



# Impaired Driving Analyses

## Characteristic of Crashes

(Alabama 2012 Crash Data)

David B. Brown

[brown@cs.ua.edu](mailto:brown@cs.ua.edu)

February 20, 2014

# Purpose of this Presentation

- **To Present Impaired Driving Crash (ID) Info**
  - To created and improve ID countermeasures
  - To improve their implementations
- **To Train on the Use of CARE/IMPACT**
  - **Critical Analysis Report Environment (CARE)**
  - **Information Mining Performance Analysis Control Technique (IMPACT)**



# Definitions for the Comparison

- **Impaired Driving (ID) – used to be DUI/DWI**
  - Includes alcohol and all other drugs
  - Filter: **all** possible ID indicators in the crash record
- ***Over-Represented* – Proportion Comparison (P)**
  - If ID had no effect, proportions would be equal
  - Significance determined by odds ratio
  - Odds ratio =  $P(\text{ID})/P(\text{non-ID})$



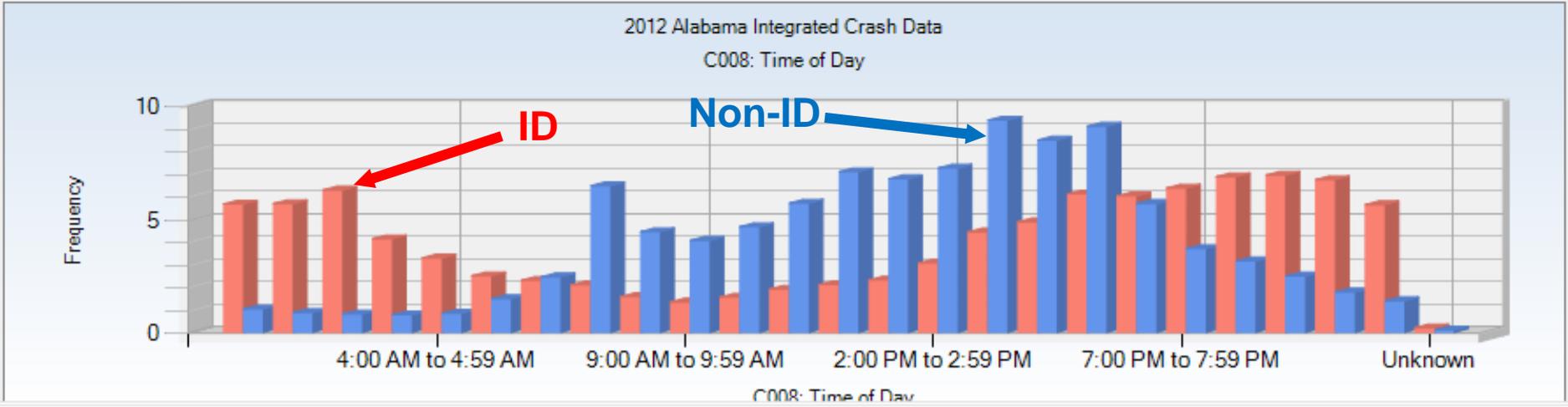
**C008: Time of Day**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	12:00 Midnight to 12:59 AM	395	5.67	1248	1.03	5.510*	323.318
	1:00 AM to 1:59 AM	396	5.68	1062	0.88	6.492*	335.001
	2:00 AM to 2:59 AM	438	6.28	983	0.81	7.758*	381.539
	3:00 AM to 3:59 AM	288	4.13	938	0.77	5.346*	234.123
	4:00 AM to 4:59 AM	229	3.29	1021	0.84	3.905*	170.356
	5:00 AM to 5:59 AM	174	2.50	1799	1.48	1.684*	70.670
	6:00 AM to 6:59 AM	160	2.30	2970	2.45	0.938	-10.590
	7:00 AM to 7:59 AM	146	2.09	7854	6.47	0.324*	-305.115
	8:00 AM to 8:59 AM	110	1.58	5386	4.44	0.356*	-199.359
	9:00 AM to 9:59 AM	93	1.33	4926	4.06	0.329*	-189.938

- C124: CU Driver Alcohol Test Type Given
  - C225: CU Citation Issued
  - C227: CU Vehicle Towed
  - C126: CU Driver Alcohol Test Results
  - C204: E CU Sequence of Events #1
  - C123: CU Driver Officer Opinion Drugs
  - C205: E CU Sequence of Events #2
  - C017: First Harmful Event
  - C201: CU Vehicle Most Harmful Event
  - C008: Time of Day
  - C019: E Most Harmful Event
  - C031: Lighting Conditions
  - C023: E Manner of Crash
- Sort by Sum of Max Gain



Display Filter Name



# Definitions for IMPACT

- **Max Gain – Maximum Expected Gain**
  - This is the reduction in crashes that would occur if some magical countermeasure could eliminate just the over-representation
  - IMPACT outputs are generally ordered by Max Gain
- **CARE Facilitates Any Ordering**
  - Max Gain, Natural, Odds Ratio, Frequency
  - Graphically rearranges cells accordingly



# Why Questions?

**If you know (not guess) answers to over 80% of the posed questions correctly, we estimate that this puts you in the top 95% of experts on Impaired Driving (ID) crashes worldwide.**

**All answers come from Alabama 2012 crash data, which is fairly typical of most states.**



## Questions Related to Reporting

# Overall Impaired Driving Reported

Multiple Choice

What proportion of crashes in Alabama are reported to involve **impaired driving (ID)**?

5%

10%

20%

**Answer:**

# Overall Impaired Driving Reported

**Multiple Choice**

**What proportion of crashes in Alabama are reported to involve **impaired driving (ID)**?**

**5%**      **$6,970/128,319 = 0.0543$**

**10%**

**20%**

# Questions Related to Reporting Overall Impaired Driving Reported

## Multiple Choice

What proportion of fatal crashes in Alabama are reported to involve **impaired driving (ID)**?

10%

20%

30%

**Answer:**

# Overall Impaired Driving Reported

**Multiple Choice**

**What proportion of fatal crashes in Alabama are reported to involve **impaired driving (ID)**?**

**10%**

**20%**

$$190/812 = .234 = 23.4\%$$

**30%**

# Questions Related to Reporting Officer Opinion Entries

## Multiple Choice

What proportion of all “ID crashes” in Alabama are reported as “YES” in the **Officer’s Opinion**?

60%

80%

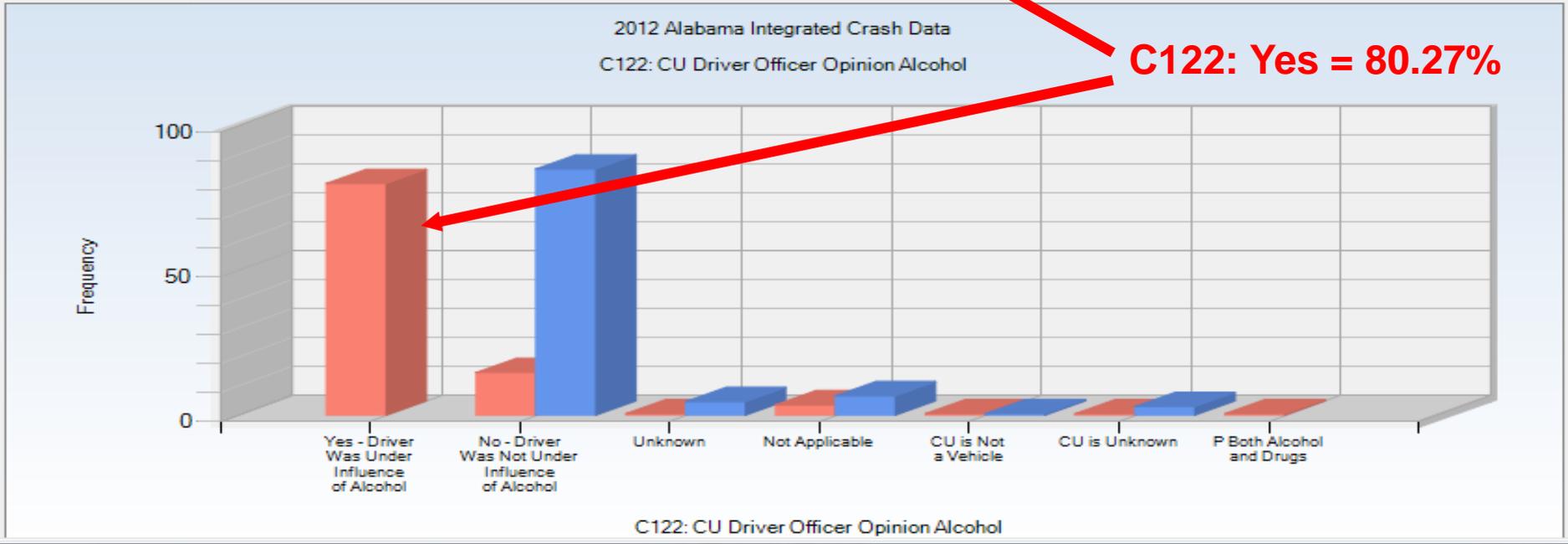
95%

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
▶	Yes - Driver Was Under I...	5595	80.27	0	0.00	0.000	5595.000
	No - Driver Was Not Und...	1028	14.75	103486	85.28	0.173*	-4916.285
	Unknown	36	0.52	5702	4.70	0.110*	-291.526
	Not Applicable	249	3.57	8136	6.70	0.533*	-218.336
	CU is Not a Vehicle	36	0.52	421	0.35	1.489	11.818
	CU is Unknown	7	0.10	3598	2.97	0.034	-199.671
	P Both Alcohol and Drugs	19	0.27	0	0.00	0.000	19.000

- C122: CU Driver Officer Opinion Alcohol**
- C121: CU Driver Condition
  - C015: Primary Contributing Circumstance
  - C202: CU Contributing Circumstance
  - C124: CU Driver Alcohol Test Type Given
  - C225: CU Citation Issued
  - C227: CU Vehicle Towed
  - C126: CU Driver Alcohol Test Results
  - C204: E CU Sequence of Events #1
- Sort by Sum of Max Gain

Display Filter Name



# Questions Related to Reporting BAC Levels (Legally Impaired at 0.08)

**For causal drivers for which a BAC test is given,  
which has the greatest BAC frequency?**

**Less than 0.099**

**0.10 to 0.199**

**0.20 or greater**

### C126: CU Driver Alcohol Test Results

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	0.00	93	1.40	235	0.19	7.219*	80.118
	.01 to .039	173	2.61	2	0.00	1578.000	172.890
	.04 to .079	257	3.87	0	0.00	0.000	257.000
	.08 to .099	172	2.59	0	0.00	0.000	172.000
	.10 to .199	1169	17.61	0	0.00	0.000	1169.000
	.20 to .249	309	4.65	0	0.00	0.000	309.000
	.25 to .299	97	1.46	0	0.00	0.000	97.000
	.30 to .349	38	0.57	0	0.00	0.000	38.000
	.35 to .399	10	0.15	0	0.00	0.000	10.000
	.40 or Over	8	0.12	0	0.00	0.000	8.000
	No Test Given	1934	29.13	88337	72.93	0.399*	-2908.302

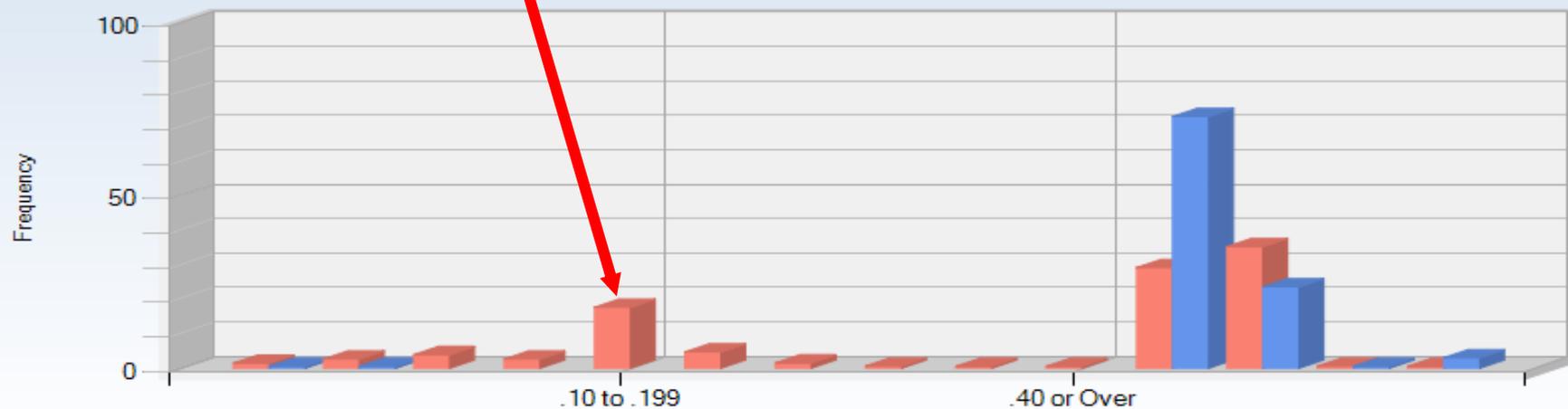
- C122: CU Driver Officer Opinion Alcohol
  - C121: CU Driver Condition
  - C015: Primary Contributing Circumstance
  - C202: CU Contributing Circumstance
  - C124: CU Driver Alcohol Test Type Given
  - C225: CU Citation Issued
  - C227: CU Vehicle Towed
  - C126: CU Driver Alcohol Test Results
  - C204: E CU Sequence of Events #1
  - C123: CU Driver Officer Opinion Drugs
  - C205: E CU Sequence of Events #2
  - C017: First Harmful Event
  - C201: CU Vehicle Most Harmful Event
  - C008: Time of Day
- Sort by Sum of Max Gain



Display Filter Name

2012 Alabama Integrated Crash Data

C126: CU Driver Alcohol Test Results



C126: CU Driver Alcohol Test Results

# Questions Related to Reporting Drug Proportion

**True or False:**

**Drugs were reportedly involved in over  
20% of impaired driving crashes**

**C123: CU Driver Officer Opinion Drugs**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	No - Driver Was Not Und...	3305	47.42	102951	84.84	0.559*	-2608.555
	Not Applicable	1852	26.57	8671	7.15	3.718*	1353.934
	Yes - Driver Was Under I...	1611	23.11	0	0.00	0.000	1611.000
	Unknown	140	2.01	5702	4.70	0.427*	-187.526
	CU is Not a Vehicle	36	0.52	421	0.35	1.489	11.818
	P Both Alcohol and Drugs	19	0.27	0	0.00	0.000	19.000
	CU is Unknown	7	0.10	3598	2.97	0.034	-199.671

- C122: CU Driver Officer Opinion Alcohol
- C121: CU Driver Condition
- C015: Primary Contributing Circumstance
- C202: CU Contributing Circumstance
- C124: CU Driver Alcohol Test Type Given
- C225: CU Citation Issued
- C227: CU Vehicle Towed
- C126: CU Driver Alcohol Test Results
- C204: E CU Sequence of Events #1

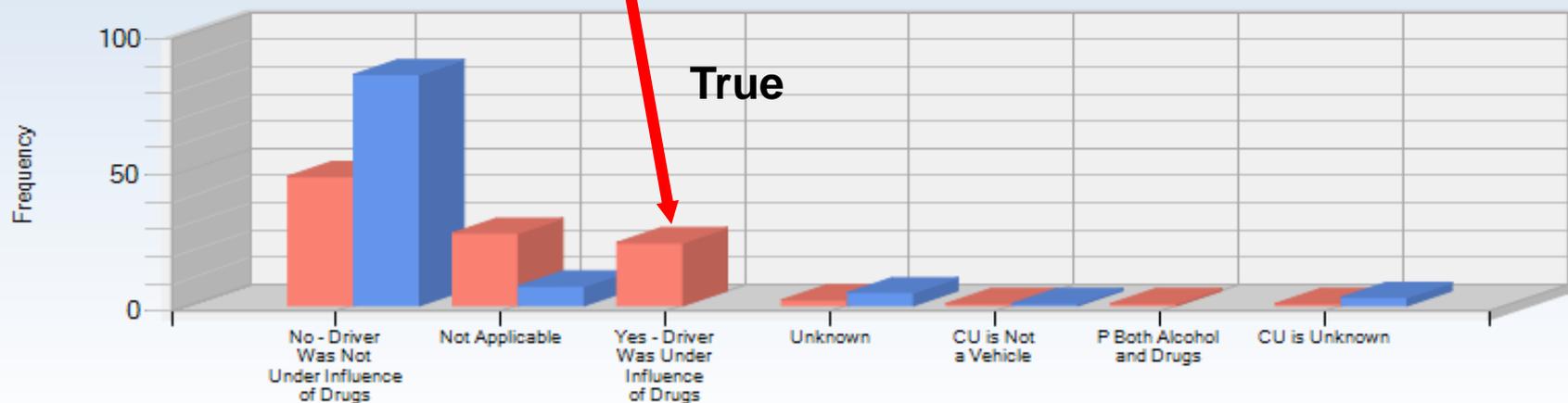
< ||| >

Sort by Sum of Max Gain



Display Filter Name

2012 Alabama Integrated Crash Data  
C123: CU Driver Officer Opinion Drugs



C123: CU Driver Officer Opinion Drugs

# Questions Related to Reporting Citations Issued

**What proportion of drivers were issued DUI citations when officers opinion was that alcohol or drugs were a causal factor?**

