CARE IMPACT Study of Drowsy Driving (DrD) 2014-2018 Data David B. Brown, PhD, P.E. <u>brown@cs.ua.edu</u> January 25, 2020

Introduction

According to a NCSDR report (NCSDR): "NHTSA data indicate that in recent years there have been about 56,000 crashes reported by police annually that cited driver drowsiness/fatigue [Drowsy Driving, which we are calling DrD]. Annual averages of roughly 40,000 nonfatal injuries and 1,550 fatalities result from these crashes. It is widely recognized that these statistics underreport the extent of these types of crashes. These statistics also do not deal with crashes caused by driver inattention, which is believed to be a larger problem." These statistics were checked against those obtained in Alabama and accessed by CARE (discussed below), and our conclusion is that the NCSDR articles is still quite applicable.

To bring the above home to Alabama, over the five calendar years of 2014-2018, law enforcement crash records recorded 204 Fatal Injury crashes; 1,864 Incapacitating Injury crashes; 3,073 Non-Incapacitating Injury crashes; 1,886 Possible Injury crashes; and 10,208 Property Damage Only crashes, for a total of 17,658. This averages to 3,532 DrD crashes in Alabama per year. The table below indicates the actual number of crashes in each year of the study. This is further discussed in conjunction with attribute C003 (Crashes per Year) below.

Frequency of DrD Crashes by Year

Year	Number	% of Ťota l
2014	3,052	17.28%
2015	3,502	19.83%
2016	3,746	21.21%
2017	3,638	20.60%
2018	3,720	21.07%
Total	17,658	100.00%

This report will continue by presenting the major findings organized by the following major groupings of the attributes: Geographical, Time and Weather, Driver Related, Severity and Vehicles. The findings from these CARE IMPACT studies are presented first after which there is a section for references. The next five sections present the displays for each IMPACT run. A final section presents an example of the hotspot outputs that can be generated for DrD hotspots over the state. These high crash locations are quite important since it has been determined (SJ) that characteristics of *the roadway itself can tend to produce an affinity toward drowsiness*.

Major Interesting Findings and Recommendations

The details for the summaries in this section are given in the sections that follow, referenced by the crash attribute numbers (Cnnn). The acronym we will use for Drowsy Driving will be DrD, to distinguish it from that commonly used for Distracted Driving (DD). References are given in the next major section.

Geographical Findings

- C010 Rural or Urban. Rural areas had over twice their expected proportion with over half of the DrD crashes being in rural areas, while the non-DrD crashes only had about 22% in the rural areas. The reason for this is fairly obvious observations tend to get uninteresting when the roadside scenery is not changing, and rural areas tend to involve longer trips. The recommendation here would be to place some type of diversion on those highways that are exhibiting excessive DrD crashes. See C028 below. [The red background on an IMPACT item indicates that it has an Odds Ratio of at least 2; this means that the proportion of the DrD crashes is twice that of the non-DrD crashes, which is extremely statistically significant. Just notifying drivers of the fact that these roads exhibit more than expected DrD crashes would seem to go a long way to reducing DrD crashes on them.
- C011 Highway Classification. This reflects the rural/urban finding above. Interstates have been found to be particularly vulnerable to DrD-caused crashes. However, in Alabama, State and County roads are also significantly over-represented. It may be for different reasons. The boring nature of driving on Interstates is obvious; however, they may be much more forgiving than State and County roads when it comes to vehicles veering off the roadway.
- C027 At Intersection. Intersections occur much more often in urban areas, so the rural tendency of DrD crashes is supported by the finding of under-representation at intersections. It might also be reasoned that the intersection itself provides a "wake-up call" for the driver.
- C028 Mileposted Routes. This is one of the most important findings in that it differentiates the particular roadways that exhibit a proclivity toward DrD. The SJ report (referenced below) showed clearly that some roadway types are more prone to create the conditions for DrD than others. Findings from Alabama confirm this result, showing that some roadways have up to five times the relative proportion of DrD crashes than those of their non-DrD crashes. The IMPACT display C028 below shows the top 27 DrD Max Gain roadways, where the Max Gain is the number of crashes that would be reduced if the proportion of DrD crashes was reduced to the same as the proportion of non-DrD crashes. The highest of these was I-65, which had a max gain of over 500 crashes (over the five-year period of the study). Recognize that the Max Gain will be affected by the length and volume of traffic on the subject roadway. This sensitivity to ADT and segment length does not affect the Odds Ratio, which compares the proportion of DrD against non-DrD crashes on that same roadway. An example Hotspot analysis for DrD

crashes on I-65 is given in the final section of this report. This is an excerpt of the analysis that is available to all law enforcement in Alabama via CARE. Recall that the red background for lines in the table indicates that the item's DrD proportion is at least twice that of its non-DrD proportion.

- C033 Locale. As expected Open Country is the only Locale that is significantly overrepresented.
- C110 Driver Residence Distance. While not as large an Odds Ratio as many of the items given above, the Greater than 25 Miles (from home) is over a third higher than what would be expected from the proportion of non-DrD crashes, which is still statistically significant at a high level.

Time and Weather Findings

- C003 Year. Examining the Subset Frequency column shows an increase of nearly 700 DrD crashes over the five years. The good news is that the rate of increase was primarily up to 2016, and it has dropped off since then. The Odds Ratios being close to 1 indicate that the proportion to DrD crashes has remained stable over the five-year period it has neither increased nor decreased more than the overall non-DrD crash proportion, which is a good proxy for overall traffic volume.
- C004 Month. It would be expected that the months of the longer trips would be over-represented in DrD crashes. This over-representation starts in April, but the difference is not significant. It becomes significant for May, June, July and August, which are the expected vacation months. Public PI&E warnings regarding the dangers of drowsy driving should be timed appropriately. However, the average DrDs per month is 1471.5 DrD crashes, and even the lowest months have well over 1000 DrD crashes, so it is important to keep the recognition of this problem in front of the public all year round.
- C006 Day of the Week. Clearly Saturday and Sunday are the bad days for DrD crashes, which would be expected since the bulk of the traffic during the week is for commuting and delivery. Also, see C122 and C123, which show the high correlation of DrD with Impaired Driving (ID/DUI).
- C008 Time of Day. Ten PM and after, and the later hours, including late early morning until 8 AM. The chart is totally informative. DrD happens during the day, but not nearly as much as late night and early morning. This also shows the correlation with ID/DUI
- C031 Lighting Conditions. It is not just the time, but also the presence or absence of light. Note Dark-Roadway Lighted. But this must be qualified by the fact that these conditions exist mainly in the urban rather than the rural areas. These things all work together, and it is difficult to analyze each of them independently.
- C032 Weather. What is it about rain that keeps us awake? perhaps the fear that if we doze off the consequences will be obvious. It would be good if we could move this fear into clear weather as well. For right now it appears that bad weather is a positive factor in reducing the number of DrD crashes.

Driver Related Findings

- C017 First Harmful Event. There is nothing unexpected here. When a person loses consciousness behind the wheel, the results are random. If there happens to be a vehicle in its path, hitting it may be avoided in some cases by evasive action on the part of the other driver – perhaps taking any evasion, even if resulting in a crash – to avoid the perceived worst case scenario. Thus, this attribute generally demonstrates the objects that are the first thing encountered by a vehicle that randomly departs the roadway.
- C023 Manner of Crash. The major finding here is obviously that DrD crashes are dominated by single vehicle crashes, which is consistent with many of the findings above. Even though there are some large numbers on some of the two-vehicle Manner of Crash types, most of them are under-represented, indicated by an Odds Ration less than 0.5.
- C052 Number of Vehicles. This quantifies the dominance of single-vehicle crashes at 68.71% of all DrD crashes. Those that do involve more than one vehicle are distributed over the number of vehicles involved as would be expected for non-DrD crashes.
- C104 Causal Unit (CU) Left Scene. The proportion of DrD crashes where the causal driver left the scene is one of the lowest found for all crash types. Perhaps this is due to their not being fully cognizant of what went on prior to the crash. Also, the increased severity of DrD crashes would make many of them impossible to drive away from.
- C107 CU Driver Raw Age. The youngest drivers (aged 16-18) are either significantly under-represented (16-17) or as expected (18). After that, from aged 19 through 29, they are all over-represented. This is evidence of a correlation with alcohol and drugs, and it also indicates that the 16-18 year olds are typically not be driving on the longer trips in which DrD becomes problematic. We would also expect the very youngest drivers to have a high level of excitement from driving that would make sleep less likely.
- C109 CU Driver Gender. Very clearly, males are significantly over-represented in DrD crashes, with an Odds Ratio of about 40% higher than expected. The reason for this is not clear, but it probably is related to males being the primary drivers on longer trips and those that go late into the night (see time of day C008).
- C115 CU Driver CDL Status and C080 CMV Involved. These two attributes are considered together to give the most accurate possible picture of CMV involvement. CMV operation requires a Commercial Drivers' License (CDL), which is the subject of C115. Adding the Not Applicable with the Unknown gives about 94% that are not CMV, from which CMV involvement can be inferred to be about 6%. This is confirmed from the C080 value of 5.95% for C080 where CMV Involved is indicated. This does not appear to be a large percentage, but it must be compared to the proportion of their crashes in general (in this case their non-DrD crashes). In both cases we see that the CMV involvement in DrD crashes is significantly higher than that expected. It is slightly above 15% higher proportion as given by the C080 result. C115 indicates that this over-representation is much higher for those whose licenses are not Current/Valid. While we might expect professional drivers to have relatively fewer DrD crashes, we must recognize that they are generally involved in far more longer trips than is true of non-CDL drivers. The conclusion here is that DrD countermeasures need to be emphasized as much with CMV

drivers as with anyone else; and perhaps the laws requiring them to rest at certain intervals need to be better observed and enforced.

- C122 CU Officer Opinion Alcohol. The effect of alcohol and drugs on creating drowsy drivers cannot be disputed. Here the proportion of those who were using alcohol is close to 60% higher for DrD crashes than for crashes in general.
- C123 CU Officer Opinion Drugs. (Non-alcohol) drugs are even more over-represented than is alcohol. The proportion of DrD drivers using drugs is estimated to be over three times that of non-DrD drivers.
- C129 Vehicle Maneuvers. Falling asleep at the wheel can be described as an unforced error (in tennis terminology). After that, what happens, happens. It seems that if that event is a curve, there is an excellent chance it will result in a crash (Odds Ratio = 2.357). Even worse is if the vehicle departs the roadway (Odds Ratio 3.672). But the overwhelming proportion of DrD crashes (81.93%) are on straight and level roadways.

Findings Related to Severity

- C025 Crash Severity. All of the highest injury categories (Fatal, Incapacitation and Non-Incapacitating) are highly over-represented by over twice the proportion that occurs for non-DrD crashes. Fatal is the smallest of these, but its proportion is still 2.103 times the non DrD crashes. Some possible reasons for these higher severity will be given in the next attributes considered in this section. We also postulate that the consequences of crashes are more severe when drivers do not have awareness to take defensive actions once the inevitable crash event sequences are in process.
- C038 Adjusted EMS Arrival Delay Time. The 0 to 5-minute delay from crash time to ambulance arrival is significantly under-represented, as is the 6-10-minute delay. After that, all of the delay categories are over-represented. Items with less than 20 occurrences are not processed with a statistical test, but it seems likely that all of the delay times above 10 minutes are significantly over-represented. We expect that this is due to the rural nature of the large majority of these crashes. The times being analyzed here are from the crash report to the time that the ambulance arrives. There is no accounting for the delay between the crash itself and when it is reported. This is especially relevant in late night crashes, which characterize DrD crashes. Certainly rural roads that have relatively few vehicles late at night would be susceptible to this problem.
- C060 Number Injured Including Fatalities. Single injury crashes have the highest overrepresentation. However, all of the multiple injury classifications are over-represented up to and including 4 injuries.
- C224 CU Estimated Speed at Impact. This is the largest single factor that determines whether crashes result in fatalities or not. In this case the average speed at impact of the DrD crashes was 48.5 MPH, while that of the non-DrD crashes was 28.6 MPH. It has been determined in a large number of former studies within Alabama that, above 40 MPH, each increase in the impact speed of 10 MPH doubles the probability of any given crash being fatal. Since this doubling is from its next lower 10 MPH-lower speed estimate, this is an exponential increase. So, for example, if the probability of a crash being fatal at 40 MPH is 1%, the probability at 50 MPH would be 2%, the probability at 60

MPH would be 4%, and the probability at 70 MPH would be 8%, doubling from its previous value for each increase in 10 MPH (hypothetical numbers for illustration only). This reflects the laws of physics and kinetic energy. Display C025 shows that the probability of a DrD crash being fatal is 1.16%, while that same probability for a non-DrD crash is only 0.55%.

