CENTER for ADVANCED PUBLIC SAFETY

ADECA Special Study Report

ANALYSIS OF SPEED-RELATED CRASHES IN CY2012-2016

For general information from NHTSA and other sources, see:
http://www.safehomealabama.gov/tag/speeding/

September 2017

THE UNIVERSITY OF ALABAMA

Recommendations - 1

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Recommendations Ordered Like Slides
  - ✓ References will be to the attribute number
  - ✓ E.g., C003=Year
- Impress to a Greater Extent: Lethality of Speed
  - ✓ 72% of fatal crashes = speed or speed related causes
  - ✓ 10MPH increase doubles chance crash is fatal
- Recatal Crashes
  - ✓ Fatal speexd crashes increased 35%
  - ✓ Fatal non-speed crashes increase by 21%
  - ✓ Recent fatality increase links 72% to speed involved

Recommendations - 2

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Speed Reduction to Reduce Fatalities

Analysis: *Fatal Crash AND Speed vs Fatal and NOT Speeding*

- Rural roadways about 77% of speed fatalities
- County roads almost 50% of speed fatalities
- Younger Drivers 16-35 (60% speed vs 37% non-speed)
- Potential Immediate Actions:
  - ✓ Increase in patrol officers ALEA and local
    - Demonstration speed reduction project (comprehensive)
    - Legislative action to recognize problem
  - ✓ Assure compliance with selective enforcement targeting
  - ✓ Roadway improvements: trees, rollovers, utility poles, culverts, ditches, embankments (Most Harmful Event)

Recommendations - 3

CENTER for ADVANCED PUBLIC SAFETY

Seatbelt Use Target Groups

Analysis: *Fatal NOT Restrained vs NonF Properly Restrained*

- DUI (5 times the expected)
- Other Severe Violations
  - ✓ Speed (8.3); Aggressive (5.4)
- Age 16-20 (risk); 21-37 (correlation with DUI)
- Single Vehicle Crashes (3.3 times expected)
- Potential Immediate Actions
  - ✓ Get "Budweiser" to promote seatbelt use ("save our customers")
  - ✓ PI&E targeting the worst offenders
    - Their friends and relatives – people of influence over them
    - Draw targets from intensive psychological studies

Recommendations - 4

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Multi-Fatality Crash Target Groups

Analysis: *Multiple Fatality Crashes vs Single Fatality Crashes*

- Age 16-21
- State/Federal Roads as Opposed to County
- Severest of Violations
  - ✓ Cross centerline, wrong way, aggressive driving
  - ✓ DUI same as for single fatality crashes & seatbelts
- Collisions with other Vehicles
  - ✓ As opposed to roadside objects (e.g., trees)
- Countermeasures Must Target Worst Offenders

Most Counter-Intuitive Findings

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Weather Conditions and Speed**
  - ✓ Lowest % speed related fatalities occur in rain
  - ✓ Speed increases wet pavement crash % by a factor of 3.5
- **Impaired Driving and Speed**
  - ✓ DUI alcohol use increases 69% for speed crashes
  - ✓ Reported drug use increases 44% for speed crashes
- **Age and Speed**
  - ✓ Highest frequency ages, in order: 18, 17, 19, 20, 16
  - ✓ Drop-off after 20 is consistent to 33
  - ✓ Ages 16-21 cause about 33% of all speed crashes
  - ✓ Six years = 6/50 = 12% of the miles driven (approximate)
- **Roadway**
  - ✓ More County speed fatal crashes than I/S/F combined
  - ✓ Trees are Most Deadly Hit Objects in Speed Crashes

Introduction: PPT Organization

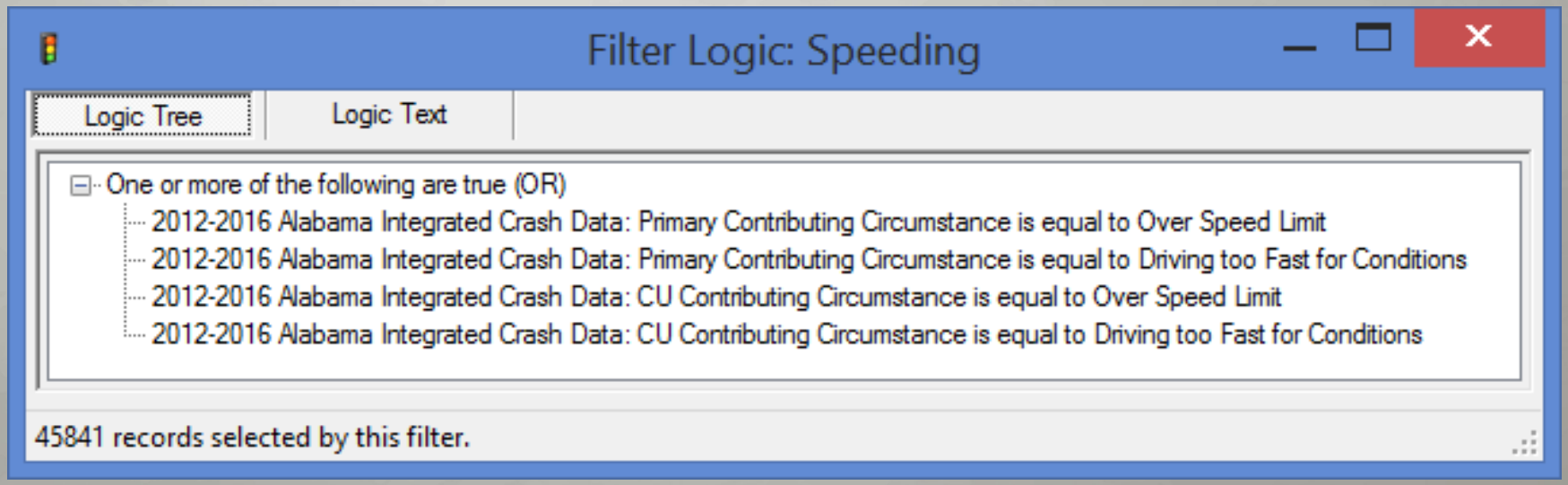
CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **IMPACT and Frequency Comparisons**
  - ✓ Speed vs Non-speed IMPACTs for overall crashes
  - ✓ A few straight numerical comparisons
- **Presentation Approach**
  - ✓ Conclusion summaries given first for each section
  - ✓ Analytical support for conclusions presented next

Introductory Definitions

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **What is a "Speed" Crash**
  - ✓ **"Speed" is abbreviation for "Speed Involved"**
  - ✓ **Based on PCC or CU-CC (see logic below)**
  - ✓ **Is good sample of speed crashes but NOT 100%**



Introductory Analyses

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Speed vs Non-Speed Crashes 2012-2016
  - ✓ Five year time frame to get best recent sample
  - ✓ Speed vs non-speed IMPACTs to surface root causes
- Analysis by Year Comparing 2016 to 2012
  - ✓ Small 3% overall increase in all speed crashes
  - ✓ Larger 23% increase in all non-speed crashes
- Recent (2016 to 2015) Comparison, Fatal Crashes
  - ✓ Fatal speed crashes increased 35%
  - ✓ Fatal non-speed crashes increase by 21%
  - ✓ Recent fatality increase links 72% to speed involved

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

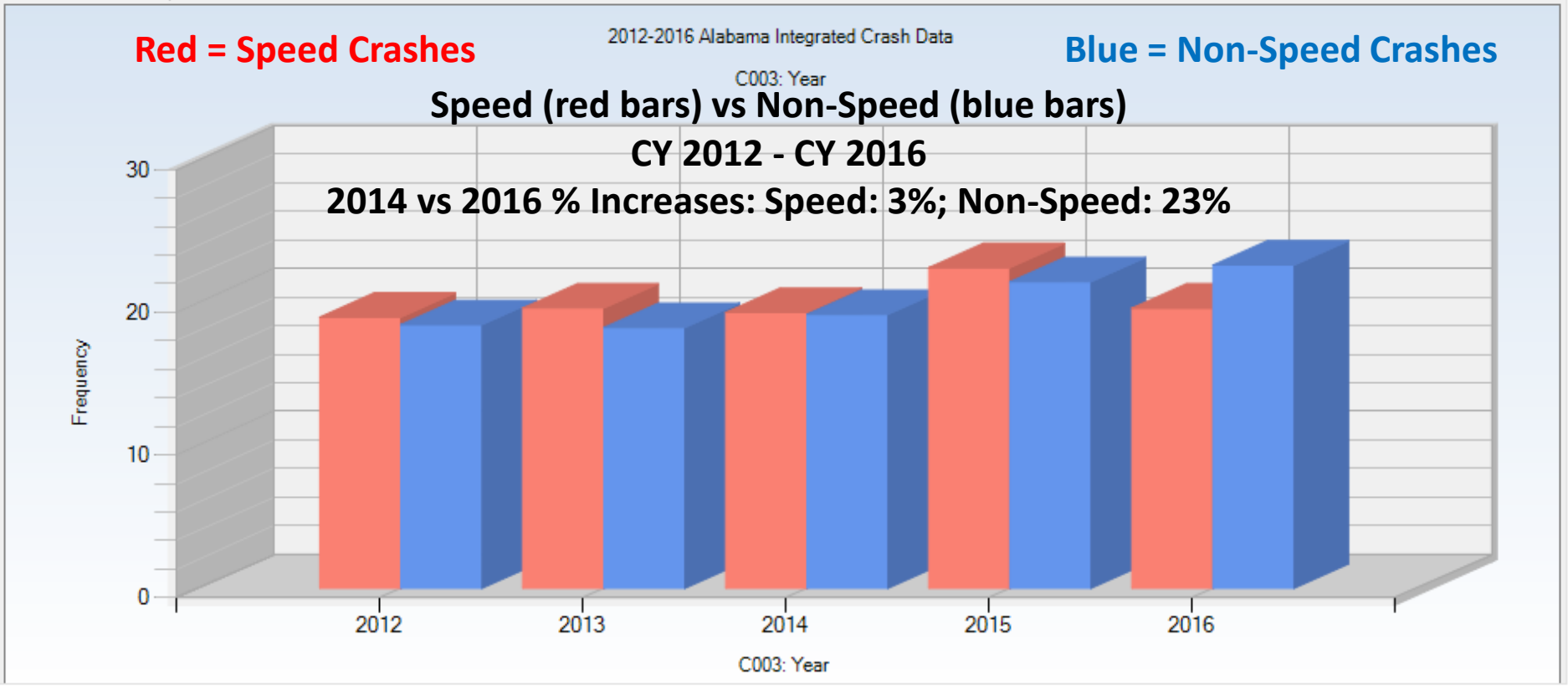
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C003: Year Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
2012	8703	18.99	119809	18.46	1.028*	239.089
2013	8994	19.62	118490	18.26	1.074*	623.269
2014	8857	19.32	124476	19.18	1.007	63.388
2015	10294	22.46	139259	21.46	1.046*	456.043
2016	8993	19.62	146858	22.63	0.867*	-1381.789

C001: County
C002: City
C003: Year
C004: Month
C005: Day of Month
C006: Day of the Week
C007: Week of the Year

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Fatal Crashes And Spee...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Fatal Crashes And Speeding | 1/ 1/2012 | 12/31/2016

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

C003: Year Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
2012	213	21.22	604	19.48	1.089	17.382
2013	197	19.62	560	18.06	1.086	15.632
2014	173	17.23	566	18.26	0.944	-10.311
2015	179	17.83	620	20.00	0.891	-21.800
2016	242	24.10	750	24.19	0.996	-0.903

C001: County
C002: City
C003: Year
C004: Month
C005: Day of Month
C006: Day of the Week
C007: Week of the Year

Sort by Sum of Max Gain

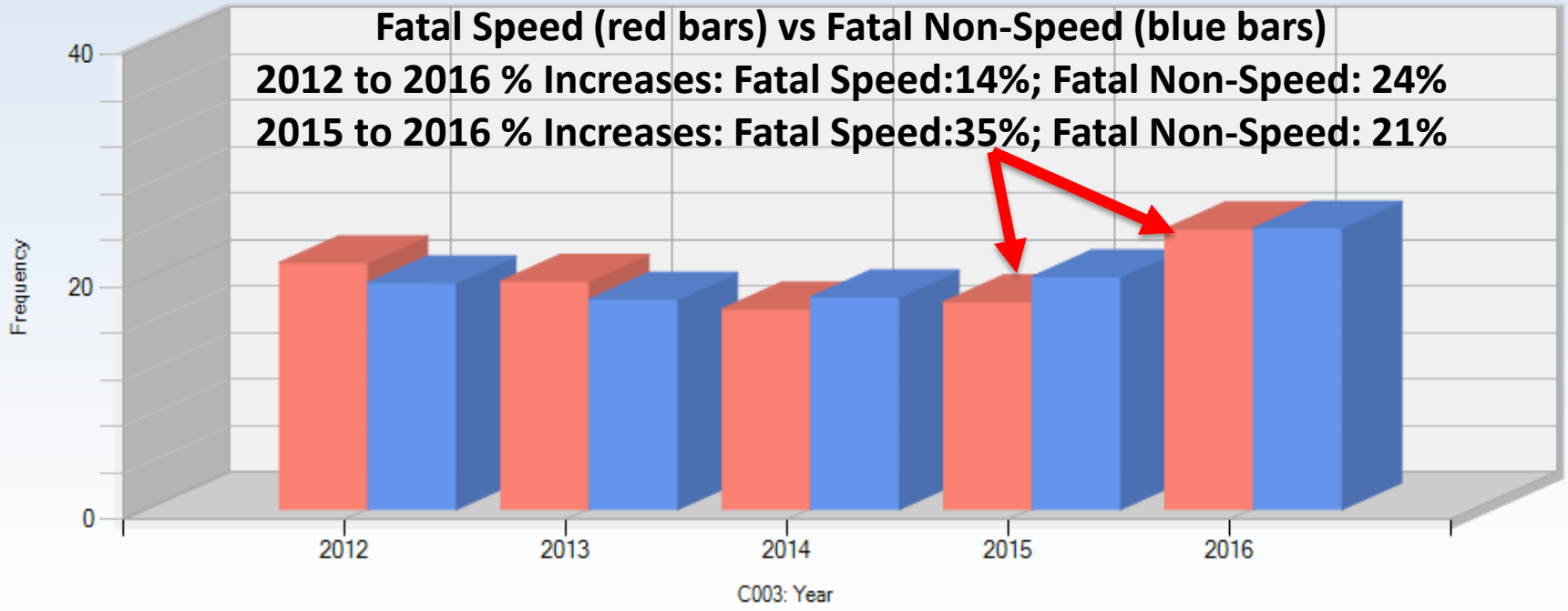
Display Filter Name

Red = Fatal Speed Crashes

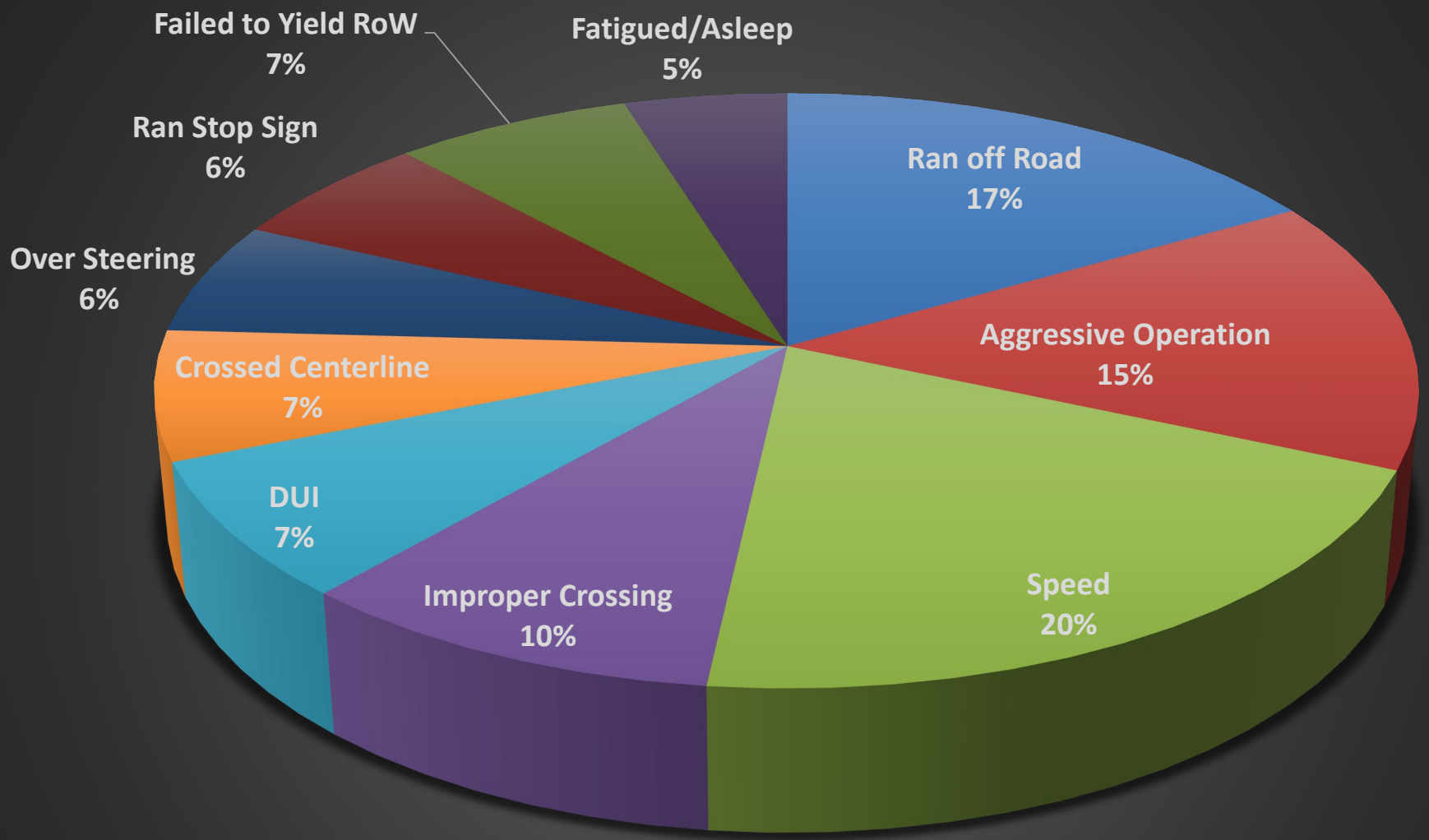
2012-2016 Alabama Integrated Crash Data

C003: Year

Blue = Fatal Non-Speed Crashes



2014 vs 2016 % Increase in Fatal Crashes



Speed (20%) + Related PCCs = Ran off Road (17%) + Aggressive Operation (15%) + DUI (7%) + Crossed Centerline (7%) + Over Steering (6%) = 72% Speed or Speed Related

IMPACT Analysis Organization

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Crash Severity Causes
  - ✓ Restraints and Helmets, EMS Arrival, Weather
- Driver Behavior
  - ✓ PCC, DUI, Speed
- Driver Demographics – Age and Gender
- Time Considerations – Time of Day, Day of Week, Month
- Geographical Characteristics
  - ✓ County, City, Rural/Urban, Locale
- Roadway Characteristics
- Weather and Roadway Condition
- Crash Characteristics
- Pedestrian Behavior
- Vehicle Characteristics
- Recommended Countermeasures

Crash Severity

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Overall Effect of Speed Involvement**
  - ✓ Probability of death increases from 0.48% to 2.19%
  - ✓ Highest severity* odds ratios: 4.6, 2.8 and 2.1
  - ✓ PDO decrease from 76.68% down to 61.72%
- **Speed Effect of Fatal and Severe Crashes**
  - ✓ Fatalities increased by 785 crashes = 157/year
  - ✓ Highest severity* increased by 6,805 = 1,361/year

*Highest severity = Fatal, Incapacitating & Non-Incapacitating Injuries

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

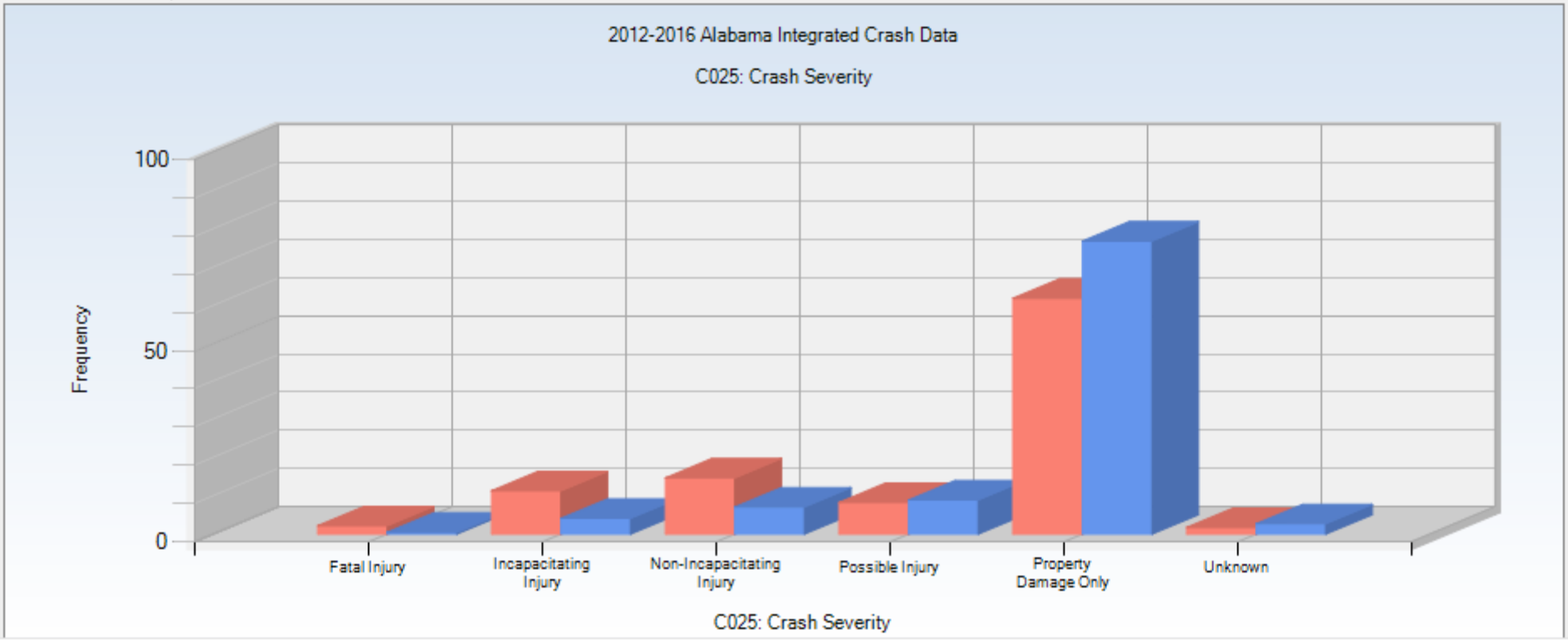
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C025: Crash Severity	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Fatal Injury	1004	2.19	3100	0.48	4.584*	785.000
Incapacitating Injury	5200	11.34	26763	4.12	2.750*	3309.327
Non-Incapacitating Injury	6741	14.71	45939	7.08	2.077*	3495.638
Possible Injury	3799	8.29	57982	8.94	0.927*	-297.141
Property Damage Only	28292	61.72	497549	76.68	0.805*	-6857.368
Unknown	805	1.76	17559	2.71	0.649*	-435.456

C020: E Distracted Driving Opinion
C021: Distance to Fixed Object
C022: E Type of Roadway Junction/Featu
C023: E Manner of Crash
C024: School Bus Related
C025: Crash Severity
C026: Intersection Related
C027: At Intersection

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding XTab SpdLimit ImpSpd | 1/ 1/2012 | 12/31/2016

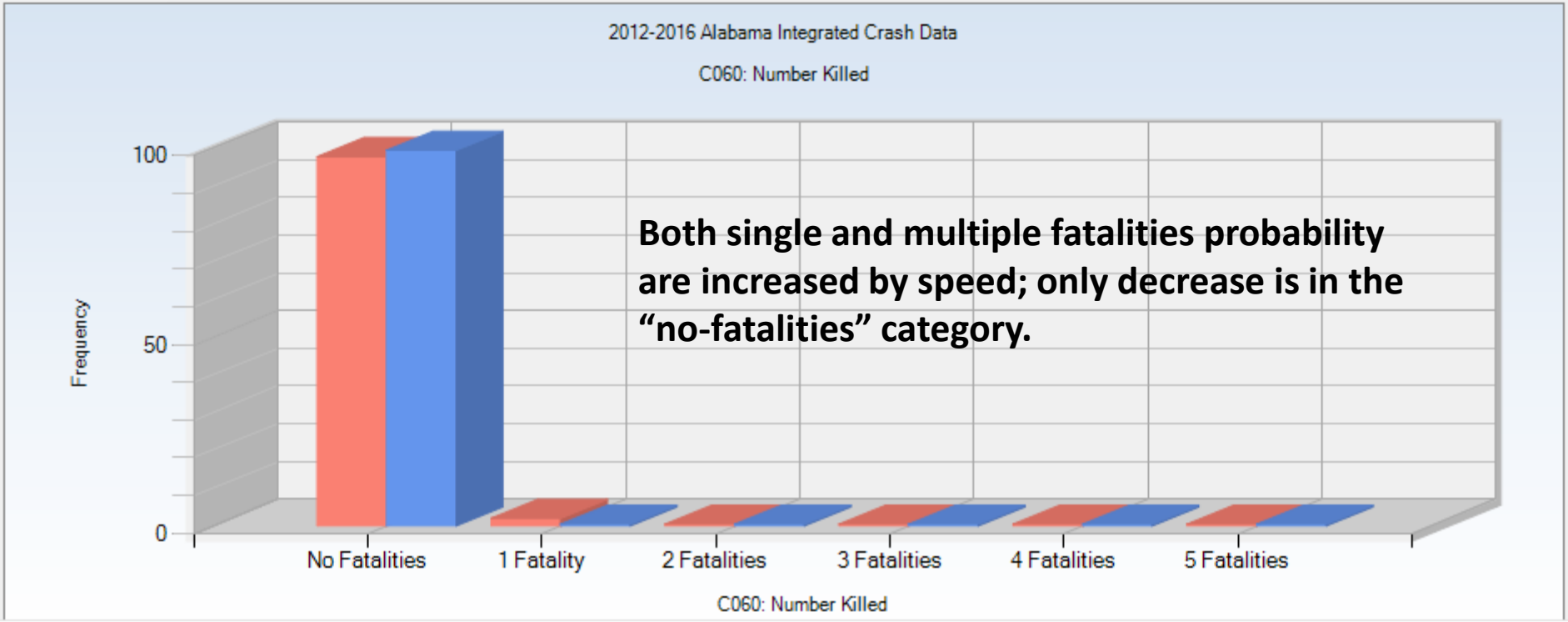
Order: Natural Order | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C060: Number Killed	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No Fatalities	44837	97.81	645778	99.52	0.983*	-784.011
1 Fatality	916	2.00	2889	0.45	4.488*	711.906
2 Fatalities	73	0.16	185	0.03	5.586*	59.931
3 Fatalities	12	0.03	29	0.00	5.857	9.951
4 Fatalities	1	0.00	9	0.00	1.573	0.364
5 Fatalities	2	0.00	2	0.00	14.155	1.859

C056: Number of Pedestrians
C057: Number of Pedacyclists
C058: Number Injured (Non-Fatal)
C059: Number Injured (Includes Fatalitie
C060: Number Killed
C061: Number of Railroad Trains
C062: Has Railroad Crossing Number
C080: CMV Involved

Sort by Sum of Max Gain

Display Filter Name



Both single and multiple fatalities probability are increased by speed; only decrease is in the "no-fatalities" category.