**1/3**

**1/2**

**2/3**

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

**C225: CU Citation Issued**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Driving Under the Influe...★	2995	43.95	0	0.00	0.000	2995.000
	E None	2370	34.78	94121	85.31	0.408*	-3442.877
	E No Proof of Insurance	332	4.87	9018	8.17	0.596*	-224.948
	Driving Under the Influe...★	295	4.33	0	0.00	0.000	295.000
	Leaving the Scene of a...	259	3.80	848	0.77	4.945*	206.628
	E Driving Under the Influe...★	252	3.70	0	0.00	0.000	252.000
	E Driving Under the Influe...★	151	2.22	0	0.00	0.000	151.000
	CU is Not a Vehicle	36	0.53	421	0.38	1.385	9.999
	No Driver License	32	0.47	1076	0.98	0.482*	-34.453
	Driving While Suspended	32	0.47	681	0.62	0.761	-10.058
	Eluding Police	21	0.31	65	0.06	5.231*	16.986

- C122: CU Driver Officer Opinion Alcohol
- C121: CU Driver Condition
- C015: Primary Contributing Circumstance
- C202: CU Contributing Circumstance
- C124: CU Driver Alcohol Test Type Given
- C225: CU Citation Issued
- C227: CU Vehicle Towed
- C126: CU Driver Alcohol Test Results
- C204: E CU Sequence of Events #1
- C123: CU Driver Officer Opinion Drugs
- C205: E CU Sequence of Events #2
- C017: First Harmful Event
- C201: CU Vehicle Most Harmful Event
- C008: Time of Day

Sort by Sum of Max Gain

★  $(2995+295+252+151)/5595 = 0.660 = 66.0\%$

Display Filter Name

## Questions Related to Cause

# Causal Unit Contributing Circumstances

(Given: DUI is the most frequent CUCC for ID Crashes)

**What is the second most cited CUCC in ID crashes?**

**Over the Speed Limit**

**Ran Off Road**

**Aggressive Operation**

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

**C202: CU Contributing Circumstance**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	DUI	3473	49.83	0	0.00	0.000	3473.000
	Over Speed Limit ←	595	8.54	2122	1.75	4.881*	473.093
	Not Applicable	419	6.01	20797	17.14	0.351*	-775.767
	E Ran off Road ←	321	4.61	2565	2.11	2.178*	173.643
	Unknown	242	3.47	8664	7.14	0.486*	-255.738
	E Aggressive Operation ←	210	3.01	1152	0.95	3.173*	143.819
	Driving too Fast for Con...	126	1.81	3387	2.79	0.648*	-68.580
	Followed too Close	121	1.74	12740	10.50	0.165*	-610.900
	E Fatigued/Asleep	99	1.42	1424	1.17	1.210	17.193
	Misjudge Stopping Dista...	93	1.33	9495	7.83	0.170*	-452.478
	Traveling Wrong Way/...	79	1.13	416	0.34	3.306*	55.101
	E Over Correcting/Over ...	79	1.13	1407	1.16	0.977	-1.831
	E Ran Stop Sign	77	1.10	821	0.68	1.633*	29.834

- C122: CU Driver Officer Opinion Alcohol
- C121: CU Driver Condition
- C015: Primary Contributing Circumstance
- C202: CU Contributing Circumstance
- C124: CU Driver Alcohol Test Type Given
- C225: CU Citation Issued
- C227: CU Vehicle Towed
- C126: CU Driver Alcohol Test Results
- C204: E CU Sequence of Events #1
- C123: CU Driver Officer Opinion Drugs
- C205: E CU Sequence of Events #2
- C017: First Harmful Event
- C201: CU Vehicle Most Harmful Event
- C008: Time of Day
- C019: E Most Harmful Event
- C031: Lighting Conditions
- C002: E Manner of Crash

Sort by Sum of Max Gain

# Questions Related to Cause First Harmful Event

**True or False:**

**“Collisions with other Vehicle” is the highest frequency first harmful event in ID crashes, but it only occurs with half of the proportion of non-ID crashes.**

**C017: First Harmful Event**

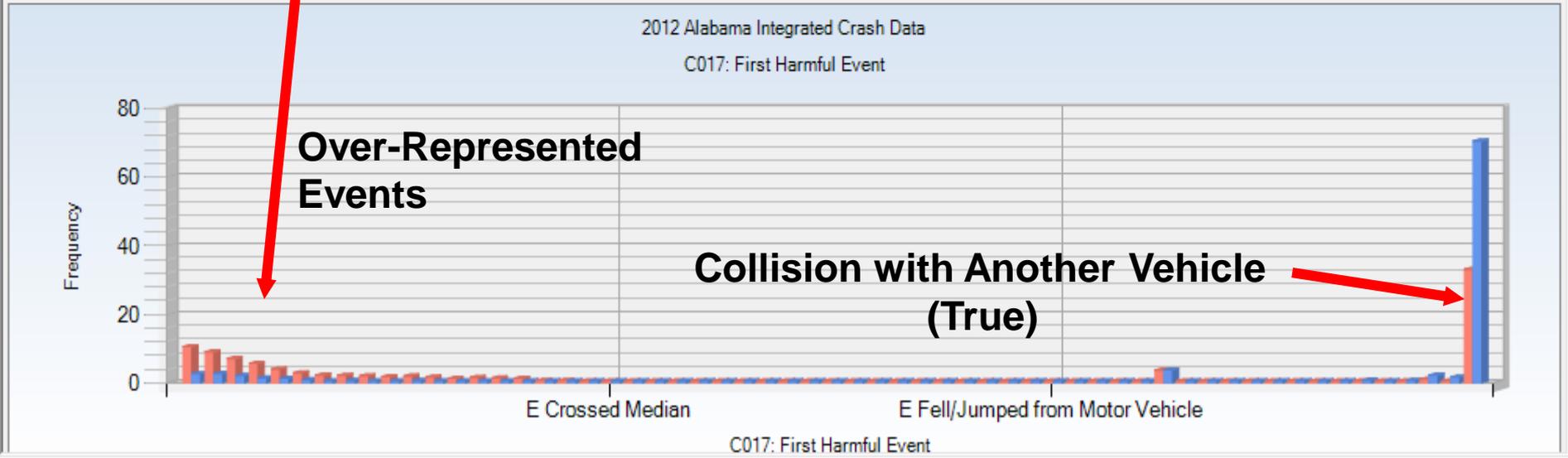
Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Collision with Ditch	733	10.52	3209	2.65	3.976*	548.633
E Ran Off Road Right	625	8.97	3227	2.66	3.371*	439.599
Collision with Tree	490	7.03	2511	2.07	3.397*	345.736
E Ran Off Road Left	391	5.61	1686	1.39	4.037*	294.134
Overtum/Rollover	275	3.95	1551	1.28	3.086*	185.890
Collision with Utility Pole	199	2.86	1012	0.83	3.423*	140.858
Collision with Mailbox	152	2.18	630	0.52	4.199*	115.805
Collision with Sign Post	145	2.08	722	0.60	3.496*	103.519
E Collision with Embankment	137	1.97	627	0.52	3.803*	100.977
Collision with Culvert Headwal	124	1.78	451	0.37	4.786*	98.089

- C205: E CU Sequence of Events #2
  - C017: First Harmful Event
  - C201: CU Vehicle Most Harmful Event
  - C008: Time of Day
  - C019: E Most Harmful Event
  - C031: Lighting Conditions
  - C023: E Manner of Crash
  - C051: Number of Vehicles
  - C018: Location First Harmful Event Rel
  - C052: Number of Drivers Recorded
  - C203: CU First Harmful Event Location
  - C226: CU Vehicle Damage
  - C054: Number of Motorists Recorded
- Sort by Sum of Max Gain

2012 Alabama Integrated Crash Data

C017: First Harmful Event

Display Filter Name



# Questions Related to Cause Number of Vehicles

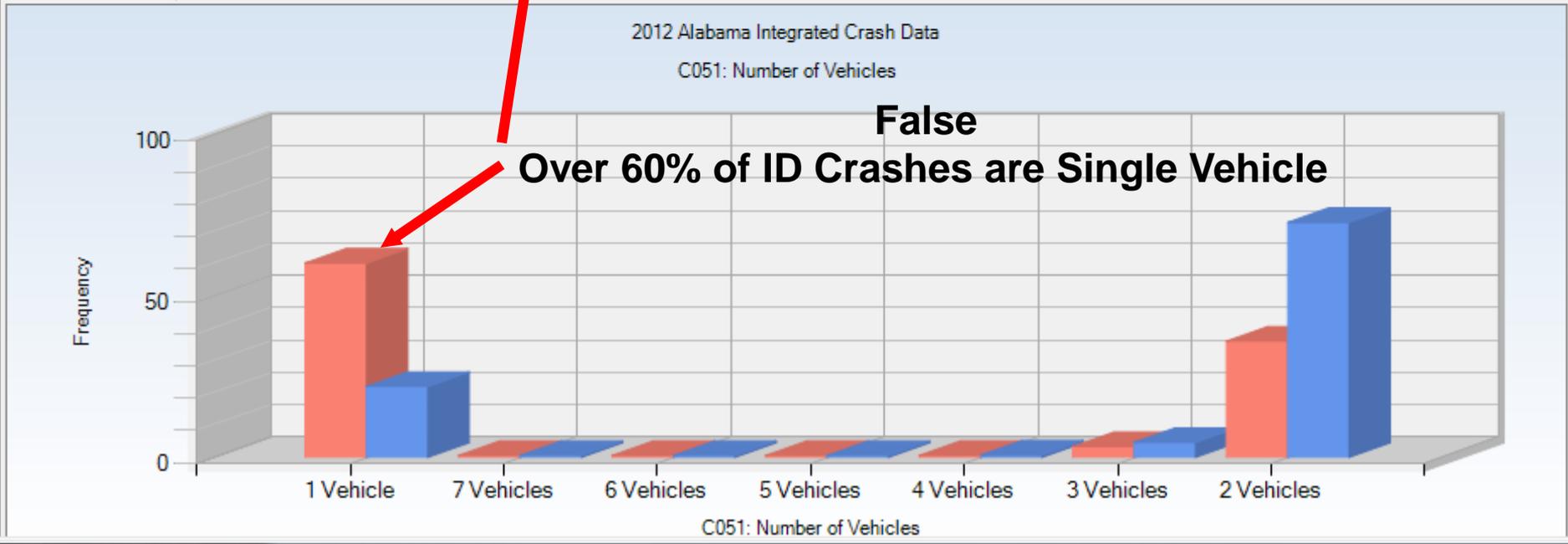
**True or False:**

**Less than 50% of ID crashes are single vehicle.**

**C051: Number of Vehicles**

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
1 Vehicle	4192	60.14	26596	21.92	2.744*	2664.389
7 Vehicles	3	0.04	3	0.00	17.410	2.828
6 Vehicles	4	0.06	26	0.02	2.678	2.507
5 Vehicles	3	0.04	100	0.08	0.522	-2.744
4 Vehicles	36	0.52	763	0.63	0.821	-7.825
3 Vehicles	228	3.27	5581	4.60	0.711*	-92.559
2 Vehicles	2504	35.93	88272	72.74	0.494*	-2566.135

- C205: E CU Sequence of Events #2
  - C017: First Harmful Event
  - C201: CU Vehicle Most Harmful Event
  - C008: Time of Day
  - C019: E Most Harmful Event
  - C031: Lighting Conditions
  - C023: E Manner of Crash
  - C051: Number of Vehicles
  - C018: Location First Harmful Event Rel
- Sort by Sum of Max Gain



# Questions Related to Cause Weather

**True or False?**

**Weather does not play much if any part in  
causing ID crashes.**

**C403: CU Roadway Condition**

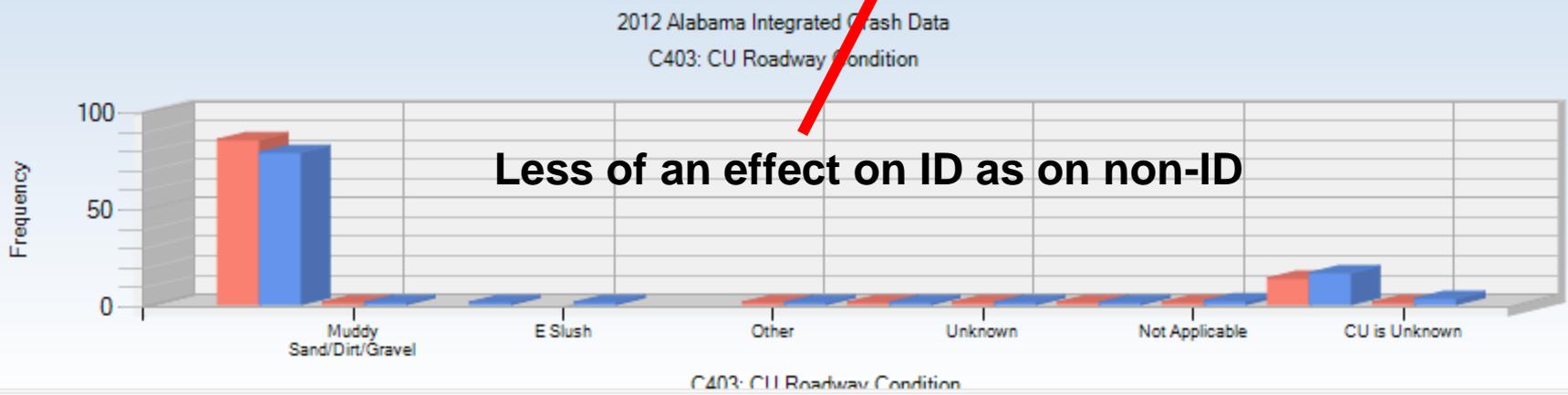
Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Dry	5946	85.33	95402	78.65	1.085*	465.965
Muddy Sand/Dirt/Gravel	9	0.13	71	0.06	2.207	4.922
E Snow	0	0.00	8	0.01	0.000	0.000
E Slush	0	0.00	3	0.00	0.000	0.000
P Snow or Slush*	0	0.00	0	0.00	0.000	0.000
Other	1	0.01	25	0.02	0.696	-0.436
Ice	2	0.03	65	0.05	0.536	-1.734
Unknown	6	0.09	136	0.11	0.768	-1.812
E Water Buildup	2	0.03	137	0.11	0.254	-5.869
Not Applicable	58	0.83	2197	1.81	0.460*	-68.199
Wet	937	13.45	19664	16.21	0.830*	-192.530
CU is Unknown	7	0.10	3598	2.97	0.034	-199.675

- C110: CU Driver Residence Distance
- C403: CU Roadway Condition
- C026: Intersection Related
- C222: CU Contributing Vehicle Defect
- C111: CU Driver License State
- C103: CU Commercial Motor Vehicle Indicator
- C450: CU CMV Indicator
- C452: CU CMV Hazard Materials Involvement
- C220: CU Oversized Load Requiring Permit
- C034: E Police Present at Time of Crash
- C009: Data Source
- C016: Primary Contributing Unit Number
- C217: CU Hazardous Cargo
- C012: Controlled Access
- C327: CU Driver Ejection Status

Sort by Sum of Max Gain

2012 Alabama Integrated Crash Data  
C403: CU Roadway Condition

Display Filter Name



C032: Weather

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Clear	4925	70.68	81555	67.25	1.051*	238.928
Fog	66	0.95	779	0.64	1.475*	21.239
Cloudy	1363	19.56	23617	19.47	1.004	5.990
E Mist	126	1.81	2121	1.75	1.034	4.129
Other	2	0.03	22	0.02	1.582	0.736
Snow	0	0.00	34	0.03	0.000	0.000
E Blowing Snow	0	0.00	6	0.00	0.000	0.000
Severe Winds	0	0.00	43	0.04	0.000	0.000
E Blowing Sand/Soil/Dirt	0	0.00	2	0.00	0.000	0.000
Sleet/Hail/Freezing Rain	3	0.04	54	0.04	0.967	-0.103
Unknown	9	0.13	200	0.16	0.783	-2.492
Rain	474	6.80	12836	10.58	0.643*	-263.544

- C221: CU Had Oversized Load Permit
  - C007: Week of the Year
  - C405: CU Contributing Material in Roadway
  - C005: Day of Month
  - C128: CU Vehicle Initial Travel Direction
  - C415: CU Workzone Related
  - C032: Weather
  - C414: CU One-Way Street
  - C406: CU Contributing Material Source
  - C321: CU Driver/Non-Motorist Seating Position
  - C322: CU Driver/Non-Motorist Victim/Occ Type
  - C080: CMV Involved
  - C046: HasRTMP
  - C309: CU Non-Motorist Officer Opinion Alcohol
  - C308: CU Non-Motorist Condition
- Sort by Sum of Max Gain