Findings Related to Vehicles

- C101 Causal Unit (CU) Type. Other than light pick-ups, there does not seem to be a vehicle that is causing or necessarily avoiding DrD crashes. If anything, it would be the drivers that are prone to use these vehicles that might be over- or under-represented, as opposed to the vehicles themselves.
- C208 CU Model Year. Vehicle years that are over-represented start at 1996 and go through 2006, with 2004 being the last of these that are statistically significant. Under-representation significance starts at 2008 and continues through 2011. Above that, nothing is statistically significant. It might be reasoned that vehicles from 2007 and after have additional safety features that could prevent crashes.

Hotspot Analysis

- Hotspot analyses can be performed using a DrD filter for any type of roadway in Alabama. Such a filter will only allow DrD crashes to be considered in the analysis.
- Since Interstates and other mileposted routes tend to have more DrD crashes, hotspot analyses on these roadway types is considered to be most fruitful.
- An example is given in the last section of this report. It is the first segment found on I-65 (starting with milepost 0.0 near Mobile) that had more than 50 DrD crashes in a ten mile span.
- It is interesting that the first such hotspot could not be found on I-65 in less than 100 miles from Mobile. This is not saying that no DrD crashes occurred; they just were not of such a concentration to qualify according to the criterion given above. Perhaps it takes 100 miles for most drivers to become drowsy, and taking a break every 100 miles would be an excellent recommendation.

References

SJ: National Article Reference:

https://www.sleepjunkie.org/falling-asleep-wheel/

WRBL: Local News Referencing the Article Above:

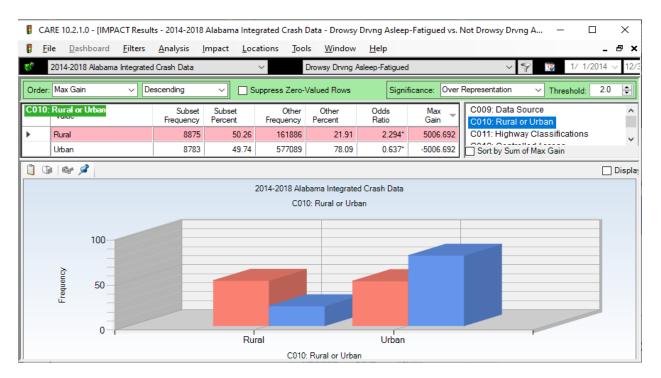
https://www.wrbl.com/news/highway-to-south-texas-rated-worst-for-sleepy-driver-deaths-holiday-travelers-warned/?utm_medium=social&utm_source=facebook_WRBL_News_3

NCSDR: National Center on Sleep Disorders Research (NCSDR) and NHTSA:

Drowsy Driving and Automobile Crashes; NCSDR/NHTSA Expert Panel on Driver Fatigue and Sleepiness; <u>https://one.nhtsa.gov/people/injury/drowsy_driv-ing1/drowsy.html#EXECUTIVE%20SUMMARY</u>

NHTSA: NHTSA home page for drowsy driving (links to research): https://one.nhtsa.gov/Driving-Safety/Drowsy-Driving/Research-on-Drowsy-Driving

IMPACT Displays – Geographical/Roadway 10, 11, 13, 27, 28, 33, 110

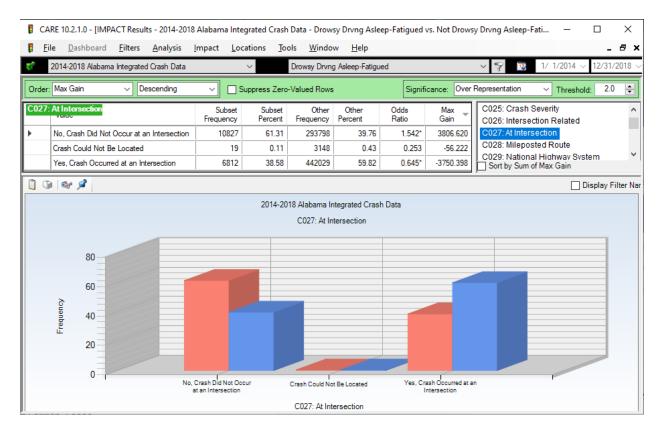


C010 Rural or Urban

C011 Highway Classification



C027 At Intersection



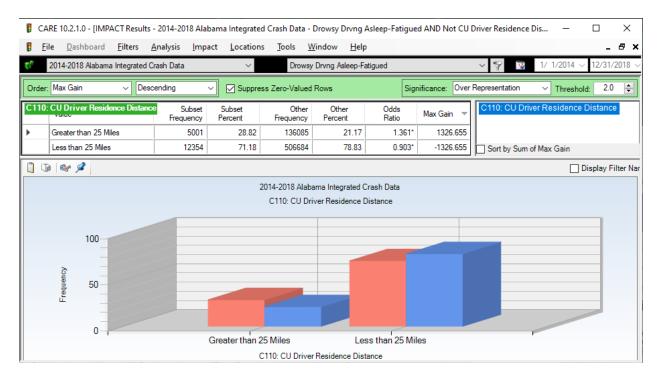
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	IN0059	925	9.01	17253	4.95	1.820*	416.846	C027: At Intersection
	IN0085	388	3.78	7976	2.29	1.652*	153.082	C028: Mileposted Route C029: National Highway System
	IN0022	129	1.26	892	0.26	4.910*	102.728	C029. National Algiway System
	IN0020	245	2.39	5618	1.61	1.481*	79.533	C031: Lighting Conditions
	AL0074	125	1.22	2324	0.67	1.826*	56.551	C032: Weather
	AL0013	253	2.46	6935	1.99	1.239*	48.743	C033: Locale
	AL0009	165	1.61	4201	1.20	1.334*	41.268	C034: E Police Present at Time of Cras C035: Police Notification Delay
	AL0017	141	1.37	3768	1.08	1.271*	30.021	C036: Police Arrival Delay
	AL0069	196	1.91	5646	1.62	1.179	29.708	C037: EMS Arrival Delay
	IN0010	226	2.20	6745	1.93	1.138	27.339	C038: Adjusted EMS Arrival Delay
	AL0025	175	1.70	5074	1.46	1.171	25.555	C039: Non-Vehicular Property Damage
	AL0018	33	0.32	303	0.09	3.698*	24.076	C040: Agency ORI C042: Highway Patrol Troops
	AL0010	97	0.94	2553	0.73	1.290*	21.806	C043: Highway Patrol Posts
	AL0022	66	0.64	1546	0.44	1.449*	20.466	C044: ALEA Division
	AL0171	48	0.47	941	0.27	1.732*	20.285	C045: ALDOT Area
	AL0049	30	0.29	384	0.11	2.653*	18.690	C046: ALDOT Region
	AL0169	27	0.26	351	0.10	2.612*	16.662	C047: ADECAAHSO Region C048: RPO
	AL0050	27	0.26	370	0.11	2.478*	16.102	C049: MPO
	AL0020	79	0.77	2142	0.61	1.252	15.911	C050: Has Coordinate
	AL0086	20	0.19	139	0.04	4.885*	15.906	C051: E MapClick Used
	AL0118	29	0.28	453	0.13	2.174*	15.658	C052: Number of Vehicles
	AL0079	90	0.88	2575	0.74	1.187	14,158	C053: Number of Drivers Recorded C054: Number of Persons Recorded
	AL0077	90	0.88	2622	0.75	1.165	12.774	C055: Number of Motorists Recorded
	AL0195	31	0.30	639	0.73	1.647*	12.179	C056: Number of Non-Motorists Record
	AL0144	20	0.19	269	0.08	2.524*	12.077	C057: Number of Pedestrians
	AL0101	20	0.19	272	0.08	2.496*	11.989	C058: Number of Pedacyclists
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	Manufacturing or Industrial	291	1.65	13709	1.86	0.888	-36.660	C035: Police Notification Delay
	Other	132	0.75	7413	1.00	0.745*	-45.179	C036: Police Arrival Delay
	School	123	0.70	11612	1.57	0.443*	-154.540	C037: EMS Arrival Delay
	Residential	3517	19.92	154710	20.94	0.951*	-180.741	C038: Adjusted EMS Arrival Delay
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C110 CU Driver Residence Distance



IMPACT Displays – Times, Weather and Lighting 3-8, 31-32

C003 Year

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•	January	1190	6.74	57723	7.81	0.863*	-189.306	C003: Ye	ar	
	February	1173	6.64	55099	7.46	0.891*	-143.605	C004: Mo		
	March	1472	8.34	62248	8.42	0.990	-15.432		iy of Month iy of the Week	
	April	1537	8.70	62670	8.48	1.026	39.484		ek of the Year	
	May	1617	9.16	63204	8.55	1.071*	106.724	C008: Tir		
	June	1524	8.63	58589	7.93	1.089*	124.001		ta Source	
	July	1623	9.19	57846	7.83	1.174*	240.755		iral or Urban	
	August	1662	9.41	63511	8.59	1.095*	144.388		phway Classifications Introlled Access	
	September	1443	8.17	60617	8.20	0.996	-5.459		Highway Side	
	October	1590	9.00	66319	8.97	1.003	5.290		mary Contributing Circu	nstand
	November	1411	7.99	63791	8.63	0.926*	-113.303		mary Contributing Unit N	umbe
	December	1416	8.02	67358	9.12	0.880*	-193.537		st Hormful Event Sum of Max Gain	
	201	4-2018 Alabama Inte	egrated Crash D	ata - Filter = Dr	owsy Drvng Asl C004: Month	eep-Fatigued	vs. Not Drowsy	Drvng Asleep-Fati	igued	
	10									
ı	Frequency	h			ľ	1				
	0	February	Apri		June C004: Mon	Aug	ust	October	December	

C006 Day of the Week

C 🔋	ARE 10.	2.1.0 - [IMP/	ACT Results -	2014-2018 Alal	oama Integrate	d Crash Data -	Drowsy Drvng A	Asleep-Fatigu	ued vs. Not Drows	y Drvng Asleep-Fati —	
	<u>E</u> ile [ashboard	<u>F</u> ilters <u>A</u>	analysis <u>I</u> mpa	act <u>L</u> ocation	s <u>T</u> ools <u>V</u>	<u>/</u> indow <u>H</u> elp				_ 8 ×
60	2014-2	018 Alabama	Integrated Ci	rash Data	\sim	Drowsy	Drvng Asleep-Fa	atigued		✓ ♥ 1/ 1/2014 \	/ 12/31/2018 ~
Orde	r: Natur	al Order	∽ Desc	ending	Suppre	ss Zero-Valued	Rows	Si	ignificance: Over I	Representation V Thresho	ld: 2.0 🚖
C000	5: Day o	f the Week		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C001: County C002: City	^
•	Sunda	зу		2822	15.98	70418	9.53	1.677	7* 1139.344	C003: Year	
	Mond	ay		2244	12.71	108401	14.67	0.866	S* -346.270	C004: Month	
	Tueso	lay		2214	12.54	111226	15.05	0.833	3* -443.774	C005: Day of Month C006: Day of the Week	
	Wedr	iesday		2315	13.11	109631	14.84	0.884	4* -304.661	C007: Week of the Year	
	Thurs	day		2488	14.09	114782	15.53	0.907	7* -254.746	C008: Time of Day	
	Friday			2524	14.29	132496	17.93	0.797	7* -642.026	C009: Data Source	~
	Satur	lay		3051	17.28	92021	12.45	1.388	8* 852.134	Sort by Sum of Max Gain	
	D 🖋	<i>A</i>	2014-20	18 Alabama Inte	grated Crash Da				s. Not Drowsy Drvng		Display Filter Nar
						C006:	Day of the Week				
		20									
	Frequency	10									
		0	Su	nday N	londay	Tuesday C0	Wednesday 06: Day of the W	Thursda eek	ay Friday	Saturday	