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding XTab SpdLimit ImpSpd | 1/ 1/2012 | 12/31/2016

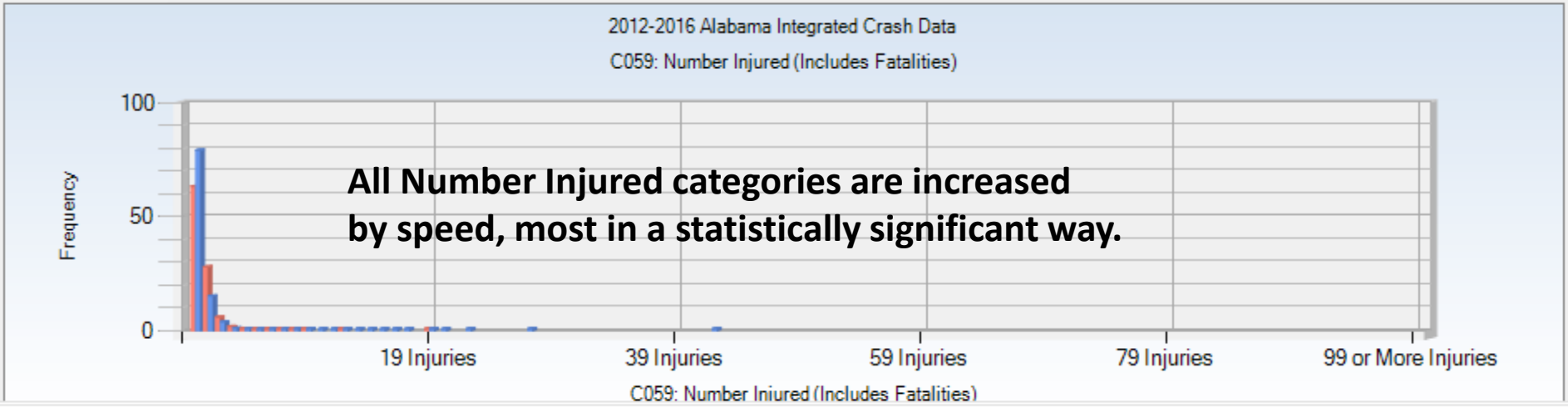
Order: Natural Order | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C059: Number Injured (Includes Fatalities)	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No Injuries	29035	63.34	514020	79.22	0.800*	-7277.962
1 Injury	12847	28.03	98832	15.23	1.840*	5865.010
2 Injuries	2719	5.93	25068	3.86	1.535*	948.070
3 Injuries	794	1.73	7070	1.09	1.590*	294.540
4 Injuries	291	0.63	2398	0.37	1.718*	121.593
5 Injuries	101	0.22	912	0.14	1.568*	36.572
6 Injuries	25	0.05	351	0.05	1.008	0.204
7 Injuries	20	0.04	132	0.02	2.145*	10.675
8 Injuries	4	0.01	41	0.01	1.381	1.104
9 Injuries	3	0.01	25	0.00	1.699	1.234
12 Injuries	1	0.00	8	0.00	1.769	0.435
19 Injuries	1	0.00	3	0.00	4.718	0.788

C330: CU Driver/Non-Motorist Transport
C329: CU Driver/Non-Motorist First Aid B
C324: CU Driver Airbag Status
C022: E Type of Roadway Junction/Featu
C025: Crash Severity
C325: CU Driver/Non-Motorist Age
C035: EMS Arrival Delay
C059: Number Injured (Includes Fatalitie
C208: CU Model Year
C036: Adjusted EMS Arrival Delay
C037: Non-Vehicular Property Damage
C043: Highway Patrol Posts
C029: Lighting Conditions
C058: Number Injured (Non-Fatal)
C048: Regional Planning Organization
C026: Intersection Related

Sort by Sum of Max Gain

Display Filter Name



Restraints and Helmets

Effects of Speed on Crash Severity

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Speed Multipliers Probability of Death**
- **Increases:**
  - ✓ **About 4.5 times for all speed involved**
  - ✓ **About 25 times for speed and no restraint**
  - ✓ **Over 20 times for speed and approved MC helmet**
  - ✓ **Over 26 times for speed and no MC helmet**
  - ✓ **Over 39 times for speed and improper MC helmet**
  - ✓ **Over 5 times the total ejection rate**

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND N...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

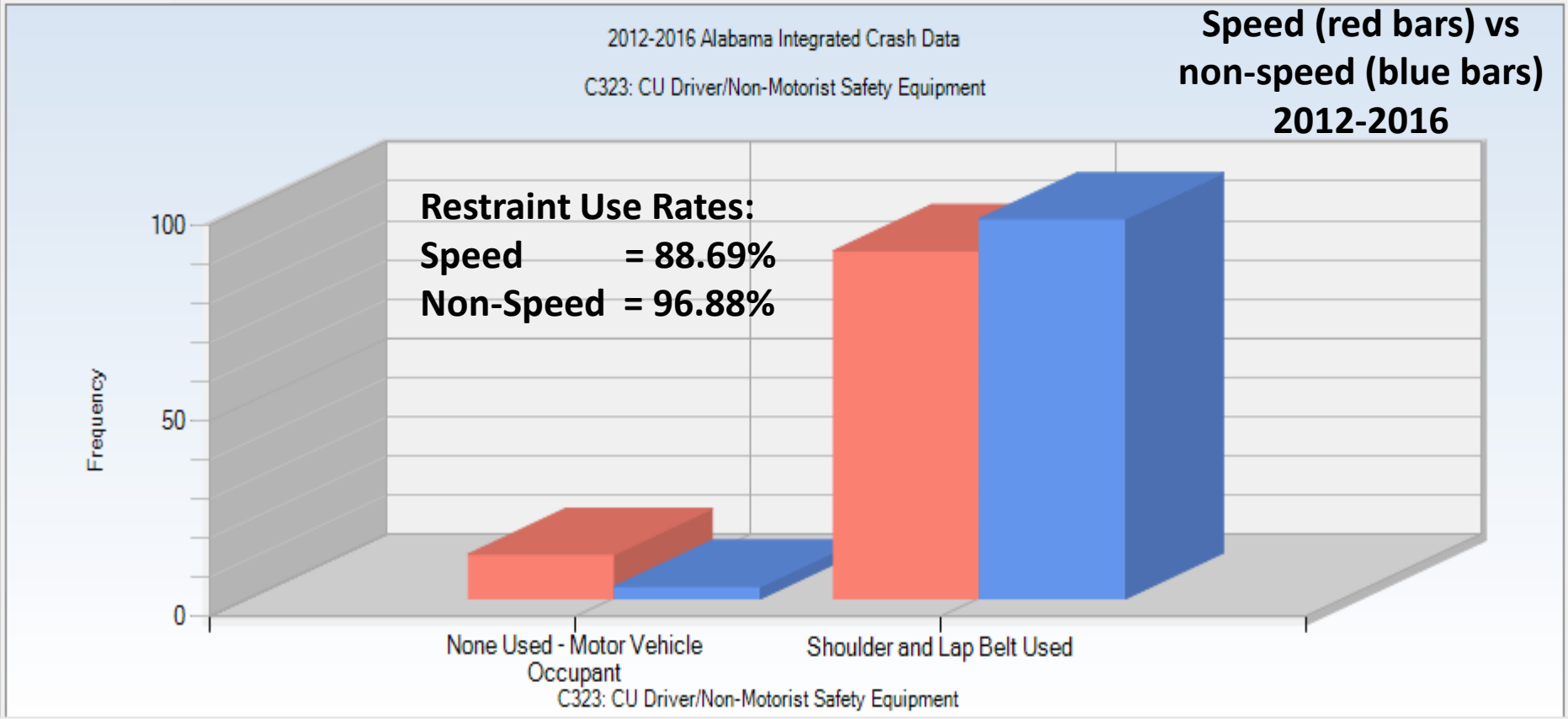
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C323: CU Driver/Non-Motorist Safety Equipment Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
None Used - Motor Vehicle O...	4629	11.31	16975	3.12	3.627*	3352.871
Shoulder and Lap Belt Used	36302	88.69	527487	96.88	0.915*	-3352.871

C323: CU Driver/Non-Motorist Safety Equip

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND Not...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding XTab SpdLimit ImpSpd | 1/ 1/2012 | 12/31/2016

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

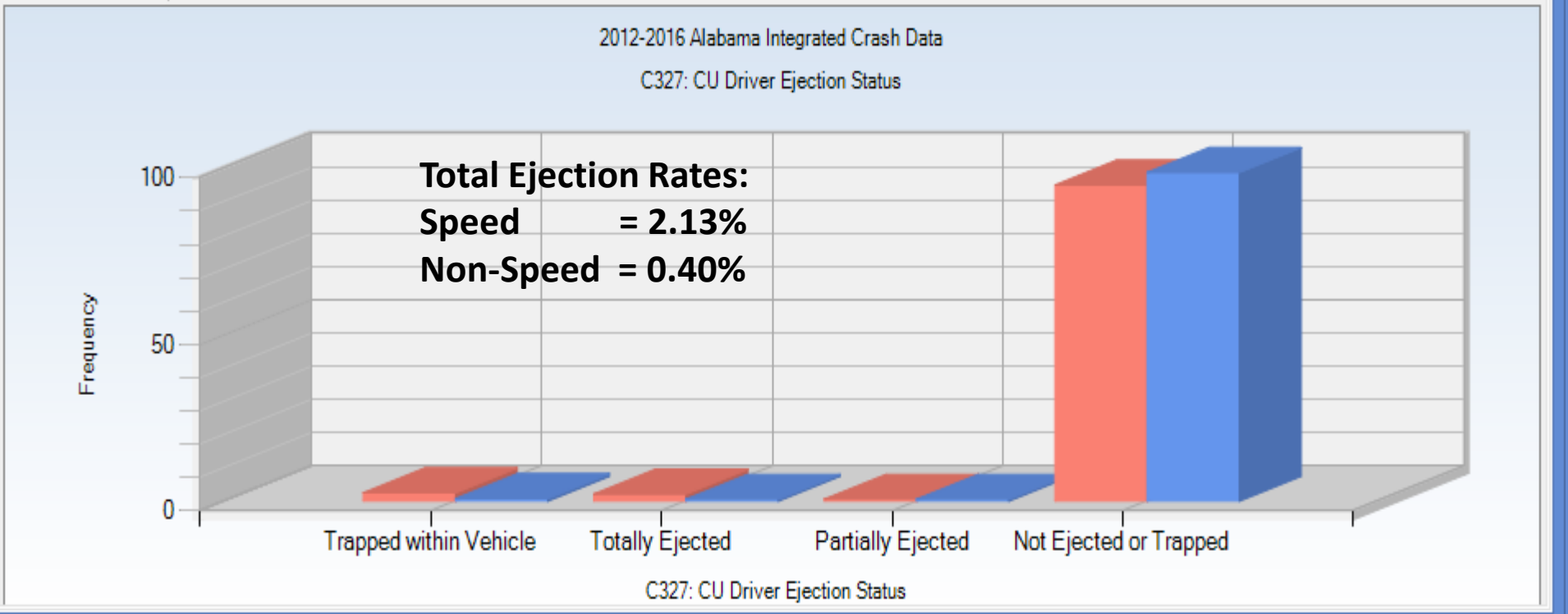
C327: CU Driver Ejection Status	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Trapped within Vehicle	1093	2.49	4348	0.73	3.391*	770.680
Totally Ejected	935	2.13	2379	0.40	5.302*	758.643
Partially Ejected	185	0.42	745	0.13	3.350*	129.773
Not Ejected or Trapped	41688	94.96	584739	98.74	0.962*	-1659.096

C327: CU Driver Ejection Status

Speed (red bars) vs non-speed (blue bars) 2012-2016

Sort by Sum of Max Gain

Display Filter Name



EMS Arrival

Effects on Crash Severity

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Rural High Speeds and Remote Locations**
  - ✓ **Fatal probability (2.19% overall=1 in 46 crashes):**
    - **2.90% rural; 1.21% urban**
    - **Increase in rural area more than a factor of 2**
    - **See rural/urban under geographical considerations**
- **Delay times**
  - ✓ **All above 10 minutes overrepresented**
  - ✓ **Increasing overrepresentations with longer times**

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

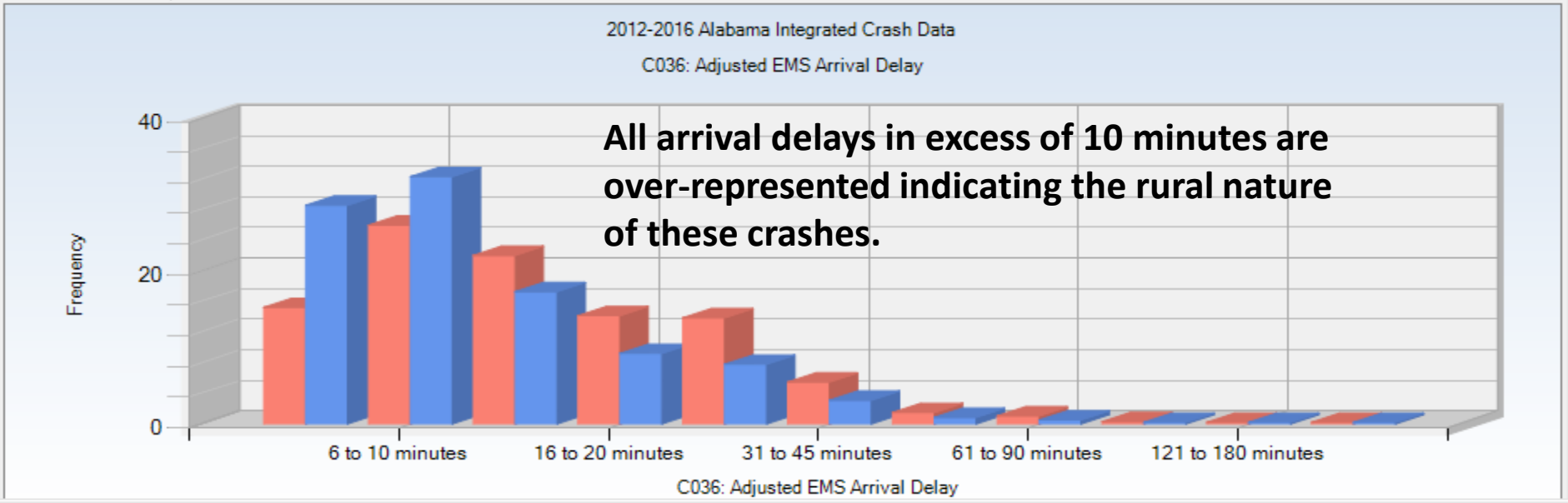
C036: Adjusted EMS Arrival Delay	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
0 to 5 minutes	2681	15.24	42930	28.61	0.533*	-2351.650
6 to 10 minutes	4574	26.00	48550	32.35	0.804*	-1117.478
11 to 15 minutes	3879	22.05	25972	17.31	1.274*	834.323
16 to 20 minutes	2491	14.16	13829	9.22	1.537*	869.837
21 to 30 minutes	2441	13.88	11715	7.81	1.777*	1067.660
31 to 45 minutes	962	5.47	4646	3.10	1.766*	417.353
46 to 60 minutes	261	1.48	1275	0.85	1.746*	111.533
61 to 90 minutes	183	1.04	750	0.50	2.081*	95.078
91 to 120 minutes	50	0.28	138	0.09	3.091*	33.822
121 to 180 minutes	36	0.20	108	0.07	2.843*	23.339
Over 180 minutes	34	0.19	152	0.10	1.908*	16.181

C036: Adjusted EMS Arrival Delay

Speed (red bars) vs non-speed (blue bars) 2012-2016

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [Crosstab Results - 2012-2016 Alabama I...

File Dashboard Filters Analysis Crosstab Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding

Suppress Zero Values: None | Select Cells: | Column: Rural or Urban ; Row: Crash Severity

	Rural	Urban	TOTAL
Fatal Injury	770	234	1004
Incapacitating Injury	4015	1185	5200
Non-Incapacitating Inju	4627	2114	6741
Possible Injury	1533	2266	3799
Property Damage Only	15376	12916	28292
Unknown	216	589	805
TOTAL	26537	19304	**45841**

Rural: Higher speeds and longer EMS delay times result in higher severity crashes.

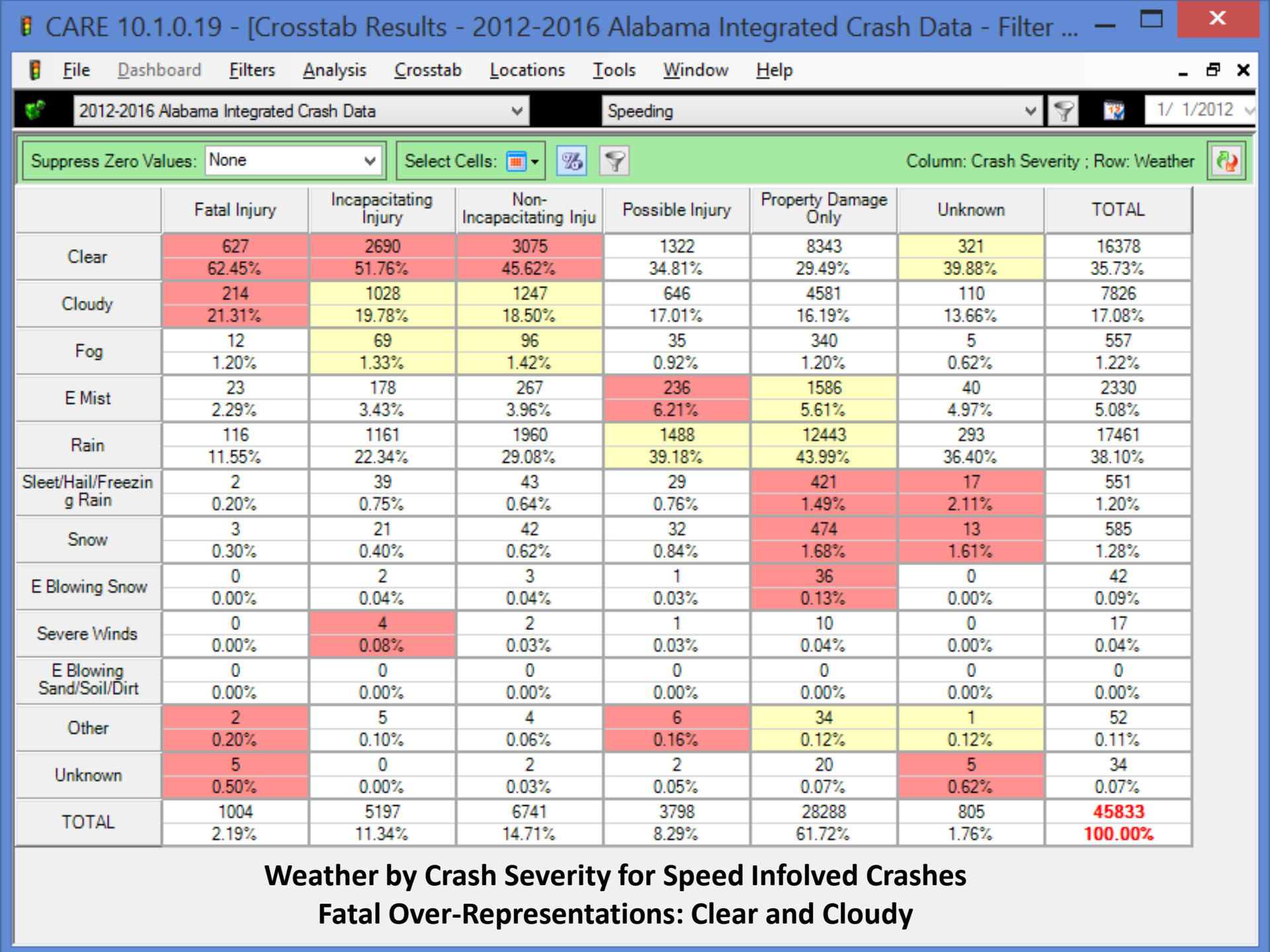
Weather Effects on Severity

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Speed Was the Reported Factor but …
- Most Reported as "Too Fast for Conditions"
  - ✓ Probability of Fatal Speed Crash by Weather:

Condition	Probability, 1 in XX
✓ Clear	26 (worst case)
✓ Cloudy	37
✓ Fog	46
✓ Rain	101 (best case)
✓ All crashes	169 (all speeds & weather conditions)

  - ✓ See weather frequency analysis below under Roadway



	Fatal Injury	Incapacitating Injury	Non-Incapacitating Inju	Possible Injury	Property Damage Only	Unknown	TOTAL
Clear	627	2690	3075	1322	8343	321	16378
	62.45%	51.76%	45.62%	34.81%	29.49%	39.88%	35.73%
Cloudy	214	1028	1247	646	4581	110	7826
	21.31%	19.78%	18.50%	17.01%	16.19%	13.66%	17.08%
Fog	12	69	96	35	340	5	557
	1.20%	1.33%	1.42%	0.92%	1.20%	0.62%	1.22%
E Mist	23	178	267	236	1586	40	2330
	2.29%	3.43%	3.96%	6.21%	5.61%	4.97%	5.08%
Rain	116	1161	1960	1488	12443	293	17461
	11.55%	22.34%	29.08%	39.18%	43.99%	36.40%	38.10%
Sleet/Hail/Freezing Rain	2	39	43	29	421	17	551
	0.20%	0.75%	0.64%	0.76%	1.49%	2.11%	1.20%
Snow	3	21	42	32	474	13	585
	0.30%	0.40%	0.62%	0.84%	1.68%	1.61%	1.28%
E Blowing Snow	0	2	3	1	36	0	42
	0.00%	0.04%	0.04%	0.03%	0.13%	0.00%	0.09%
Severe Winds	0	4	2	1	10	0	17
	0.00%	0.08%	0.03%	0.03%	0.04%	0.00%	0.04%
E Blowing Sand/Soil/Dirt	0	0	0	0	0	0	0
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other	2	5	4	6	34	1	52
	0.20%	0.10%	0.06%	0.16%	0.12%	0.12%	0.11%
Unknown	5	0	2	2	20	5	34
	0.50%	0.00%	0.03%	0.05%	0.07%	0.62%	0.07%
TOTAL	1004	5197	6741	3798	28288	805	45833
	2.19%	11.34%	14.71%	8.29%	61.72%	1.76%	100.00%