2012 Alabama Integrated Crash Data  
C032: Weather

Frequency

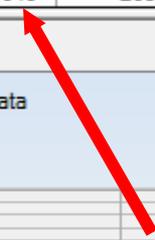
80  
60  
40  
20  
0

Fog E Mist Snow Severe Winds Sleet/Hail/Freezing Rain Rain

C032: Weather

Display Filter Name

**Same result for weather as road conditions**



# Questions Related to Severity Towing

**Multiple Choice:**

**What proportion of ID-involved  
causal units are towed?**

**50%**

**70%**

**90%**

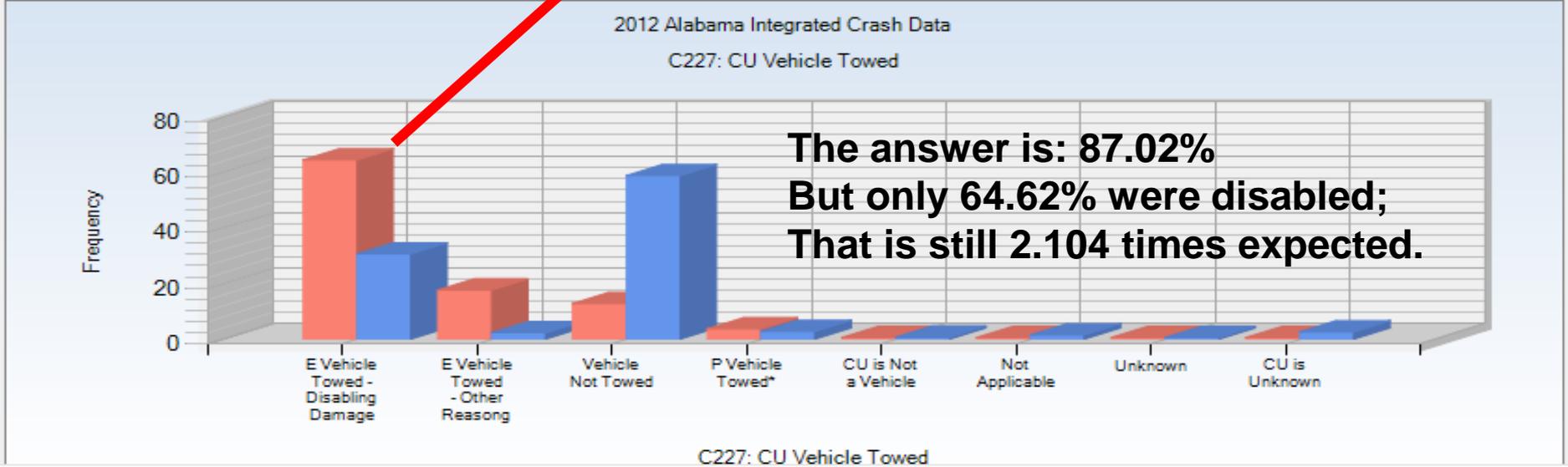
Order: Subset Frequency Descending  Suppress Zero-Valued Rows Significance: Over Representation Threshold: 2.0

**C227: CU Vehicle Towed**

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Vehicle Towed - Disabl...	4504	64.62	37269	30.71	2.104*	2363.251
E Vehicle Towed - Other ...	1234	17.70	2762	2.28	7.778*	1075.349
Vehicle Not Towed	893	12.81	71530	58.99	0.217*	-3215.717
P Vehicle Towed*	258	3.70	3371	2.78	1.332*	64.368
CU is Not a Vehicle	34	0.49	846	0.70	0.700	-14.595
Not Applicable	29	0.42	1826	1.50	0.276*	-75.886
Unknown	9	0.13	366	0.47	0.277	-23.511
CU is Unknown	9	0.13	3173	2.61	0.049	-173.259

- C122: CU Driver Officer Opinion Alcohol
  - C121: CU Driver Condition
  - C015: Primary Contributing Circumstance
  - C202: CU Contributing Circumstance
  - C124: CU Driver Alcohol Test Type Given
  - C225: CU Citation Issued
  - C227: CU Vehicle Towed
  - C126: CU Driver Alcohol Test Results
  - C204: E CU Sequence of Events #1
  - C123: CU Driver Officer Opinion Drugs
  - C205: E CU Sequence of Events #2
- Sort by Sum of Max Gain

Display Filter Name



# Questions Related to Severity Severity

**True or False:**

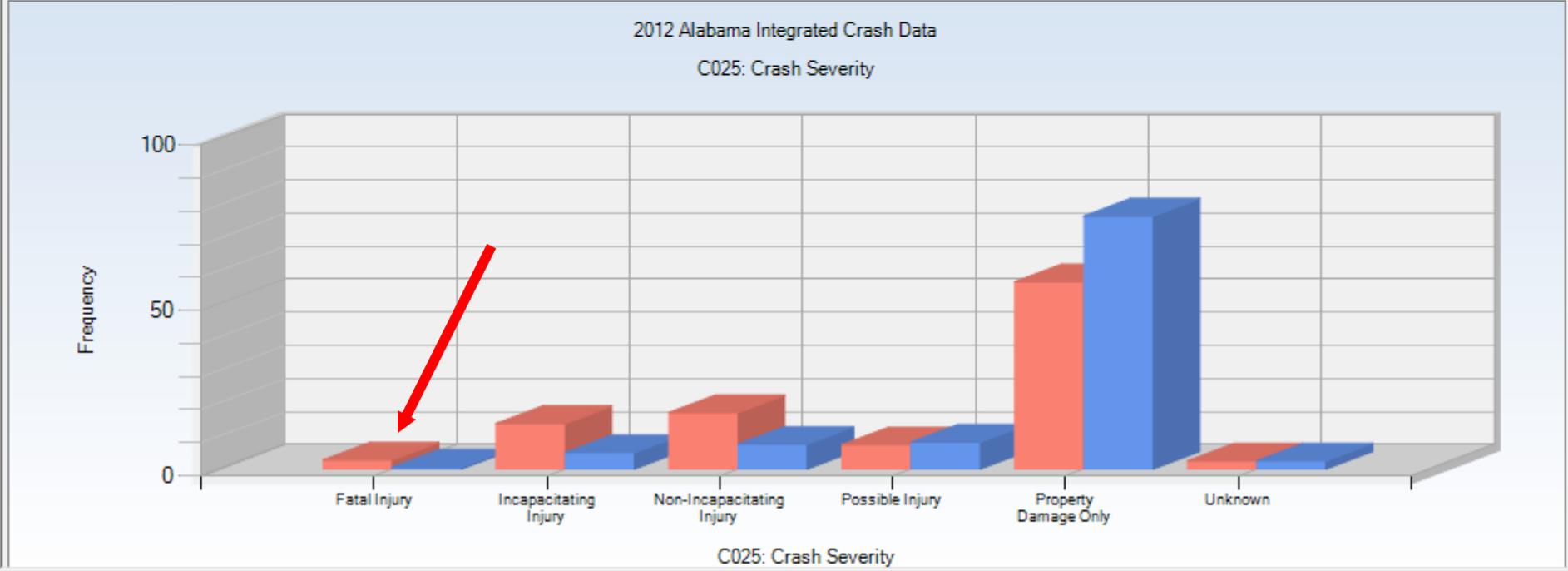
**ID crashes produce over five times the fatalities as non-ID crashes.**

**C025: Crash Severity**

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Fatal Injury	190	2.73	622	0.51	5.318*	154.274
Incapacitating Injury	959	13.76	5969	4.92	2.797*	616.155
Non-Incapacitating Injury	1192	17.10	9078	7.48	2.286*	670.581
Possible Injury	508	7.29	9824	8.10	0.900*	-56.267
Property Damage Only	3951	56.69	92899	76.56	0.740*	-1384.899
Unknown	170	2.44	2957	2.44	1.001	0.157

C025: Crash Severity  
 C328: CU Driver/Non-Motorist Injury Type  
 C331: E CU Driver/Non-Motorist Transport T  
 C120: E CU Driver Employment Status  
 C059: Number Injured (Includes Fatalities)  
 C045: HasGPS  
 C038: Non-Vehicular Property Damage  
 C329: CU Driver/Non-Motorist First Aid By

Sort by Sum of Max Gain



# Questions Related to Severity Injury Transport

**True or False:**

**Law enforcement transports twice as many injured ID victims as they do injuries from all non-ID types of crashes combined.**

Order: Max Gain ▾ Descending ▾

 Suppress Zero-Valued Rows

Significance: Over Representation ▾ Threshold: 2.0 ▾

**C331: E CU Driver/Non-Motorist Transport Type**

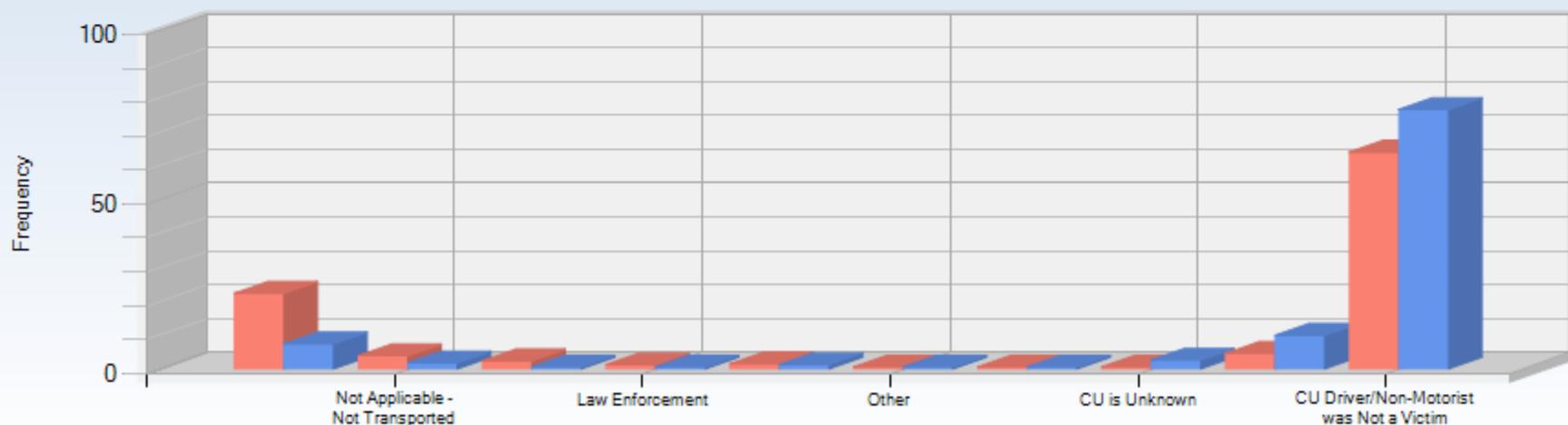
C025: Crash Severity  
 C328: CU Driver/Non-Motorist Injury Type  
 C331: E CU Driver/Non-Motorist Transport T  
 C120: E CU Driver Employment Status  
 C059: Number Injured (Includes Fatalities)  
 C045: HasGPS  
 C038: Non-Vehicular Property Damage  
 C329: CU Driver/Non-Motorist First Aid By  
 C011: Highway Classifications

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
EMS Ground	1555	22.31	8902	7.34	3.041*	1043.690
Not Applicable - Not Transpo...	268	3.85	2112	1.74	2.209*	146.692
EMS Air	163	2.34	612	0.50	4.637*	127.848
Law Enforcement	85	1.22	37	0.03	39.996*	82.875
Private Vehicle	100	1.43	1490	1.23	1.168	14.418
Other	13	0.19	101	0.08	2.241	7.199
Unknown	3	0.04	65	0.05	0.804	-0.733

 Sort by Sum of Max Gain Display Filter Name

2012 Alabama Integrated Crash Data

C331: E CU Driver/Non-Motorist Transport Type



C331: E CU Driver/Non-Motorist Transport Type

# Questions Related to Severity Multiple Injuries

**True or False:**

**All multiple injury categories are  
over-represented for ID crashes.**

## C059: Number Injured (Includes Fatalities)

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	No Injuries	4111	58.98	95643	78.82	0.748*	-1382.508
	1 Injury	2122	30.44	18998	15.66	1.945*	1030.800
	2 Injuries	488	7.00	4674	3.85	1.818*	219.536
	3 Injuries	165	2.37	1266	1.04	2.269*	92.284
	4 Injuries	41	0.59	475	0.39	1.503*	13.717
	5 Injuries	27	0.39	185	0.15	2.541*	16.374
	6 Injuries	8	0.11	64	0.05	2.176	4.324
	7 Injuries	4	0.06	25	0.02	2.786	2.564
	8 Injuries	2	0.03	5	0.00	6.964	1.713
	11 Injuries	1	0.01	1	0.00	17.410	0.943
	19 Injuries	1	0.01	1	0.00	17.410	0.943

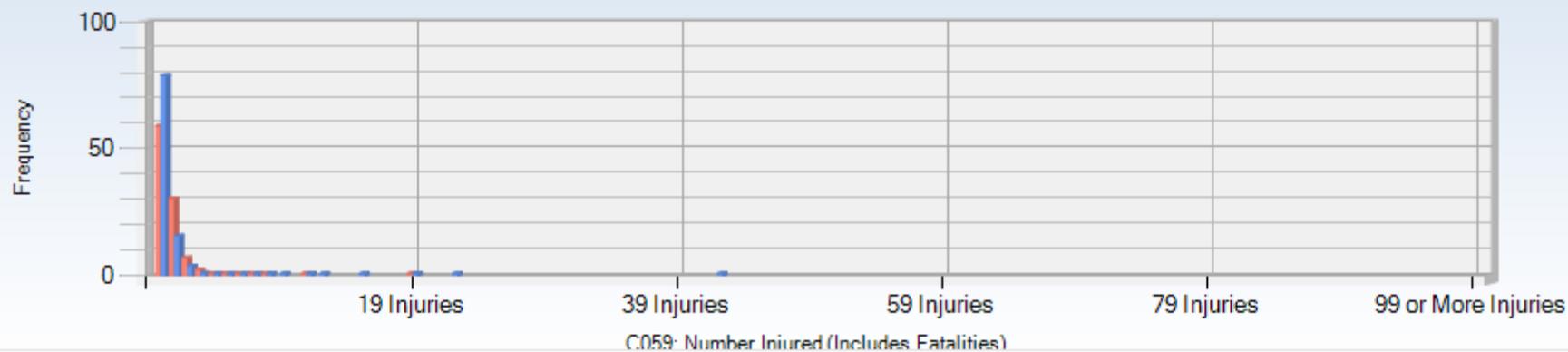
## C059: Number Injured (Includes Fataliti

 Sort by Sum of Max Gain

 Display Filter Name

 Display Filter Name

2012 Alabama Integrated Crash Data  
C059: Number Injured (Includes Fatalities)



# Questions Related to Severity Restraints

**True or False:**

**Impaired drivers only use restraints about  
half as much as non-ID drivers.**

**C323: CU Driver/Non-Motorist Safety Equipment**

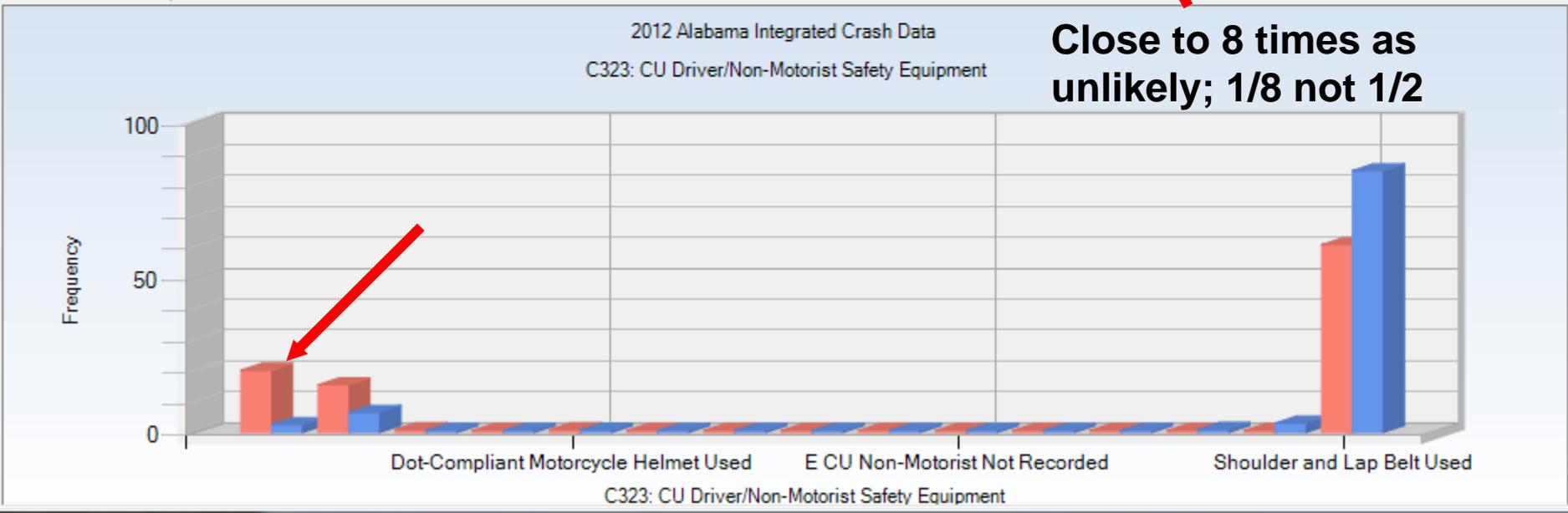
Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
None Used - Motor Vehicle O...	1398	20.09	3069	2.56	7.857*	1220.066
Unknown	1070	15.38	7796	6.50	2.367*	618.004
Not Applicable	64	0.92	669	0.56	1.650*	25.213
Other	31	0.45	226	0.19	2.366*	17.897
Dot-Compliant Motorcycle Hel...	62	0.89	895	0.75	1.195	10.110
E Other Motorcycle Helmet Us...	12	0.17	43	0.04	4.813	5.507
No Motorcycle Helmet Used	12	0.17	47	0.04	4.404	9.275
Reflective Clothing (Jacket/B...	1	0.01	19	0.02	0.908	-0.102