C008 Time of Day

Image: Bathboard Effet Analysis Impact Location Joil: Window Help Location Joil: Dirac Dirac <thdirac< th=""> Dirac <th< th=""><th>CARE 10.2.1.0 - [IMPACT R</th><th>esults - 2014-2018 Alal</th><th>oama Integrated</th><th>l Crash Data - I</th><th>Drowsy Drvng A</th><th>sleep-Fatigued</th><th>d vs. Not Drows</th><th>sy Drvng Asleep-Fati — 🗆 🗙</th></th<></thdirac<>	CARE 10.2.1.0 - [IMPACT R	esults - 2014-2018 Alal	oama Integrated	l Crash Data - I	Drowsy Drvng A	sleep-Fatigued	d vs. Not Drows	sy Drvng Asleep-Fati — 🗆 🗙
Order Descending Subert Superses Superses Superses Superses Superses Superses Control Threehold 2.0 0000 Imped Inter Interehold Superses Other Precent Ratio Max Gain Control <	Eile Dashboard Filte	ers <u>A</u> nalysis <u>I</u> mpa	act <u>L</u> ocations	: <u>T</u> ools <u>W</u>	indow <u>H</u> elp			_ 8
Color Subert Frequency Precent Other Precent Othe	2014-2018 Alabama Integ	rated Crash Data	~	Drowsy	Drvng Asleep-Fat	igued		✓ ♥ 1/ 1/2014 ∨ 12/31/2018
Notice Frequency Precisit Frequency Precisit Frequency Nat Cam CODE City 100 Mating to 1259 AM 668 3.78 9677 1.17 3.222 460681 CODE City 200 Atto 259 AM 911 4.58 0664 0.07 5.231 656.541 CODE City CODE	Order: Natural Order ~	Descending	Suppres	s Zero-Valued	Rows	Sign	ificance: Over	Representation V Threshold: 2.0
12:00 Monght to 12:59 AM 668 3.78 8677 1.17 3.222 460.651 10:00 AMto 159 AM 777 4.06 7056 0.56 4.247 545.641 C003. Year 20:00 Monght to 259 AM 910 5.15 5446 0.74 6.9937 773.66 30:00 AMto 259 AM 910 5.15 5446 0.74 6.9937 773.66 50:00 AMto 559 AM 1233 7.32 17770 2.43 3.011 663.66 0.022 C010. Rural or Urban 7:00 AMto 559 AM 1233 7.49 44425 6.15 1.219 29.558 C013. E Highway Side C016. Primary Contributing Circumstan 10:00 AMto 159 AM 5032 2.26 3.3050 4.47 0.662 28.957 C017. First Harmfol Event Rel to 2.00 AMto 3.59 AM 657 2.21 3.9942 5.29 0.559 C017. First Harmfol Event Rel to 2.00 AMto 3.59 AM 657 2.21 3.9942 5.29 0.559 C016. Primary Contributing Circumstan 10:00 AMto 159 AM 557 2.21 3.9942 5.29 0.559 C016. Primary Contributing Circumstan 10:00	C008: Time of Day						Max Gain	
0.00 Anto 1:33 Am 11 1.00 7.00 0.03 1.4.24 9.4.24 0.05 0.05 Day of Month 200 Anto 2:59 AM 910 5.15 5.46 0.74 6.5931 7.7366 300 Anto 3:59 AM 973 5.52 608 0.82 6.544 82.802 500 Anto 5:59 AM 1235 7.45 5.52 6.51 1.219 23.73 9 00 Anto 5:59 AM 1323 7.44 4.545 6.15 1.219 23.76 9 00 Anto 5:59 AM 1323 7.44 4.542 6.61 1.219 23.76 9 00 Anto 5:59 AM 153 3.44 2.2847 3.90 0.892 -74.37 1000 Anto 1:59 AM 5:23 2.96 33.06 4.47 0.662 2.96.577 1000 Anto 1:59 AM 5:23 2.96 33.06 4.47 0.652 2.96.577 100 ON In 1:59 PM 6.67 0.539 4.97.157 1.0513 -73.270 100 PM to 3:59 PM 714 4.49 6.59 5.93 -73.770 500 PM to 3:59 PM 714 4.9	12:00 Midnight to 12:59 /	AM 668	3.78	8677	1.17	3.222*	460.661	
200 ANto 239 AM 011 4.39 0484 0.87 5.21 ⁺ 0600 Tay of the Week 300 ANto 359 AM 974 5.52 6008 0.82 6.584 828502 500 ANto 559 AM 1235 6.59 10521 1.42 4.912 983802 600 ANto 559 AM 1232 7.49 6.51 1.219 2.756 900 ANto 559 AM 1823 7.48 6.51 1.219 2.743 1000 ANto 159 AM 657 3.21 39842 5.39 0.595 -385035 1100 ANto 1159 AM 557 3.21 39842 5.39 0.595 -385035 1200 Nonto 1259 PM 611 3.46 48971 6.63 0.522 -57380 300 PM to 259 PM 688 3.99 5.281 7.15 0.545 57380 300 PM to 259 PM 688 3.99 5.281 7.15 0.545 57380 300 PM to 259 PM 714 4.04 6541 9.20 6.87 9.00 400 PM to 259 PM 714 2.20 2.826 0.887 -5.875 <t< td=""><td>1:00 AM to 1:59 AM</td><td>717</td><td>4.06</td><td>7065</td><td>0.96</td><td>4.247*</td><td>548.180</td><td></td></t<>	1:00 AM to 1:59 AM	717	4.06	7065	0.96	4.247*	548.180	
300 AMb 359 AM 910 5.15 5446 0.74 6.937 773 866 4 00 AMb 459 AM 974 5.52 6088 0.82 6.684 828502 5 00 AMb 559 AM 1235 6.95 1.22 9.33860 0.02 6.684 828502 7 00 AMb 559 AM 1232 7.49 4.42 5.11 12.19 22.3758 800 AMb 859 AM 837 5.02 32.381 4.38 1.147 1.132 1000 AMb 159 AM 523 2.96 33060 4.47 0.652 -266 577 1100 AMb 1159 AM 523 2.96 33060 4.47 0.652 -595 175 1100 AMb 1159 AM 563 3.22 -595 73.586 0.018 Highway Side 1200 Non 1259 PM 611 3.46 650 0.588 4.71 597 1.00 111 Finary Contributing Oricumstance 100 PM to 159 PM 677 3.83 4066 650 0.588 4.71 597 2.00 PM to 259 PM 511 2.28 3.331 657 657 573.590 0.022 Etype of Roadway Junchonon Feat	2:00 AM to 2:59 AM	811	4.59	6464	0.87	5.251*	656.541	
400 AMto 4:59 AM 974 5.52 6008 0.02 6.654 92.502 500 AMto 5:59 AM 1225 6.99 10521 1.42 4.912 983.98 600 AMto 5:59 AM 1323 7.49 45425 6.15 1.219 237.55 9:00 AMto 7:59 AM 1323 7.49 45425 6.15 1.219 237.55 9:00 AMto 7:59 AM 615 3.40 28847 3.90 0.852 7.43 0.011 * Highway Classifications 10:00 AMto 1:59 AM 523 2.66 33661 4.47 0.662 -266977 0.016 * Primary Contributing Unit Numbe 11:00 AMto 1:59 AM 567 3.21 39842 5.38 0.582 4.37.97 12:00 Non to 1259 PM 611 3.46 48071 6.63 0.522 59175 2:00 PM to 259 PM 618 3.90 52813 7.15 0.545 -573.80 3:00 PM to 259 PM 688 3.90 52813 7.15 0.545 -573.80 3:00 PM to 559 PM 774 4.30 68321 557 0.513 -732.024	3:00 AM to 3:59 AM	910	5.15	5446	0.74	6.993*	779.866	
0.00 Mito 559 AM 1.220 0.021 1.74 4.01 M 0.0020 0.00 Alto 559 AM 1323 7.49 45425 6.15 1.219 23758 0.00 Alto 559 AM 1323 7.49 45425 6.15 1.219 23758 0.00 Alto 559 AM 615 3.48 23261 4.38 1.147 113.25 C013: E Highway Side 0.100 Alto 159 AM 623 2.26 3360 4.47 0.662 -266.577 C018: ElingWay Classifications 11:00 Alto 1159 AM 567 3.21 33842 5.39 0.596' -385.035 C019: E Mirany Contributing Unit Numbe 12:00 Nonto 1259 PM 611 3.46 48971 6.63 0.522' -59.175 C019: E Most Harmful Event 12:00 Nonto 152 PM 681 3.00 52813 7.15 0.545' -75.396 C022: E Type of Roadway JunctionFeat 0:00 PM to 259 PM 774 4.04 68415 3.26 0.437' -732.02 1:00 PM to 259 PM 711 2.03 6.0437' -732.02 C22.56 3.42 0.591' -737.02	4:00 AM to 4:59 AM	974	5.52	6089	0.82	6.694*	828.502	
000 AM to 5:59 AM 1233 7.42 1.7270 2.44 3.011 0.68 back 700 AM to 7:59 AM 1233 7.44 4.425 6.15 1.219 227.556 C011: Highway Classifications 9.00 AM to 5:59 AM 615 3.46 2.8947 3.90 0.892° -74.307 10.00 AM to 1:59 AM 523 2.96 3.3060 4.47 0.662 -266.577 11.100 AM to 1:59 AM 567 3.21 3.948 6.59 0.595° -385.055 12.00 Neon to 12:59 PM 611 3.46 48971 6.63 0.522° -559.175 1.00 PM to 1:59 PM 677 3.33 44068 6.59 0.586° -47.357 2.00 PM to 2:59 PM 688 3.90 52313 7.15 0.545° -73.360 3.00 PM to 559 PM 764 4.39 6.3221 8.57 0.513° -737072 5.00 PM to 559 PM 714 4.04 6.8415 9.26 0.437° -735.08 5.00 PM to 559 PM 714 2.40 2.9823 4.04 0.594° -292.62 <td< td=""><td>5:00 AM to 5:59 AM</td><td>1235</td><td>6.99</td><td>10521</td><td>1.42</td><td>4.912*</td><td>983.598</td><td></td></td<>	5:00 AM to 5:59 AM	1235	6.99	10521	1.42	4.912*	983.598	
7.00 AMIo 7:59 AM 1323 7.49 45425 6.15 1.119 227.58 C012: Controlled Access 0.00 AMIo 8:59 AM 887 5.02 322.61 4.38 1.147 113.725 0.00 AMIo 8:59 AM 615 3.48 2847 3.90 0.992 7.43.47 C012: Centrolled Access 10:00 AMIo 10:59 AM 523 2.56 33060 4.47 0.6622 266.577 11:00 AMIo 11:59 AM 567 3.21 39842 5.39 0.595' -385.055 12:00 Neon to 12:59 PM 611 3.46 48971 6.63 0.522' -599.175 10:00 FM to 159 PM 677 3.33 44066 6.50 539' -77.012 C012: Elstradet D/thiog Opinion 2:00 PM to 259 PM 688 3.90 52813 7.15 0.545' -573.960 C022: Elstradet D/thiog Opinion 0:00 FM to 559 PM 744 4.49 68321 8.57 0.513' -720.024 C022: Elstradet D/thiog Opinion 0:00 FM to 559 PM 742 2.60 2.037' -65.575 C024: School Bus Related C022: Nitenes to Related <	6:00 AM to 6:59 AM	1293	7.32	17970	2.43	3.011*	863.602	
8:00 AM to 8:59 AM 887 5.02 32361 4.38 11.47 113.725 C013: E Highway Side 9:00 AM to 9:59 AM 615 3.48 28847 3.90 0.852' -74.307 10:00 AM to 10:59 AM 523 2.96 33060 4.47 0.662' -266.97 11:00 AM to 11:59 AM 567 3.21 39842 5.39 0.556' -355.98 12:00 Noon to 12:59 PM 611 3.46 48971 6.63 0.522' -559.175 10:00 PM to 159 PM 677 3.83 40068 6.50 0.589' -471.597 2:00 PM to 5.59 PM 688 3.90 52813 -730.072 C022 E Nathard Livent Co22 E Type of Roadway JunctionFeat 3:00 PM to 5.59 PM 776 4.39 63321 8.57 0.513' -732.021 C022 E Noahar of Crash 5:00 PM to 5.59 PM 511 2.29 4333 5.95 0.437' -292.074 C023: E Manner of Crash <	7:00 AM to 7:59 AM	1323	7.49	45425	6.15	1.219*	237.558	
900 AM to 959 AM 615 3.48 28847 3.90 0.882' 74.30' 10:00 AM to 159 AM 523 2.96 33660 4.47 0.662' -266.97' 11:00 AM to 159 AM 567 3.21 33842 5.39 0.566' -385.005' 12:00 Moto 11:59 PM 677 3.83 48068 6.50 0.589' 471.59' 2:00 Moto 159 PM 668 3.90 52213 7.15 0.545' -573.990' 2:00 Moto 359 PM 688 3.90 52213 7.15 0.545' -573.990' 3:00 PM to 359 PM 6824 4.67 67211 9.10 0.513' -773.027' 5:00 PM to 559 PM 714 4.04 68415 9.26 0.437' -593.880 7:00 PM to 559 PM 711 2.28 4.3937 5.55 0.487' -583.886 7:00 PM to 759 PM 4.42 2.50 2.0265 2.82 0.837' -56.575' 10:00 PM to 159 PM 536 3.04 15634 2.12 1.435' 162.422 9:00 PM to 159 PM 536 <t< td=""><td>8:00 AM to 8:59 AM</td><td>887</td><td>5.02</td><td>32361</td><td>4.38</td><td>1.147*</td><td>113.725</td><td></td></t<>	8:00 AM to 8:59 AM	887	5.02	32361	4.38	1.147*	113.725	
11:000 Mit 0: 11:59 AM 2.23 30000 1.47 0.582 2.082 2.081 2.00 Mit 0: 11:59 Mit 0: 159 PM 6.63 0.522 559:15 C017: First Harmful Event Rel t C012: Distance to Fixed Object 2:00 PM to 1:59 PM 6.68 3.90 52813 7.15 0.545 573:390 3:00 PM to 3:59 PM 6.68 3.90 52813 7.15 0.545 573:900 5:00 PM to 3:59 PM 764 4.39 6.3321 8.57 0.513' -772:022 5:00 PM to 5:59 PM 774 4.04 6445 9.26 0.437' 920:744 6:00 PM to 5:59 PM 511 2.88 43937 5.95 0.487' 538.886 7:00 PM to 7:59 PM 423 2.40 2.9823 4.04 0.594' -228:628 8:00 PM to 8:59 PM 357 2.02 2.528 3.42 0.591' -247:26 9:00 PM to 9:59 PM 352 3.04 16524 2.12 1.435' 162:422 10:00 PM to 1:59 PM 564 3.19 11529' 1.0	9:00 AM to 9:59 AM	615	3.48	28847	3.90	0.892*	-74.307	
