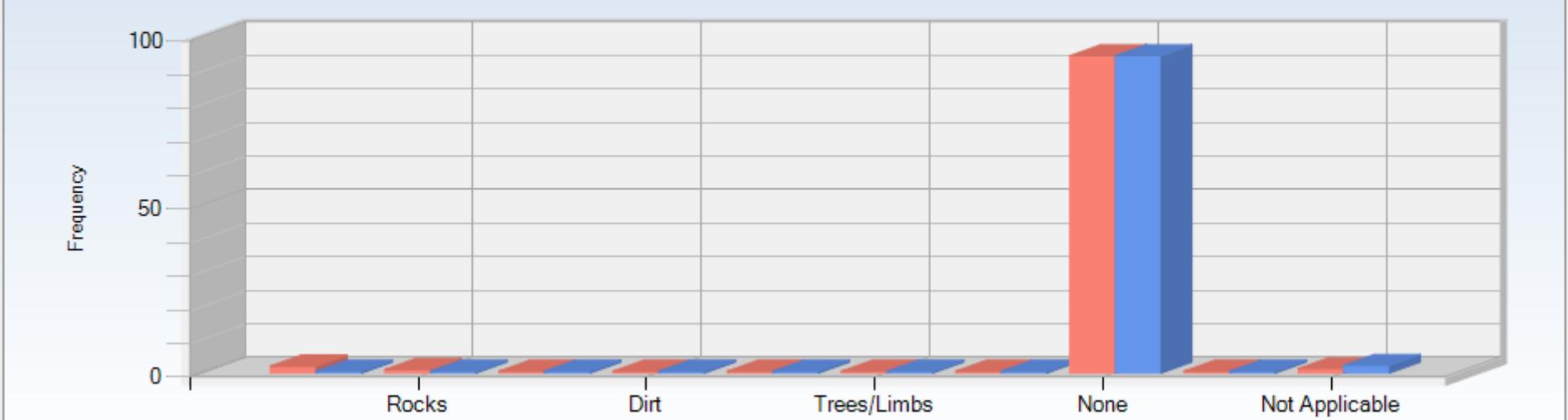


C405: CU Contributing Material in Roadway

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Gravel	76	2.02	311	0.08	24.752*	72.930
	Rocks	37	0.99	204	0.05	18.371*	34.986
	Oil/Petroleum	17	0.45	107	0.03	16.093	15.944
	Dirt	11	0.29	106	0.03	10.511	9.953
	E Tire Debris	7	0.19	416	0.11	1.704	2.893
	Trees/Limbs	10	0.27	737	0.19	1.374	2.724
	E Leaves	1	0.03	44	0.01	2.302	0.566
	None	3547	94.44	359237	94.43	1.000	0.360
	P Other	2	0.05	299	0.08	0.678	-0.952
	Not Applicable	48	1.28	8484	2.23	0.573*	-35.760

- C322: CU Driver/Non-Motorist Victim/Occ Type
 - C123: CU Driver Officer Opinion Drugs
 - C405: CU Contributing Material in Roadway**
 - C117: CU DL Restriction Violations #2
 - C414: CU One-Way Street
 - C126: CU Driver Alcohol Test Results
 - C102: CU Non-Motorist Indicator
 - C310: CU Non-Motorist Officer Opinion Drugs
 - C309: CU Non-Motorist Officer Opinion Alcohol
 - C306: CU Non-Motorist Location at Time of Cras
 - C301: CU Non-Motorist Prior Action
 - C308: CU Non-Motorist Condition
 - C311: CU Non-Motorist Most Harmful Event
- Sort by Sum of Max Gain

2010-2012 Alabama Integrated Crash Data
C405: CU Contributing Material in Roadway



MAJOR SUBJECT CHANGE

MC VICTIM CRASHES



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We will call a crash in which the MC driver is not at fault a *MC victim crash* (i.e., the motorcycle driver was a victim since s/he was not at fault).

Victim driver characteristics in general tend to be much more random ... reflecting the demographics of the victims as opposed to their behavior.

MC Victim Crash Proportion

Caused vs. Victim

What proportion of MC involved crashes are MC victim crashes (i.e., MC was not at fault)?