Weather by Crash Severity for Speed Infolved Crashes
Fatal Over-Representations: Clear and Cloudy

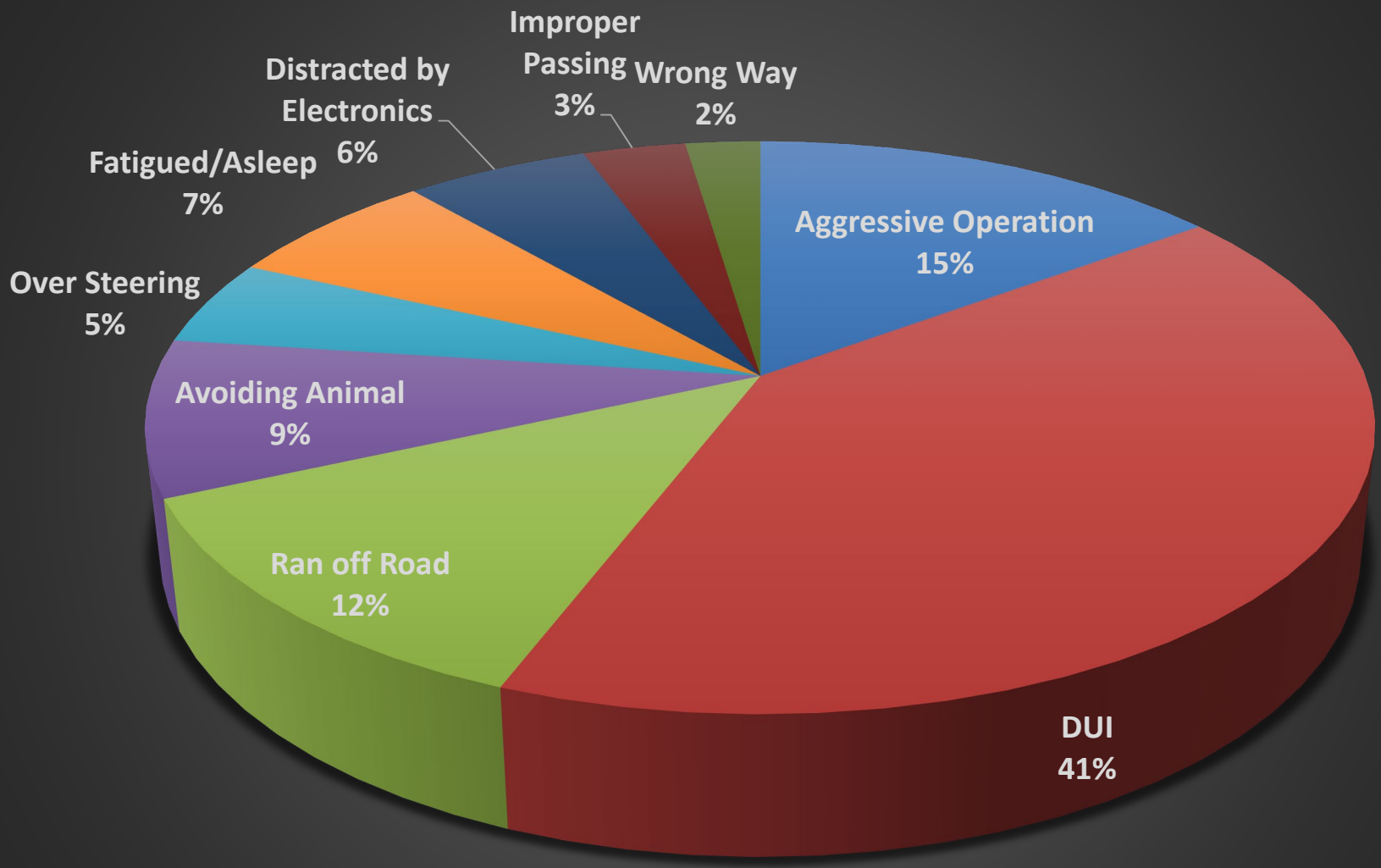
Driver Behavior

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Largest Supplemental PCCs for Speed Crashes
  - ✓ DUI, Aggressive, Ran off Road, Avoiding Animal
  - ✓ Over Steering, Fatigue, Distracted Electronic
- Exponential doubling for every 10 MPH
- Impact Speeds
  - ✓ 7.8% had Impact Speeds > 70 MPH
  - ✓ 68.7% had 36 MPH < Impact Speed < 70 MPH
  - ✓ 4x over-representations for 76 < Impact Speeds < 95
- Over-Rep in Speed: DUI (43.5%); Drugs (68.9%)
- Speed Multi-Fatals Increased Fatalities by 166

Top 10 Supplemental PCC for Speed Crashes

2012-2016 All Severity Speed Crashes



Ordered worst first: DUI, Aggressive Operation, Ran off Road, Avoiding Animal, Asleep, E-Distracted, Over Steering, Improper Pass, Wrong Way

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

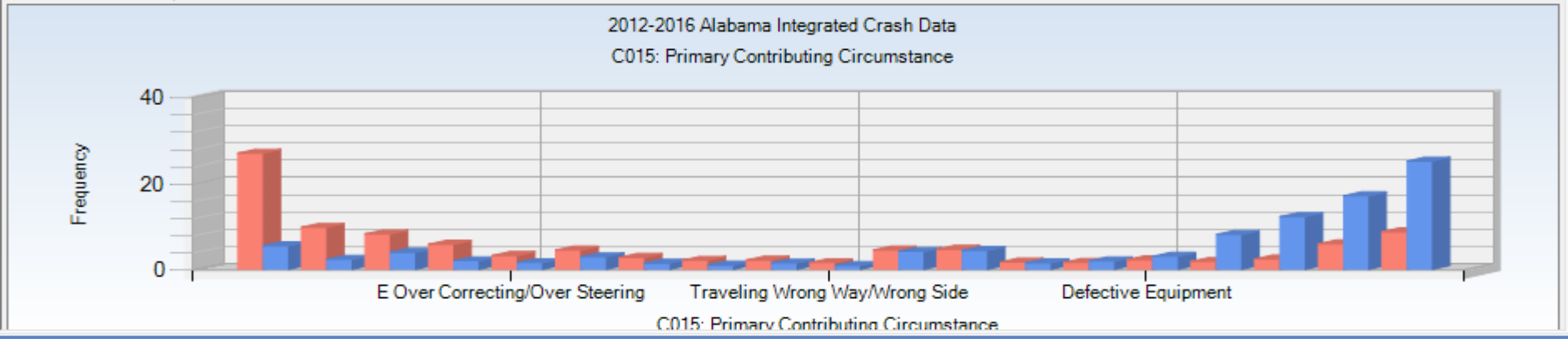
C015: Primary Contributing Circumstance	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
DUI	2064	26.90	20978	5.46	4.923*	1644.722
E Aggressive Operation	746	9.72	8772	2.28	4.255*	570.678
E Ran off Road	627	8.17	15115	3.94	2.075*	324.903
E Swerved to Avoid Animal	445	5.80	7602	1.98	2.929*	293.062
E Over Correcting/Over Steeri...	244	3.18	5884	1.53	2.075*	126.399
E Fatigued/Asleep	340	4.43	11021	2.87	1.544*	119.728
E Distracted by Use of Electro...	210	2.74	5436	1.42	1.933*	101.353
P Driver Not in Control	160	2.09	3698	0.96	2.165*	86.090
Improper Passing	162	2.11	5540	1.44	1.463*	51.274
Traveling Wrong Way/Wrong...	118	1.54	3341	0.87	1.767*	51.225
E Other Distraction Inside the ...	342	4.46	15908	4.14	1.076	24.054
E Swerved to Avoid Vehicle	356	4.64	16672	4.34	1.068	22.784
E Ran Stop Sign	128	1.67	5678	1.48	1.128	14.516
E Crossed Centerline	123	1.60	7435	1.94	0.828	-25.600
Defective Equipment	171	2.23	11543	3.01	0.741*	-59.705
Improper Lane Change/Use	138	1.80	31015	8.08	0.223*	-481.883
Unseen Object/Person/Vehicle	182	2.37	46726	12.17	0.195*	-751.892
Misjudge Stopping Distance	451	5.88	65321	17.01	0.345*	-854.542
Followed too Close	666	8.68	96223	25.06	0.346*	-1257.167

C015: Primary Contributing Circumstance

PCCs for > 100 Speed Crashes 2012-2016

Sort by Sum of Max Gain

Display Filter Name



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

C224: CU Estimated Speed at Impact	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
1 to 5 MPH	17	2.66	14765	18.07	0.147	-98.665
6 to 10 MPH	18	2.81	9661	11.83	0.238	-57.682
11 to 15 MPH	16	2.50	6361	7.79	0.321	-33.830
16 to 20 MPH	9	1.41	4794	5.87	0.240	-28.555
21 to 25 MPH	7	1.09	4233	5.18	0.211	-26.160
26 to 30 MPH	3	0.47	4632	5.67	0.083	-33.286
31 to 35 MPH	15	2.34	5237	6.41	0.366	-26.025
36 to 40 MPH	22	3.44	4815	5.89	0.583*	-15.719
41 to 45 MPH	36	5.63	7305	8.94	0.629*	-21.225
46 to 50 MPH	41	6.41	3568	4.37	1.467*	13.049
51 to 55 MPH	101	15.78	5835	7.14	2.210*	55.290
56 to 60 MPH	61	9.53	2715	3.32	2.868*	39.731
61 to 65 MPH	65	10.16	2936	3.59	2.826*	42.000
66 to 70 MPH	88	13.75	3394	4.15	3.310*	61.412
71 to 75 MPH	36	5.63	663	0.81	6.931*	30.806
76 to 80 MPH	40	6.25	427	0.52	11.958*	36.655
81 to 85 MPH	13	2.03	149	0.18	11.138	11.833
86 to 90 MPH	19	2.97	103	0.13	23.548	18.193
91 to 95 MPH	7	1.09	19	0.02	47.030	6.851
96 to 100 MPH	16	2.50	56	0.07	36.472	15.561
Over 100 MPH	10	1.56	30	0.04	42.551	9.765

C224: CU Estimated Speed at Impact

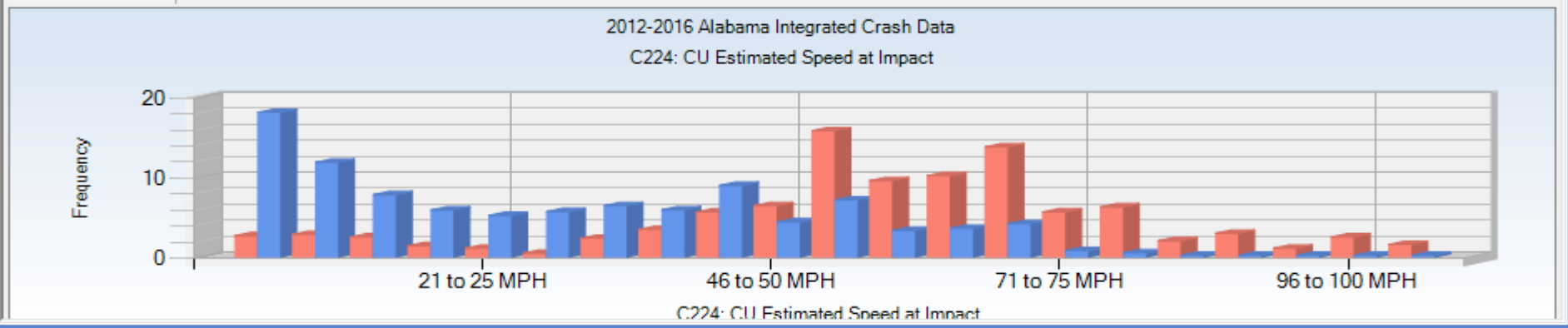
To See Speed Effects:
ALL FATAL CRASHES VS NON-FATAL

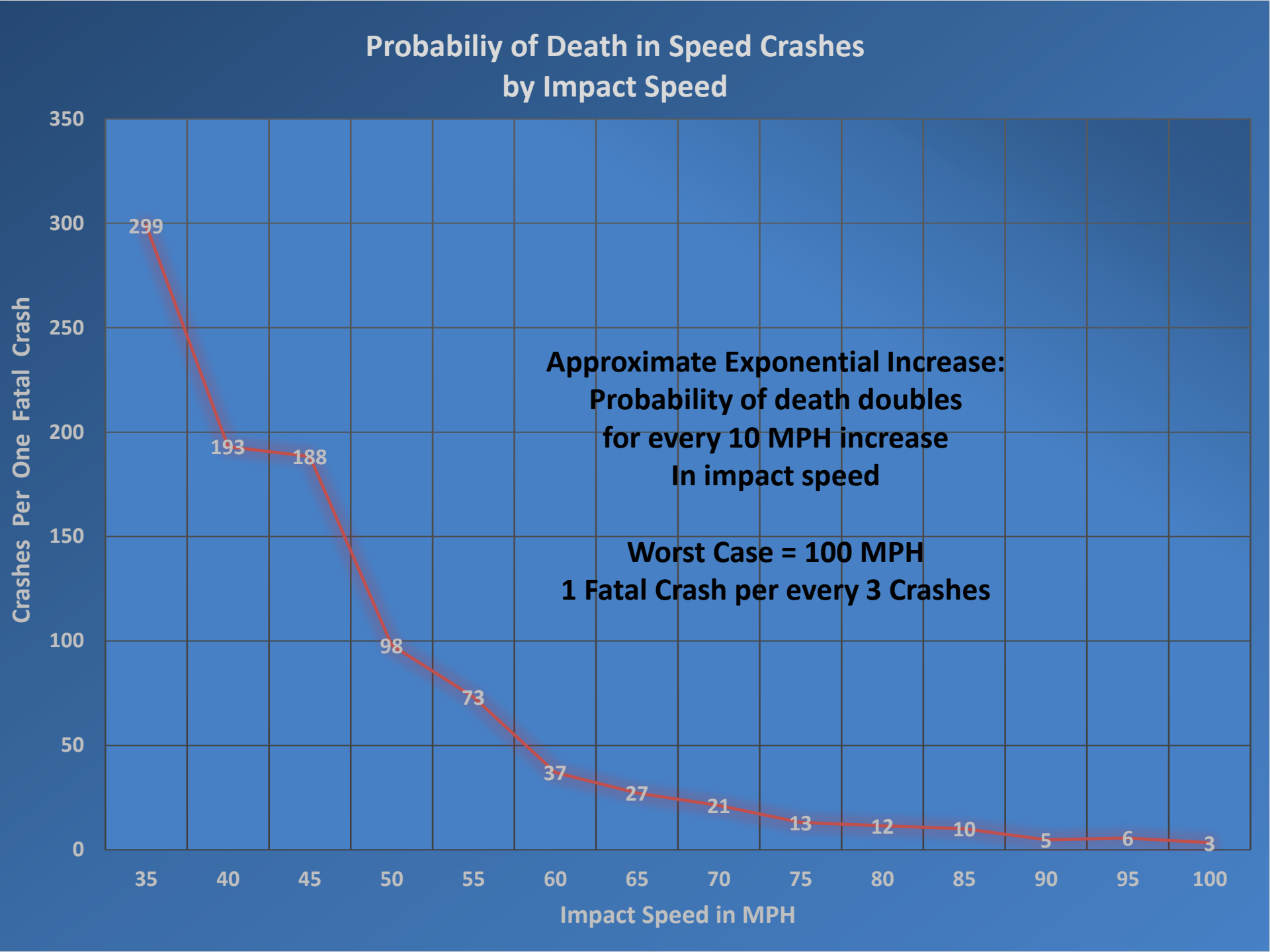
Fatal (red bars) vs non-fatal (blue bars) for CY 2016

Exponential Increase: Odds ratio doubles for every increase of 10 MPH

Sort by Sum of Max Gain

Display Filter Name




Probabiliy of Death in Speed Crashes
by Impact Speed
Crashes Per One Fatal Crash
350
300
250
200
150
100
50
0
299
193
188
98
73
37
27
21
13
12
10
5
6
3
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Impact Speed in MPH
Approximate Exponential Increase:
Probability of death doubles
for every 10 MPH increase
In impact speed
Worst Case = 100 MPH
1 Fatal Crash per every 3 Crashes

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C224: CU Estimated Speed at Impact	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
31 to 35 MPH	2090	6.41	23485	16.10	0.398*	-3160.546
36 to 40 MPH	2703	8.29	21096	14.46	0.573*	-2013.437
41 to 45 MPH	4897	15.01	30259	20.74	0.724*	-1868.011
46 to 50 MPH	3822	11.72	14137	9.69	1.209*	661.388
51 to 55 MPH	5273	16.17	22955	15.73	1.027	140.946
56 to 60 MPH	4374	13.41	8200	5.62	2.386*	2540.724
61 to 65 MPH	3672	11.26	10152	6.96	1.618*	1402.315
66 to 70 MPH	2990	9.17	12022	8.24	1.112*	302.239
71 to 75 MPH	1121	3.44	1785	1.22	2.809*	721.927
76 to 80 MPH	866	2.65	918	0.63	4.220*	660.763
81 to 85 MPH	345	1.06	271	0.19	5.694*	284.412
86 to 90 MPH	226	0.69	219	0.15	4.616*	177.038
91 to 95 MPH	51	0.16	54	0.04	4.224*	38.927
96 to 100 MPH	122	0.37	231	0.16	2.362*	70.355
Over 100 MPH	66	0.20	112	0.08	2.636*	40.960

C224: CU Estimated Speed at Impact

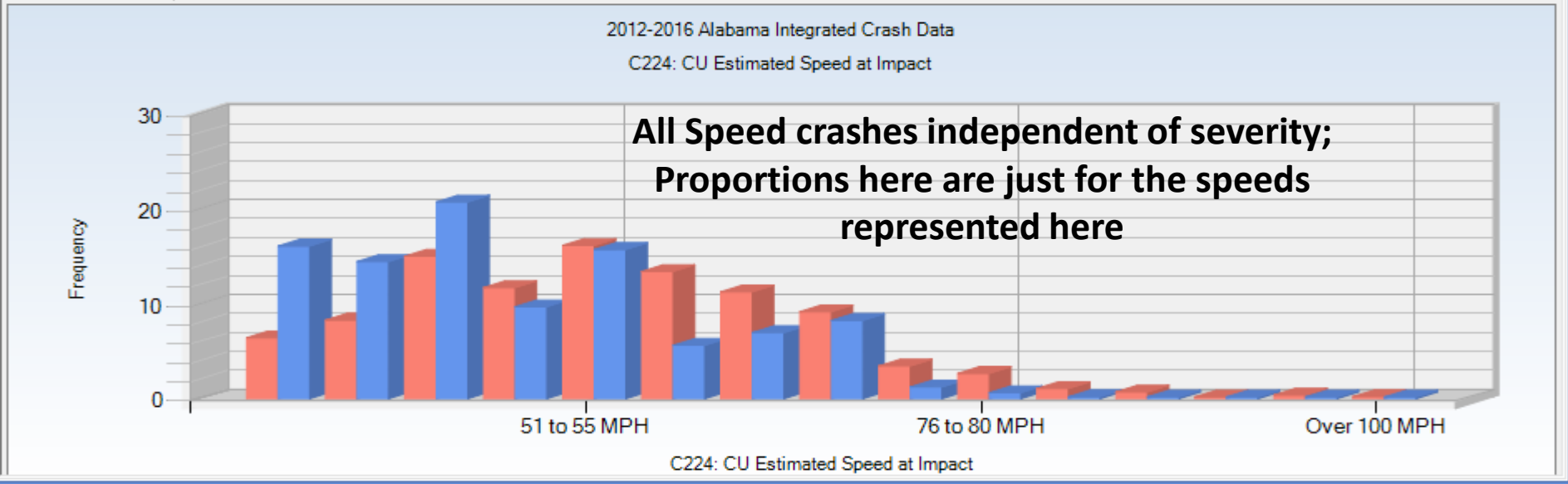
HOW FAST?

Speed (red bars) vs non-speed (blue bars) for 2012-2016

All speeds above 30 MPH were over-represented in the general analysis

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

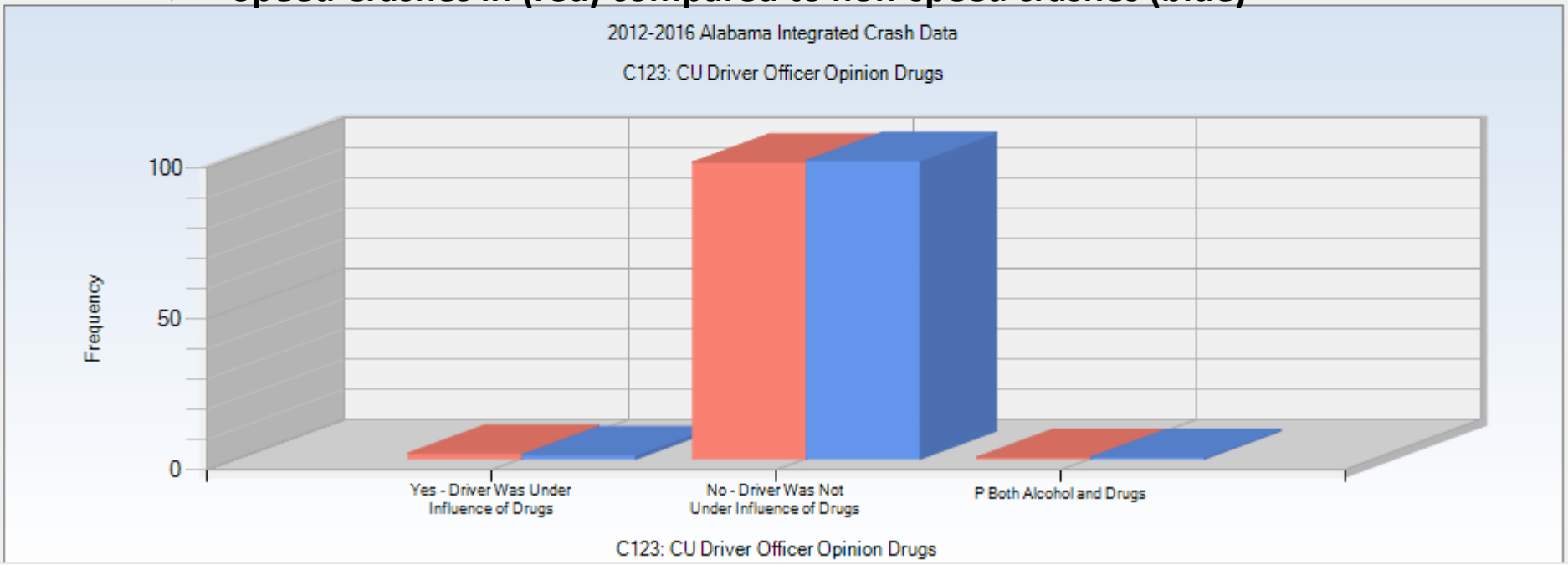
C123: CU Driver Officer Opinion Drugs	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Yes - Driver Was Under Influe...	742	1.84	7071	1.28	1.435*	225.068
No - Driver Was Not Under Inf...	39512	98.15	543563	98.71	0.994*	-225.705
P Both Alcohol and Drugs	4	0.01	46	0.01	1.189	0.637

C123: CU Driver Officer Opinion Drugs

Sort by Sum of Max Gain

Speed Crashes in (red) compared to non-speed crashes (blue)

Display Filter Name



Speed Crashes had 43.5% greater proportion than expected from non-speed.