11:00 AM to 11:39 AM 366 3.21 33842 5.39 0.0396 -338.039 12:00 Nom to 12:59 PM 611 3.46 48971 6.63 0.522* 559.175 10:00 PM to 1:59 PM 677 3.83 4806 6.50 0.589* -471.597 2:00 PM to 2:59 PM 688 3.90 52813 7.15 0.545* 573.360 3:00 PM to 3:59 PM 624 4.67 67211 9.10 0.513* -782.024 4:00 PM to 5:59 PM 774 4.04 68415 9.26 0.437* -583.866 5:00 PM to 5:59 PM 513 2.29 4.937 555 0.437* -583.866 7:00 PM to 7:59 PM 423 2.40 29823 4.04 0.594* -289.623 9:00 PM to 9:59 PM 330 11629 1.57 2.030* 2.6774 10628* 1074* 9:00 PM to 9:59 PM 442 2.50 2.0827 56.6775 10:00 PM to 10:59 PM 536 3.04 15634 2.12 1.435* 162422 10:00 PM to 11:59 PM 564 3.19 11629 <td>10:00 AM to 10:59 AM</td> <td>523</td> <td>2.96</td> <td>33060</td> <td>4.47</td> <td>0.662*</td> <td>-266.977</td> <td></td>	10:00 AM to 10:59 AM	523	2.96	33060	4.47	0.662*	-266.977	
12:00 Noon to 12:59 PM 611 3:46 49971 6:63 0.522' -559.175 100 PM to 1:59 PM 6:77 3:83 40068 6:50 0.589 471.157 2:00 PM to 2:59 PM 6:88 3:90 52913 7.15 0.545' 573.300 3:00 PM to 3:59 PM 6:82 4:67 67211 9:10 0.513' 772.024 4:00 PM to 4:59 PM 776 4:39 6:3321 8:57 0.513' 773.072 5:00 PM to 5:59 PM 714 4:04 68415 9:26 0.437' 920.794 6:00 PM to 5:59 PM 511 2:89 43937 5:55 0.487' -538.886 7:00 PM to 7:59 PM 4:22 2:02 2:5286 3:42 0.591' -247.216 8:00 PM to 8:59 PM 3:07 2:02 2:5286 3:42 0.591' -247.216 9:00 PM to 9:59 PM 5:36 3:04 15634' 2:12 1:435' 162.422 1:00 PM to 10:59 PM 5:36 3:04 15634' 2:12 1:435' 162.422 1:00 PM to 1:59 PM 5:6	11:00 AM to 11:59 AM	567	3.21	39842	5.39	0.596*	-385.035	
1:00 PM to 1:59 PM 677 3.83 48068 6.50 0.589' 471:597 2:00 PM to 2:59 PM 668 3.90 52813 7.15 0.545' 573:900 3:00 PM to 3:59 PM 824 4.67 67211 9.10 0.513' -782.024 4:00 PM to 4:59 PM 776 4.39 63321 8.57 0.513' -773.027 5:00 PM to 5:59 PM 714 4.04 68415 9.26 0.437' 930.784 6:00 PM to 5:59 PM 911 2.29 4.9337 5.55 0.437' -538.806 7:00 PM to 7:59 PM 423 2.40 298:23 4.04 0.594' -289.628 8:00 PM to 8:59 PM 355 3.42 0.591' -247.216 C028: Mileposted Route 9:00 PM to 1:59 PM 546 3.19 11629 1.57 2.030' 286.122 11:00 PM to 1:159 PM 564 3.19 11629 1.57 2.030' 286.122 10/nknown 12 0.07 1235 0.17 0.407' 17.511' Sort by Sum of Max Gain Cotext bat	12:00 Noon to 12:59 PM	611	3.46	48971	6.63	0.522*	-559.175	
3:00 PM to 3:59 PM 3:24 4:67 67211 9:10 0:513' 778:2024 4:00 PM to 3:59 PM 776 4:39 6:3321 8:57 0:513' 773:707 5:00 PM to 5:59 PM 714 4.04 68415 9:26 0:437' 920.74 6:00 PM to 6:59 PM 511 2:89 43337 5:35 0:487' 5:38.86 7:00 PM to 7:59 PM 4:23 2:40 2:92:3 4:04 0:594' 2:98:28 8:00 PM to 1:59 PM 3:57 2:02 2:52:86 3:42 0:591' 2:47:216 9:00 PM to 1:59 PM 3:04 1:5634 2:12 1:435' 162:42 2:00:00' 2:00:12:1:10:00' 2:00:1:10:10:10:10:10:10:10:10:10:10:10:1	1:00 PM to 1:59 PM	677	3.83	48068	6.50	0.589*	-471.597	
300 PM to 3:39 PM 8:24 4.67 6:711 9.10 0.313 -7.42.024 4:00 PM to 4:59 PM 776 4.39 63321 8.57 0.513* -737.072 5:00 PM to 5:59 PM 714 4.04 68415 9.26 0.437 920.74 6:00 PM to 6:59 PM 511 2.89 4.04 0.594 -238.286 0.26: Intersection Related 7:00 PM to 7:59 PM 423 2.40 2.923 4.04 0.594 -239.282 0.26: Intersection Related 0.028: Mileposted Route 0.028: Mileposted Route 0.028: Mileposted Route 0.029: National Highway System 0.030: Functional Class 0.031: Lighting Conditions 0.031: Lighting Conditions 0.031: Lighting Conditions 0.031: Lighting Conditions 0.032: Weather	2:00 PM to 2:59 PM	688	3.90	52813	7.15	0.545*	-573.980	C021: Distance to Fixed Object
4:00 PM to 4:59 PM 776 4:39 63321 8:57 0.513* -737.072 5:00 PM to 5:59 PM 714 4.04 66415 9.26 0.437 -920.74 6:00 PM to 5:59 PM 511 2.89 43937 5.95 0.487* -538.86 7:00 PM to 7:59 PM 423 2.40 29233 4.04 0.591* -2247.216 9:00 PM to 5:59 PM 357 2.02 25286 3.42 0.591* -247.216 9:00 PM to 15:59 PM 442 2.50 2085 2.82 0.887* -555.75 10:00 PM to 15:59 PM 536 3.04 15634 2.12 1.435* 162.422 11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.122 Uhknown 12 0.07 1235 0.17 0.407 -17.511 -032* Locala 0:32* Lipsting Craditions 0:32* Lipsting M & State 7.00 PM & State 7.00 PM & State -032* Lipsting M & State 0:02 0:047 1:059 PM 0:0407 -17.511 -032* Lipsting M & State 0:032* Use & State <	3:00 PM to 3:59 PM	824	4.67	67211	9.10	0.513*	-782.024	
5:00 PM to 5:59 PM 714 4.04 68415 9.26 0.437 -920.794 6:00 PM to 6:59 PM 511 2.89 43937 5.95 0.487 -538.866 7:00 PM to 7:59 PM 423 2.40 29223 4.04 0.594* -289.628 8:00 PM to 8:59 PM 357 2.02 25226 3.42 0.591* -247.216 9:00 PM to 9:59 PM 442 2.50 20865 2.82 0.887* -56.575 10:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.122 11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.122 10:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.122 10:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.128 10:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.128 10:00 PM to 12:59 PM 10:407 -17:51* Sortby Sum of Max Gain 1.57 2014-2018 Alabama Integrated Crash Data - Filter = Drowsy Drvng	4:00 PM to 4:59 PM	776	4.39	63321	8.57	0.513*	-737.072	
6:00 PM to 6:59 PM 511 2.89 43937 5.95 0.487 538.886 7:00 PM to 7:59 PM 423 2.40 29823 4.04 0.594* 298.628 8:00 PM to 8:59 PM 357 2.02 25286 3.42 0.591* 247.216 9:00 PM to 9:59 PM 442 2.50 20865 2.82 0.887* 56.575 10:00 PM to 10:59 PM 536 3.04 15634 2.12 1.435* 162.422 Unknown 12 0.07 1235 0.17 0.407 -17.511 0.32* Weather C030* Functional Class 0:00 PM to 10:59 PM 564 3.19 11629 1.57 2.030* 286.122 Unknown 12 0.07 1235 0.17 0.407 -17.511 0.32* Montional 0:32* Maximum 12 0.07 1235 0.17 0.407 -17.511 0.32* Montional 0:32* Maximum 12 0.07 1235 0.17 0.407 -17.511 0.32* Montional 0:32* Montional 1:50* PM 2:00 PM to 7:50 PM 2:00 PM to 7:59 PM 2:00 PM to	5:00 PM to 5:59 PM	714	4.04	68415	9.26	0.437*	-920.794	
0.00 PM to 0.35 PM 423 2.40 23023 4.04 0.334 -2203020 8:00 PM to 8:59 PM 357 2.02 25286 3.42 0.591* -247.216 9:00 PM to 9:59 PM 442 2.50 20865 2.82 0.887* -56.575 10:00 PM to 10:59 PM 536 3.04 15634 2.12 1.435* 162.422 11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 228.122 Uhknown 12 0.07 1235 0.17 0.407 -17.51 Sort by Sum of Max Gain	6:00 PM to 6:59 PM	511	2.89	43937	5.95	0.487*	-538.886	· · · · · ·
8:00 PM to 8:59 PM 357 2.02 25286 3.42 0.591* -247.216 9:00 PM to 9:59 PM 442 2.50 20865 2.82 0.887* -56.575 10:00 PM to 10:59 PM 536 3.04 15634 2.12 1.435* 162.422 11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 286.122 Unknown 12 0.07 1235 0.17 0.407 -17.511 C029: Waitonal Highway System C030: Functional Class C031: Lighting Conditions C032: Weather C032: Weather C032: Weather C032: Weather C032: Weather C032: Josala C031: Lighting Conditions C032: Weather C032: Weather C032: Time of Day Image: Conditions C032: Time of Day Image: Conditions C032: Time of Day C031: Lighting Conditions C032: Time of Day Image: Conditions C032: Time of Day Image: Conditions C032: Time of Day C032: Lighting Conditions Condi	7:00 PM to 7:59 PM	423	2.40	29823	4.04	0.594*	-289.628	
9:00 PM to 9:59 PM 442 2:50 20865 2:82 0.887 -56:575 10:00 PM to 10:59 PM 536 3.04 15634 2:12 1.435 162:422 11:00 PM to 11:59 PM 564 3.19 11629 1:57 2:030 286:122 Unknown 12 0.07 1235 0.17 0.407 -17:511 Soft by Sum of Max Gain Co32: Weather Co32: Weather	8:00 PM to 8:59 PM	357	2.02	25286	3.42	0.591*	-247.216	
10:00 PM to 10:59 PM 536 3.04 15634 2.12 1.435* 162.422 11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 286.122 Unknown 12 0.07 1235 0.17 0.407 -17.511 C031: Lighting Conditions C032: Weather C032: Weather	9:00 PM to 9:59 PM	442	2.50	20865	2.82	0.887*	-56.575	
11:00 PM to 11:59 PM 564 3.19 11629 1.57 2.030* 286.122 Unknown 12 0.07 1235 0.17 0.407 -17.511 Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Day Image: Sort by Sum of Day Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sum of Max Gain Image: Sort by Sort b	10:00 PM to 10:59 PM	536	3.04	15634	2.12	1.435*	162.422	
Unknown 12 0.07 1235 0.17 0.407 -17.511 Sort by Sum of Max Gain Display Filter Na 2014-2018 Alabama Integrated Crash Data - Filter = Drowsy Drvng Asleep-Fatigued vs. Not Drowsy Drvng Asleep-Fatigued CO08: Time of Day 0 4:00 AM to 4:59 AM 9:00 AM to 9:59 AM 2:00 PM to 2:59 PM 7:00 PM to 7:59 PM Unknown	11:00 PM to 11:59 PM	564	3.19	11629	1.57	2.030*	286.122	C032: Weather
2014-2018 Alabama Integrated Crash Data - Filter = Drowsy Drvng Asleep-Fatigued vs. Not Drowsy Drvng Asleep-Fatigued CO08: Time of Day	Unknown	12	0.07	1235	0.17	0.407	-17.511	
C008: Time of Day								Display Filter N
0 0		2014-2018 Alabama Inte	grated Crash Dat			-Fatigued vs. N	lot Drowsy Drvn	g Asleep-Fatigued
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4:00 AM to 4:59 AM 9:00 AM to 9:59 AM 2:00 PM to 2:59 PM 7:00 PM to 7:59 PM Unknown	10							
4:00 AM to 4:59 AM 9:00 AM to 9:59 AM 2:00 PM to 2:59 PM 7:00 PM to 7:59 PM Unknown								
4:00 AM to 4:59 AM 9:00 AM to 9:59 AM 2:00 PM to 2:59 PM 7:00 PM to 7:59 PM Unknown	2							
4:00 AM to 4:59 AM 9:00 AM to 9:59 AM 2:00 PM to 2:59 PM 7:00 PM to 7:59 PM Unknown	5 5 1							
	0	4:00 AM to 4:	59 AM 9:0	0 AM to 9:59	AM 2:00	PM to 2:59 P	M 7:00 P	PM to 7:59 PM Unknown
CUUS: TIME OF DAV					C008: Time of D			