- C230: CU Areas Damaged #1
  - C021: Distance to Fixed Object
  - C002: City
  - C043: Agency ORI
  - C224: CU Estimated Speed at Impact
  - C323: CU Driver/Non-Motorist Safety Ec
  - C033: Locale
  - C129: CU Vehicle Maneuvers
  - C206: E CU Sequence of Events #3
  - C010: Rural or Urban
- Sort by Sum of Max Gain



Display Filter Name

**Close to 8 times as unlikely; 1/8 not 1/2**



# Questions Related to Severity Ejection/Trapped

**How much more likely is a ID crash causal driver liable to be ejected from or trapped in the vehicle?**

**2 times**

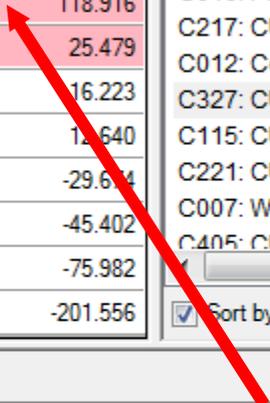
**3 times**

**5 times**

C327: CU Driver Ejection Status

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
Trapped within Vehicle	227	3.26	822	0.68	4.764*	179.353
Totally Ejected	149	2.14	519	0.43	4.953*	118.916
Partially Ejected	34	0.49	147	0.12	3.990*	25.479
Unknown	67	0.96	876	0.73	1.320	16.223
CU is Not a Vehicle	36	0.52	403	0.34	1.541*	12.640
E CU Driver Not Recorded	36	0.52	1133	0.94	0.548*	-29.674
Not Applicable	118	1.70	2819	2.35	0.722*	-45.402
Not Ejected or Trapped	6283	90.31	109705	91.40	0.988*	-75.982
CU is Unknown	7	0.10	3598	3.00	0.034	-201.556

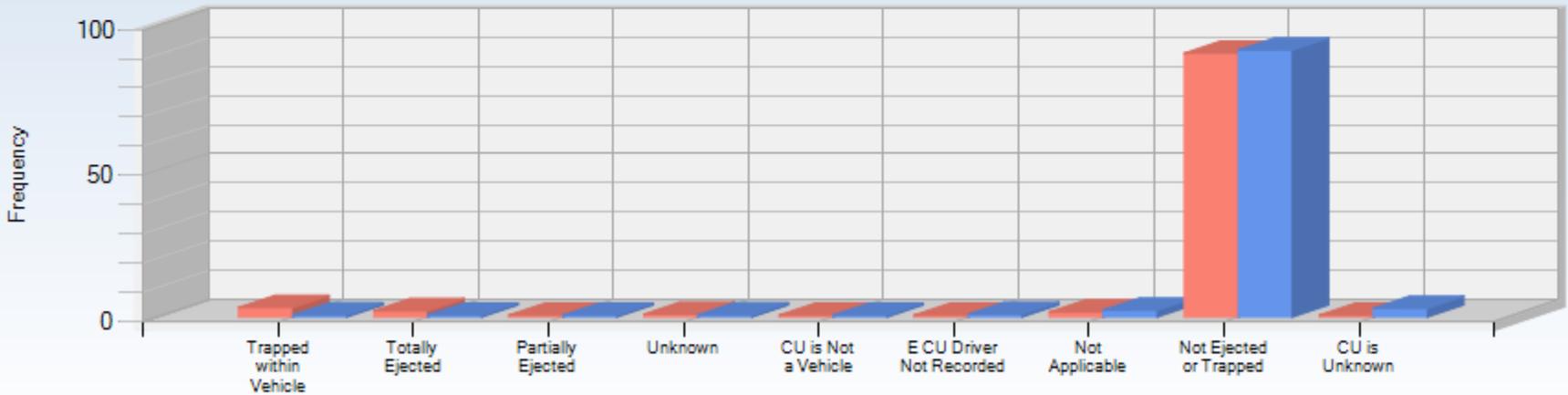
- C452: CU CMV Hazard Materials Involvement
  - C220: CU Oversized Load Requiring Permit
  - C034: E Police Present at Time of Crash
  - C009: Data Source
  - C016: Primary Contributing Unit Number
  - C217: CU Hazardous Cargo
  - C012: Controlled Access
  - C327: CU Driver Ejection Status
  - C115: CU Driver CDL Status
  - C221: CU Had Oversized Load Permit
  - C007: Week of the Year
  - C405: CU Contributing Material in Roadway
- Sort by Sum of Max Gain



Display Filter Name

2012 Alabama Integrated Crash Data  
C327: CU Driver Ejection Status

**Closest to five times**



C327: CU Driver Ejection Status

# Questions Related to Severity Impact Speed

**True or False:**

**The ID crash causal vehicle is ten times more likely to be going over 100 MPH than a non-ID causal vehicle.**

Order: Natural Order Descending

 Suppress Zero-Valued Rows

Significance: Over Representation Threshold: 2.0

## C224: CU Estimated Speed at Impact

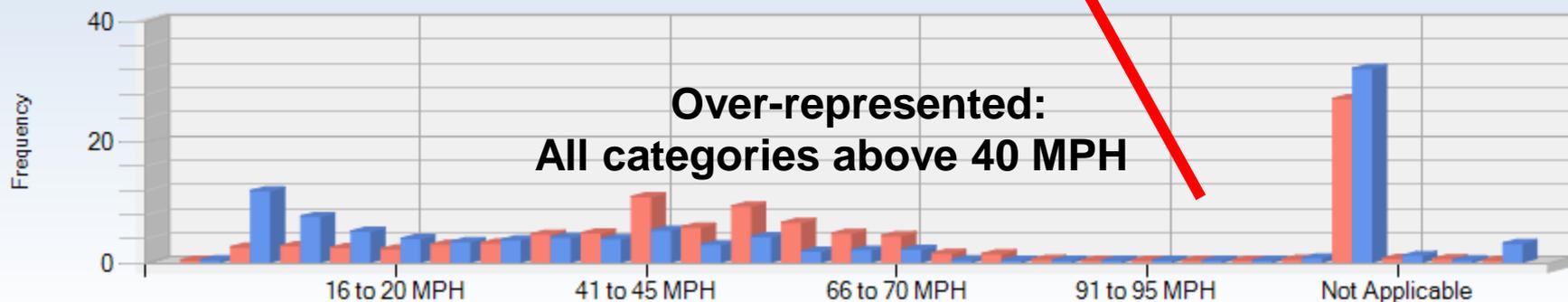
C230: CU Areas Damaged #1  
 C021: Distance to Fixed Object  
 C002: City  
 C043: Agency ORI  
 C224: CU Estimated Speed at Impact  
 C323: CU Driver/Non-Motorist Safety Ec  
 C033: Locale  
 C129: CU Vehicle Maneuvers  
 C206: E CU Sequence of Events #3  
 C010: Rural or Urban  
 C037: EMS Arrival Delay  
 C413: E CU Turn Lanes  
 C107: CU Driver Raw Age  
 C601: Adjusted FMS Arrival Delay

Sort by Sum of Max Gain

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	51 to 55 MPH	627	9.25	4894	4.23	2.188*	340.488
	56 to 60 MPH	443	6.53	2085	1.80	3.629*	320.937
	61 to 65 MPH	322	4.75	2307	1.99	2.384*	186.940
	66 to 70 MPH	297	4.38	2415	2.09	2.101*	155.617
	71 to 75 MPH	98	1.45	425	0.37	3.939*	73.119
	76 to 80 MPH	92	1.36	206	0.18	7.629*	79.940
	81 to 85 MPH	30	0.44	79	0.07	6.487*	25.375
	86 to 90 MPH	22	0.32	39	0.03	9.636*	19.717
	91 to 95 MPH	10	0.15	14	0.01	12.201	9.180
	96 to 100 MPH	21	0.31	54	0.05	6.643*	17.839
	Over 100 MPH	14	0.21	24	0.02	9.964	12.595

 Display Filter Name

2012 Alabama Integrated Crash Data  
 C224: CU Estimated Speed at Impact



C224: CU Estimated Speed at Impact

# Questions Related to Severity EMS Arrival Delay

**True or False:**

**One of the major reasons for increased ID crash severity is a longer EMS arrival delay.**

### C601: Adjusted EMS Arrival Delay

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
11 to 15 minutes	482	17.33	3787	15.21	1.139*	58.924
16 to 20 minutes	310	11.14	2132	8.56	1.302*	71.817
21 to 30 minutes	296	10.64	1866	7.49	1.420*	87.534
31 to 45 minutes	136	4.89	762	3.06	1.598*	50.871
46 to 60 minutes	45	1.62	194	0.78	2.076*	23.327
61 to 90 minutes	26	0.93	114	0.46	2.041*	13.264

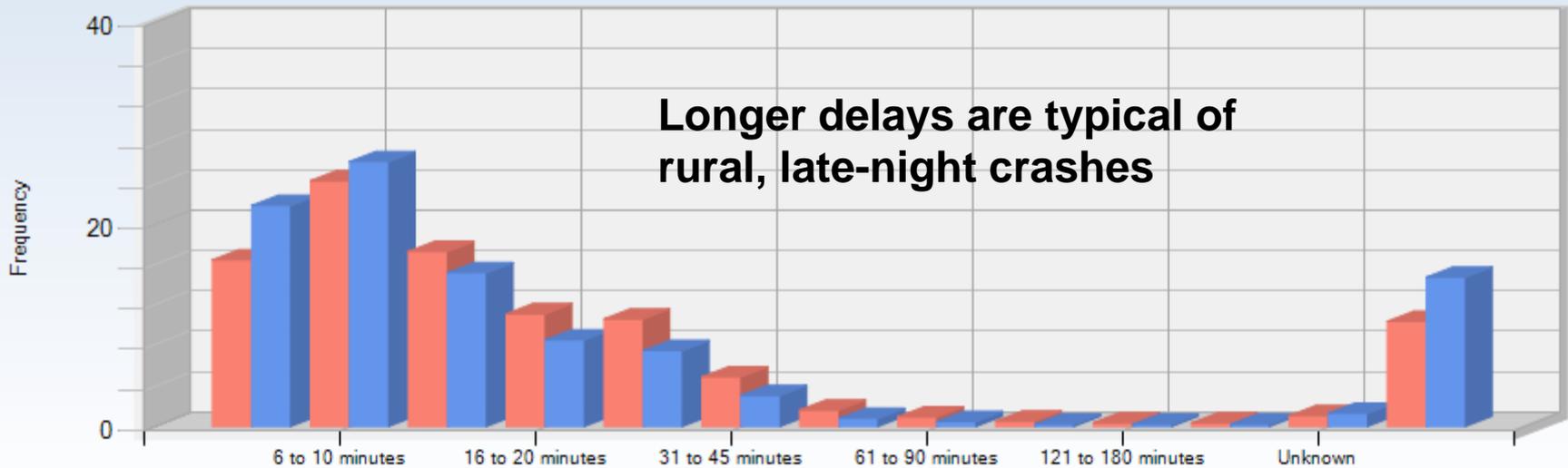
### C601: Adjusted EMS Arrival Delay

Sort by Sum of Max Gain

Display Filter Name

2012 Alabama Integrated Crash Data

C601: Adjusted EMS Arrival Delay



C601: Adjusted EMS Arrival Delay

# Questions Related to Severity ID Crash Police Arrival Time

**All police arrival times above the following are over-represented for ID crashes:**

**10 minutes**

**20 minutes**

**40 minutes**

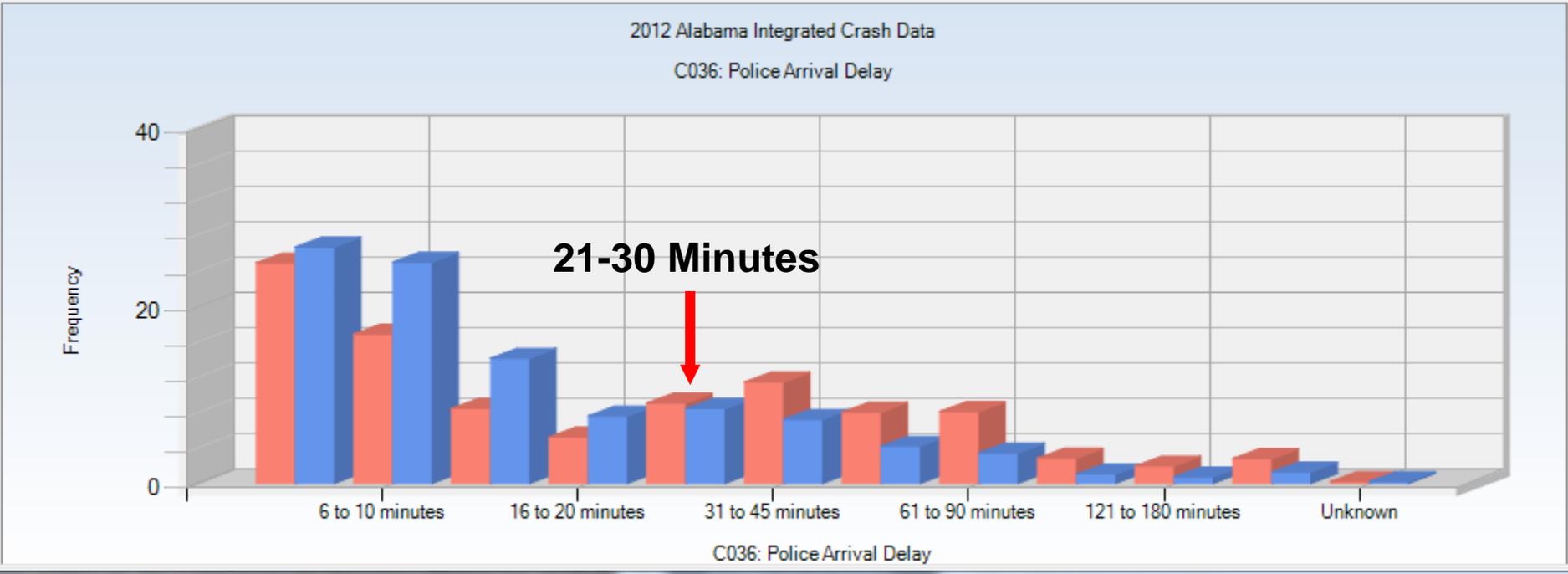
**C036: Police Arrival Delay**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	31 to 45 minutes	795	11.46	8732	7.25	1.581*	292.138
	46 to 60 minutes	558	8.04	5058	4.20	1.916*	266.718
	61 to 90 minutes	563	8.11	4147	3.44	2.357*	324.181
	91 to 120 minutes	197	2.84	1250	1.04	2.737*	125.014
	121 to 180 minutes	136	1.96	884	0.73	2.671*	85.092
	Over 180 minutes	194	2.80	1538	1.28	2.190*	105.429

- C011: Highway Classifications
  - C058: Number Injured (Non-Fatal)
  - C208: CU Model Year
  - C114: CU Driver License Status
  - C036: Police Arrival Delay
  - C014: Distance from Node 1
  - C027: At Intersection
  - C001: County
- Sort by Sum of Max Gain



Display Filter Name



# Questions Related to Severity Causal Vehicle Model Year

**True or False:**

**All vehicles prior to 2002 are  
over-represented in ID crashes.**



# Questions Related to Severity Pedestrians

**True or False?**

**While only 33 ID crashes in 2012 were caused by pedestrians, this was over twice the number expected from their non-ID proportion.**



# Questions Related to Severity Pedestrian Type

**True or False?**

**Over half of the pedestrians were walking, Running, jogging or playing in the roadway.**

Order: Max Gain

Descending

 Suppress Zero-Valued Rows

Significance:

Over Representation

Threshold: 2.0

## C130: E CU Non-Motorist Maneuvers

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	CU is Not a Non-Motorist	6614	94.96	105894	87.33	1.087*	531.450
▶	Walking/Running/Jogging/...	12	0.17	93	0.08	2.246	6.658
	Entering or Crossing Roadway	14	0.20	141	0.12	1.729	5.901
	Approaching or Leaving Ve...	1	0.01	6	0.00	2.902	0.655
	Lying or Sitting in Roadway	1	0.01	7	0.01	2.487	0.598
	Other	1	0.01	14	0.01	1.244	0.196
	Working	0	0.00	3	0.00	0.000	0.000

C416: E CU Workzone Type

C216: E CU Placard Status

C408: CU Vision Obscured By

C304: E CU Non-Motorist Action at Time of Cra

C305: E CU Non-Motorist Action at Time of Cra

C303: E CU K-12 Child W/C To/From School

C119: E CU Endorsement Violations #2

C130: E CU Non-Motorist Maneuvers

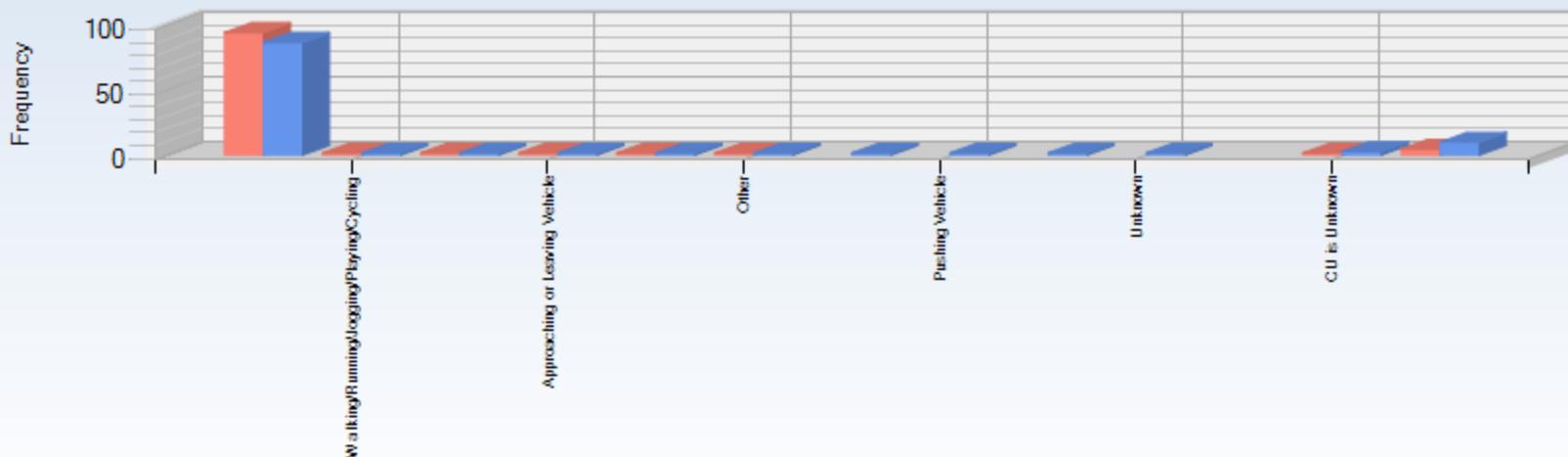
C307: E Vehicle Unit That Struck CU Non-Moto

 Sort by Sum of Max Gain
 Display Filter Name

Answer is closer to 1/3.

2012 Alabama Integrated Crash Data

C130: E CU Non-Motorist Maneuvers



C130: E CU Non-Motorist Maneuvers

# Questions Related to Severity Impaired Pedestrian?

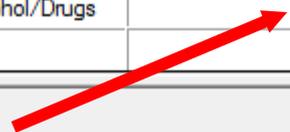
**True or False?**

**Practically all of the pedestrians had been  
drinking or taking drugs.**

C308: CU Non-Motorist Condition

	Value	Frequency	Cum. Frequency	Percentage	Cum. Percent
▶	Apparently Normal	2	2	0.03	0.03
	E Physical Impairment	0	2	0.00	0.03
	E Emotional (Depressed/Angry/Disturb...	0	2	0.00	0.03
	Illness	0	2	0.00	0.03
	Asleep/Fainted/Fatigued	0	2	0.00	0.03
	E Under the Influence of Alcohol/Drugs	32	34	0.46	0.49
	Other	1	35	0.01	0.50

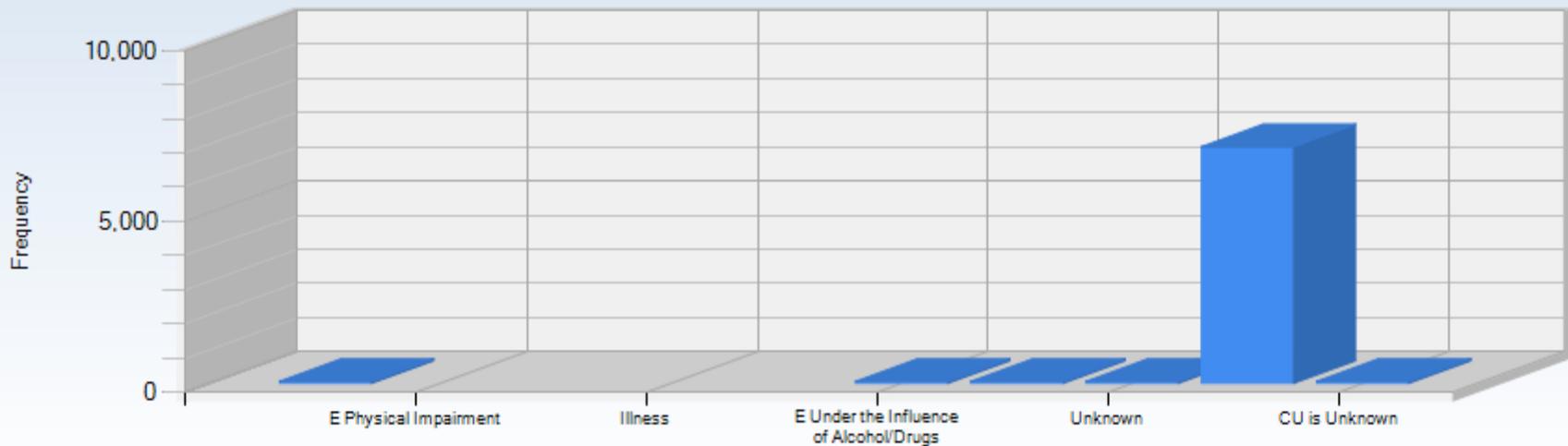
C301: CU Non-Motorist Prior Action  
**C308: CU Non-Motorist Condition**  
 C309: CU Non-Motorist Officer Opinion Alco  
 C310: CU Non-Motorist Officer Opinion Dru



**32 out of 33**

2012 Alabama Integrated Crash Data

C308: CU Non-Motorist Condition



Display Average  Display Filter Name

C308: CU Non-Motorist Condition

# Questions Related to Times

## Time of Day

Comparing the three hours before midnight to the three hours after midnight, the three hours before are ...

- (a) **better than,**
- (b) **worse than, or**
- (c) **about the same as**

... the three hours after midnight.

Order: Natural Order

Descending

 Suppress Zero-Valued Rows

Significance: Over Representation

Threshold: 2.0

## C008: Time of Day

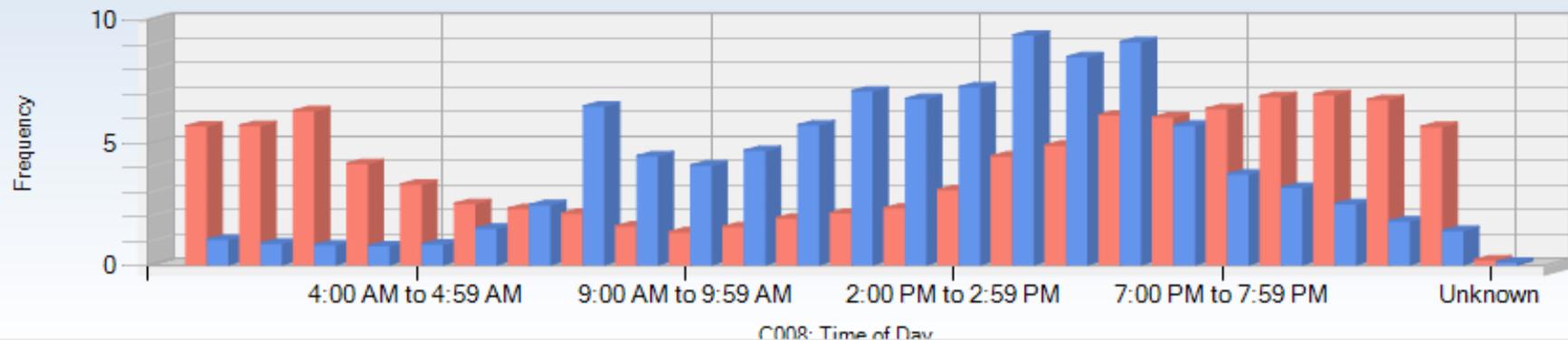
	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	12:00 Midnight to 12:59 AM	395	5.67	1248	1.03	5.510*	323.318
	1:00 AM to 1:59 AM	396	5.68	1062	0.88	6.492*	335.001
	2:00 AM to 2:59 AM	438	6.28	983	0.81	7.758*	381.539
	3:00 AM to 3:59 AM	288	4.13	938	0.77	5.346*	234.123
	4:00 AM to 4:59 AM	229	3.29	1021	0.84	3.905*	170.356
	5:00 AM to 5:59 AM	174	2.50	1799	1.48	1.684*	70.670
	6:00 AM to 6:59 AM	160	2.30	2970	2.45	0.938	-10.590
	7:00 AM to 7:59 AM	146	2.09	7854	6.47	0.324*	-305.115
	8:00 AM to 8:59 AM	110	1.58	5386	4.44	0.356*	-199.359
	9:00 AM to 9:59 AM	93	1.33	4926	4.06	0.329*	-189.938

C124: CU Driver Alcohol Test Type Given  
 C225: CU Citation Issued  
 C227: CU Vehicle Towed  
 C126: CU Driver Alcohol Test Results  
 C204: E CU Sequence of Events #1  
 C123: CU Driver Officer Opinion Drugs  
 C205: E CU Sequence of Events #2  
 C017: First Harmful Event  
 C201: CU Vehicle Most Harmful Event  
 C008: Time of Day  
 C019: E Most Harmful Event  
 C031: Lighting Conditions  
 C023: E Manner of Crash

 Sort by Sum of Max Gain Display Filter Name

## 2012 Alabama Integrated Crash Data

## C008: Time of Day



# Questions Related to Times Day of the Week

**True or False:**

**Sunday is worse than Friday for ID crashes  
both from frequency and  
over-representation points of view.**

## C006: Day of the Week

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	Sunday	1353	19.41	11165	9.20	2.110*	711.709
	Monday	648	9.30	18525	15.27	0.609*	-416.032
	Tuesday	675	9.68	18799	15.49	0.625*	-404.770
	Wednesday	764	10.96	17749	14.63	0.749*	-255.461
	Thursday	774	11.10	19031	15.68	0.708*	-319.096
	Friday	1145	16.43	21628	17.82	0.922*	-97.261
	Saturday	1611	23.11	14452	11.91	1.941*	780.911

C106: CU Driver Age  
 C326: CU Driver/Non-Motorist Gender  
 C324: CU Driver Airbag Status  
 C325: CU Driver/Non-Motorist Age  
 C006: Day of the Week  
 C412: CU Trafficway Lanes  
 C409: CU Traffic Control  
 C025: Crash Severity  
 C328: CU Driver/Non-Motorist Injury Type

< ||| >

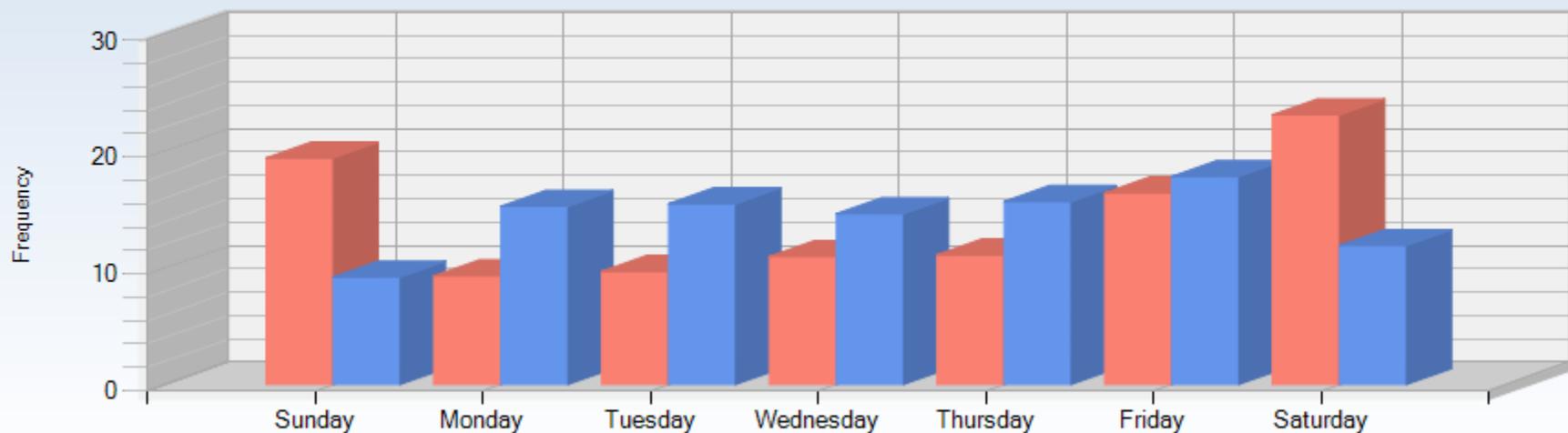
Sort by Sum of Max Gain



Display Filter Name

## 2012 Alabama Integrated Crash Data

## C006: Day of the Week



C006: Day of the Week

# Questions Related to Times Sunday Time of Day for ID Crashes

**True or False:**

**Impaired Drivers are going to the  
bars rather than to church.**

C008: Time of Day

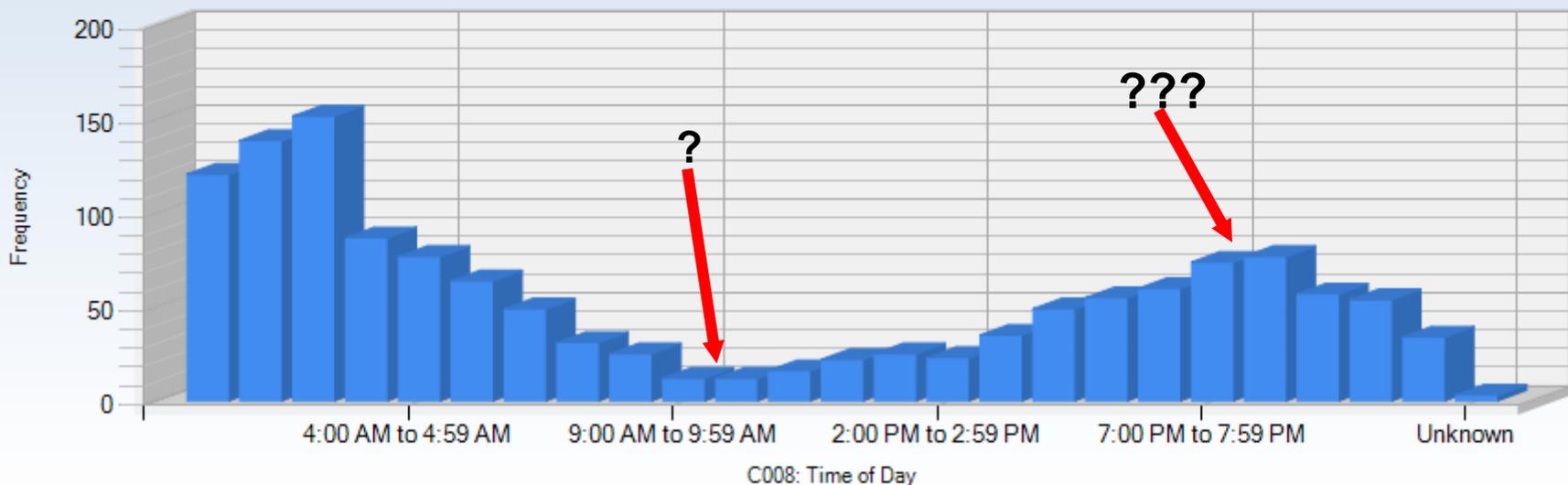
Value	Frequency	Cum. Frequency	Percentage	Cum. Percent
12:00 Midnight to 12:59 AM	121	121	8.94	8.94
1:00 AM to 1:59 AM	139	260	10.27	19.22
2:00 AM to 2:59 AM	152	412	11.23	30.45
3:00 AM to 3:59 AM	87	499	6.43	36.88
4:00 AM to 4:59 AM	77	576	5.69	42.57
5:00 AM to 5:59 AM	64	640	4.73	47.30
6:00 AM to 6:59 AM	49	689	3.62	50.92