1/3

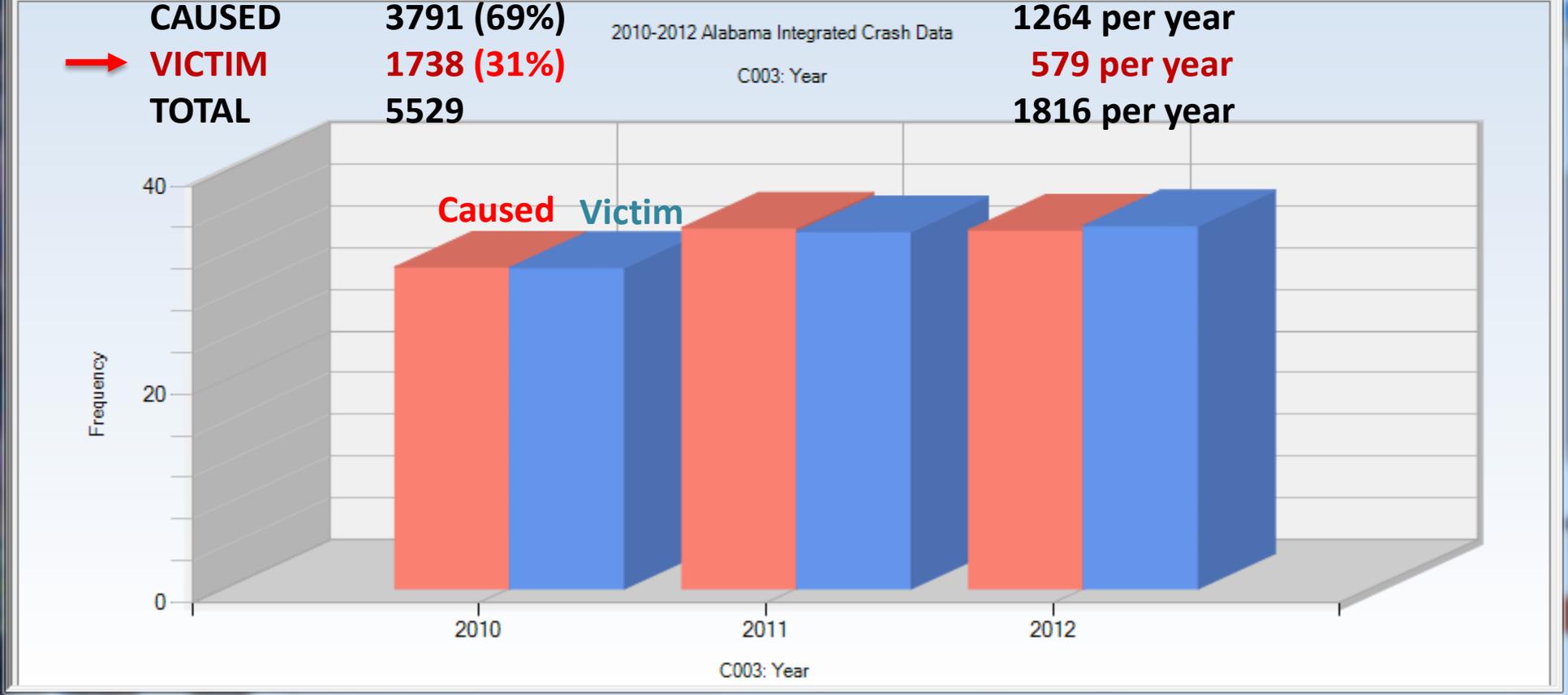
1/2

2/3

C003: Year							
	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	2010	1171	30.89	536	30.84	1.002	1.854
	2011	1314	34.66	596	34.29	1.011	13.979
▶	2012	1306	34.45	606	34.87	0.988	-15.833

C001: County
 C002: City
C003: Year
 C004: Month
 C005: Day of Month

Sort by Sum of Max Gain



MC VICTIM CRASHES



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Most characteristics are reversed:

- Only 2% Caused by Another Motorcycle
- Older Drivers (65-72) are Over-Represented
- Female Drivers are Over-Represented
- Curves are not Nearly the Problem
- Urban are Over 4 Times the Rural Number
- Turning Movements at Intersections
- On the Roadway as opposed to Off Roadway
- DUI/ID Not Nearly the Problem



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ROUNDTABLE INPUT AND QUESTIONS THANK YOU!





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