C031 Lighting Conditions

-	RE 10.2.1.0 - [IMPAC	T Results - 2014 Filters Analys		-	sh Data - Drow ools Windo		ep-Fatigued /	AND Not Light	ting Condition	is=1 − □ × _ ₽ X
	2014-2018 Alabama In	/		<u>L</u> ocations <u>1</u>		ig Asleep-Fatigu	ied		~ ? 7	
Order	: Max Gain		. ~ 6	Suppress Ze	ro-Valued Rows	S	Signifi	cance: Over F	Representation	✓ Threshold: 2.0
C031:	Lighting Conditions			Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C031: Lighting Conditions
•	Dark - Roadway Not I	Lighted		4622	26.22	67473	9.18	2.855*	3003.215	
	Dawn			736	4.18	8704	1.18	3.525*	527.177	
	E Dark - Spot Illumina	tion One Side of	Roadway	780	4.43	24202	3.29	1.343*	199.355	
	E Dark - Continuous L	ighting One Side	of Roadway	124	0.70	3918	0.53	1.319*	30.001	
	Dark - Roadway Light	ted		64	0.36	2354	0.32	1.133	7.524	
	E Dark - Unknown Ro	adway Lighting		65	0.37	2407	0.33	1.126	7.252	
	E Dark - Spot Illumina	tion Both Sides of	f Roadway	1040	5.90	44875	6.11	0.966	-36.623	
	E Dark - Continuous L	ighting Both Side	s of Roadway	532	3.02	24393	3.32	0.909	-53.227	
	Dusk			349	1.98	21224	2.89	0.685*	-160.198	
	Daylight			9313	52.84	535082	72.84	0.725*	-3524.475	Sort by Sum of Max Gain
0) 😪 🖉									Display Filter N
				2014-2	2018 Alabama I	ntegrated Cras	h Data			
					C031: Lightir	ng Conditions				
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	20 - C									
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	0		l Dawn	E Dark - Contin One Side of		E Dark - Unkr Roadway Lig		Jark - Continuous L Both Sides of Road		Daylight
				one one of		ghting Conditio	-	our once of Audu		

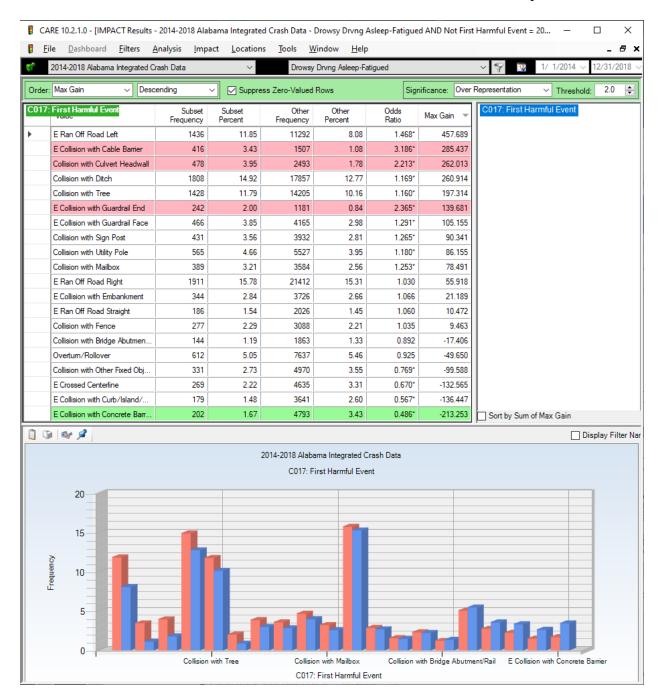
C032 Weather

-	ARE 10.2.1.0 - [IMPACT Results ile Dashboard Filters		-		Drowsy Drvng A /indow Help		d vs. Not Drows	y Drvng Asleep-Fati — 🛛	×
	2014-2018 Alabama Integrated (v		Drvng Asleep-Fa			✓ ♥ 〒 1/ 1/2014 ∨ 12/31/	
Order	: Max Gain 🗸 Desi	cending 🔹	Suppres	ss Zero-Valued	Rows	Sign	ificance: Over I	Representation V Threshold: 2.0	•
C032	Weather	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 🔻	C023: E Manner of Crash C024: School Bus Related	^
	Clear	12428	70.38	492477	66.65	1.056*	659.385	C025: Crash Severity	
	Cloudy	3643	20.63	138318	18.72	1.102*	337.645	C026: Intersection Related	
	Fog	219	1.24	3730	0.50	2.457*	129.865	C027: At Intersection C028: Mileposted Route	
	E Blowing Snow	1	0.01	91	0.01	0.460	-1.175	C029: National Highway System	
	Other	1	0.01	237	0.03	0.177	-4.664	C030: Functional Class	
	Sleet/Hail/Freezing Rain	8	0.05	1401	0.19	0.239	-25.479	C031: Lighting Conditions	
	Unknown	17	0.10	2122	0.29	0.335	-33.709	C032: Weather C033: Locale	
	E Mist	378	2.14	17288	2.34	0.915	-35.128	C033: Eocale C034: E Police Present at Time of Cr	ast
	Snow	4	0.02	1836	0.25	0.091	-39.874	C035: Police Notification Delay	~
•	Rain	959	5.43	81183	10.99	0.494*	-981.012	Sort by Sum of Max Gain	
	2014-2	018 Alabama Integ	grated Crash Dat	ta - Filter = Drow	vsy Drvng Asleep	o-Fatigued vs. N	lot Drowsy Drvng	☑ Display F g Asleep-Fatigued	lter Nar
				CC	032: Weather				
	80								
	60								
	ancy and								
	August 40								
	20								
	0	Cloudy	EBI	owing Snow	Sleet/Hail/Fr	eezing Rain	E Mist	Rain	
					C032: Weather				

IMPACT Displays - Driver 17, 23, 52, 104, 107, 109, 115, 122-123, 204

C017 First Harmful Event

Removed: all items with less than 100 crashes in subset; also MV in traffic and parked MV.



C023 E Manner of Crash

-	RE 10.2.1.0 - [IMPACT Results - 2014-20		-			eep-Fatigued	vs. Not Drows	, <u>,</u>
1 L	le <u>D</u> ashboard <u>Filters</u> <u>A</u> nalysis 2014-2018 Alabama Integrated Crash Data		Locations	Tools <u>W</u> ind	low <u>H</u> elp mg Asleep-Fatig	ued		_ ₽ 2 √ ? 72 1/ 1/2014 ∨ 12/31/2018
Order	Max Gain V Descending		Suppress Ze	- · ·			ficance: Over	Representation V Threshold: 2.0
C023:	E Manner of Crash	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain -	C012: Controlled Access C013: E Highway Side
•	Single Vehicle Crash (all types)	11565	65.49	136972	18.54	3.533*	8292.018	C015: Primary Contributing Circumstance
	Head-On (front to front only)	660	3.74	14804	2.00	1.866*	306.255	C016: Primary Contributing Unit Numbe
	Sideswipe - Opposite Direction	376	2.13	12813	1.73	1.228*	69.830	C017: First Harmful Event C018: Location First Harmful Event Rel t
	Non-Collision	105	0.59	5040	0.68	0.872	-15.432	C019: E Most Harmful Event
	Record from Paper System	41	0.23	5563	0.75	0.308*	-91.929	C020: E Distracted Driving Opinion
	Causal Veh Backing: Rearto Rear	2	0.01	4459	0.60	0.019	-104.549	C021: Distance to Fixed Object
	Unknown	6	0.03	4968	0.67	0.051	-112.712	C022: E Type of Roadway Junction/Featu C023: E Manner of Crash
	Angle Oncoming (frontal)	237	1.34	16922	2.29	0.586*	-167.356	C024: School Bus Related
	Other	248	1.40	17922	2.43	0.579*	-180.251	C025: Crash Severity
	Angle (front to side) Opposite Direction	178	1.01	20705	2.80	0.360*	-316.751	C026: Intersection Related
	Causal Veh Backing: Rearto Side	13	0.07	13931	1.89	0.039	-319.885	C027: At Intersection C028: Mileposted Route
	Angle (front to side) Same Direction	135	0.76	19508	2.64	0.290*	-331.149	C029: National Highway System
	Sideswipe - Same Direction	602	3.41	64710	8.76	0.389*	-944.262	C030: Functional Class
	Side Impact (angled)	372	2.11	62544	8.46	0.249*	-1122.505	C031: Lighting Conditions
	Side Impact (90 degrees)	256	1.45	67325	9.11	0.159*	-1352.748	C032: Weather
	Rear End (front to rear)	2862	16.21	270789	36.64	0.442*	-3608.574	Sort by Sum of Max Gain
00) 🐟 🖉							🖂 Display Filter N
	2014-2018 Alaba	ama Integrated	Crash Data - F		Drvng Asleep-F Inner of Crash	Fatigued vs. No	ot Drowsy Drvn	g Asleep-Fatigued
	60 40 20 0	Pagged &	on Paper Sunt	200		eide) Once: ite		Side Impact (9) descent
		Record fro	om Paper Syst		Angle (front to E Manner of Cr		Direction	Side Impact (90 degrees)
				C023:	E Manner of Cr	rash		