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

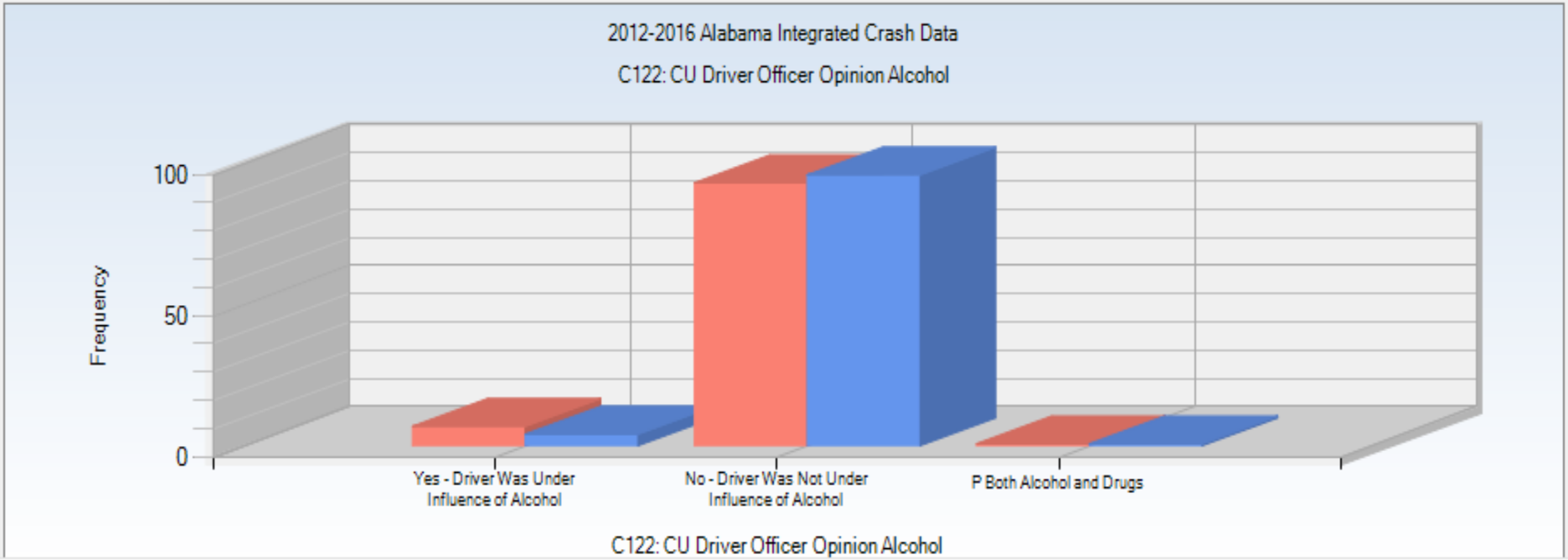
C122: CU Driver Officer Opinion Alcohol Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Yes - Driver Was Under Influe...	2832	6.83	22648	4.05	1.689*	1154.849
No - Driver Was Not Under Inf...	38607	93.16	536946	95.94	0.971*	-1155.442
P Both Alcohol and Drugs	4	0.01	46	0.01	1.174	0.594

C122: CU Driver Officer Opinion Alcohol

Sort by Sum of Max Gain

Speed Crashes in red compared to non-speed crashes in blue

Display Filter Name



Speed had a 68.9% higher proportion of alcohol use compared to the non-speed proportion

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not ...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

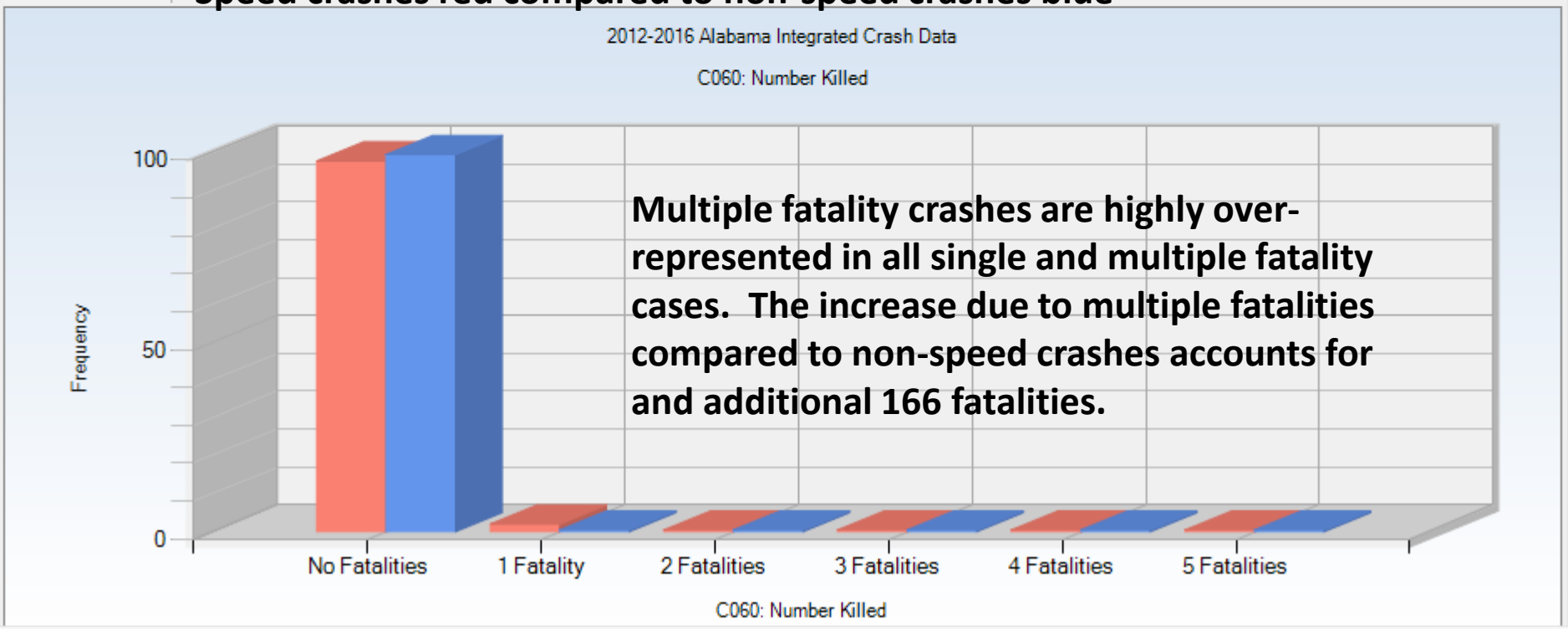
C060: Number Killed	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No Fatalities	44837	97.81	645778	99.52	0.983*	-784.011
1 Fatality	916	2.00	2889	0.45	4.488*	711.906
2 Fatalities	73	0.16	185	0.03	5.586*	59.931
3 Fatalities	12	0.03	29	0.00	5.857	9.951
4 Fatalities	1	0.00	9	0.00	1.573	0.364
5 Fatalities	2	0.00	2	0.00	14.155	1.859

C047: ADECAAHSO Region
C048: Regional Planning Organization
C049: Has Coordinate
C050: E MapClick Used
C051: Number of Vehicles
C052: Number of Drivers Recorded
C053: Number of Persons Recorded
C054: Number of Motorists Recorded
C055: Number of Non-Motorists Record

Sort by Sum of Max Gain

Speed crashes red compared to non-speed crashes blue

Display Filter Name



Multiple fatality crashes are highly over-represented in all single and multiple fatality cases. The increase due to multiple fatalities compared to non-speed crashes accounts for and additional 166 fatalities.

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND Not...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding XTab SpdLimit ImpSpd | 1/ 1/2012 | 12/31/2016

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

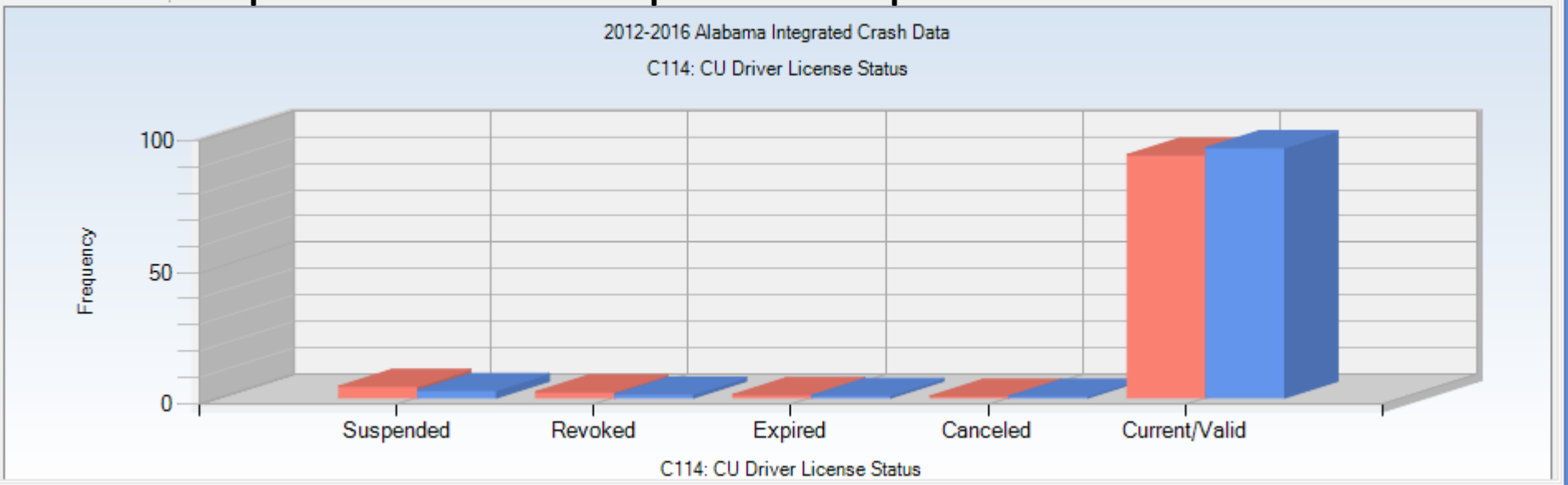
C114: CU Driver License Status	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Suspended	1786	4.35	15607	2.83	1.535*	622.733
Revoked	925	2.25	7343	1.33	1.690*	377.690
Expired	484	1.18	5170	0.94	1.256*	98.654
Canceled	19	0.05	164	0.03	1.554	6.776
Current/Valid	37881	92.18	523057	94.87	0.972*	-1105.033

C114: CU Driver License Status

Sort by Sum of Max Gain

Speed Crashes in red compared to non-speed crashes in blue

Display Filter Name



Many drivers who have speed crashes have had serious violation problems in the past.

Driver Demographics

CAPS
CENTER for ADVANCED PUBLIC SAFETY

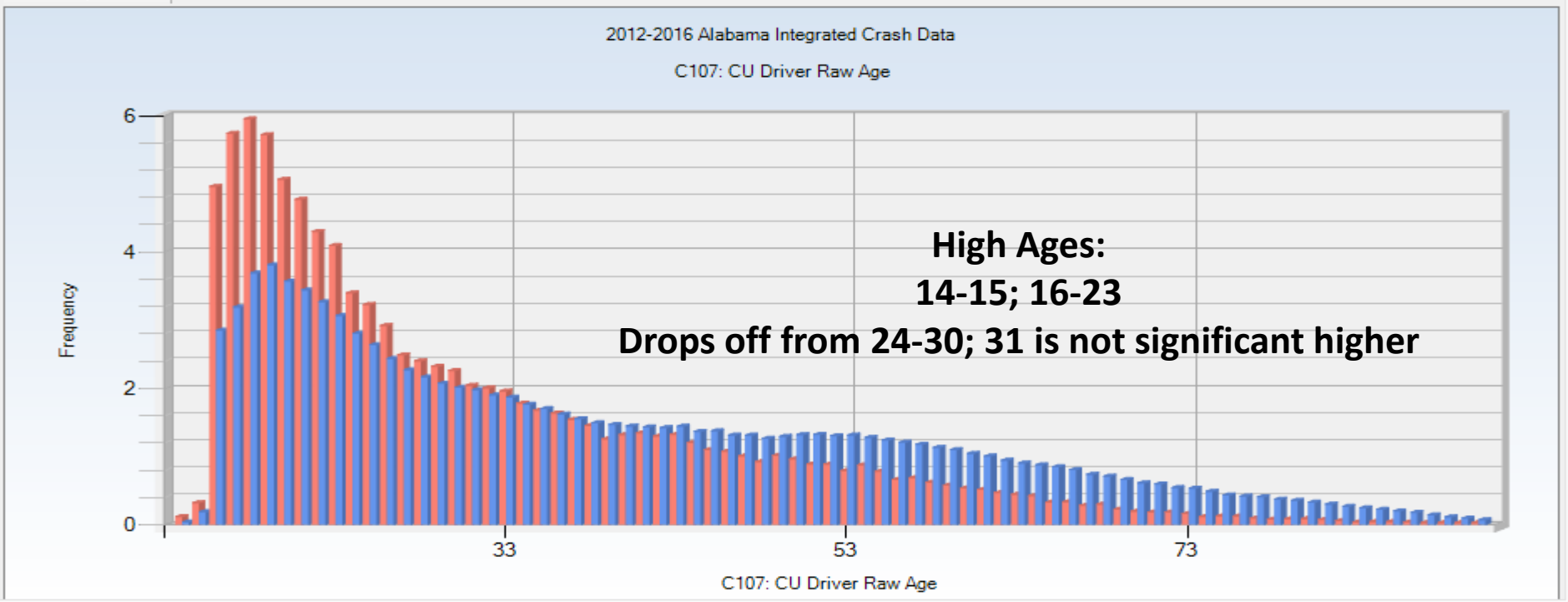
- **AGE**
  - ✓ **Critical Ages 14-15; 16-30**
  - ✓ **No significant over-representations after 30**
- **GENDER**
  - ✓ **Males 14.1% higher than expected**

	Frequency	Percent	Frequency	Percent	Ratio	
14	49	0.11	192	0.03	3.382*	34.510
15	137	0.31	1048	0.18	1.732*	57.909
16	2160	4.96	16428	2.84	1.742*	920.203
17	2500	5.74	18406	3.19	1.800*	1110.926
18	2591	5.94	21286	3.69	1.613*	984.577
19	2491	5.72	21982	3.81	1.502*	832.051
20	2205	5.06	20602	3.57	1.418*	650.197
21	2077	4.77	19848	3.44	1.387*	579.101
22	1872	4.29	18860	3.27	1.315*	448.664
23	1782	4.09	17668	3.06	1.336*	448.622
24	1478	3.39	16174	2.80	1.211*	257.372
25	1405	3.22	15224	2.64	1.223*	256.067
26	1270	2.91	14040	2.43	1.199*	210.422
27	1082	2.48	13084	2.27	1.096*	94.570
28	1044	2.40	12492	2.16	1.107*	101.247
29	1009	2.31	11949	2.07	1.119*	107.227
30	983	2.26	11595	2.01	1.123*	107.942

Speed (red bars) vs non-speed (blue bars) 2012-2016

Sort by Sum of Max Gain

Display Filter Name

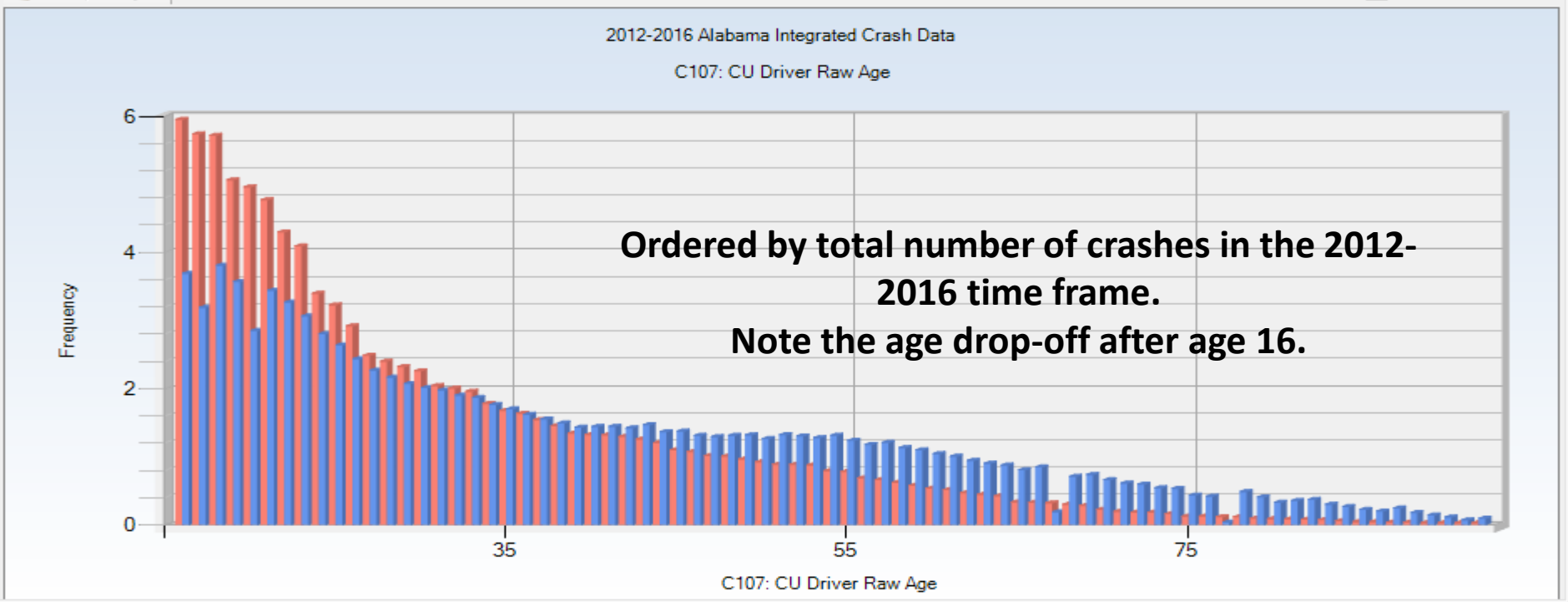


	Value	Frequency	Percent	Frequency	Percent	Ratio	Max Gain
▶	18	2591	5.94	21286	3.69	1.613*	984.577
	17	2500	5.74	18406	3.19	1.800*	1110.926
	19	2491	5.72	21982	3.81	1.502*	832.051
	20	2205	5.06	20602	3.57	1.418*	650.197
	16	2160	4.96	16428	2.84	1.742*	920.203
	21	2077	4.77	19848	3.44	1.387*	579.101
	22	1872	4.29	18860	3.27	1.315*	448.664
	23	1782	4.09	17668	3.06	1.336*	448.622
	24	1478	3.39	16174	2.80	1.211*	257.372
	25	1405	3.22	15224	2.64	1.223*	256.067
	26	1270	2.91	14040	2.43	1.199*	210.422
	27	1082	2.48	13084	2.27	1.096*	94.570
	28	1044	2.40	12492	2.16	1.107*	101.247
	29	1009	2.31	11949	2.07	1.119*	107.227
	30	983	2.26	11595	2.01	1.123*	107.942
	31	888	2.04	11389	1.97	1.033	28.489
	32	871	2.00	10951	1.90	1.054	44.544

Speed (red bars) vs non-speed (blue bars) 2012-2016

☐ Sort by Sum of Max Gain

☐ Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

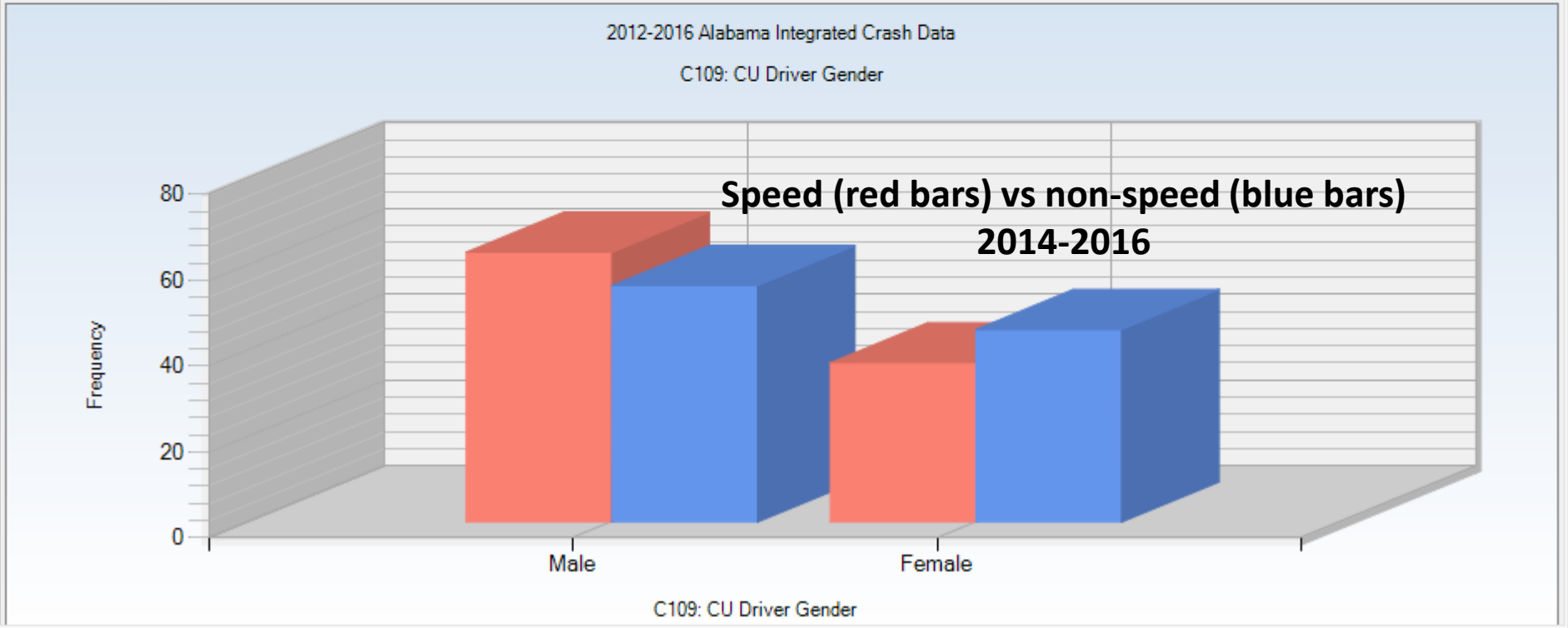
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C109: CU Driver Gender	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Male	27638	62.88	323012	55.12	1.141*	3410.309
Female	16316	37.12	262998	44.88	0.827*	-3410.309

C109: CU Driver Gender

Sort by Sum of Max Gain

Display Filter Name



Speed over-represented with male drivers (14.1%).