C008: Time of Day

Display Average  Display Filter Name

2012 Alabama Integrated Crash Data

C008: Time of Day



# Questions Related to Times Week of the Year

**True or False?**

**The last week of the year is the most  
over-represented for ID crashes.**

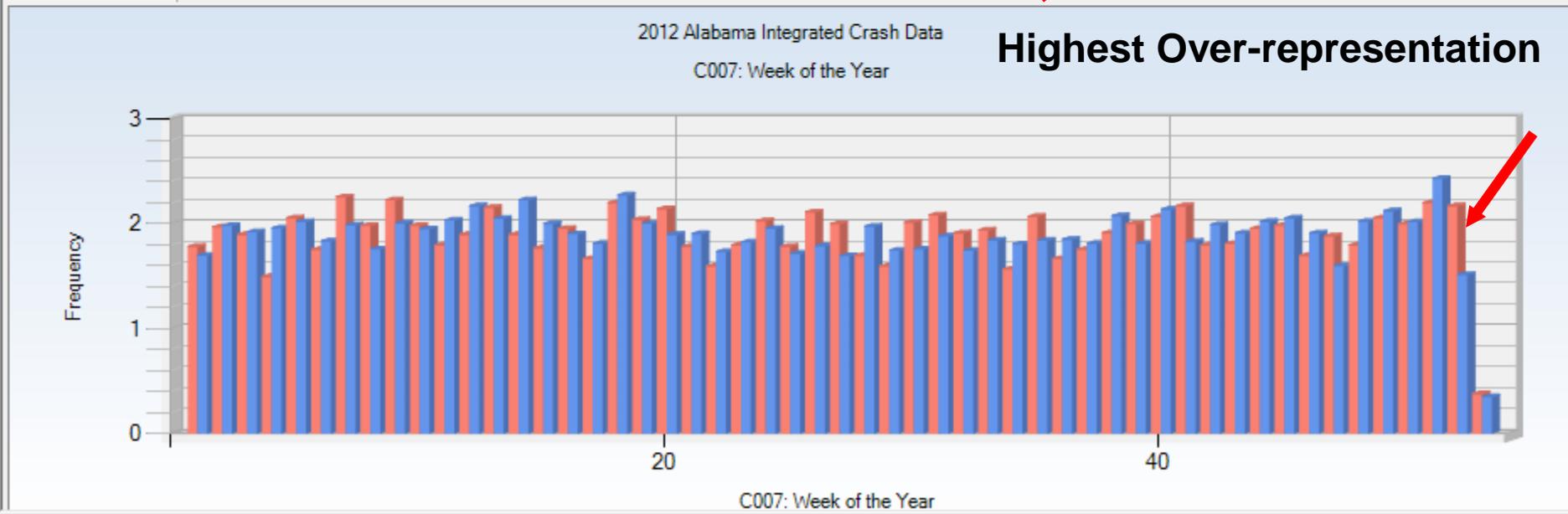
C007: Week of the Year

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	45	138	1.98	2487	2.05	0.966	-4.847
	46	118	1.69	2313	1.91	0.888	-14.853
	47	131	1.88	1938	1.60	1.177	19.686
	48	125	1.79	2452	2.02	0.888	-15.837
	49	143	2.05	2570	2.12	0.969	-4.615
	50	139	1.99	2446	2.02	0.989	-1.492
	51	153	2.20	2948	2.43	0.904	-16.326
	52	151	2.17	1832	1.51	1.435*	45.774
	53	26	0.37	419	0.35	1.080	1.934

- C452: CU CMV Hazard Materials Involvement
  - C220: CU Oversized Load Requiring Permit
  - C034: E Police Present at Time of Crash
  - C009: Data Source
  - C016: Primary Contributing Unit Number
  - C217: CU Hazardous Cargo
  - C012: Controlled Access
  - C327: CU Driver Ejection Status
  - C115: CU Driver CDL Status
  - C221: CU Had Oversized Load Permit
  - C007: Week of the Year
  - C405: CU Contributing Material in Roadway
- Sort by Sum of Max Gain



Display Filter Name



# Questions Related to Times Month

**True or False?**

**ID crashes by month reflect the overall monthly distributions – there are no significant over-representations.**

## C004: Month

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	January	546	7.83	9949	8.20	0.955	-25.447
	February	588	8.44	9709	8.00	1.054	30.338
	March	623	8.94	11081	9.13	0.979	-13.466
	April	551	7.91	10209	8.41	0.940	-35.381
	May	588	8.44	10578	8.72	0.968	-19.575
	June	584	8.38	9548	7.87	1.065	35.585
	July	565	8.11	9584	7.90	1.026	14.518
	August	573	8.22	9892	8.15	1.008	4.827
	September	575	8.25	9752	8.04	1.027	14.868
	October	578	8.29	10447	8.61	0.963	-22.051
	November	555	7.96	10092	8.32	0.957	-24.661
	December	644	9.24	10508	8.66	1.067	40.445

C116: CU DL Restriction Violations #1

C117: CU DL Restriction Violations #2

C306: CU Non-Motorist Location at Time of Cra

C301: CU Non-Motorist Prior Action

C311: CU Non-Motorist Most Harmful Event

C310: CU Non-Motorist Officer Opinion Drugs

C102: CU Non-Motorist Indicator

C060: Number Killed

C004: Month

C056: Number of Pedestrians

C020: E Distracted Driving

C055: Number of Non-Motorists Recorded

C024: School Bus Related

C057: Number of Pedacyclists

C003: Year

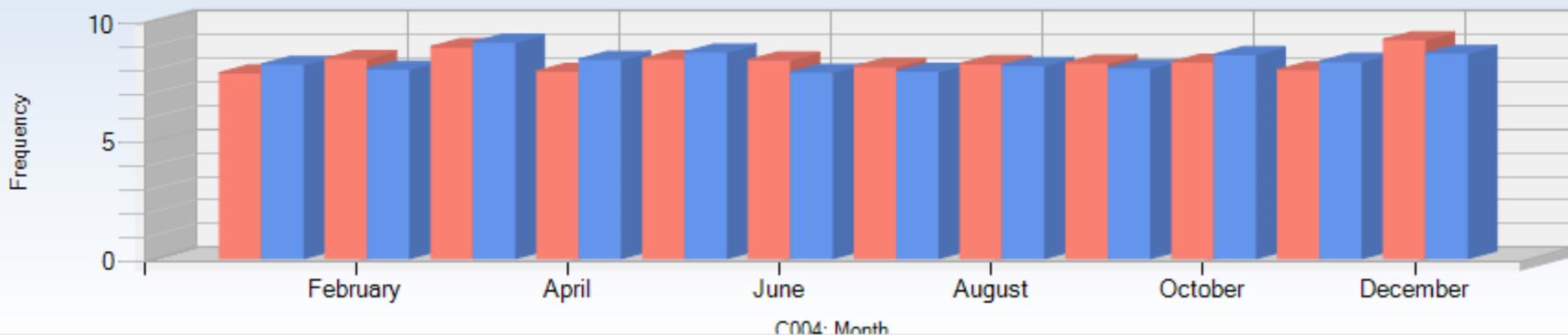
 Sort by Sum of Max Gain

 Display Filter Name

2012 Alabama Integrated Crash Data

C004: Month

No asterisks (\*)



# Questions Related to Locations

## Worst “Cities”

### Notes:

1. The rural areas of a county are considered to be a “city”
2. **Worst** is defined as most **over-represented** compared to the proportion of crashes in the “city” that do not involve ID

### True of False:

**The worst areas are the unincorporated parts of the more populated counties.**

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 Madison	200	2.87	1513	1.25	2.301*	113.089
Rural Mobile	185	2.65	1857	1.53	1.734*	78.329
Rural Tuscaloosa	148	2.12	1325	1.09	1.945*	71.888
Rural Lauderdale	95	1.36	512	0.42	3.230*	65.589
Rural Walker	98	1.41	587	0.48	2.906*	64.281
Rural Cullman	112	1.61	847	0.70	2.302*	63.346
Rural Elmore	96	1.38	575	0.47	2.906*	62.970
Rural Limestone	104	1.49	771	0.64	2.348*	59.712
Rural Baldwin	119	1.71	1134	0.93	1.827*	53.860

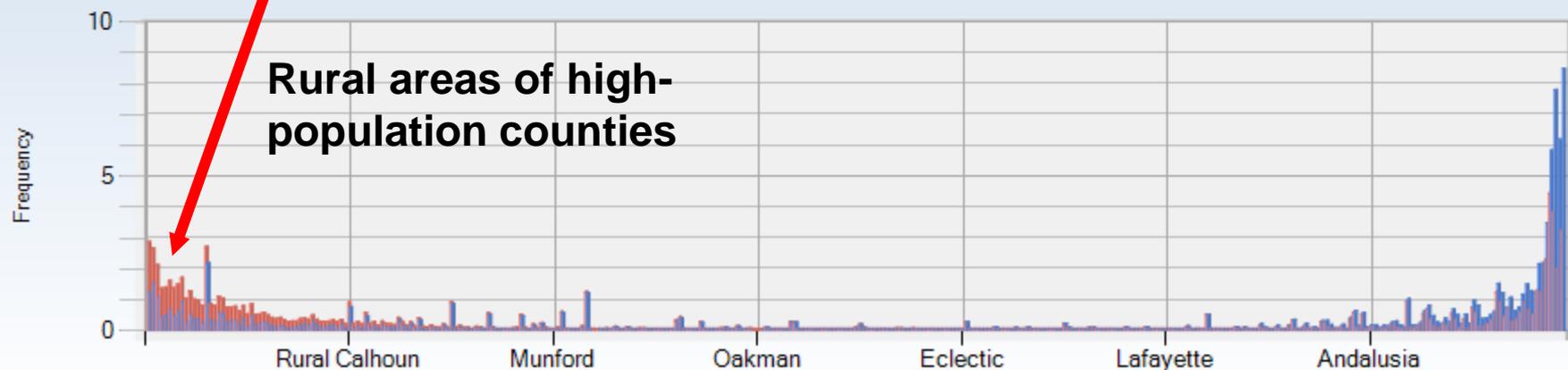
C230: CU Areas Damaged #1  
C021: Distance to Fixed Object  
C002: City  
C043: Agency ORI  
C224: CU Estimated Speed at Impact  
C323: CU Driver/Non-Motorist Safety Ec  
C033: Locale  
C129: CU Vehicle Maneuvers  
C206: E CU Sequence of Events #3  
C010: Rural or Urban  
C037: EMS Arrival Delay

Sort by Sum of Max Gain

 Display Filter Name

## 2012 Alabama Integrated Crash Data

C002: City



C002: City

# Questions Related to Locations “Best” Cities

## Notes:

1. The rural areas of a county are considered to be a “city”
2. **Best** is defined as most **under**-represented compared to their base line of crashes in the “city” not involving ID

## True or False:

**The best areas are the largest cities.**

Order: Max Gain ▾ Descending ▾

Suppress Zero-Valued Rows

Significance: Over Representation ▾ Threshold: 2.0 ▾

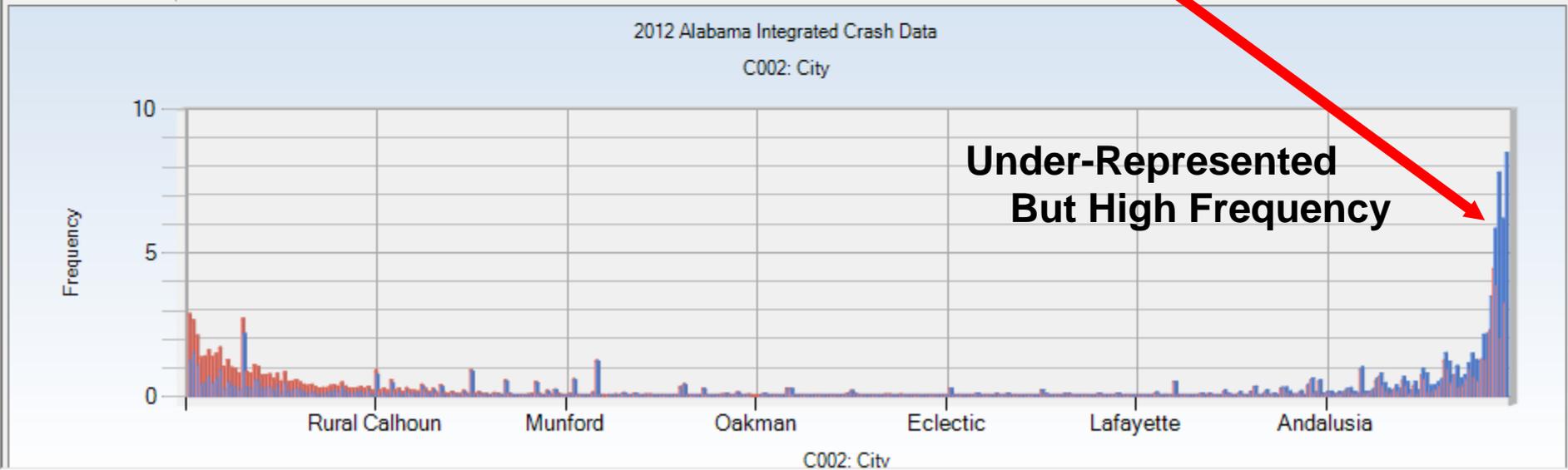
**C002: City**

- C230: CU Areas Damaged #1
  - C021: Distance to Fixed Object
  - C002: City
  - C043: Agency ORI
  - C224: CU Estimated Speed at Impact
  - C323: CU Driver/Non-Motorist Safety Ec
  - C033: Locale
  - C129: CU Vehicle Maneuvers
  - C206: E CU Sequence of Events #3
  - C010: Rural or Urban
  - C037: EMS Arrival Delay
- Sort by Sum of Max Gain

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain ▾
	Phenix City	46	0.66	1559	1.28	0.514*	-43.553
	Homewood	37	0.53	1505	1.24	0.428*	-49.451
	Dothan	91	1.31	2621	2.16	0.604*	-59.558
	Hoover	87	1.25	2646	2.18	0.572*	-64.994
	Tuscaloosa	160	2.30	4226	3.48	0.659*	-82.753
	Huntsville	310	4.45	7087	5.84	0.761*	-97.097
	Mobile	268	3.85	9473	7.81	0.493*	-276.156
	Montgomery	140	2.01	7511	6.19	0.324*	-291.453
	Birmingham	227	3.26	10305	8.49	0.383*	-304.949



Display Filter Name



# Questions Related to Locations Rural/Urban

**True or False:**

**Rural roadways have about 20% higher than their expected proportion of ID crashes compared to non-ID crashes.**

## C010: Rural or Urban

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Rural	3279	47.04	28086	23.14	2.033*	1665.806
	Urban	3691	52.96	93263	76.86	0.689*	-1665.806

Rural has about twice its expected proportion

C224: CU Estimated Speed at Impact  
C323: CU Driver/Non-Motorist Safety Ec  
C033: Locale  
C129: CU Vehicle Maneuvers  
C206: E CU Sequence of Events #3  
C010: Rural or Urban  
C037: EMS Arrival Delay  
C413: E CU Turn Lanes  
C107: CU Driver Raw Age

< ||| >

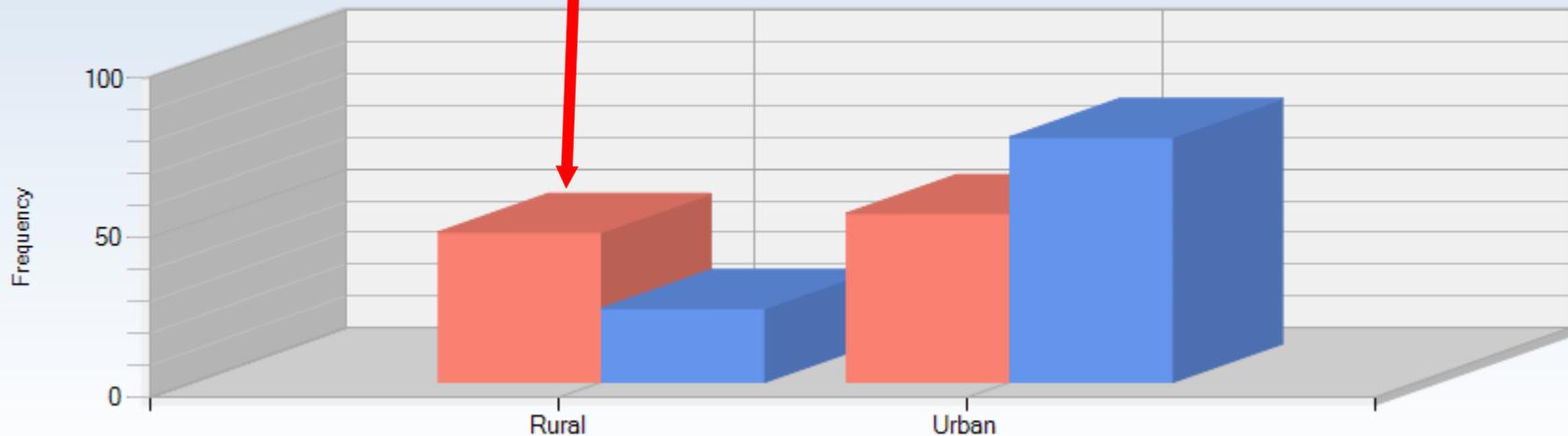
Sort by Sum of Max Gain

Display Filter Name



2012 Alabama Integrated Crash Data

C010: Rural or Urban



C010: Rural or Urban

# Questions Related to Locations Locale

**True or False:**

**The largest frequency and over-representation for ID crashes are in open country.**

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	3365	48.38	33131	27.45	1.762*	1455.539
	Residential	1821	26.18	24743	20.50	1.277*	394.970
	Playground	3	0.04	57	0.05	0.913	-0.285
	Other	35	0.50	833	0.69	0.729	-13.009
	Manufacturing or Industrial	82	1.18	2147	1.78	0.663*	-41.739
	School	56	0.81	2317	1.92	0.419*	-77.537
	Shopping or Business	1593	22.90	57448	47.61	0.481*	-1717.939