C052 Number of Vehicles

8	CARE	10.2.1.0 - [IMPA	ACT Results -	2014-2018 Alak	oama Integrated	d Crash Data -	Drowsy Drvng	Asleep-Fatigue	ed vs. Not Drows	sy Drvng Asleep-Fati —	
B	<u>F</u> ile	<u>D</u> ashboard	<u>F</u> ilters <u>A</u>	nalysis <u>I</u> mpa	act <u>L</u> ocation	s <u>T</u> ools <u>V</u>	<u>/</u> indow <u>H</u> elp)			_ @ ×
¢?	201	4-2018 Alabama	Integrated C	ash Data	~	Drowsy	Drvng Asleep-Fa	atigued		✓ ♥ 1/ 1/2014 ∨	12/31/2018
Ord	ler: Na	tural Order	✓ Desc	ending	Suppres	ss Zero-Valued	Rows	Sig	nificance: Over	Representation V Threshold	d: 2.0 📥
C05	52: Nu	mber of Vehicle	s	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C049: MPO C050: Has Coordinate	^
	1\	/ehicle		12133	68.71	152286	20.61	3.334*	8494.086	C051: E MapClick Used	
	21	/ehicles		4909	27.80	544711	73.71	0.377*	-8107.011	C052: Number of Vehicles C053: Number of Drivers Ree	a a r d a d
	3 \	/ehicles		470	2.66	36096	4.88	0.545*	-392.523	C053: Number of Drivers Ref C054: Number of Persons R	
	4 \	/ehicles		101	0.57	4837	0.65	0.874	-14.581	C055: Number of Motorists R	
	5 \	/ehicles		31	0.18	788	0.11	1.646*	12.171	C056: Number of Non-Motori	sts Record
	6 \	/ehicles		7	0.04	176	0.02	1.664	2.794	C057: Number of Pedestrian	-
	71	/ehicles		4	0.02	48	0.01	3.487	2.853	C058: Number of Pedacyclis C059: Number Injured (Non-	
	8 \	/ehicles		1	0.01	22	0.00	1.902	0.474	C060: Number Injured (Inclue	
	91	/ehicles		2	0.01	5	0.00	16.740	1.881	Sort by Sum of Max Gain	
		Ser 🖋									isplay Filter Na
			2014-20	18 Alabama Inte <u>o</u>	grated Crash Dat		wsy Drvng Aslee lumber of Vehicl		Not Drowsy Drvng	g Asleep-Fatigued	
		100									
	Frequency	50									
		0	1 Vehi	cle 2 Vehicle	es 3 Vehicles		5 Vehicles 2: Number of Ve	6 Vehicles hicles	7 Vehicles 8	8 Vehicles 9 Vehicles	

C104 CU Left Scene

🖡 CA	ARE 10.2.1.0 - [IMI	PACT Results ·	- 2014-2018 Alal	bama Integrate	d Crash Data -	Drowsy Drvng	Asleep-Fatigue	ed vs. Not Drows	sy Drvng Asleep-Fati — 🗆 🗙
₿ E	ile <u>D</u> ashboard	<u>F</u> ilters <u>A</u>	<u>A</u> nalysis <u>I</u> mpa	act <u>L</u> ocatior	ns <u>T</u> ools <u>V</u>	<u>/</u> indow <u>H</u> elp)		_ 8 ×
¢?	2014-2018 Alaban	na Integrated C	rash Data	~	Drowsy	Drvng Asleep-Fa	atigued		✓ ♥ 1/ 1/2014 ∨ 12/31/2018 ∨
Order	r: Max Gain	✓ Desc	ending	Suppre	ess Zero-Valued	Rows	Sig	nificance: Over	Representation V Threshold: 2.0
C104	CU Left Scene		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 📼	C102: CU Non-Motorist Indicator C103: CU Commercial Motor Vehicle Inc
•	No		17177	97.28	643129	87.03	1.118*	1809.224	C104: CU Left Scene
	CU is Unknown		19	0.11	26561	3.59	0.030	-615.684	C105: CU Driver Age Range 1
	Yes		462	2.62	69283	9.38	0.279*	-1193.540	Sort by Sum of Max Gain
		2014-20	18 Alabama Inte	grated Crash Da		wsy Drvng Aslee : CU Left Scene	p-Fatigued vs.	Not Drowsy Drvn	☑ Display Filter Na g Asleep-Fatigued
	100 buenes J			No		is Unknown CU Left Scene		Yes	

C107 CU Driver Raw Age

CA	RE 10.2.1.0 - [IMI	PACT Result	s - 2014-2018 Ala	abama Integrat	ed Crash Data	- Drowsy Drvn	g Asleep-Fati	gued AND No	t CU D	river Raw Age =	: 10 —		×
🗄 Ei	le <u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis <u>I</u> mp	act <u>L</u> ocatio	ns <u>T</u> ools	<u>W</u> indow <u>H</u>	elp					- 6	5
8	2014-2018 Alaban	na Integrated	Crash Data	~	Drow	vsy Drvng Asleep	-Fatigued			~ 💡 🈨	1/ 1/2014 $ \smallsetminus$	12/31/20)18
Order:	Max Gain	∼ De:	scending	✓ ✓ Suppr	ess Zero-Valu	ed Rows	[Significance:	Over F	Representation	✓ Threshold:	2.0	*
C107:	CU Driver Raw	Age	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	^	C107: CU Dri	ver Raw Age		
•	16		239	1.36	19319	2.96	0.460*	-280.277	7				
	17		385	2.20	21499	3.30	0.666*	-192.874	L				
	18		684	3.90	24634	3.78	1.033						
	19		862	4.92	24718	3.79	1.297*	197.602	2				
	20		762	4.35	23420	3.59	1.210*	132.491					
	21		779	4.44	22236	3.41	1.303*	181.316					
	22		702	4.00	20997	3.22	1.244*	_					
	23		651	3.71	19891	3.05	1.218*		- 11				
	24		658	3.75	18593	2.85	1.317*	_	- 11				
	25		585	3.34	17578	2.69	1.238*	112.519	- 11				
	26		561 466	3.20 2.66	15335	2.51 2.35	1.273*		- 11				
	28		502	2.86	15534	2.35	1.131		- 11				
	29		423	2.00	13863	2.23	1.207	50.375	- 11				
	30		352	2.41	13269	2.13	0.987		- 11				
	31		368	2.01	12835	1.97	1.067	_	- 11				
	32		353	2.01	12303	1.89	1.067		- 11				
	33		317	1.81	12239	1.88	0.964		- 11				
	34		310	1.77	11513	1.77	1.002		- 11				
	35		321	1.83	11222	1.72	1.064		- 11				
	36		313	1.79	10921	1.67	1.066		3				
	37		280	1.60	10422	1.60	1.000		- 11				
	38		275	1.57	9868	1.51	1.037	9.757	7				
	39		263	1.50	9492	1.46	1.031	7.864	.				
	40		271	1.55	9206	1.41	1.095	23.551	~	Sort by Sum	of Max Gain		
] ()) 🗞 🖉										Di:	splay Filt	er
					2014-2018 Ala	abama Integrate	d Crash Data						
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				30	-	55 107: CU Driver	D		/5		99 OI	Older	

Over-representations 19 and above are significant up to and including age 29.

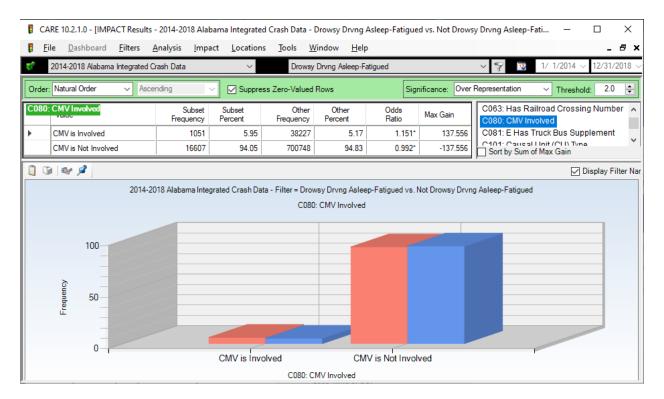
C109 CU Driver Gender

🔋 CA	RE 10.2.1.0 - [IMPACT	r Results - 2014-2018 Ala	ibama Integrate	d Crash Data -	Drowsy Drvng	Asleep-Fatigue	d vs. Not Drows	sy Drvng Asleep-Fati — 🛛	X
🖡 <u>E</u> i	ile <u>D</u> ashboard <u>F</u>	ilters <u>A</u> nalysis <u>I</u> mp	act <u>L</u> ocation	s <u>T</u> ools <u>W</u>	<u>/</u> indow <u>H</u> elp)		- t	7 ×
6 °	2014-2018 Alabama Int	egrated Crash Data	~	Drowsy	Drvng Asleep-Fa	atigued		✓ ♥ 1/ 1/2014 ∨ 12/31/20	18 ~
Order:	Natural Order	✓ Descending	V Suppre	ess Zero-Valued	Rows	Sigr	nificance: Over	Representation V Threshold: 2.0	÷
C109:	CU Driver Gender	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C105: CU Driver Age Range 1 C106: CU Driver Age Range 2	^
•	Male	12238	69.31	367143	49.68	1.395*	3465.011	C107: CU Driver Raw Age	
	Female	5340	30.24	292730	39.61	0.763*	-1654.869	C108: CU Driver Race	
	Unknown	53	0.30	48015	6.50	0.046*	-1094.332	C109: CU Driver Gender C110: CU Driver Residence Distance	
	Not Applicable	8	0.05	2324	0.31	0.144	-47.533	C111: CU Driver License State	~
	CU is Unknown	19	0.11	26561	3.59	0.030	-615.683	Sort by Sum of Max Gain	
		2014-2018 Alabama Inte	egrated Crash Da		vsy Drvng Aslee CU Driver Gend		Not Drowsy Drvn	ig Asleep-Fatigued	
	100 Source								

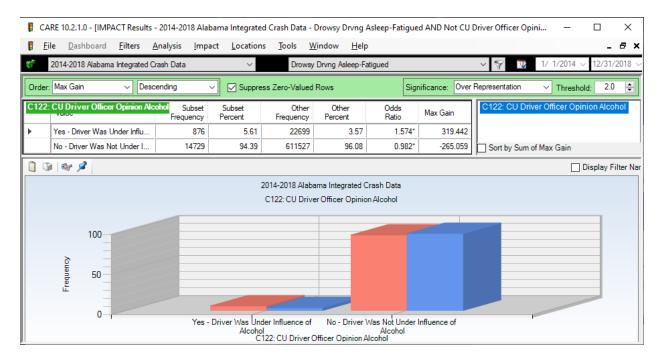
C115 CU Driver CDL Status

🚦 CA	RE 10.2.1.0 - [IMPACT Results ·	2014-2018 Alak	oama Integrate	d Crash Data - I	Drowsy Drvng A	Asleep-Fatigue	ed vs. Not Drows	iy Drvng Asleep-Fati — 🗆 🗙
🔋 Ei	le <u>D</u> ashboard <u>F</u> ilters <u>A</u>	<u>analysis I</u> mpa	ect <u>L</u> ocation	s <u>T</u> ools <u>W</u>	/indow <u>H</u> elp			_ @ ×
*	2014-2018 Alabama Integrated C	rash Data	~	Drowsy	Drvng Asleep-Fa	tigued		✓ ♥ 1/ 1/2014 ∨ 12/31/2018 ∨
Order	Max Gain 🗸 Desc	ending ·	Suppre	ss Zero-Valued	Rows	Sig	gnificance: Over	Representation V Threshold: 2.0 🛓
C115:	CU Driver CDL Status	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 👻	C111: CU Driver License State C112: CU Driver First License Class
•	Not Applicable/Unlicensed	16231	92.01	604750	81.89	1.124*	1786.002	C113: CU Driver Second License Class
	Current/Valid	975	5.53	36511	4.94	1.118*	102.902	C114: CU Driver License Status C115: CU Driver CDL Status
	Canceled	32	0.18	956	0.13	1.401	9.165	C116: CU DL Restriction Violations #1
	Suspended	16	0.09	429	0.06	1.561	5.753	C117: CU DL Restriction Violations #2
	Revoked	5	0.03	120	0.02	1.744	2.134	C118: CU Endorsement Violations #1
	Denied	3	0.02	52	0.01	2.415	i 1.758	C119: E CU Endorsement Violations #2
	Expired	4	0.02	150	0.02	1.116	0.417	C120: E CU Driver Employment Status C121: CU Driver Condition
	E Test Required	3	0.02	179	0.02	0.702	-1.276	C122: CU Driver Officer Opinion Alcohol
	CU is Unknown	19	0.11	26561	3.60	0.030		C123: CU Driver Officer Opinion Drugs 🗸
	Unknown	352	2.00	66583	9.02	0.221*	-1238.395	Sort by Sum of Max Gain
00) 💱 🖉							🗹 Display Filter Na
	2014-20)18 Alabama Integ	grated Crash Da		vsy Drvng Aslee I Driver CDL Sta	-	Not Drowsy Drvn	g Asleep-Fatigued
	100							
	Leadnen 20							
	0	Current/Valie	d S	uspended C115	Den : CU Driver CDI		E Test Requ	ired Unknown