Time Considerations

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Over-Represented Times of Speed Crashes:**
  - ✓ Morning: 12:00 Midnight to 7:00 AM
  - ✓ Late night: 8:00 PM to Midnight
  - ✓ This pattern correlates extremely well with impaired driving
- **Day-of-the-Week also Reflects**
  - ✓ Typical DUI pattern
  - ✓ Fatal crash pattern
- **Month**
  - ✓ Significantly over-represented: Jan, Feb, Jul, Dec
  - ✓ Definitely affected by presence of holidays

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

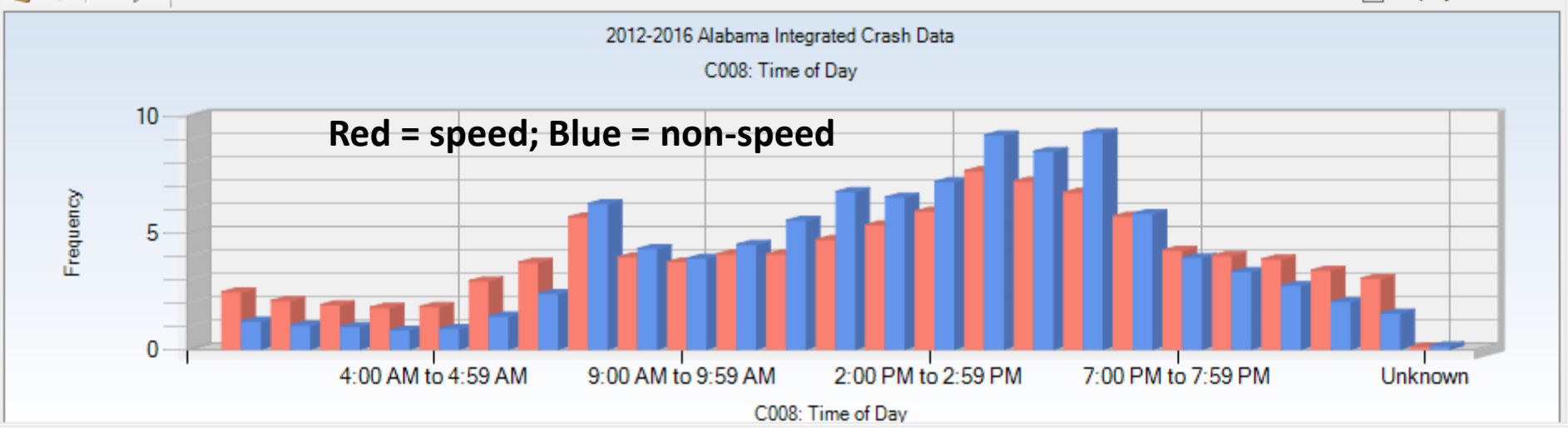
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C008: Time of Day	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
12:00 Midnight to 12:59 AM	1121	2.45	7744	1.19	2.049*	573.925
1:00 AM to 1:59 AM	951	2.07	6653	1.03	2.023*	480.999
2:00 AM to 2:59 AM	870	1.90	6266	0.97	1.965*	427.338
3:00 AM to 3:59 AM	817	1.78	5295	0.82	2.184*	442.935
4:00 AM to 4:59 AM	834	1.82	5687	0.88	2.076*	432.242
5:00 AM to 5:59 AM	1339	2.92	9186	1.42	2.063*	690.055
6:00 AM to 6:59 AM	1706	3.72	15419	2.38	1.566*	616.724
7:00 AM to 7:59 AM	2598	5.67	40513	6.24	0.908*	-264.042
8:00 AM to 8:59 AM	1813	3.95	27955	4.31	0.918*	-161.882
9:00 AM to 9:59 AM	1717	3.75	25280	3.90	0.961	-68.907
10:00 AM to 10:59 AM	1870	4.08	29111	4.49	0.909*	-186.548
11:00 AM to 11:59 AM	1866	4.07	35801	5.52	0.738*	-663.163

C001: County
C002: City
C003: Year
C004: Month
C005: Day of Month
C006: Day of the Week
C007: Week of the Year
C008: Time of Day
C009: Data Source
C010: Rural or Urban
C011: Highway Classifications
C012: Controlled Access
C013: E Highway Side
C015: Primary Contributing Circumstanc
C016: Primary Contributing Unit Numbe
C017: First Harmful Event

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

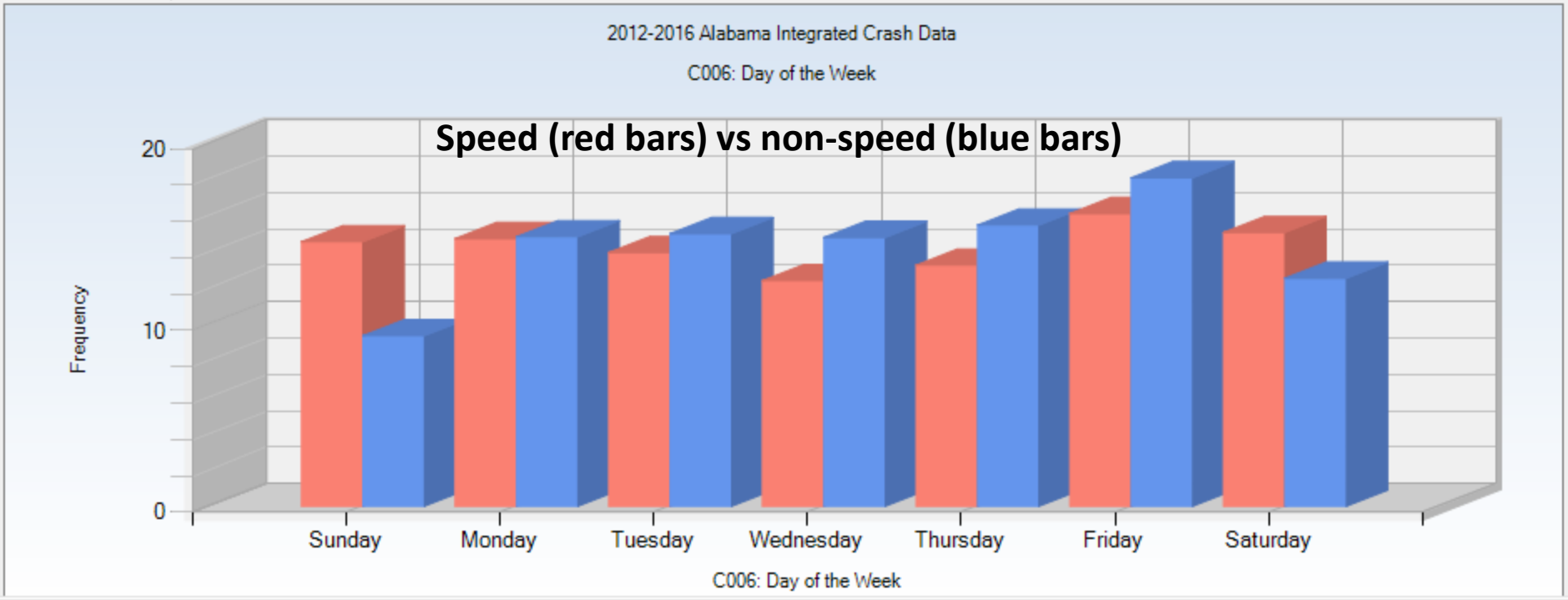
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C006: Day of the Week	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Sunday	6665	14.54	60809	9.37	1.551*	2369.146
Monday	6745	14.71	96129	14.81	0.993	-46.037
Tuesday	6395	13.95	97258	14.99	0.931*	-475.795
Wednesday	5685	12.40	95891	14.78	0.839*	-1089.223
Thursday	6075	13.25	100287	15.46	0.857*	-1009.779
Friday	7377	16.09	117173	18.06	0.891*	-900.691
Saturday	6899	15.05	81345	12.54	1.201*	1152.379

C001: County
C002: City
C003: Year
C004: Month
C005: Day of Month
C006: Day of the Week
C007: Week of the Year
C008: Time of Day
C009: Data Source
C010: Rural or Urban

Sort by Sum of Max Gain

Display Filter Name



File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | 2016 Fatal Crashes | 1/ 1/2012 | 12/31/20

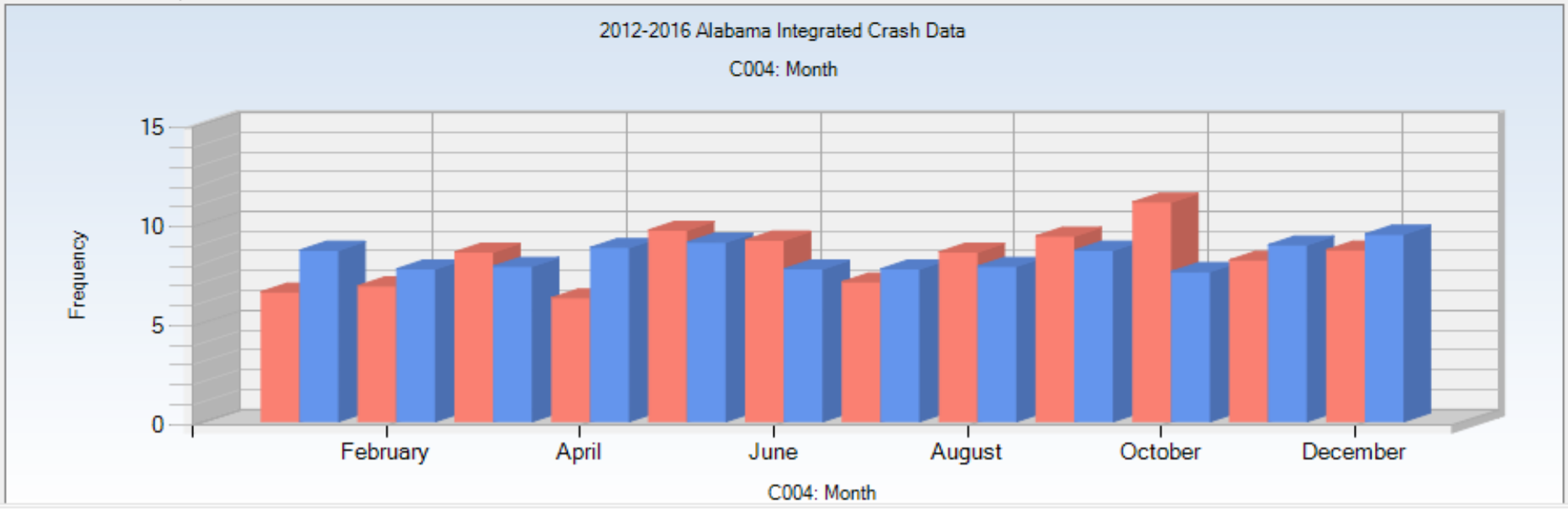
Order: Natural Order | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C004: Month	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
January	65	6.55	64	8.66	0.757	-20.911
February	68	6.85	57	7.71	0.889	-8.514
March	85	8.57	58	7.85	1.092	7.143
April	62	6.25	65	8.80	0.711	-25.253
May	96	9.68	67	9.07	1.067	6.062
June	91	9.17	57	7.71	1.189	14.486
July	70	7.06	57	7.71	0.915	-6.514
August	85	8.57	58	7.85	1.092	7.143
September	93	9.38	64	8.66	1.083	7.089
October	110	11.09	56	7.58	1.463*	34.828
November	81	8.17	66	8.93	0.914	-7.595
December	86	8.67	70	9.47	0.915	-7.965

C204: E CU Sequence of Events #1
C105: CU Driver Age Range 1
C563: V2 Estimated Speed at Impact
C224: CU Estimated Speed at Impact
C004: Month
C043: Highway Patrol Posts
C127: E CU Driver Drug Test Results
C048: Regional Planning Organization
C045: ALDOT Area
C501: Vehicle 2 (V2) Type
C233: CU Point of Initial Impact
C128: CU Vehicle Initial Travel Direction
C020: E Distracted Driving Opinion
C203: CU First Harmful Event Location
C125: E CU Driver Drug Test Type Given
C006: Day of the Week

Sort by Sum of Max Gain

Display Filte



Geographical Features

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Geographical Characteristics

- Counties with significantly higher proportions:
  - ✓ Talladega, Delalb, Escambia, Limestone
  - ✓ Elmore, Cullman and Marshall
- Rural Areas of Counties Over-Rep in Speed Crashes
  - ✓ Confirmed by comparing rural proportions for each county
  - ✓ Confirmed by general rural-urban speed crash comparison
  - ✓ Confirmed by Locale = Open Country over-representation

2012-2016 Alabama Integrated Crash Data | Speeding AND Fatal Crashes | 1/ 1/2012 | 12/31/2016

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

C001: County	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Talladega	43	9.37	8775	2.24	4.190*	32.738
Dekalb	31	6.75	6073	1.55	4.365*	23.898
Escambia	20	4.36	4040	1.03	4.233*	15.275
Limestone	25	5.45	8374	2.13	2.553*	15.207
Elmore	26	5.66	9437	2.40	2.356*	14.964
Cullman	27	5.88	11053	2.82	2.089*	14.074
Marshall	22	4.79	11520	2.94	1.633*	8.528
Etowah	20	4.36	15572	3.97	1.098	1.789
Baldwin	25	5.45	23984	6.11	0.891	-3.048
Tuscaloosa	39	8.50	38573	9.83	0.865	-6.110
Mobile	72	15.69	72089	18.37	0.854	-12.305
Madison	43	9.37	53817	13.71	0.683*	-19.937
Jefferson	66	14.38	129182	32.91	0.437*	-85.073

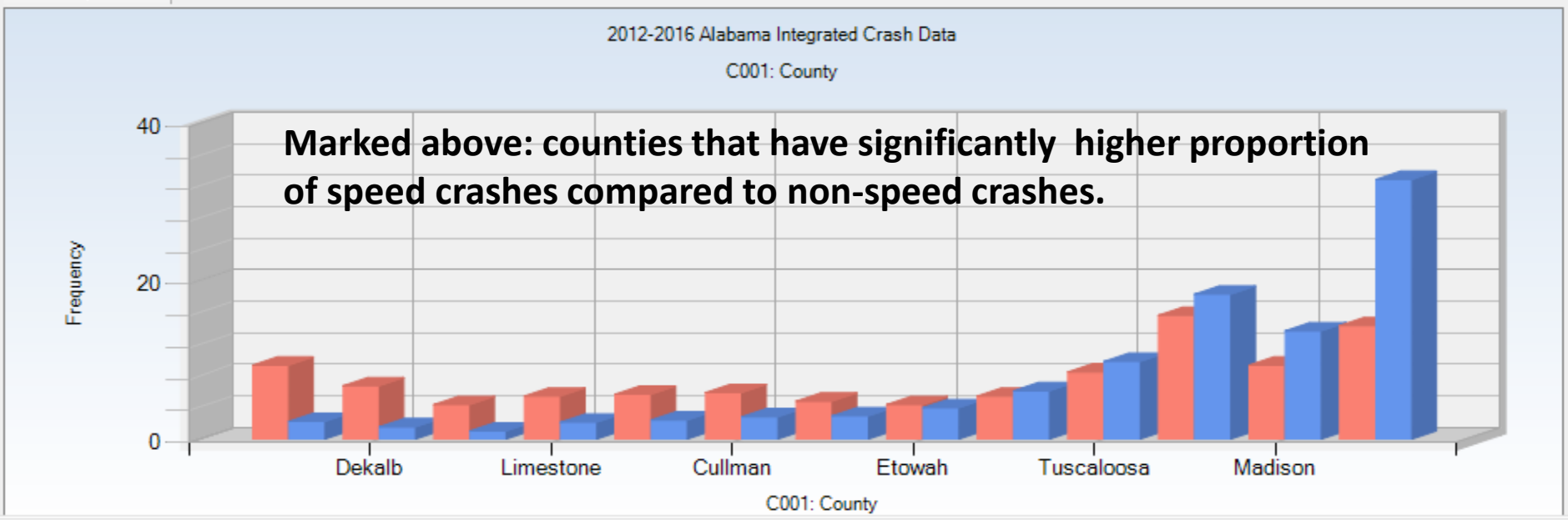
C001: County

Speed (red bars) vs non-speed (blue bars)

Counties with 20 or more fatal speed crashes over 2012-2016

Sort by Sum of Max Gain

Display Filter Name



File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C002: City Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Rural Cullman	1252	5.24	3901	1.32	3.961*	935.943
Rural Madison	1510	6.32	7158	2.43	2.604*	930.062
Rural Talladega	801	3.35	2816	0.95	3.511*	572.849
Rural Dekalb	666	2.79	1588	0.54	5.176*	537.341
Rural Morgan	747	3.13	2830	0.96	3.258*	517.715
Rural St. Clair	731	3.06	2841	0.96	3.176*	500.823
Rural Calhoun	819	3.43	3945	1.34	2.562*	499.378
Rural Etowah	658	2.75	1973	0.67	4.116*	498.148
Rural Walker	690	2.89	2676	0.91	3.183*	473.192
Rural Baldwin	913	3.82	5431	1.84	2.075*	472.983
Rural Marshall	614	2.57	1925	0.65	3.937*	458.037
Rural Jefferson	1458	6.10	12514	4.24	1.438*	444.121
Rural Elmore	649	2.72	2607	0.88	3.073*	437.782
Rural Tuscaloosa	978	4.09	7213	2.45	1.674*	393.606
Rural Limestone	691	2.89	3671	1.24	2.323*	393.577
Rural Chilton	519	2.17	1982	0.67	3.232*	358.419
Rural Lauderdale	554	2.32	2440	0.83	2.802*	356.312
Rural Montgomery	526	2.20	3318	1.12	1.957*	257.177
Rural Mobile	935	3.91	9272	3.14	1.245*	183.786
Rural Shelby	586	2.45	6279	2.13	1.152*	77.278
Hoover	712	2.98	14023	4.75	0.627*	-424.138
Huntsville	1586	6.64	37787	12.81	0.518*	-1475.487
Mobile	2445	10.23	50981	17.29	0.592*	-1685.460
Montgomery	1284	5.37	40422	13.71	0.392*	-1990.974
Birmingham	1572	6.58	64619	21.91	0.300*	-3663.405

C002: City

Speed (Subset) vs non-speed (Other)

Cities with 500 or more speed crashes over 2012-2016

Pattern:
Rural areas of highly populated counties are generally over-represented. Larger urban areas are under-represented.

Sort by Sum of Max Gain

Display Filter Name

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

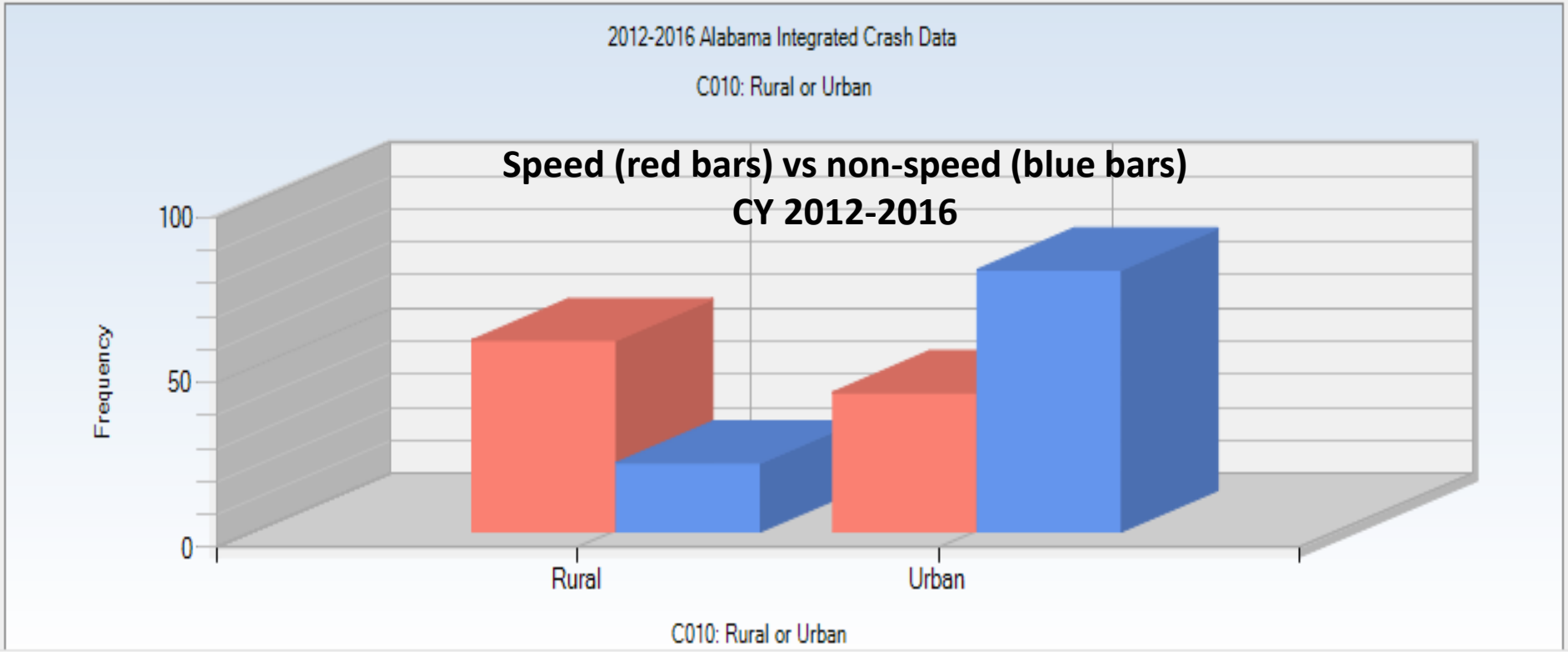
2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C010: Rural or Urban	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Rural	26537	57.89	134877	20.79	2.785*	17008.609
Urban	19304	42.11	514015	79.21	0.532*	-17008.609

C009: Data Source
C010: Rural or Urban
C011: Highway Classifications
C012: Controlled Access
Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

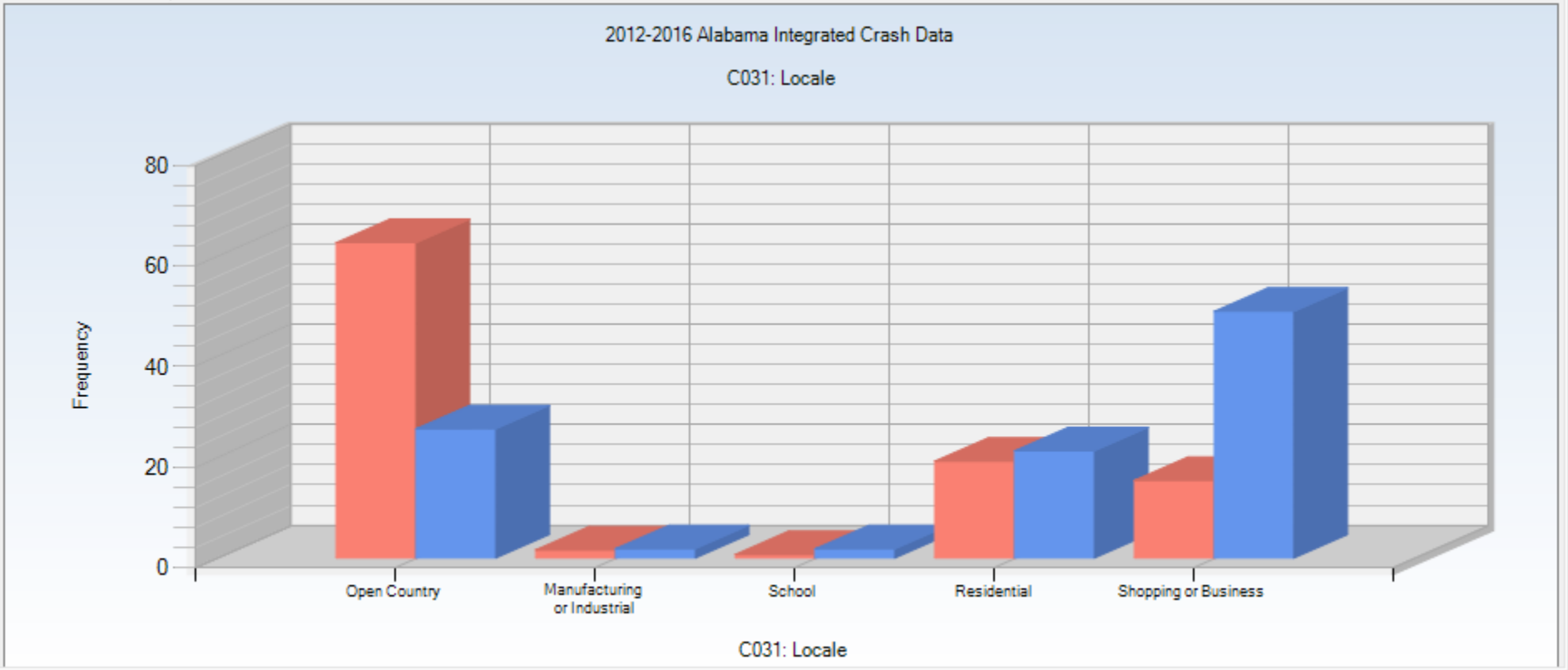
C031: Locale	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Open Country	28597	62.93	165294	25.76	2.443*	16889.636
Manufacturing or Industrial	727	1.60	11826	1.84	0.868*	-110.606
School	313	0.69	11596	1.81	0.381*	-508.316
Residential	8774	19.31	137194	21.38	0.903*	-943.111
Shopping or Business	7033	15.48	315705	49.20	0.315*	-15327.603

C031: Locale

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



Roadway Features

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Fatality Over-Represented Highway Classes**
  - ✓ Primarily County (17,600; OR=2.887)
  - ✓ Interstate (7,388; OR=1.700)
- **Over-Represented:**
  - ✓ Event Location: Roadside, Shoulder, Off Roadway
  - ✓ Median, Outside of ROW
  - ✓ Traffic Control: No-Passing and Warning Signs
  - ✓ All Curves, especially on down-grades (ORs=3 to 7)
  - ✓ Non-intersection crashes (characteristic of rural)

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

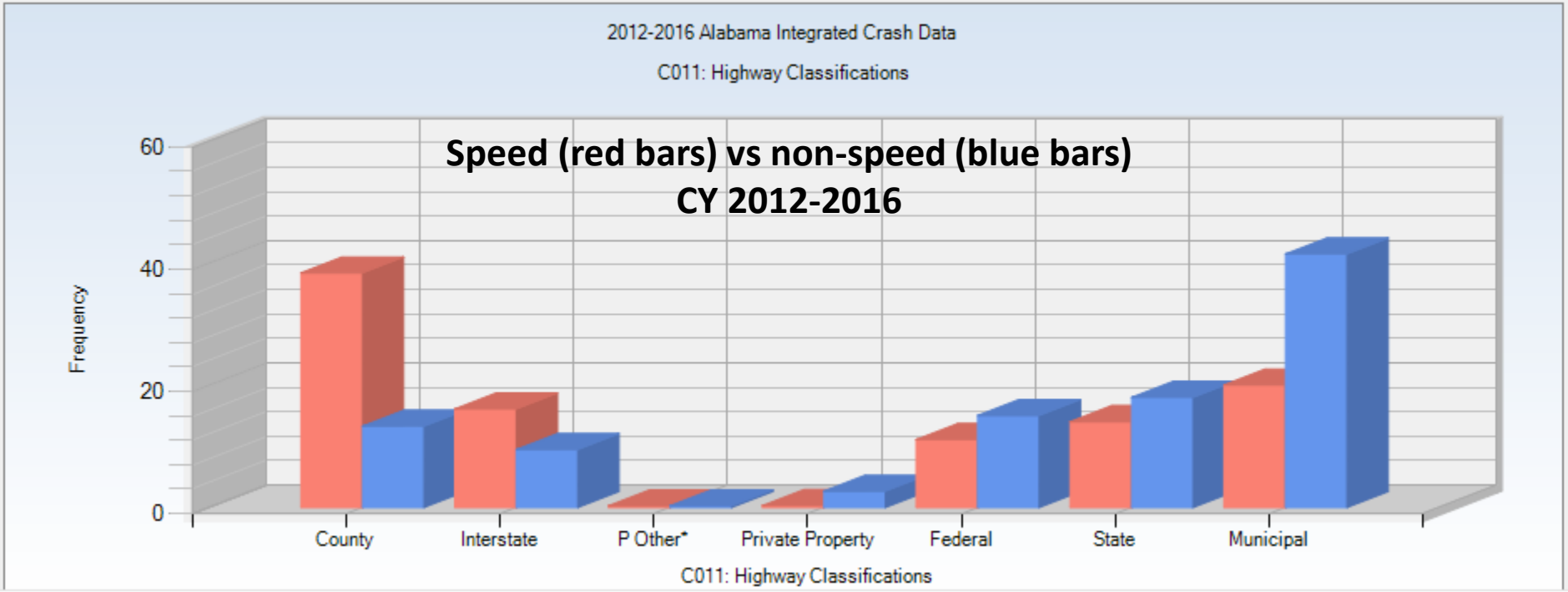
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