C224: CU Estimated Speed at Impact  
 C323: CU Driver/Non-Motorist Safety Ec  
 C033: Locale

C129: CU Vehicle Maneuvers

C206: E CU Sequence of Events #3

C010: Rural or Urban

C037: EMS Arrival Delay

C413: E CU Turn Lanes

C107: CU Driver Raw Age

< ||| >

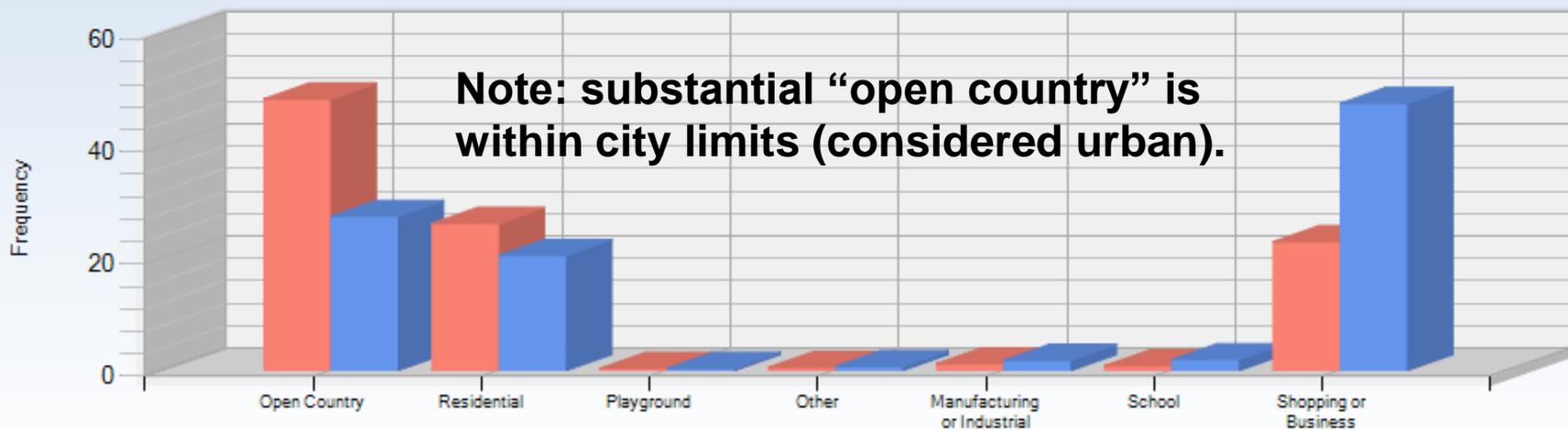
Sort by Sum of Max Gain



Display Filter Name

## 2012 Alabama Integrated Crash Data

C033: Locale



C033: Locale

# Questions Related to Locations Highway Classification

**True or False:**

**County roads have the highest number of ID crashes and are the most over-represented.**



# Questions Related to Locations Intersections

True or False?

**Intersections are particularly hazardous areas for causing ID crashes.**

**C027: At Intersection**

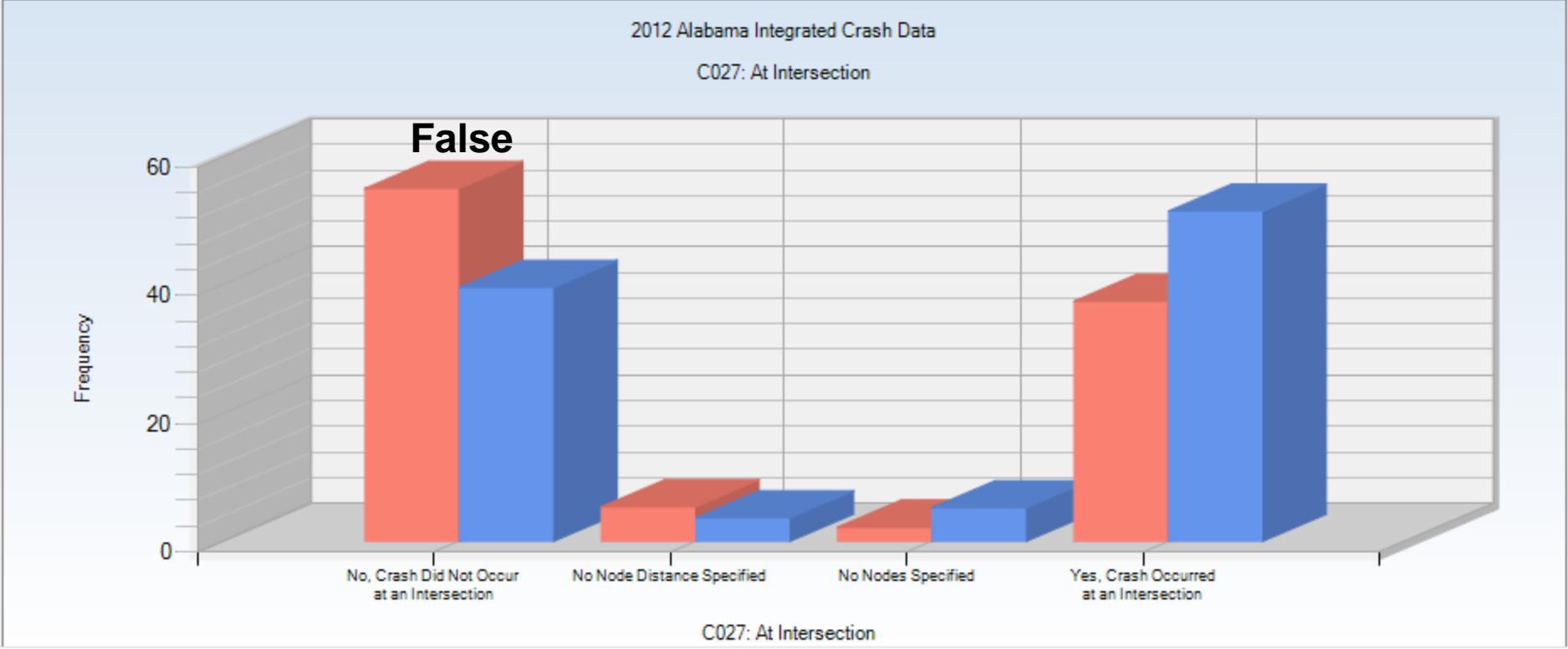
	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	No, Crash Did Not Occur at an ...	3836	55.04	48065	39.61	1.389*	1075.260
▶	No Node Distance Specified	373	5.35	4439	3.66	1.463*	118.034
	No Nodes Specified	151	2.17	6352	5.23	0.414*	-213.844
	Yes, Crash Occurred at an Inte...	2610	37.45	62493	51.50	0.727*	-979.450

C058: Number Injured (Non-Fatal)  
 C208: CU Model Year  
 C114: CU Driver License Status  
 C036: Police Arrival Delay  
 C014: Distance from Node 1  
 C027: At Intersection

Sort by Sum of Max Gain



Display Filter Name



# Questions Related to Locations Roadway Curvature

True or False?

**Curves are particularly hazardous areas for ID crashes, having about twice the proportion of crashes as expected.**

### C407: CU Roadway Curvature and Grade

Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
E Curve Left and Level	431	6.19	2704	2.23	2.774*	275.605
E Curve Left and Down Grade	335	4.81	2074	1.71	2.811*	215.810
E Curve Right and Level	343	4.92	3228	2.66	1.849*	157.492
E Curve Left and Up Grade	162	2.33	1097	0.91	2.570*	98.957
E Curve Right and Down Gr...	217	3.12	2083	1.72	1.813*	97.293
E Curve Right and Up Grade	119	1.71	1379	1.14	1.502*	39.751
Straight with Down Grade	702	10.08	11563	9.57	1.053	35.596

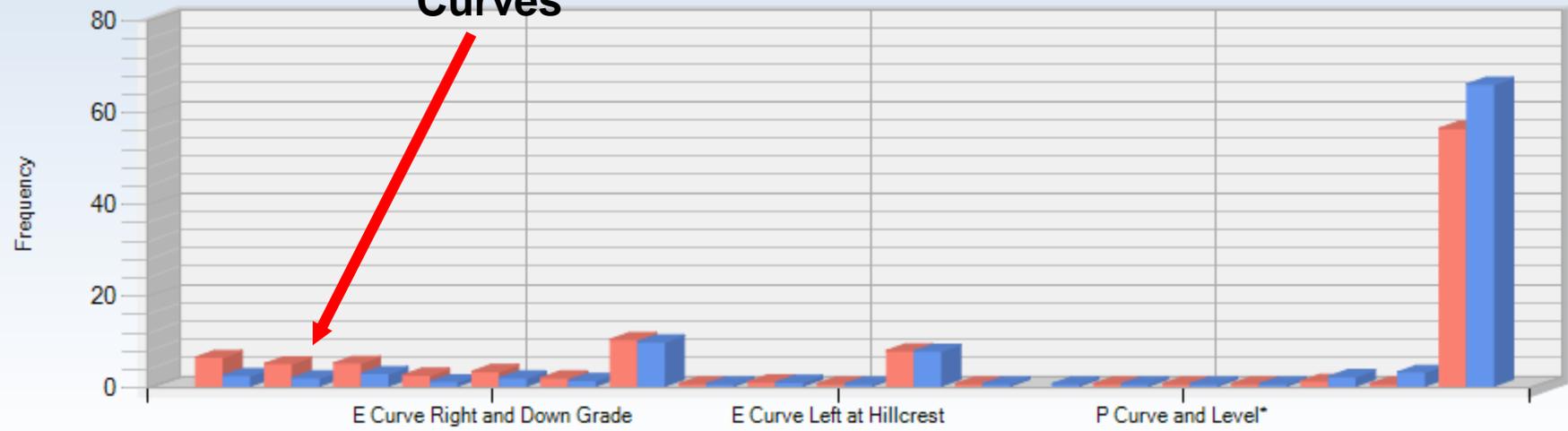
- C001: County
  - C330: CU Driver/Non-Motorist Transport Imme
  - C125: E CU Driver Drug Test Type Given
  - C035: Police Notification Delay
  - C407: CU Roadway Curvature and Grade
  - C231: E CU Areas Damaged #2
  - C411: CU Opposing Lane Separation
  - C127: E CU Driver Drug Test Results
  - C233: CU Point of Initial Impact
- Sort by Sum of Max Gain



Display Filter Name

2012 Alabama Integrated Crash Data  
C407: CU Roadway Curvature and Grade

**Curves**



C407: CU Roadway Curvature and Grade

# Questions on ID Driver Characteristics

## AGE

**True or False:**

**The ages with the best ID history is 16-19**

**AND**

**The ages with the worst ID history is 45-50.**

**AND == both have to be true for statement to be true**

C107: CU Driver Raw Age

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	45	125	1.87	1444	1.32	1.418*	36.852
	46	140	2.09	1415	1.29	1.621*	53.622
	47	140	2.09	1427	1.30	1.607*	52.889
	48	115	1.72	1499	1.37	1.257*	23.494
	49	119	1.78	1397	1.27	1.395*	33.721
	50	138	2.06	1435	1.31	1.575*	50.401

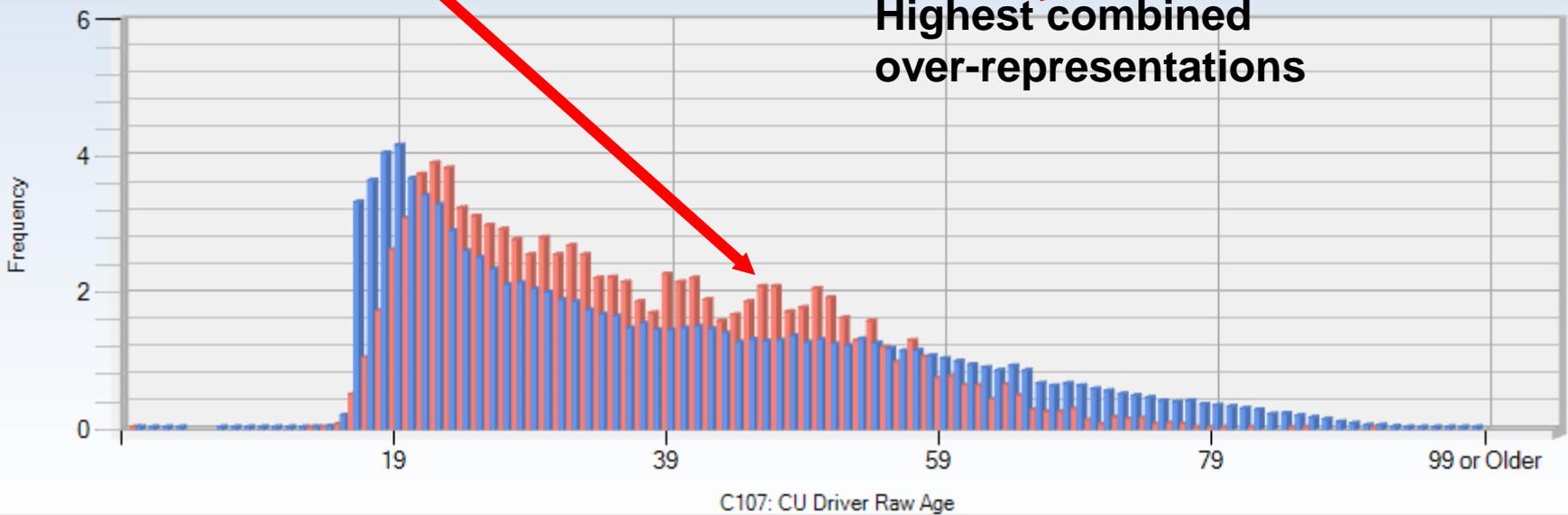
C107: CU Driver Raw Age

Sort by Sum of Max Gain

Display Filter Name

2012 Alabama Integrated Crash Data

C107: CU Driver Raw Age



**Highest combined over-representations**

# Questions on ID Driver Characteristics

## AGE

**True or False:**

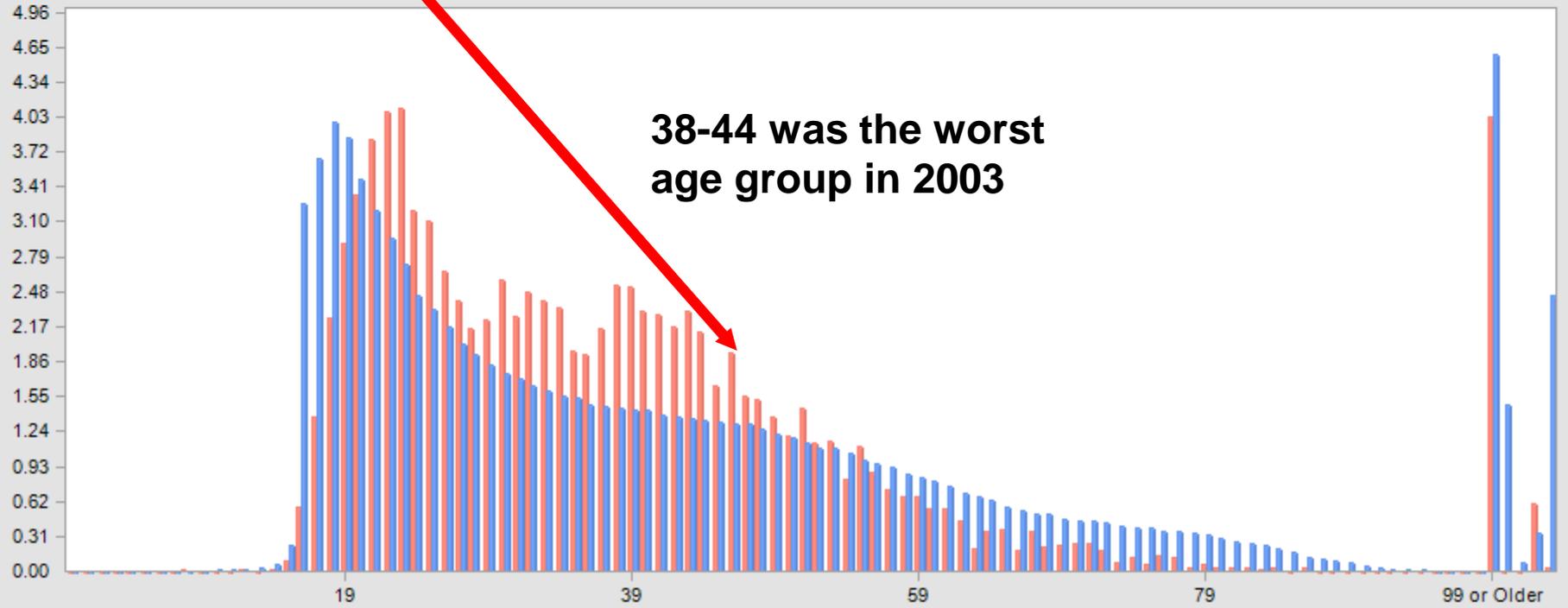
**The age distribution has not changed much in the past ten years.**