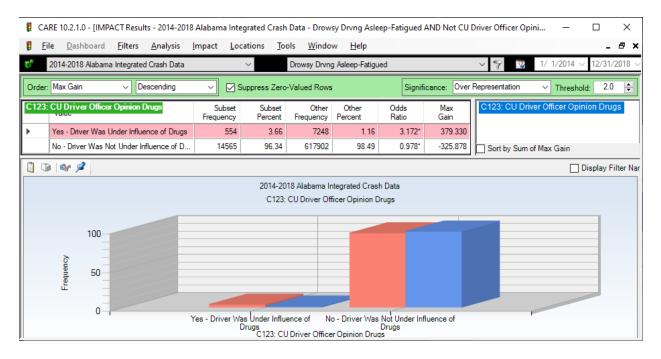
C080 CMV Involved



C122 CU Driver Officer Opinion Alcohol



C123 CU Officer Opinion Drugs



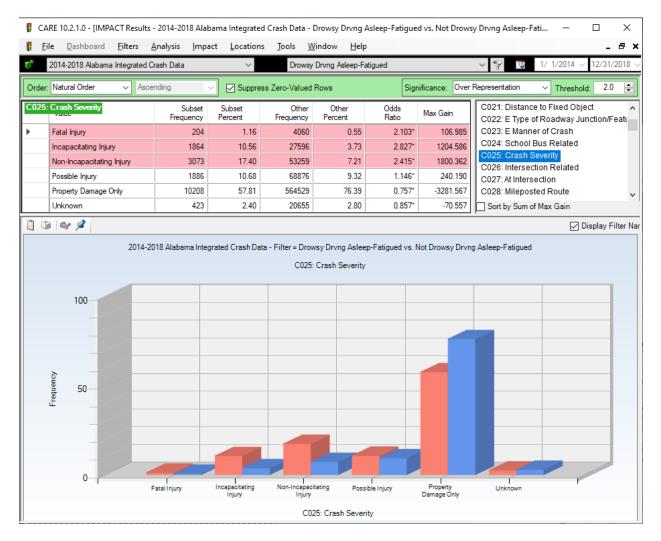
C129 CU Vehicle Maneuvers

The following was reduced by removing all of the cases in which there were zero DrD crashes recorded.

🔋 CA	RE 10.2.1.0 - [IMPACT Results -	- 2014-2018 Alab	ama Integrated	d Crash Data -	Drowsy Drvng A	Asleep-Fatigue	d AND Not CU	Vehicle Maneuvers	- 🗆 X
Ei	e <u>D</u> ashboard <u>F</u> ilters <u>A</u>	<u>A</u> nalysis <u>I</u> mpa	ct <u>L</u> ocations	s <u>T</u> ools <u>W</u>	/indow <u>H</u> elp				_ 8 :
6	2014-2018 Alabama Integrated C	irash Data	~	Drowsy	Drvng Asleep-Fa	tigued		✓ ♥ 1/ 1/2	014 ~ 12/31/2018
Order:	Max Gain 🗸 Desc	ending v	Suppres	ss Zero-Valued	Rows	Sigr	nificance: Over	Representation 🗸 Th	rreshold: 2.0 🚔
C129:	CU Vehicle Maneuvers	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 👻	C129: CU Vehicle Man	euvers
•	Movement Essentially Straight	14279	81.93	373458	54.03	1.516*	4861.527		
	E Negotiating a Curve	1940	11.13	32644	4.72	2.357*	1116.818		
	E Leaving Main Road	221	1.27	2387	0.35	3.672*	160.807		
	P Wrong Side of Road	3	0.02	86	0.01	1.383	0.831		
	P Merge Left	1	0.01	24	0.00	1.652	0.395		
	Legally Parked	4	0.02	518	0.07	0.306	-9.062		
	Illegally Parked	9	0.05	969	0.14	0.368	-15.435		
	E Stopped for Sign/Signal	38	0.22	2879	0.42	0.523*	-34.600		
	Stopped in Traffic	26	0.15	2777	0.40	0.371*	-44.027		
	Making U-Tum	8	0.05	3889	0.56	0.082	-90.069		
	E Overtaking/Passing	56	0.32	7943	1.15	0.280*	-144.298		
	E Entering Main Road	43	0.25	19577	2.83	0.087*	-450.672		
	Turning Right	126	0.72	35996	5.21	0.139*	-781.709		
	Backing	53	0.30	35110	5.08	0.060*	-832.367		
	E Changing Lanes	183	1.05	41153	5.95	0.176*	-854.753		
	Slowing/Stopping	237	1.36	46684	6.75	0.201*	-940.228		
	Turning Left	202	1.16	82331	11.91	0.097*	-1874.137	Sort by Sum of Max Ga	iin
0	🛯 😪 🔎								Display Filter N
			2	014-2018 Alaba	ama Integrated C	irash Data			
				C129: CU	Vehicle Maneuv	res			
	100								
	ð								
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	0		P Merge Left		Maki	ng U-Turn		E Changing Lanes	
			i weige Leit	C10	iviani 9: CU Vehicle M	-		E Changing Lanes	
				012	3. CO venicie M	aneuvers			

IMPACT Displays – Severity 25, 38, 60, 224

C025 Crash Severity



C038 Adjusted EMS Arrival Delay

🖡 CA	RE 10.2.1.0 - [IMPACT Results	- 2014-2018 Alab	ama Integrated	d Crash Data - I	Drowsy Drvng A	Asleep-Fatigue	d AND Not Adju	usted EMS Arriva	I De — 🗆	×
🖡 Ei	le <u>D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis <u>I</u> mpa	ct <u>L</u> ocation	s <u>T</u> ools <u>W</u>	<u>/</u> indow <u>H</u> elp				_ <i>t</i>	5 ×
6	2014-2018 Alabama Integrated	Crash Data	~	Drowsy	Drvng Asleep-Fa	tigued		~ 💡 🏆	1/ 1/2014 ~ 12/31/20	18 ~
Order:	Natural Order V Des	cending N	Suppres	ss Zero-Valued	Rows	Sigr	nificance: Over	Representation	✓ Threshold: 2.0	÷
C038:	Adjusted EMS Arrival Delay	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C038: Adjuste	ed EMS Arrival Delay	
•	0 to 5 minutes	1463	17.74	46597	27.04	0.656*	-767.390			
	6 to 10 minutes	2190	26.55	55864	32.42	0.819*	-483.959			
	11 to 15 minutes	1715	20.79	30831	17.89	1.162*	239.258			
	16 to 20 minutes	1091	13.23	16420	9.53	1.388*	305.048			
	21 to 30 minutes	1070	12.97	14197	8.24	1.575*	390.453			
	31 to 45 minutes	459	5.56	5603	3.25	1.711*	190.809			
	46 to 60 minutes	136	1.65	1521	0.88	1.868*	63.197			
	61 to 90 minutes	76	0.92	847	0.49	1.875*	35.458			
	91 to 120 minutes	19	0.23	175	0.10	2.268	10.624			
	121 to 180 minutes	11	0.13	157	0.09	1.464	3.485			
	Over 180 minutes	19	0.23	125	0.07	3.176	13.017	Sort by Sum	of Max Gain	
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			2	2014-2018 Alaba	ama Integrated C	rash Data				
			-		ted EMS Arrival					
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	0									
	0-1	6 to 10 minutes	16 to 20	minutes	31 to 45 minute	es 61 to	90 minutes	121 to 180 min	utes	
					djusted EMS Arr					
				C038: A	djusted EMS Arr	ival Delay				

C060 Number Injured (Including Fatalities)

-	-			-				ed vs. Not Drow	sy Drvng Asleep-Fati –	- 0	×
Eil	le <u>D</u> ashboard 2014-2018 Alabama		<u>A</u> nalysis <u>I</u> mp	act <u>L</u> ocation:		<u>/</u> indow <u>H</u> elp Drvng Asleep-Fa			✓ ♥ 〒 1/ 1/20		- ×
	-						-				
Order:	Natural Order	~ Asce	ending	V Suppre	ss Zero-Valued	Rows	Sig	nificance: Over	Representation V Thr	reshold: 2.0	÷
C060:	Number Injured (Includes Fat	alities) Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C053: Number of Driver C054: Number of Perso		^
•	No Injuries		10595	60.00	583826	79.00	0.759*	-3355.674	C055: Number of Motor		
	1 Injury		5777	32.72	113317	15.33	2.134*	3069.261	C056: Number of Non-I C057: Number of Pede		ord
	2 Injuries		866	4.90	29083	3.94	1.246*	171.054	C057: Number of Peda		
	3 Injuries		272	1.54	8312	1.12	1.369*	73.383	C059: Number Injured	-	
	4 Injuries		87	0.49	2798	0.38	1.301*	20.141	C060: Number Injured	(Includes Fata	litie
	5 Injuries		30	0.17	997	0.13	1.259	6.176	C061: Number Killed	a d Tasia a	
	6 Injuries		19	0.11	362	0.05	2.197	10.350	C062: Number of Railro C063: Has Railroad Cro		er
	7 Injuries		7	0.04	154	0.02	1.902	3.320	C080: CMV Involved	Jooning Hambe	
	8 Injuries		1	0.01	58	0.01	0.722	-0.386	C081: E Has Truck Bus		
	9 Injuries		3	0.02	22	0.00	5.707	2.474	C101: Causal Unit (CU) Type	~
	27 Injuries		1	0.01	0	0.00	0.000	1.000	Sort by Sum of Max Gai	n	
0) 🗇 🖉									🖂 Display Fil	ter Na
		2014-2	018 Alabama Inte	-		vsy Drvng Aslee njured (Includes		Not Drowsy Drvr	ng Asleep-Fatigued		
	100										
	50 - 50										
	0		1 Injury	3 Inji	uries	5 Injuries	7	Injuries	9 Injuries		
					C060: Numb	per Injured (Inclu	des Fatalities)				

🔋 CARE 10.2.1.0 - [IMPACT Results - 2014-2018 Alabama Integrated Crash Data - Drowsy Drvng Asleep-Fatigued AND Not CU Estimated Speed at I... \times Eile Dashboard Filters Analysis Impact Locations Tools Window Help _ 8 × 2014-2018 Alabama Integrated Crash Data 9 12 1/ 1/2014 12/31/2018 Drowsy Drvng Asleep-Fatigued Order: Natural Order Significance: Over Representation 2.0 🜲 Descending Suppress Zero-Valued Rows Threshold: C224: CU Estimated Sp d at Impact C224: CU Estimated Speed at Impact Odds Ratio Subset Subset Other Other Max Gain Frequency Percent Percent Frequency 1 to 5 MPH 247 1.93 17.92 0.108* -2044.484 69257 ۲ 6 to 10 MPH 0.137* -1313.855 208 1.63 45996 11.90 -777.306 11 to 15 MPH 228 1.78 30384 7.86 0.227* 16 to 20 MPH 219 1.71 22916 5.93 0.289* -539.214 21 to 25 MPH 387 3.03 20258 5.24 0.577* -283.270 26 to 30 MPH 495 3.87 21797 5.64 0.686* -226.190 -102.472 31 to 35 MPH 724 5.66 24979 6.46 0.876* 36 to 40 MPH 868 6.79 22654 5.86 1.158* 118.454 41 to 45 MPH 1828 14.29 34281 8.87 1.612* 693.756 46 to 50 MPH 956 7.48 16972 4.39 1.702* 394.453 51 to 55 MPH 2396 18.74 26580 6.88 2.724* 1516.556 12402 1.850* 348.659 56 to 60 MPH 759 5.94 3.21 1116 8.73 13845 3.58 2.436* 657,915 61 to 65 MPH 66 to 70 MPH 1751 13.69 15107 3.91 3.503* 1251.160 71 to 75 MPH 329 2.57 3106 0.80 3.201* 226.233 185 0.51 2.840* 76 to 80 MPH 1.45 1969 119.852 81 to 85 MPH 58 0.17 36.825 0.45 640 2.739* 86 to 90 MPH 19 0.15 501 0.13 2.424 1.146 0.327 91 to 95 MPH 4 0.03 111 0.03 1.089 96 to 100 MPH 10 0.08 354 0.09 0.854 -1.713 Over 100 MPH 1 0.01 190 0.05 0.159 -5.286 Sort by Sum of Max Gain 📋 🕼 🚳 🖉 Display Filter Nar 2014-2018 Alabama Integrated Crash Data C224: CU Estimated Speed at Impact 20 Frequency 10 0 21 to 25 MPH 71 to 75 MPH 96 to 100 MPH 46 to 50 MPH