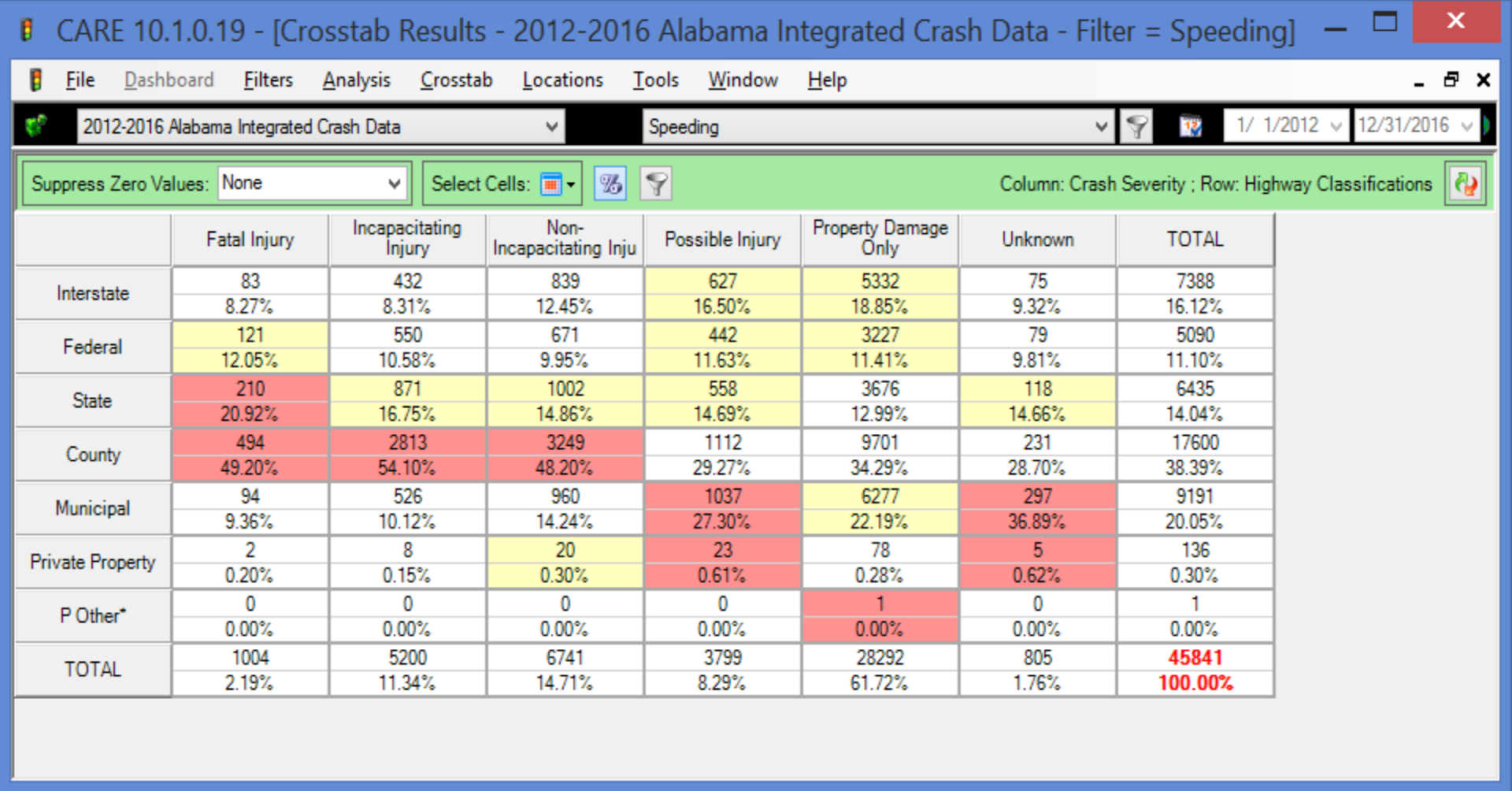
C011: Highway Classifications	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
County	17600	38.39	86281	13.30	2.887*	11504.675
Interstate	7388	16.12	61526	9.48	1.700*	3041.493
P Other*	1	0.00	20	0.00	0.708	-0.413
Private Property	136	0.30	17342	2.67	0.111*	-1089.126
Federal	5090	11.10	97726	15.06	0.737*	-1813.857
State	6435	14.04	116847	18.01	0.780*	-1819.661
Municipal	9191	20.05	269150	41.48	0.483*	-9823.112

C007: Week of the Year
C008: Time of Day
C009: Data Source
C010: Rural or Urban
C011: Highway Classifications
C012: Controlled Access
C013: E Highway Side
C015: Primary Contributing Circumstanc
C016: Primary Contributing Unit Numbe
C017: First Harmful Event

Sort by Sum of Max Gain

Display Filter Name





	Fatal Injury	Incapacitating Injury	Non-Incapacitating Inju	Possible Injury	Property Damage Only	Unknown	TOTAL
Interstate	83 8.27%	432 8.31%	839 12.45%	627 16.50%	5332 18.85%	75 9.32%	7388 16.12%
Federal	121 12.05%	550 10.58%	671 9.95%	442 11.63%	3227 11.41%	79 9.81%	5090 11.10%
State	210 20.92%	871 16.75%	1002 14.86%	558 14.69%	3676 12.99%	118 14.66%	6435 14.04%
County	494 49.20%	2813 54.10%	3249 48.20%	1112 29.27%	9701 34.29%	231 28.70%	17600 38.39%
Municipal	94 9.36%	526 10.12%	960 14.24%	1037 27.30%	6277 22.19%	297 36.89%	9191 20.05%
Private Property	2 0.20%	8 0.15%	20 0.30%	23 0.61%	78 0.28%	5 0.62%	136 0.30%
P Other*	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 0.00%	0 0.00%	1 0.00%
TOTAL	1004 2.19%	5200 11.34%	6741 14.71%	3799 8.29%	28292 61.72%	805 1.76%	45841 100.00%

County Roads have 38.39% of all speed crashes, but 49.20% of the fatal speed crashes. Interstate, Federal and State combined have fewer fatal crashes (414 = 41.23%).

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C203: CU First Harmful Event Location	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Roadside	15687	34.62	40704	6.77	5.113*	12619.075
E Shoulder	5457	12.04	20497	3.41	3.532*	3912.108
Off Roadway	1883	4.16	8290	1.38	3.014*	1258.169
Median	1427	3.15	5896	0.98	3.211*	982.609
E Outside of Right-of-Way	1294	2.86	4730	0.79	3.630*	937.492
E Off Roadway - Location Un...	1226	2.71	5263	0.88	3.091*	829.319
E At Intersection no Crosswalk	247	0.55	10812	1.80	0.303*	-567.918
On Roadway	18097	39.93	505069	84.00	0.475*	-19970.856

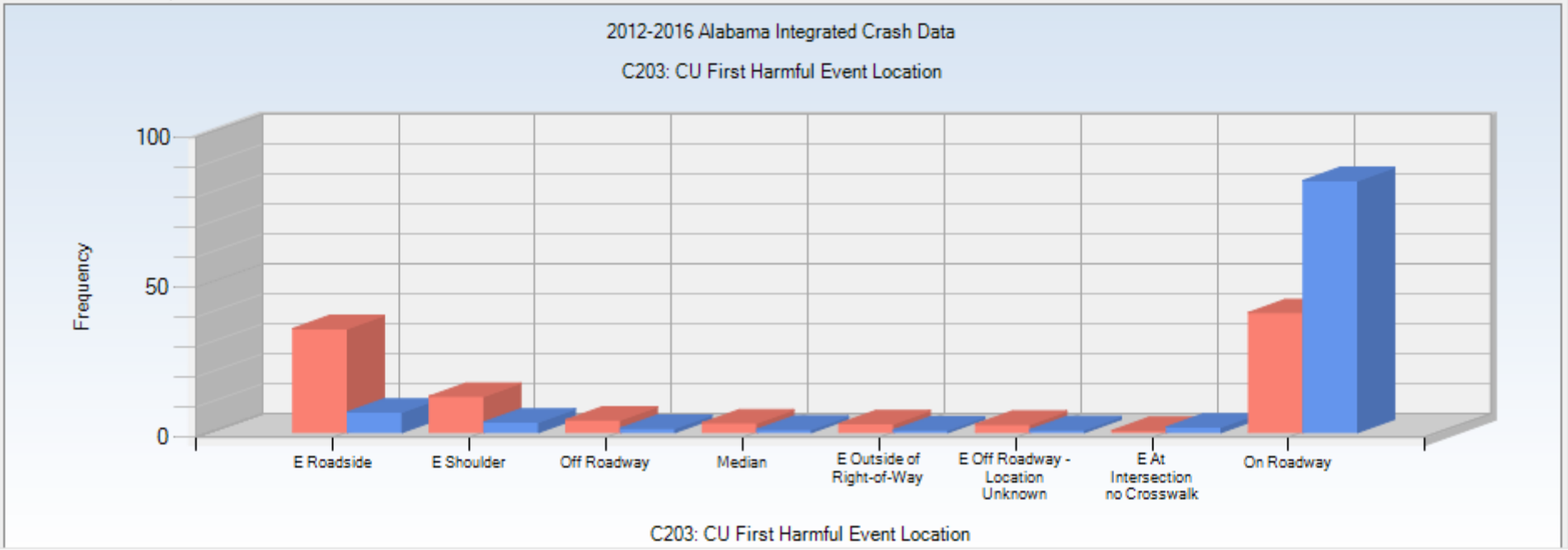
C203: CU First Harmful Event Location

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

200 or more Speed Crashes

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C409: CU Traffic Control	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No Passing Zone	12084	26.96	44898	7.59	3.552*	8682.435
No Controls Present	26128	58.30	307531	51.99	1.121*	2828.818
Lane Control Device	1680	3.75	12817	2.17	1.730*	708.958
E Warning Sign	103	0.23	302	0.05	4.502*	80.120
E Workzone Signs	203	0.45	1677	0.28	1.598*	75.947
Yield Sign	183	0.41	16197	2.74	0.149*	-1044.118
Stop Sign	1180	2.63	57765	9.77	0.270*	-3196.395
Traffic Signals	3254	7.26	150336	25.42	0.286*	-8135.765

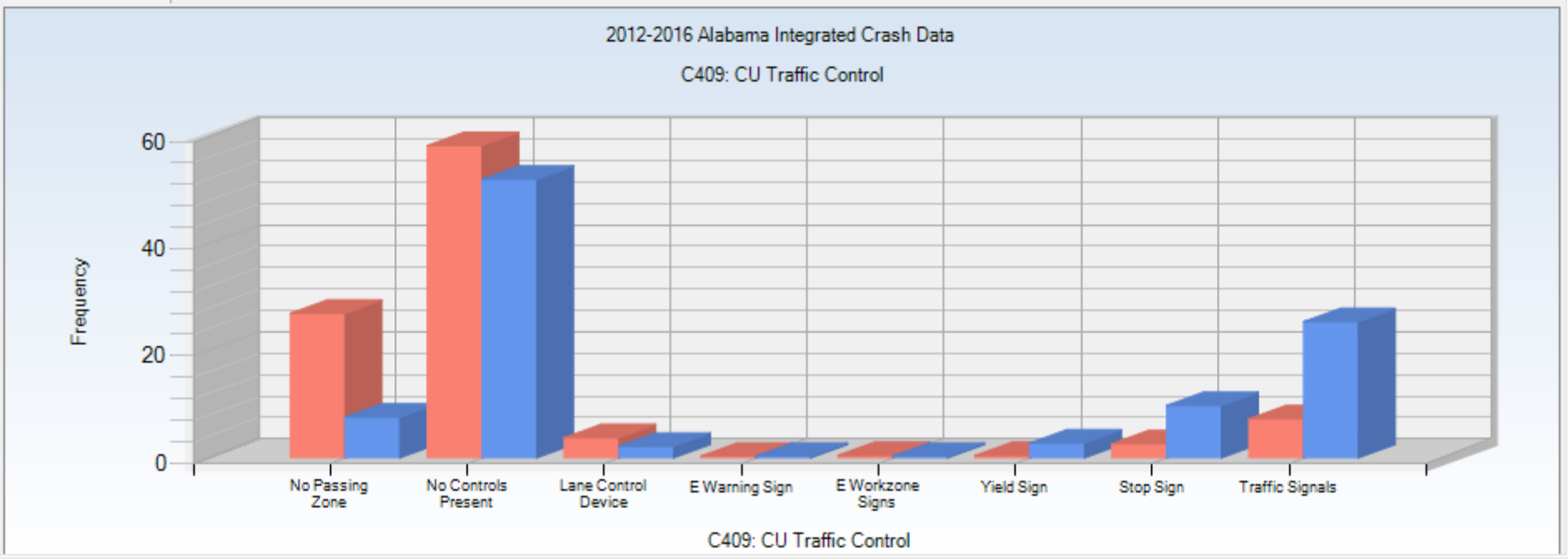
C409: CU Traffic Control

Speed (red bars) vs non-speed (blue bars) CY 2016

100 or more Speed Crashes

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

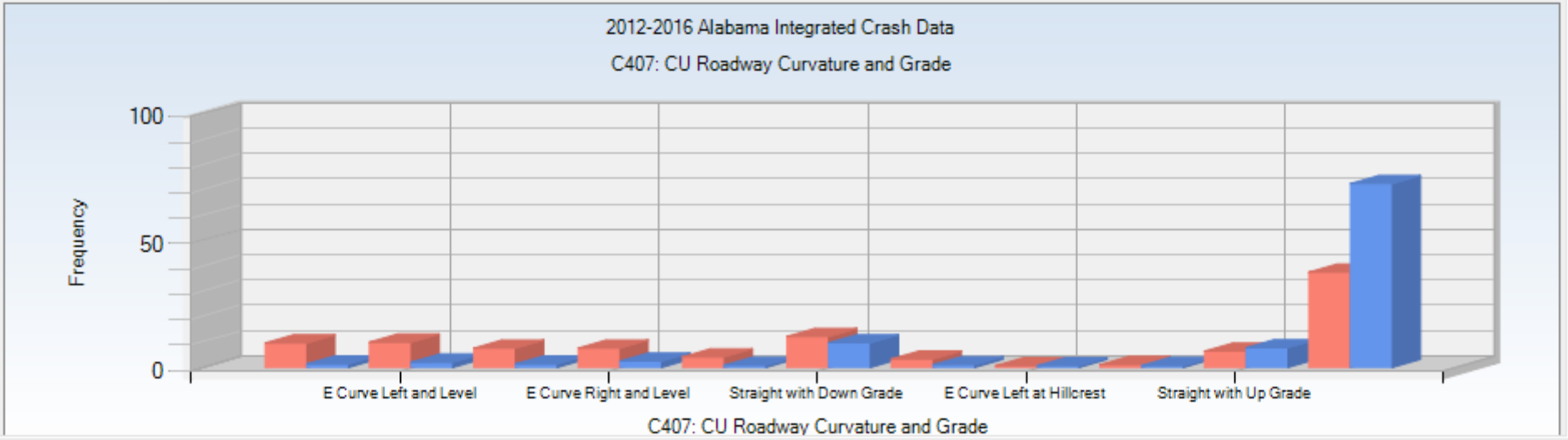
C407: CU Roadway Curvature and Grade	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Curve Left and Down Grade	4334	9.61	8216	1.36	7.076*	3721.496
E Curve Left and Level	4497	9.98	12420	2.05	4.857*	3571.087
E Curve Right and Down Grade	3424	7.60	8385	1.39	5.477*	2798.897
E Curve Right and Level	3432	7.61	14968	2.48	3.076*	2316.133
E Curve Left and Up Grade	1876	4.16	5071	0.84	4.962*	1497.956
Straight with Down Grade	5505	12.21	58707	9.71	1.258*	1128.385
E Curve Right and Up Grade	1493	3.31	6329	1.05	3.164*	1021.172
E Curve Left at Hillcrest	224	0.50	504	0.08	5.962*	186.427
Straight at Hillcrest	482	1.07	4471	0.74	1.446*	148.686
Straight with Up Grade	2877	6.38	47062	7.78	0.820*	-631.479
Straight and Level	16932	37.56	438507	72.52	0.518*	-15758.761

C407: CU Roadway Curvature and Grade

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

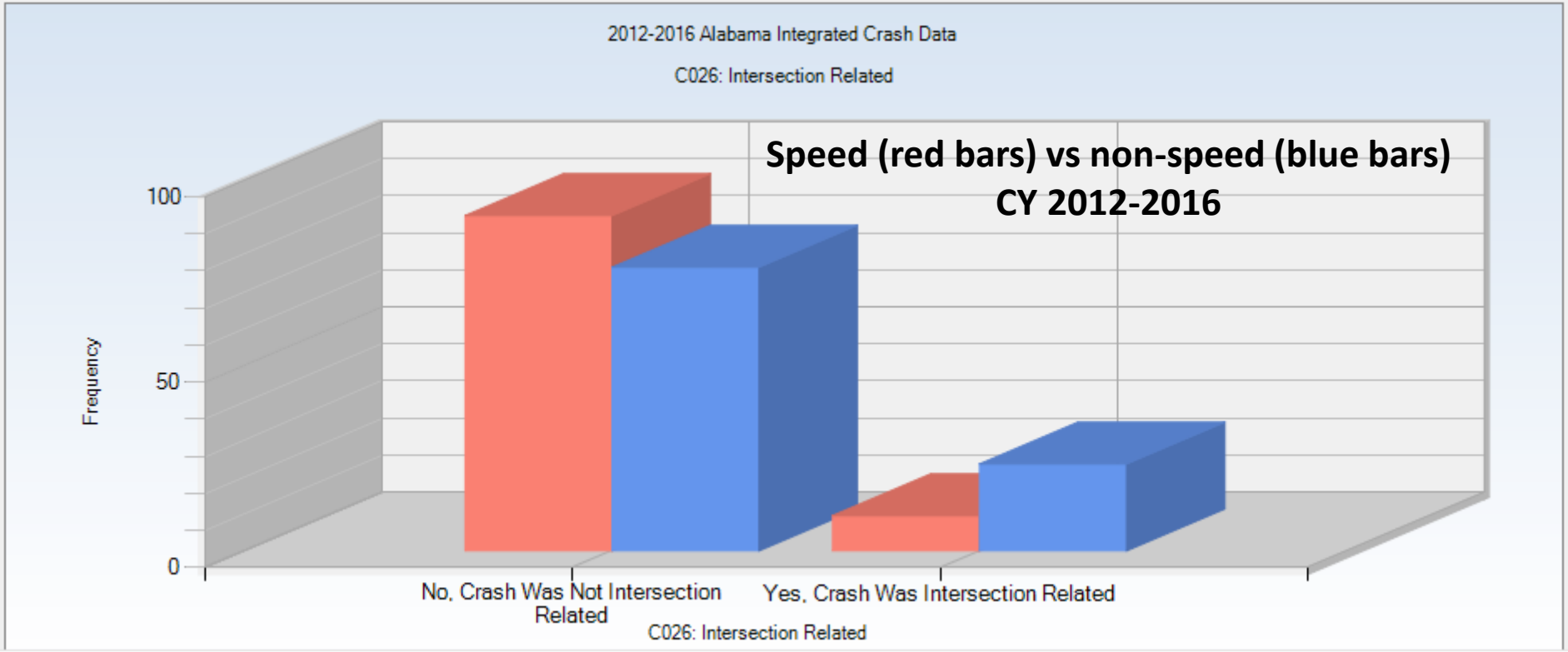
Order: Max Gain | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C026: Intersection Related	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No, Crash Was Not Intersectio...	41485	90.50	496869	76.57	1.182*	6383.671
Yes, Crash Was Intersection ...	4356	9.50	152023	23.43	0.406*	-6383.671

C022: E Type of Roadway Junction/Featu
C023: E Manner of Crash
C024: School Bus Related
C025: Crash Severity
C026: Intersection Related
C027: At Intersection
C028: Mileposted Route
C029: Lighting Conditions

Sort by Sum of Max Gain

Display Filter Name



Weather – Road Condition

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- Generally, Reduced Speeds Reduce Fatalities
- For Crashes Analyzed, Speed Was Involved
- Increased Probability of Crash with Bad Weather
- Crash Multipliers (of Odds Ratios) for Speed Crashes

Condition	Speed Multiplier
✓ Speed and Ice	17.2
✓ Speed and Slush	14.8
✓ Speed and Water Buildup	11.5
✓ Speed and Snow	10.1
✓ Speed and Muddy	8.4
✓ Speed and Wet	3.5

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

Order: Odds Ratio | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

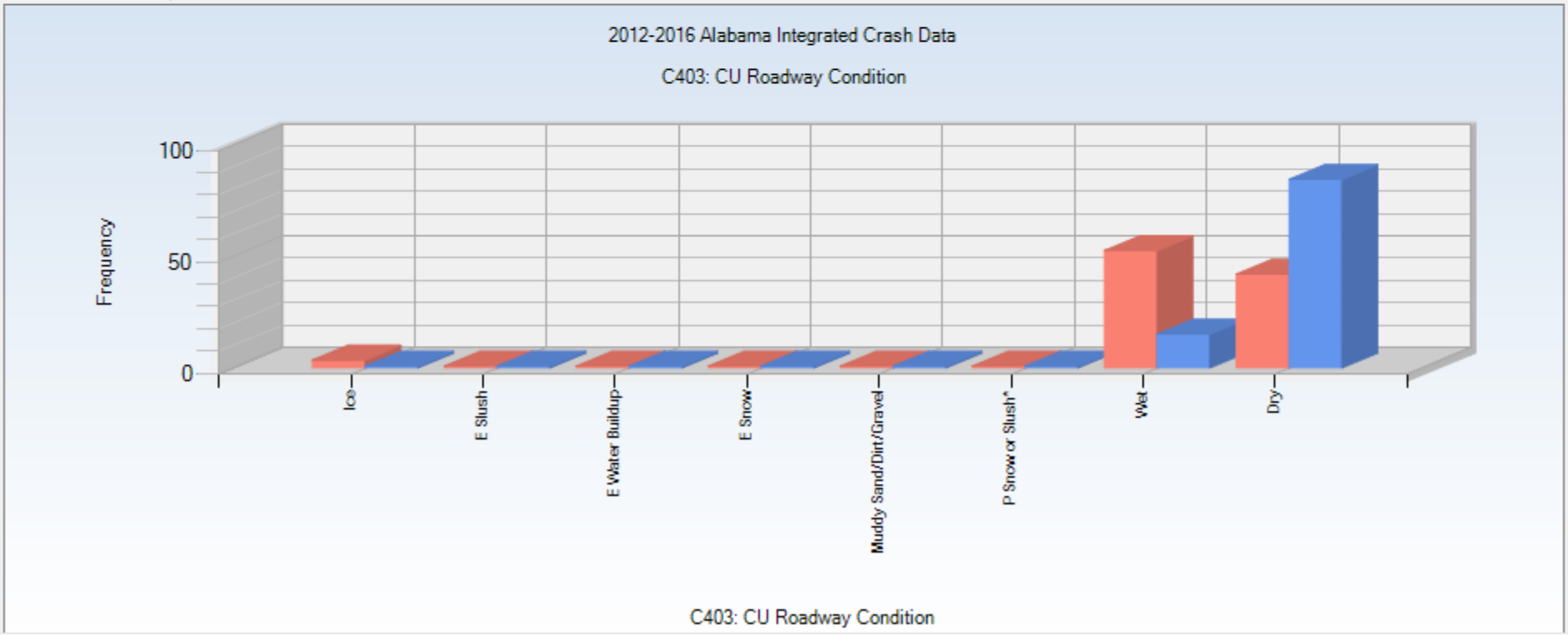
C403: CU Roadway Condition	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Ice	1584	3.48	1227	0.20	17.243*	1492.134
E Slush	136	0.30	123	0.02	14.768*	126.791
E Water Buildup	272	0.60	315	0.05	11.533*	248.416
E Snow	284	0.62	376	0.06	10.088*	255.849
Muddy Sand/Dirt/Gravel	160	0.35	254	0.04	8.413*	140.983
P Snow or Slush*	17	0.04	34	0.01	6.678	14.454
Wet	23949	52.57	91849	15.09	3.483*	17072.227
Dry	19155	42.05	514300	84.52	0.497*	-19350.854