Value	Subset Freq.	Subset Per.	Other Freq.	Other Per.	Over Rep.	Max Gair
45	117	1.641	17581	1.318	1.245*	23.038
46	138	1.936	17351	1.301	1.488*	45.267
47	111	1.557	17408	1.305	1.193	17.963
48	109	1.529	16728	1.254	1.219	19.597
49	98	1.375	16230	1.217	1.130	11.259
50	86	1.206	15862	1.189	1.014	1.225
51	103	1.445	15220	1.141	1.266*	21.656
52	81	1.136	14587	1.094	1.039	3.040
53	82	1.150	14475	1.085	1.060	4.638

Sort by Sum of Max Gain



IMPACT Results - 2003-2012 Alabama Integrated Crash Data - DUI 2003 vs. Not DUI 2003  
C107: CU Driver Raw Age



C107: CU Driver Raw Age

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	45	125	1.87	1444	1.32	1.418*	36.852
	46	140	2.09	1415	1.29	1.621*	53.622
	47	140	2.09	1427	1.30	1.607*	52.889
	48	115	1.72	1499	1.37	1.257*	23.494
	49	119	1.78	1397	1.27	1.395*	33.721
	50	138	2.06	1435	1.31	1.575*	50.401

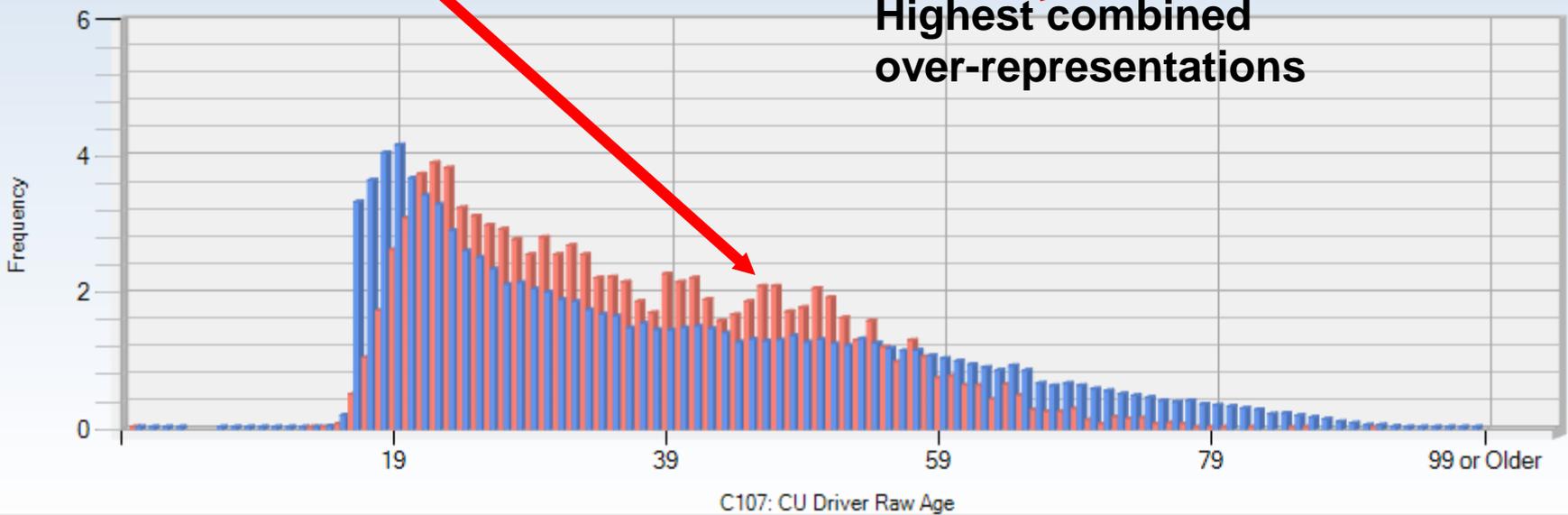
C107: CU Driver Raw Age

Sort by Sum of Max Gain

Display Filter Name

2012 Alabama Integrated Crash Data

C107: CU Driver Raw Age



**Highest combined over-representations**

# Questions on ID Driver Characteristics

## Gender

**True or False:**

**Males cause at least twice as many ID crashes as females.**



# Questions on ID Driver Characteristics Employment Status

**True or False:**

**Over 30% of ID crashes were caused by  
drivers who were unemployed.**

Order: Max Gain

Descending

 Suppress Zero-Valued Rows

Significance: Over Representation

Threshold: 2.0

## C120: E CU Driver Employment Status

C328: CU Driver/Non-Motorist Injury Type  
 C331: E CU Driver/Non-Motorist Transport T  
**C120: E CU Driver Employment Status**  
 C059: Number Injured (Includes Fatalities)  
 C045: HasGPS  
 C038: Non-Vehicular Property Damage  
 C329: CU Driver/Non-Motorist First Aid By  
 C011: Highway Classifications  
 C058: Number Injured (Non-Fatal)

 Sort by Sum of Max Gain

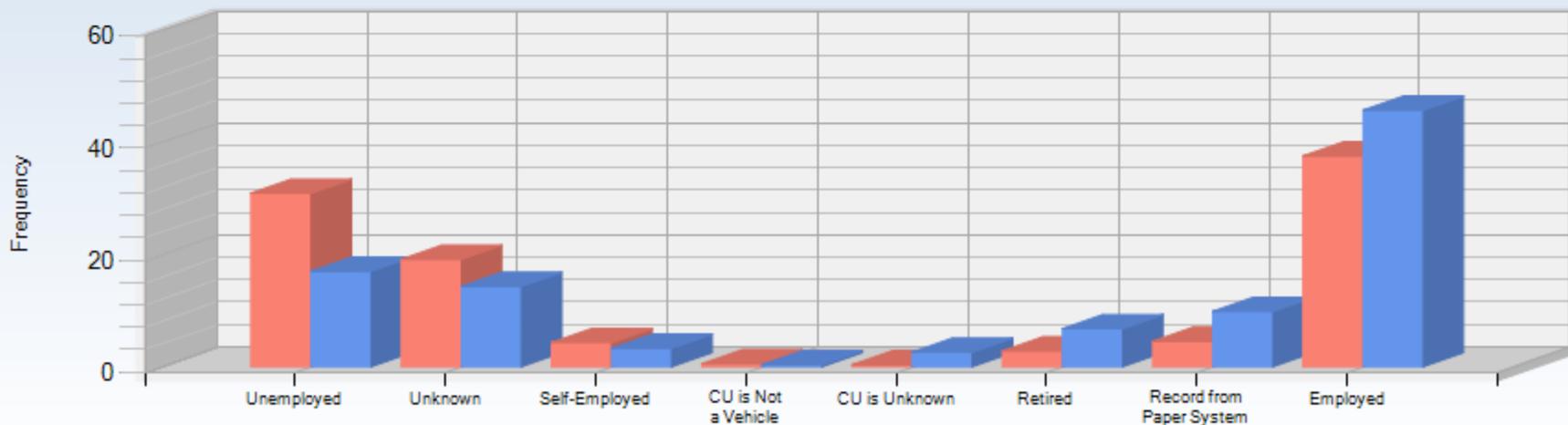
 Sort by Sum of Max Gain

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
▶	Unemployed	2160	30.99	20689	17.05	1.818*	971.673
	Unknown	1336	19.17	17407	14.34	1.336*	336.183
	Self-Employed	299	4.29	3964	3.27	1.313*	71.317
	CU is Not a Vehicle	34	0.49	366	0.30	1.617*	12.978
	CU is Unknown	7	0.10	3118	2.57	0.039	-172.091
	Retired	195	2.80	8220	6.77	0.413*	-277.137
	Record from Paper System	315	4.52	11971	9.86	0.458*	-372.586


 Display Filter Name

2012 Alabama Integrated Crash Data

C120: E CU Driver Employment Status



C120: E CU Driver Employment Status

# Questions on ID Driver Characteristics Drivers License Status

**The proportion of causal ID crash drivers who did not have valid drivers' licenses:**

**10%**

**20%**

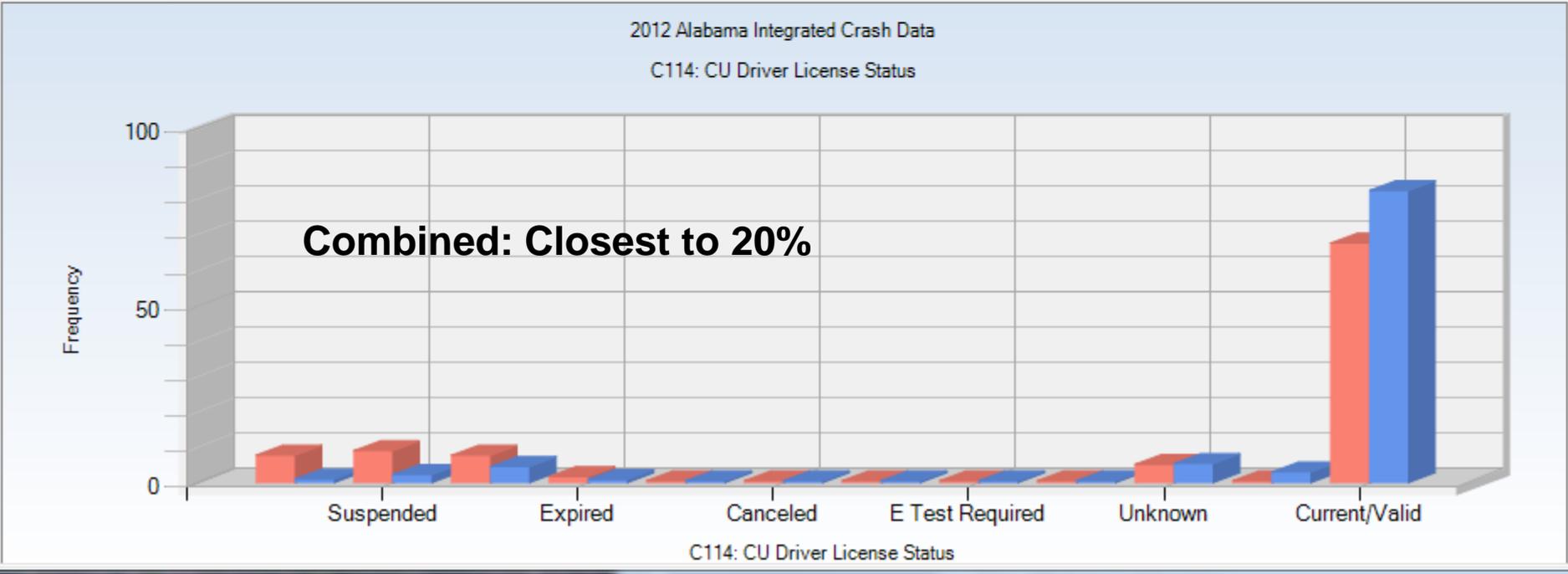
**30%**

**C114: CU Driver License Status**

	Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
	Revoked	540	7.75	1198	0.99	7.847*	471.186
	Suspended	626	8.98	2735	2.25	3.985*	468.900
	Not Applicable/Unlicensed	535	7.68	5472	4.51	1.702*	220.686
	Expired	118	1.69	1024	0.84	2.006*	59.181
	CU is Not a Vehicle	36	0.52	421	0.35	1.489	11.818
	Canceled	13	0.19	24	0.02	9.430	11.621

C011: Highway Classifications  
 C058: Number Injured (Non-Fatal)  
 C208: CU Model Year  
**C114: CU Driver License Status**  
 C036: Police Arrival Delay  
 C014: Distance from Node 1  
 C027: At Intersection  
 C001: County

Sort by Sum of Max Gain



# Questions on ID Driver Characteristics Left the Scene

What percentage of ID drivers leave the scene  
of the crash?

6%

16%

26%



# Questions on ID Driver Characteristics

## Driver Residence Distance

What proportion of ID crash drivers were more than 25 miles from their homes?

**15%**

**25%**

**35%**



# Questions on ID Driver Characteristics Commercial Vehicles

**True or False?**

**For their proportion of the total crashes, commercial vehicles cause about the same number of ID crashes as other vehicles.**

C103: CU Commercial Motor Vehicle Indicator

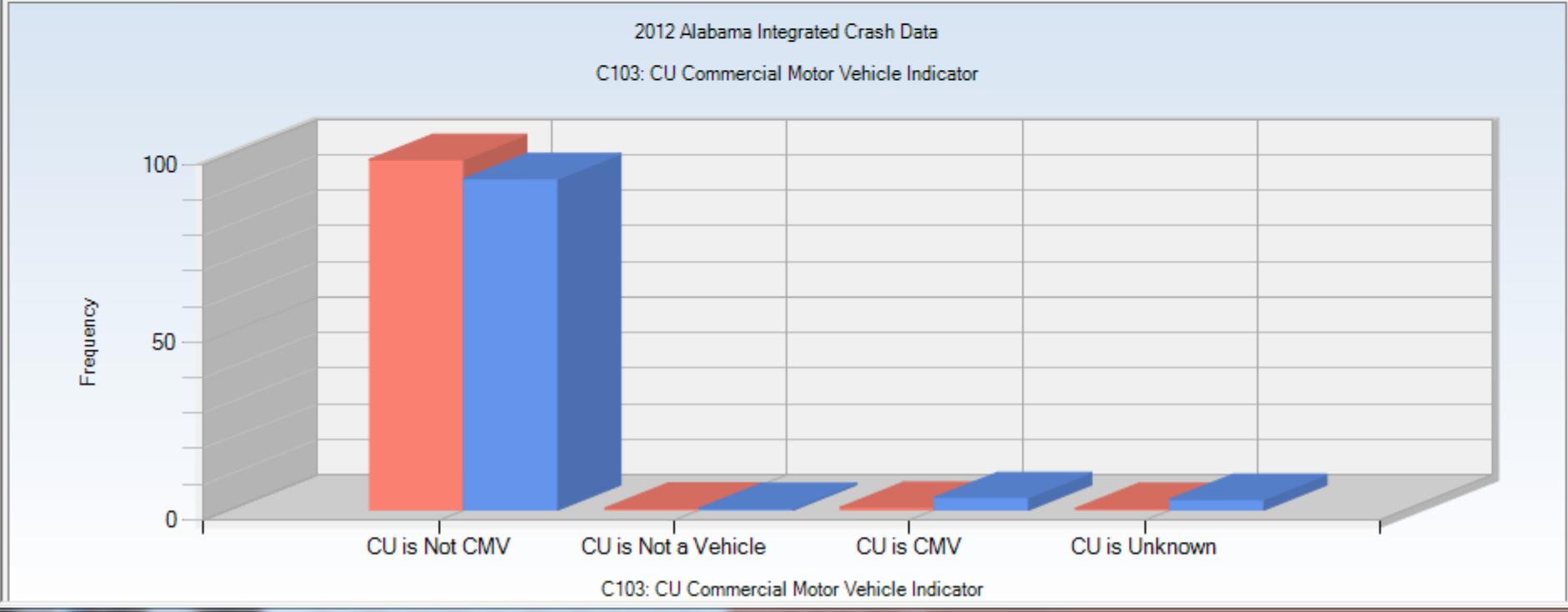
Value	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain
CU is Not CMV	6876	98.65	113085	93.19	1.059*	380.343
CU is Not a Vehicle	36	0.52	421	0.35	1.489	11.818
CU is CMV	51	0.73	4239	3.49	0.209*	-192.490
CU is Unknown	7	0.10	3598	2.97	0.034	-199.671

- C110: CU Driver Residence Distance
  - C403: CU Roadway Condition
  - C026: Intersection Related
  - C222: CU Contributing Vehicle Defect
  - C111: CU Driver License State
  - C103: CU Commercial Motor Vehicle Indicator
  - C450: CU CMV Indicator
  - C452: CU CMV Hazard Materials Involvement
  - C008: CU Qualified Lead Response Permit
- Sort by Sum of Max Gain

About 1/5 of that expected



Display Filter Name





# Roundtable Input and Questions Thank You!