C403: CU Roadway Condition

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

Order: Odds Ratio | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

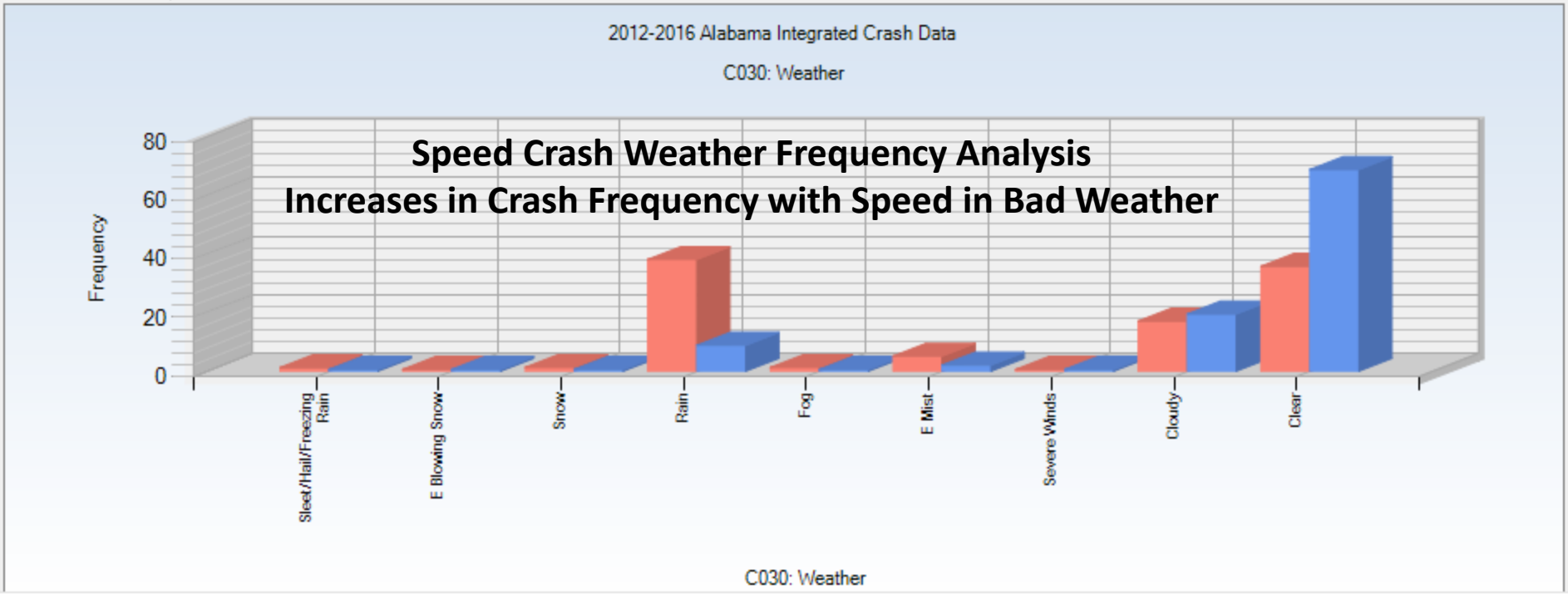
C030: Weather	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Sleet/Hail/Freezing Rain	551	1.20	668	0.10	11.666*	503.769
E Blowing Snow	42	0.09	59	0.01	10.068*	37.828
Snow	585	1.28	913	0.14	9.062*	520.446
Rain	17461	38.17	56978	8.81	4.334*	13432.357
Fog	557	1.22	2942	0.45	2.678*	348.985
E Mist	2330	5.09	13288	2.05	2.480*	1390.469
Severe Winds	17	0.04	218	0.03	1.103	1.586
Cloudy	7826	17.11	126159	19.50	0.877*	-1094.103
Clear	16378	35.80	445785	68.90	0.520*	-15141.337

C030: Weather

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



Crash Characteristics

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Clear Roadside Countermeasures (Fatal Crashes)**
  - ✓ Tree (222), Vehicle (189), Ditch (106), Rollover (96)
  - ✓ RoRoad Right (53), Embankment (45), Culvert (40)
- **Over-Represented Speed vs Non-speed (Odds Ratio)**
  - ✓ Single-vehicle crashes (3.5)
  - ✓ Ran-off-the road left and right (4.8)
  - ✓ Bridge Abutment or Concrete Barrier (6.6)
  - ✓ Guardrail or Overturned (5.2)
  - ✓ Negotiating a curve (8.6)

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C017: First Harmful Event	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Collision with Ditch	5966	13.86	14066	2.39	5.802*	4937.782
Collision with Tree	4805	11.16	10715	1.82	6.135*	4021.738
E Ran Off Road Right	3571	8.30	17735	3.01	2.755*	2274.579
Overturn/Rollover	2517	5.85	6150	1.04	5.599*	2067.438
E Ran Off Road Left	2237	5.20	9163	1.56	3.340*	1567.189
E Collision with Embankment	1446	3.36	2410	0.41	8.208*	1269.830
E Collision with Concrete Barrier	1438	3.34	2675	0.45	7.354*	1242.459
E Collision with Guardrail Face	1224	2.84	3072	0.52	5.451*	999.438
Collision with Utility Pole	1268	2.95	4806	0.82	3.609*	916.684
Collision with Fence	903	2.10	2357	0.40	5.241*	730.704
Collision with Sign Post	934	2.17	3398	0.58	3.760*	685.608
Collision with Culvert Headwall	747	1.74	2171	0.37	4.707*	588.301
Collision with Mailbox	785	1.82	3221	0.55	3.334*	549.546
Collision with Bridge Abutment...	603	1.40	1387	0.24	5.947*	501.611
Collision with Other Fixed Obj...	747	1.74	4059	0.69	2.518*	450.289
E Collision with Curb/Island/R...	648	1.51	3111	0.53	2.849*	420.587
E Evasive Action (Swerve/Br...	655	1.52	4568	0.78	1.962*	321.081
Collision with Parked Motor V...	505	1.17	28936	4.91	0.239*	-1610.209
Collision with Vehicle in Traffic	12038	27.97	464745	78.94	0.354*	-21934.655

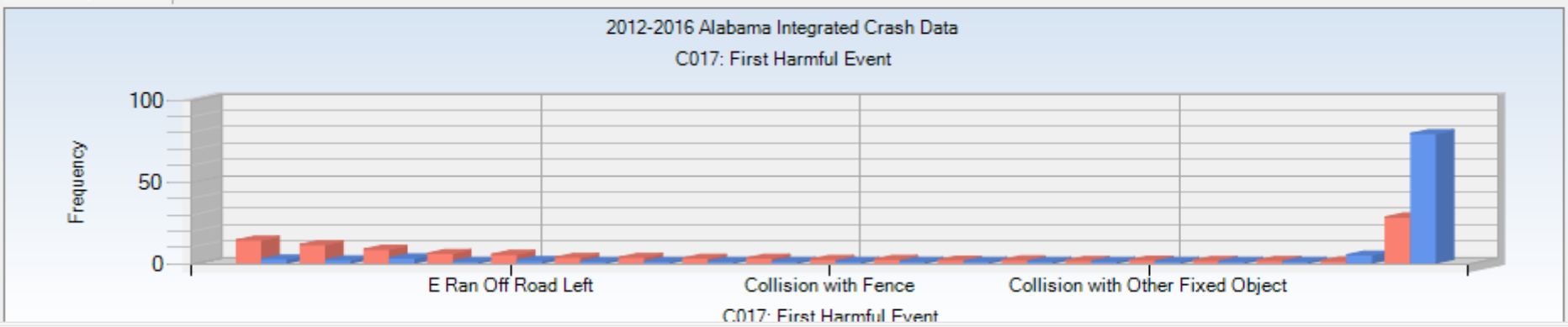
C017: First Harmful Event

Speed (red bars) vs non-speed (blue bars)
CY 2012-2016

Items with > 600 speeding crashes

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [Crosstab Results - 2012-2016 Alabama Integrated Crash Data - Filter = Speed FH...

File Dashboard Filters Analysis Crosstab Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speed FHE > 10 Fatal Crshes | 1/ 1/2012 | 12/31/2016

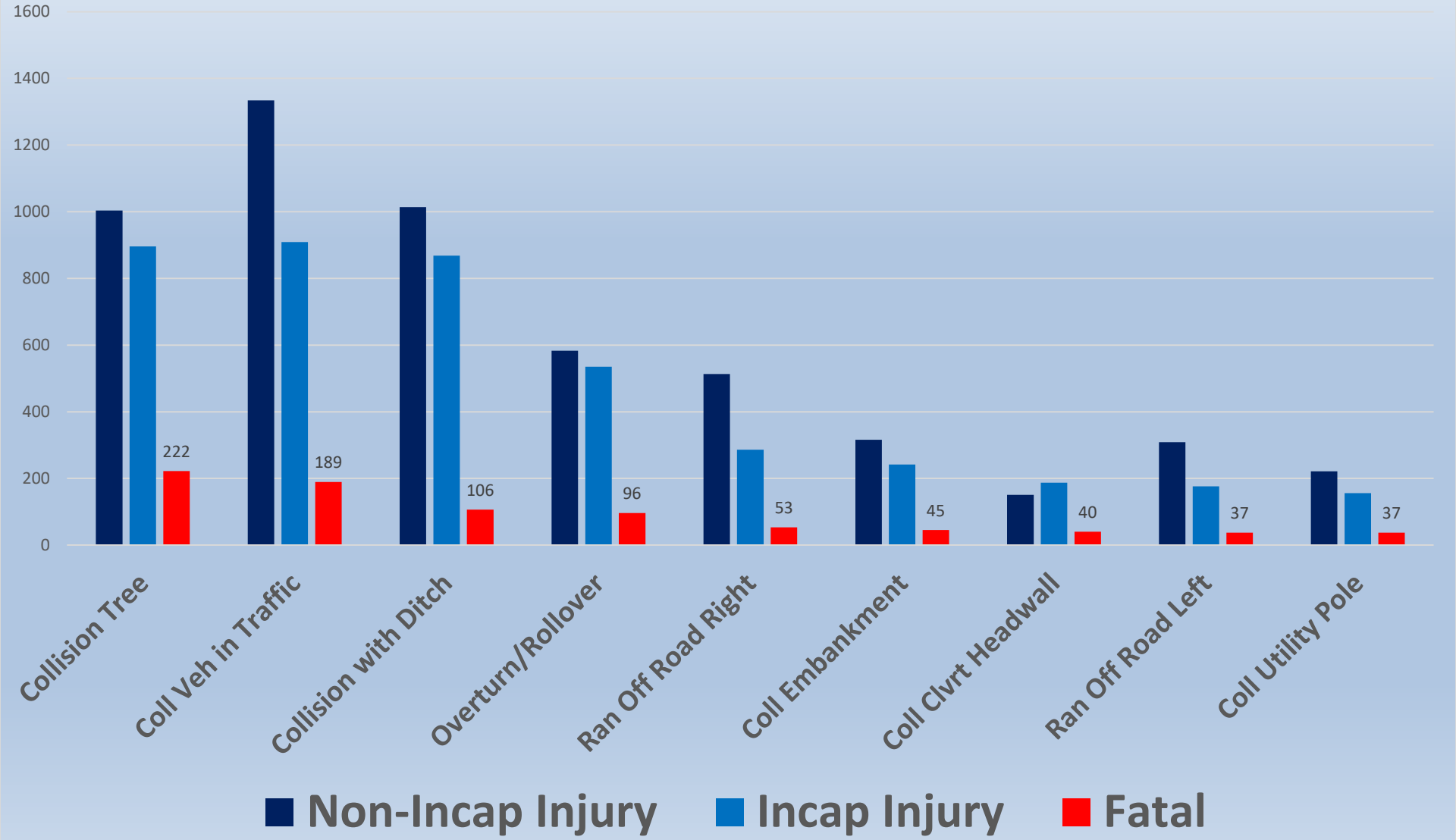
Suppress Zero Values: Rows and Columns | Select Cells: | Column: Crash Severity ; Row: First Harmful Event

	Fatal Injury	Incapacitating Injury	Non-Incapacitating Inju	Possible Injury	Property Damage Only	TOTAL
E Ran Off Road Right	53	286	513	374	2220	3446
	5.72%	6.06%	8.55%	11.60%	9.29%	8.89%
E Ran Off Road Left	37	176	309	228	1385	2135
	4.00%	3.73%	5.15%	7.07%	5.80%	5.51%
Overturn/Rollover	96	535	583	172	1100	2486
	10.37%	11.33%	9.72%	5.33%	4.60%	6.41%
Collision with Vehicle in Traffic	189	909	1334	1334	8079	11845
	20.41%	19.25%	22.24%	41.36%	33.82%	30.56%
Collision with Culvert Headwall	40	187	151	49	313	740
	4.32%	3.96%	2.52%	1.52%	1.31%	1.91%
Collision with Ditch	106	868	1014	333	3580	5901
	11.45%	18.39%	16.90%	10.33%	14.99%	15.22%
E Collision with Embankment	45	242	316	78	752	1433
	4.86%	5.13%	5.27%	2.42%	3.15%	3.70%
E Collision with Guardrail Face	13	73	122	80	924	1212
	1.40%	1.55%	2.03%	2.48%	3.87%	3.13%
E Collision with Guardrail End	12	29	34	16	135	226
	1.30%	0.61%	0.57%	0.50%	0.57%	0.58%
Collision with Tree	222	896	1004	306	2323	4751
	23.97%	18.98%	16.74%	9.49%	9.72%	12.26%
Collision with Utility Pole	37	156	221	96	739	1249
	4.00%	3.30%	3.68%	2.98%	3.09%	3.22%
Collision with Sign Post	20	87	98	49	672	926
	2.16%	1.84%	1.63%	1.52%	2.81%	2.39%
Collision with Fence	18	81	103	26	665	893
	1.94%	1.72%	1.72%	0.81%	2.78%	2.30%
Collision with Mailbox	24	95	95	36	530	780
	2.59%	2.01%	1.58%	1.12%	2.22%	2.01%
Collision with Other Fixed Objec	14	101	102	48	473	738
	1.51%	2.14%	1.70%	1.49%	1.98%	1.90%
TOTAL	926	4721	5999	3225	23890	38761
	2.39%	12.18%	15.48%	8.32%	61.63%	100.00%

Speed crash First Hazardous Event by severity provides basis for the chart on the next display. Items with > 10 fatal speeding crashes over 2012-2016

This and further similar analyses can be used to prioritize clear roadside contermeasures.

2012-2016 Severity by 1st Harmful Event
30 or more Speed Involved Fatal Crashes
Ordered Descending by Fatal Crashes



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

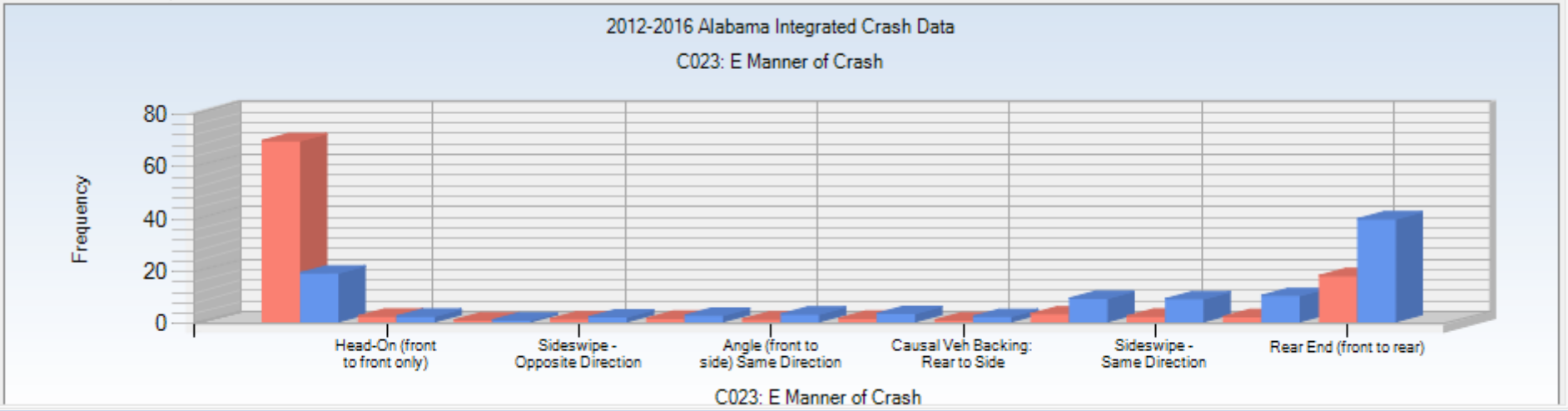
C023: E Manner of Crash	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Single Vehicle Crash (all types)	30460	69.00	111308	18.55	3.719*	22270.508
Head-On (front to front only)	910	2.06	12422	2.07	0.996	-3.949
Causal Veh Backing: Rear to ...	3	0.01	3524	0.59	0.012	-256.278
Sideswipe - Opposite Direction	455	1.03	10793	1.80	0.573*	-339.096
Angle Oncoming (frontal)	543	1.23	14346	2.39	0.514*	-512.508
Angle (front to side) Same Dire...	431	0.98	16967	2.83	0.345*	-817.348
Angle (front to side) Opposite ...	543	1.23	18763	3.13	0.393*	-837.489
Causal Veh Backing: Rear to ...	10	0.02	12091	2.02	0.011	-879.596
Side Impact (angled)	1311	2.97	53336	8.89	0.334*	-2613.199
Sideswipe - Same Direction	905	2.05	51862	8.64	0.237*	-2910.749
Side Impact (90 degrees)	827	1.87	59569	9.93	0.189*	-3555.792
Rear End (front to rear)	7746	17.55	235005	39.17	0.448*	-9544.505

C023: E Manner of Crash

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C204: E CU Sequence of Events #1	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Ran Off Road Right	13637	31.49	39265	6.96	4.523*	10622.228
Ran Off Road Left	7812	18.04	19701	3.49	5.164*	6299.354
Evasive Action (Swerve/Brake)	5028	11.61	29457	5.22	2.223*	2766.287
Crossed Centerline	2459	5.68	12997	2.30	2.464*	1461.089
Collision with Concrete Barrier	732	1.69	1467	0.26	6.499*	619.364
Ran Off Road Straight	821	1.90	3135	0.56	3.411*	580.294
Collision with Ditch	527	1.22	1833	0.33	3.745*	386.262
Overturn/Rollover	406	0.94	1056	0.19	5.007*	324.920
Collision with Guardrail Face	380	0.88	900	0.16	5.499*	310.898
Collision with Curb/Island/Rai...	490	1.13	2337	0.41	2.731*	310.565
Collision with Bridge Abutment...	304	0.70	582	0.10	6.803*	259.314
Collision with Tree	353	0.82	1823	0.32	2.522*	213.030
Collision with Utility Pole	202	0.47	1599	0.28	1.645*	79.229
Collision with Sign Post	133	0.31	886	0.16	1.955*	64.973
Crossed Median	117	0.27	891	0.16	1.710*	48.589
Collision with Mailbox	105	0.24	944	0.17	1.449*	32.520
Collision with Other Fixed Object	150	0.35	2182	0.39	0.895	-17.534
Collision with Vehicle in (or fro...	171	0.39	13061	2.32	0.171*	-831.825
Collision with Parked Motor Ve...	291	0.67	25683	4.55	0.148*	-1680.944
Collision with Vehicle in Traffic	9185	21.21	404188	71.67	0.296*	-21848.611

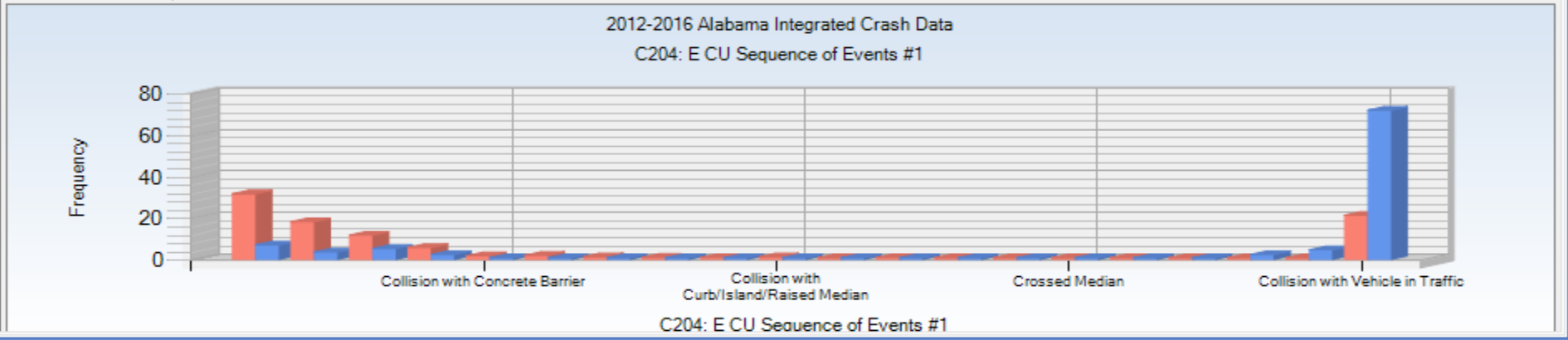
C204: E CU Sequence of Events #1

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Speed Crashes > 100

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

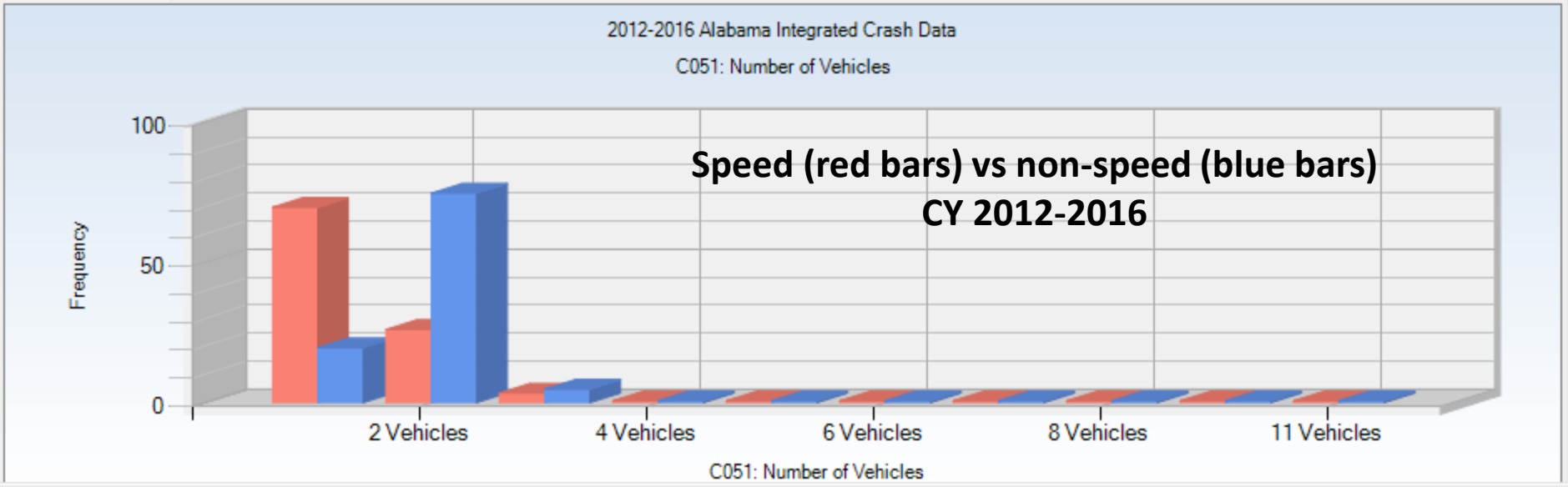
Order: Natural Order | Ascending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

C051: Number of Vehicles	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
1 Vehicle	31997	69.80	127434	19.64	3.554*	22994.420
2 Vehicles	11953	26.07	485459	74.81	0.349*	-22342.270
3 Vehicles	1546	3.37	30962	4.77	0.707*	-641.312
4 Vehicles	270	0.59	4201	0.65	0.910	-26.780
5 Vehicles	52	0.11	624	0.10	1.180	7.917
6 Vehicles	15	0.03	141	0.02	1.506	5.039
7 Vehicles	3	0.01	47	0.01	0.904	-0.320
8 Vehicles	3	0.01	15	0.00	2.831	1.940
9 Vehicles	1	0.00	4	0.00	3.539	0.717
11 Vehicles	1	0.00	1	0.00	14.155	0.929

C045: ALDOT Area
C046: ALDOT Region
C047: ADECAAHSO Region
C048: Regional Planning Organization
C049: Has Coordinate
C050: E MapClick Used
C051: Number of Vehicles
C052: Number of Drivers Recorded
C053: Number of Persons Recorded
C054: Number of Motorists Recorded
C055: Number of Non-Motorists Record
C056: Number of Pedestrians
C057: Number of Pedacyclists

Sort by Sum of Max Gain

Display Filter Name



CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding AND No...

File Dashboard Filters Analysis Impact Locations Tools Window Help

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

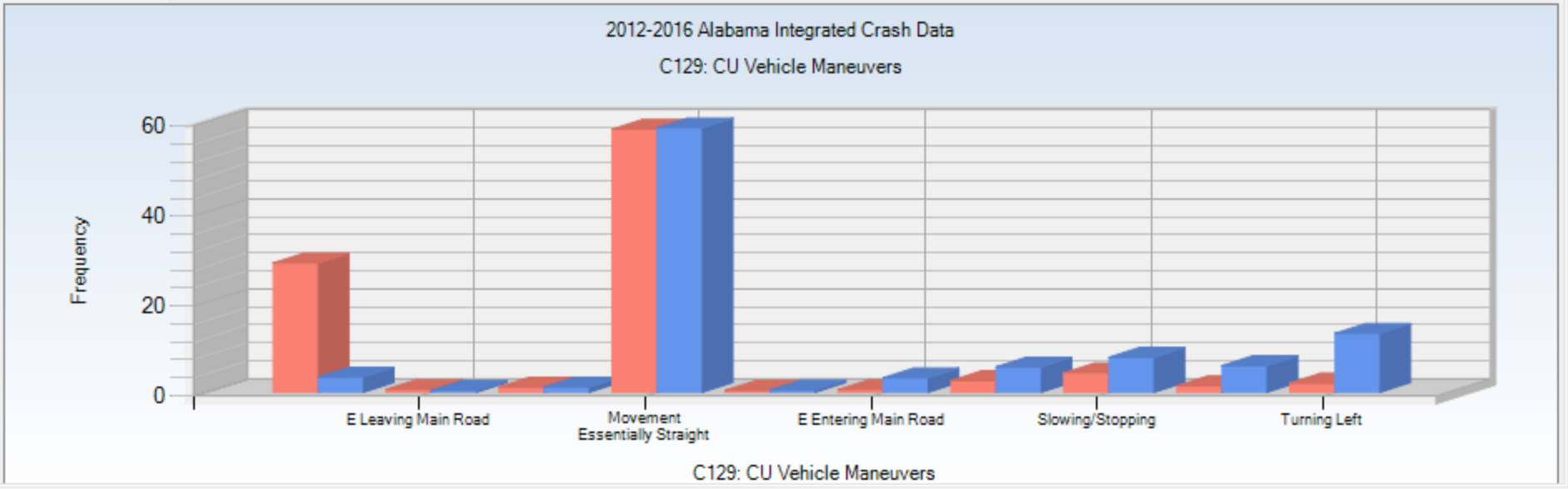
C129: CU Vehicle Maneuvers	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Negotiating a Curve	13053	28.78	19013	3.36	8.559*	11527.864
E Leaving Main Road	277	0.61	2113	0.37	1.634*	107.505
E Overtaking/Passing	526	1.16	6404	1.13	1.024	12.300
Movement Essentially Straight	26573	58.60	332899	58.88	0.995	-130.642
E Stopped for Sign/Signal	25	0.06	2626	0.46	0.119*	-185.646
E Entering Main Road	244	0.54	18017	3.19	0.169*	-1201.242
Turning Right	1169	2.58	31820	5.63	0.458*	-1383.455
Slowing/Stopping	1940	4.28	43918	7.77	0.551*	-1582.902
E Changing Lanes	629	1.39	33468	5.92	0.234*	-2055.651
Turning Left	913	2.01	74031	13.09	0.154*	-5025.430

C129: CU Vehicle Maneuvers

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

Display Filter Name



Vehicle Characteristics

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Passenger Cars and Pickups**
  - ✓ Largest number but relatively small Odds Ratio
- **Most Apt to Involve Speed**
  - ✓ Motorcycle (2.8 times expected)
  - ✓ ATV off road (2.4 times expected)
- **Prob of Fatality for Incap Injury or Worse**
  - ✓ Passenger car (1 in 12); Pick-up (1 in 11); SUV (1 in 14)
  - ✓ Motorcycle (1 in 7); Large truck (1 in 22)
- **Over-Represented Model Years**
  - ✓ All model years 1989-2006
  - ✓ Highly over-represented (15-30%): 1995-2006

2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

Order: Odds Ratio | Descending | Suppress Zero-Valued Rows | Significance: Over Representation | Threshold: 2.0

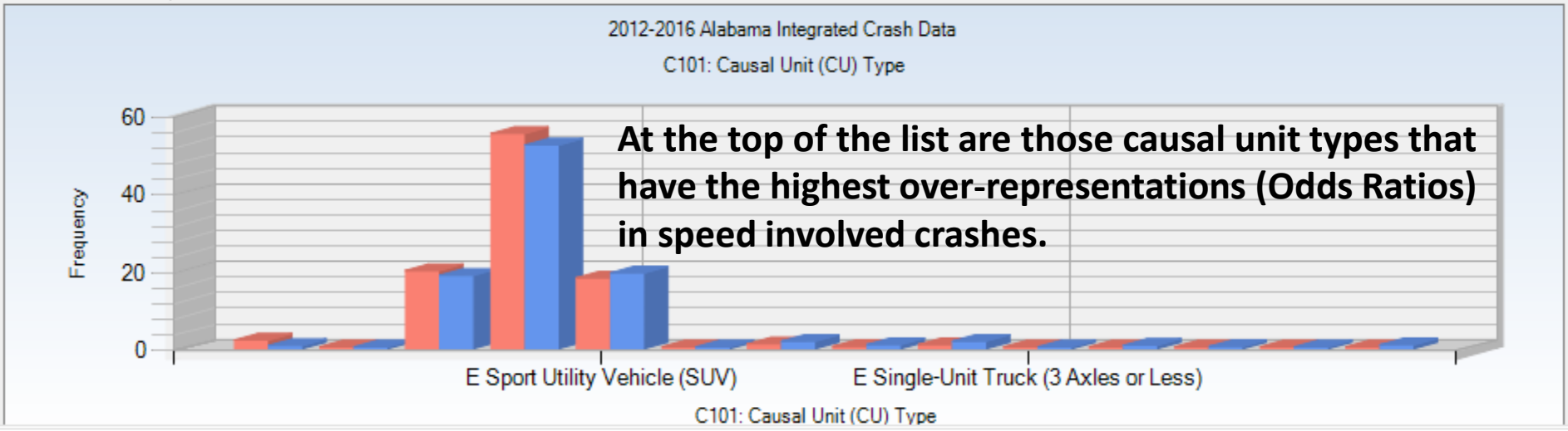
C101: Causal Unit (CU) Type	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Motorcycle	989	2.17	4798	0.78	2.798*	635.545
E 4-Wheel Off Road ATV	83	0.18	469	0.08	2.402*	48.450
Pick-Up (Four-Tire Light Truck)	9140	20.06	116368	18.82	1.066*	567.496
Passenger Car	25190	55.29	323746	52.35	1.056*	1340.542
E Sport Utility Vehicle (SUV)	8282	18.18	120316	19.46	0.934*	-581.342
Station Wagon	128	0.28	2160	0.35	0.804*	-31.121
E Tractor/Semi-Trailer	536	1.18	11742	1.90	0.620*	-329.000
E Van or Mini-Van	259	0.57	6362	1.03	0.553*	-209.671
E Mini-van	466	1.02	11888	1.92	0.532*	-409.756
E Single-Unit Truck (3 Axles or...	86	0.19	2358	0.38	0.495*	-87.707
E Single-Unit Truck (2-Axle/6-...	173	0.38	5211	0.84	0.451*	-210.880
E Cargo Van (10000 lbs or Less)	111	0.24	3379	0.55	0.446*	-137.921
E Passenger Van	57	0.13	1783	0.29	0.434*	-74.349
E Unknown Type of Motorized...	58	0.13	5926	0.96	0.133*	-378.552

C101: Causal Unit (CU) Type

Speed (red bars) vs non-speed (blue bars) CY 2012-2016

Sort by Sum of Max Gain

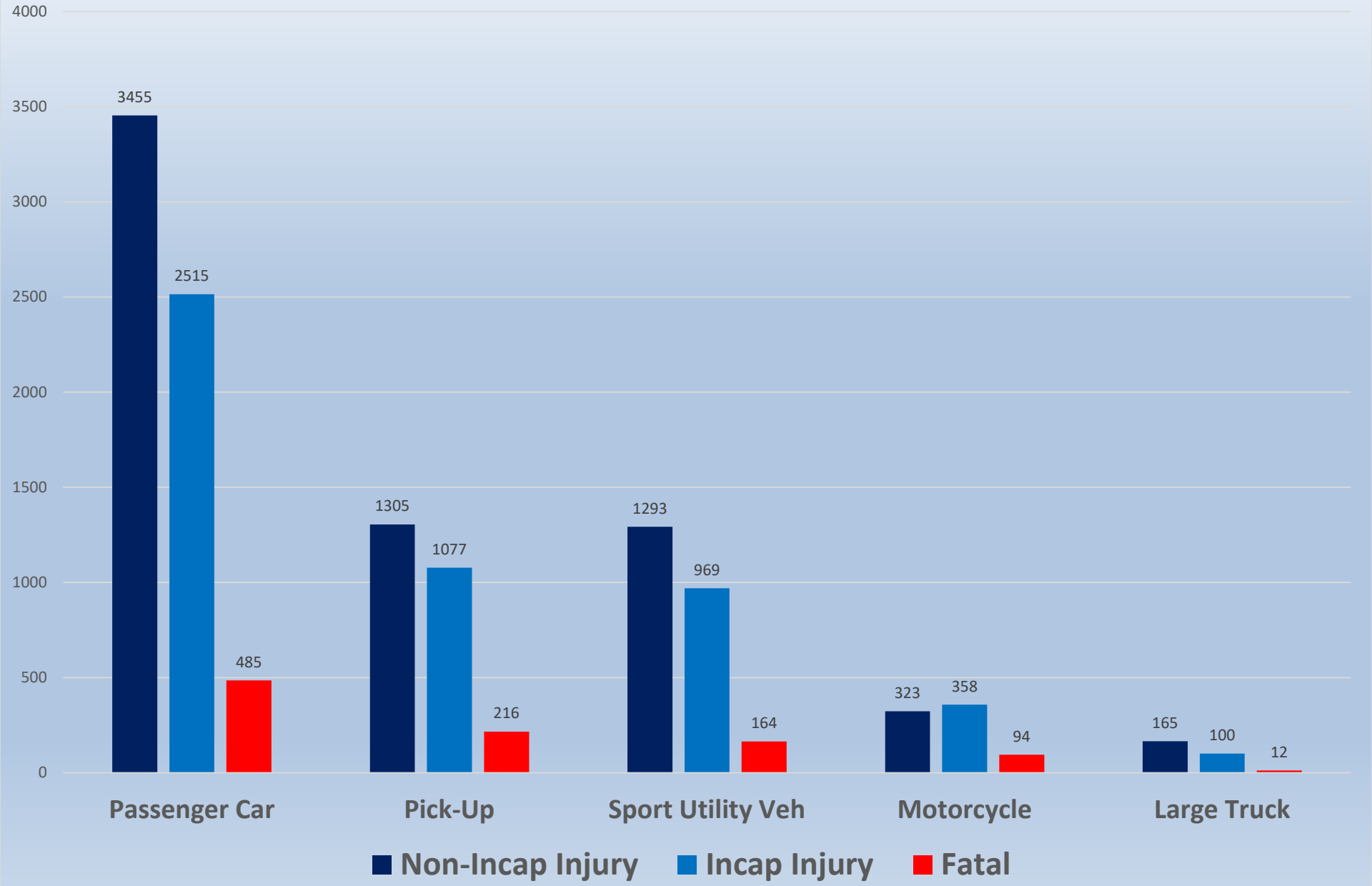
Display Filter Name



At the top of the list are those causal unit types that have the highest over-representations (Odds Ratios) in speed involved crashes.

Causal Unit Type (C101) by Crash Severity

Speed Involved Crashes CY 2012-2016



2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

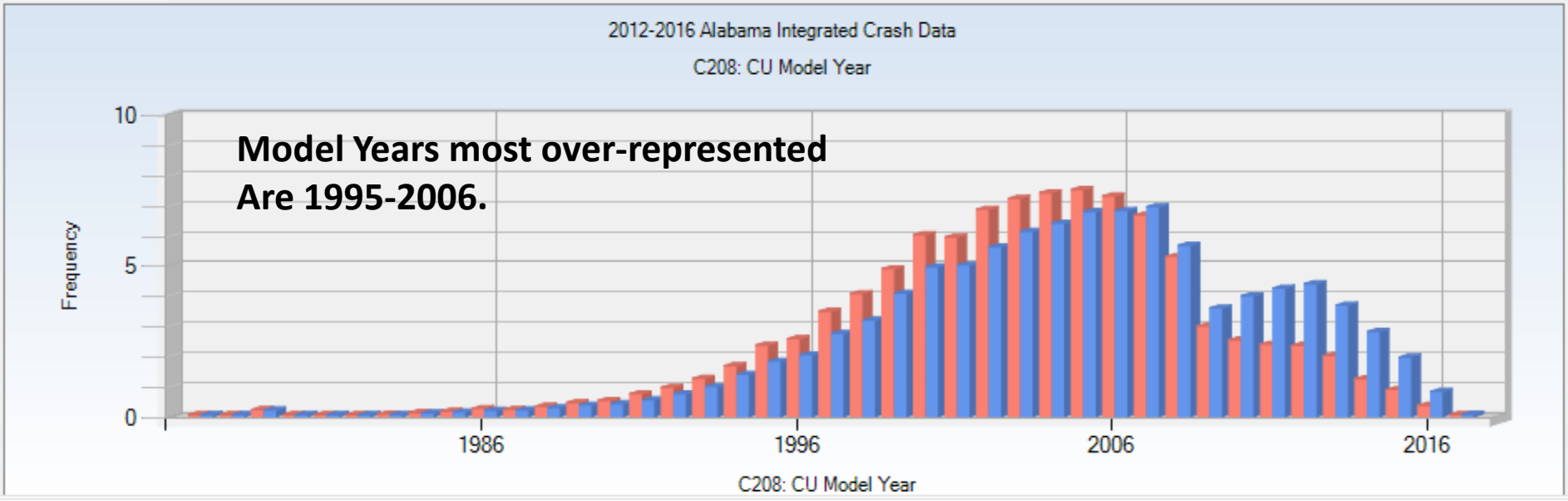
C208: CU Model Year	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
1995	1064	2.37	10801	1.84	1.290*	238.971
1996	1160	2.58	12006	2.04	1.265*	242.927
1997	1569	3.49	16232	2.76	1.265*	329.126
1998	1832	4.08	18815	3.20	1.275*	394.825
1999	2205	4.91	24067	4.09	1.199*	366.654
2000	2712	6.04	29234	4.97	1.214*	478.975
2001	2677	5.96	29589	5.03	1.184*	416.858
2002	3091	6.88	33144	5.64	1.221*	559.311
2003	3254	7.24	36150	6.15	1.178*	492.700
2004	3338	7.43	37771	6.42	1.157*	452.880
2005	3386	7.54	40044	6.81	1.107*	327.258
2006	3290	7.32	40201	6.84	1.071*	219.266

C208: CU Model Year

Speed (red bars) vs non-speed (blue bars) CY 2012-2016 1989-2006 Over-represented

Sort by Sum of Max Gain

Display Filter Name



Pedestrian Behavior

- Only about 0.14% of Speed Crashes
- # Ped Involved over 4 years = 67
- Over-Rep Ped Behavior in Fatal Crashes:
  - ✓ Improper crossing
  - ✓ In roadway
  - ✓ Not visible

CAPS
CENTER for ADVANCED PUBLIC SAFETY

CARE 10.1.0.19 - [IMPACT Results - 2012-2016 Alabama Integrated Crash Data - Speeding vs. Not S...

File Dashboard Filters Analysis Impact Locations Tools Window Help

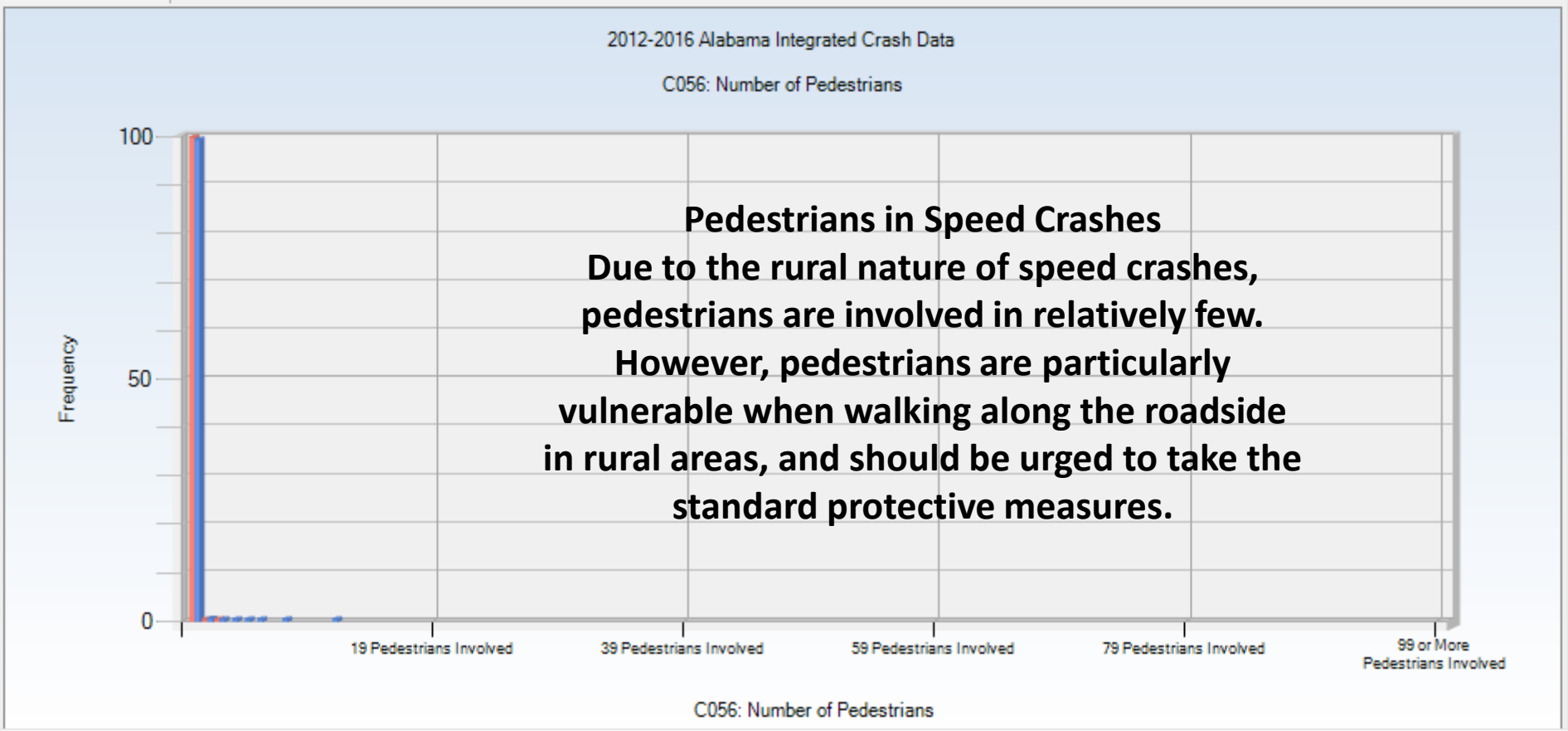
2012-2016 Alabama Integrated Crash Data | Speeding | 1/ 1/2012 | 12/31/2016

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

C056: Number of Pedestrians	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
No Pedestrians Involved	45776	99.86	645044	99.41	1.005*	206.842
1 Pedestrian Involved	63	0.14	3701	0.57	0.241*	-198.457
2 Pedestrians Involved	2	0.00	125	0.02	0.226	-6.831

C054: Number of Motorists Recorded
C055: Number of Non-Motorists Record
C056: Number of Pedestrians
C057: Number of Pedacyclists
C058: Number Injured (Non-Fatal)
Sort by Sum of Max Gain

Display Filter Name



Pedestrians in Speed Crashes
Due to the rural nature of speed crashes, pedestrians are involved in relatively few. However, pedestrians are particularly vulnerable when walking along the roadside in rural areas, and should be urged to take the standard protective measures.

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Recommended Countermeasures

Countermeasure Development - 1

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Speed Reduction to Reduce Fatalities

Analysis: *Fatal Crash AND Speed vs Fatal and NOT Speeding*

- Rural roadways about 77% of speed fatalities
- County roads almost 50% of speed fatalities
- Younger Drivers 16-35 (60% speed vs 37% non-speed)
- Potential Immediate Actions:
  - ✓ Increase in patrol officers ALEA and local
    - Demonstration speed reduction project (comprehensive)
    - Legislative action to recognize problem
  - ✓ Assure compliance with selective enforcement targeting
  - ✓ Roadway improvements: trees, rollovers, utility poles, culverts, ditches, embankments (Most Harmful Event)

Countermeasure Development - 2

CAPS
CENTER for ADVANCED PUBLIC SAFETY

Seatbelt Use Target Groups

Analysis: *Fatal NOT Restrained vs NonF Properly Restrained*

- **DUI (5 times the expected)**
- **Other Severe Violations**
  - ✓ **Speed (8.3); Aggressive (5.4)**
- **Age 16-20 (risk); 21-37 (correlation with DUI)**
- **Single Vehicle Crashes (3.3 times expected)**
- **Potential Immediate Actions**
  - ✓ **Get "Budweiser" to promote seatbelt use ("save our customers")**
  - ✓ **PI&E targeting the worst offenders**
    - **Their friends and relatives – people of influence over them**
    - **Draw targets from intensive psychological studies**

Countermeasure Development - 3

CENTER for ADVANCED PUBLIC SAFETY

Multi-Fatality Crash Target Groups

Analysis: *Multiple Fatality Crashes vs Single Fatality Crashes*

- Age 16-21
- State/Federal Roads as Opposed to County
- Severest of Violations
  - ✓ Cross centerline, wrong way, aggressive driving
  - ✓ DUI same as for single fatality crashes & seatbelts
- Collisions with other Vehicles
  - ✓ As opposed to roadside objects (e.g., trees)
- Countermeasures Must Target Worst Offenders

Most Counter-Intuitive Findings

CAPS
CENTER for ADVANCED PUBLIC SAFETY

- **Weather Conditions and Speed**
  - ✓ Lowest % speed related fatalities occur in rain
  - ✓ Speed increases wet pavement crash % by a factor of 3.5
- **Impaired Driving and Speed**
  - ✓ DUI alcohol use increases 69% for speed crashes
  - ✓ Reported drug use increases 44% for speed crashes
- **Age and Speed**
  - ✓ Highest frequency ages, in order: 18, 17, 19, 20, 16
  - ✓ Drop-off after 20 is consistent to 33
  - ✓ Ages 16-21 cause about 33% of all speed crashes
  - ✓ Six years = 6/50 = 12% of the miles driven (approximate)
- **Roadway**
  - ✓ More County speed fatal crashes than I/S/F combined
  - ✓ Trees are Most Deadly Hit Objects in Speed Crashes

CAPS

CENTER for ADVANCED PUBLIC SAFETY

THANK YOU

Q&A SESSION

David B. Brown,
brown@cs.ua.edu
Rhonda Stricklin
rstricklin@cs.ua.edu
Jesse Norris
jesse.norris@ua.edu

Center for Advanced Public Safety
Tuscaloosa, AL | (866) 349-2273
caps.ua.edu

Connect with UACAPS

CAPS

CENTER *for* ADVANCED PUBLIC SAFETY

Saved v05 to Box and sent it to Rhonda and Jesse.
Save into v06 for updates.

Position Marker

CAPS
CENTER for ADVANCED PUBLIC SAFETY