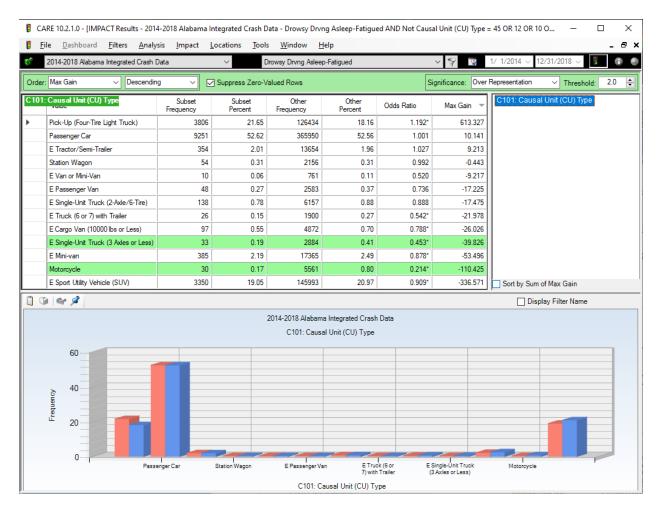
C224 CU Estimated Speed at Impact

C224: CU Estimated Speed at Impact

IMPACT Displays - Vehicle 80, 101, 129, 208

C101 Causal Unit (CU) Type

All items with less than 10 crashes in the subset were removed.



C208 CU Model Year

CAI	RE 10.2.1.0 - [IMP/	ACT Resu	ılts - 2014-2018	3 Alaba	ma Integrated	Crash Data - I	Drowsy Drvng A	Asleep-Fatigue	d AND Not CU	Model Year = 48	OR − □ >
🚦 <u>F</u> il	e <u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis	Impact	t <u>L</u> ocations	<u>T</u> ools <u>W</u>	/indow <u>H</u> elp				_ 8
6	2014-2018 Alabama	Integrate	ed Crash Data		~	Drowsy	Drvng Asleep-Fa	tigued		~ 💡 🏆	1/ 1/2014 ~ 12/31/201
Order:	Max Gain	~ [)escending	Ý	Suppres	s Zero-Valued	Rows	Sign	ificance: Over	Representation	V Threshold: 2.0
C208:	CU Model Year		Sub Freque		Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C208: CU Mo	odel Year
•	1995			230	1.36	8829	1.38	0.989	-2.557		
	1996			274	1.63	9874	1.54	1.054	13.918		
	1997			413	2.45	13920	2.18	1.126*	46.346		
	1998			427	2.53	16337	2.55	0.992	-3.318		
	1999			629	3.73	21246	3.32	1.124*	69.378		
	2000			770	4.57	26680	4.17	1.096*	67.246		
	2001			833	4.94	27533	4.30	1.149*	107.778		
	2002			882	5.23	32111	5.02	1.043	36.193		
	2003			006	5.97	36249	5.66	1.054	51.198		
	2004 2005			113	6.60	38879	6.08	1.087*	88.924		
				124	6.67 6.93	41889 42865	6.55	1.019	20.640		
	2006 2007			169 108	6.93	42865	6.70 6.99	1.035 0.941	39.932 -69.745		
	2007			879	5.21	37101	5.80	0.899*	-98.244		
	2009			589	3.49	23605	3.69	0.947	-32.758		
	2010			635	3.77	27020	4.22	0.892*	-76.709		
	2011			693	4.11	29238	4.57	0.900*	-77.132		
	2012			798	4.73	32422	5.07	0.934	-55.998		
	2013			838	4.97	33508	5.24	0.949	-44.604		
	2014			807	4.79	31159	4.87	0.983	-13.731		
	2015			749	4.44	26992	4.22	1.053	38.028		
	2016			456	2.71	19257	3.01	0.899	-51.231		
	2017			323	1.92	11706	1.83	1.048	14.663		
	2018			106	0.63	4288	0.67	0.938	-6.946		
	2019			6	0.04	352	0.06	0.647	-3.272	Sort by Sum	of Max Gain
0	Se 🖉										Display Filter
					20	014-2018 Alaba	ama Integrated C	rash Data			
						C208:	CU Model Year				
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	0		199	9		2004		2009		2014	2019
							208: CU Model `				2010

DrD Hotspot Analysis Example Excerpt from I-65

The criteria for this example is 50 DrD crashes in any 10 mile segment. There were 33 such hotspots found on 9 routes, for a totally of 4,587 DrD crashes found on the mileposted routes under consideration. Of these 70 were fatal and 1,528 were non-fatal injury crashes.

ype N				biolicy biring i	Asleep-Fatigued		~ 💎 🏆	1/ 1/2014 ~ 12/31			
	Route	Division	Hotspots >	Crashes	^	Dataset / Filter					-
	IN0065	0	10	1375	2014-201	8 Alabama Integrated	Crash Data	🚽 🖬	-		S .
	IN0059	0	7	923	Drowsy	Prvng Asleep-Fatigued		Analysis Report	ts Hots	pots Crea	ate Filter
	IN0020	0	6	828	Routes	9 Fat Ci	rs: 70		6	K	
	IN0085	0	5	379	Hotspo	te: 33 Ini Ci	rs: 1528				Last Hotsp
s	US0029	0	1	176			-				
L	AL0015	0	1	176	~ He	Ip Tot C	rs: 4587	Expand View	🔘 Мар		No Map
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		106	••••••••••••••••••••••••••••••••••••••	100				••••••••••••••••••••••••••••••••••••••		••••••••••••••••••••••••••••••••••••••	A A A A A A A A A A A A A A A A A A A
4104 Minimum	4 105	106	Hotspots	108 Hotspot Fata	8 1	PDO T) 111 otal Persons	112 Persons			1
104	4 105	106	Hotspots	108	8 1 al Injury nes Crashes	PDO T Crashes Crr) 111	112		113	I
linimum Crashes 50	4 105 Hotspot Rou Length 10 mi. I-6 Fat Crs In	106 ite i5 ij Crs Dmg	Hotspots 10 Crs Tot Crs	Hotspot Fata Crashes Crash 634 20 Deaths	8 1 Injury Crashes 0 403 Injuries	PDO T Crashes Crr	otal Persons sshes Killed 1375 22	Persons Injured			
linimum Crashes	Hotspot Length 10 mi. Fat Crs 2 1	106 106 105 107 Dmg 7 34	Hotspots 10 Crs Tot Crs 53	Hotspot Crashes 634 Deaths 2	8 1 Injury Crashes 403 Injuries 35	09 110 PDO T Crashes Cri 952 Crs/MVM Sev/ 0.13 9.06) 111 otal senes Killed 1375 22 Crs County Butler	112 Persons Injured 577 City Rural Butler	Beg MP 103.80	End MP 113.80	
linimum Crashes	4 105 Hotspot Rou 10 mi66 Fat Crs In 2 1 0 7	106 106 107 107 107 107 106	Hotspots 10 Crs Tot Crs 53 54	Hotspot Crashes 634 Deaths 2 0	8 1 Injury Crashes 403 Injuries 35 20	09 110 PDO Crashes T Crishes 952 Crs/MVM Sev/ 0.13 9.06 0.09 5.37	otal Persons ashes Killed 1375 22 Crs County Butler Autauga	112 Persons Injured 577 City Rural Butler Rural Autau	Beg MP 103.80 190.50	End MP 113.80 200.50	
linimum Crashes 50	+ 105 Hotspot Rou Length -6 10 mi6 Fat Crs In 2 1 ¹ 0 1. 0 2.	106 106 15 107 107 107 106 106 106 106 106 106 106 106 106 106	Hotspots 10 Crs Tot Crs 53 54 80	Hotspot Crashes 634 Deaths 2 0 0	8 1 Injury Crashes 403 Injuries 35 20 34	09 110 Crashes Cr 952 Cr Crs/MVM Sev/ 0.13 9.06 0.09 5.37 0.13 5.75	otal Persons sahes Killed 1375 22 Crs County Butler Autauga Chilton	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chilton	Beg MP 103.80 190.50 200.50	End MP 113.80 200.50 210.50	
linimum Crashes	Hotspot Length 10 mi. Fat Crs In 2 1' 0 1- 0 1- 0 2 2'	te .5 106 7 34 4 40 4 56 8 72	Hotspots 10 Crs Tot Crs 53 54 80 102	Hotspot Crashes 634 Deaths 2 0 0 2	8 1 8 1 Crashes 403 Injuries 35 20 34 35	09 110 Crashes 552 Crs/MVM Sev/ 0.13 9.06 0.09 5.37 0.13 5.75 0.14 6.47	otal ashes 1375 Persons Killed 22 Crs County Butler Autauga Chilton Chilton	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chilton Rural Chilton	Beg MP 103.80 190.50 200.50 211.00	End MP 113.80 200.50 210.50 221.00	
linimum Crashes 50	4 105 Hotspot Rou Length 10 mi. I-6 Fat Crs In 2 11 0 1. 0 2. 2 22 0 11	106 te 5 5 7 34 4 40 4 56 8 72 8 32	Hotspots 10 Crs Tot Crs 53 54 80 102 50	Hotspot Crashes 634 20 Deaths 2 0 0 2 0 0 0	8 1 sl Injury Crashes 0 403 Injuries 35 20 34 35 20 34 35 25	09 110 PDO Trashes Tra 952 Cre/MVM Sev/ 0.13 9.06 0.09 5.37 0.13 5.75 0.14 6.47 0.04 5.40	otal sahes 1375 Persons Killed 22 Crs County Butler Autauga Chilton Shelby	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chilton Rural Chilton Pelham	Beg MP 103.80 190.50 200.50 211.00 237.00	End MP 113.80 200.50 210.50 221.00 247.00	
linimum Crashes 50	Hotspot Rou 10 mi. I-6 10 mi. I-6 Fat Crs In 0 12 2 2 0 12 0 12 0 11 0 22 0 11 0 22 0 12 0 12 0 12 0 12	106 te 5 10 Crs Dmg 7 34 4 40 4 56 8 72 8 32 3 44	Hotspots 10 Crs Tot Crs 53 54 80 102 50 67	Hotspot Crashes 634 Deaths 2 0 0 2 0 0 2 0 0 0	8 1 1 Injury Crashes 403 Injuries 35 20 34 35 25 24	PDO Crashes Cr 952 Cr 09 110 PDO S2 Cr 052 Cr 053 Cr 054 Sev/ 0.13 9.06 0.09 5.37 0.13 5.75 0.14 6.47 0.04 5.40 0.03 5.82) 111 otal sshes sshes Killed 22 Crs County Butler Autauga Chilton Chilton Shelby Jefferson	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chilton Rural Chilton Rural Chilton Pelham Hoover	Beg MP 103.80 190.50 200.50 211.00 237.00 247.00	End MP 113.80 200.50 210.50 221.00 247.00 257.00	
linimum Crashes 50	Hotspot Rou Length 10 mi. 1-6 Fat Crs In 2 11 0 1- 2 2 2 2 2 0 11 0 2 1 1	te 5 106 106 106 106 106 106 106 106	Hotspots 10 Crs Tot Crs 53 54 80 102 50 67 54	Hotspot Crashes 634 Deaths 2 0 0 2 0 0 2 0 2 0 0 2 2 0 0 2 2	8 1 8 1 1 Injury Crashes 403 Injuries 35 20 34 35 25 24 25	09 110 Crashes 952 Crs/MVM Sev/ 0.13 9.06 0.09 5.37 0.13 5.75 0.14 6.47 0.04 5.40 0.03 5.82 0.03 6.48	otal sshes 1375 Persons Killed 22 Crs County Butler Autauga Chilton Chilton Shelby Jefferson Jefferson	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chiton Pelham Hoover Birmingham	Beg MP 103.80 190.50 200.50 211.00 237.00 247.00 258.00	End MP 113.80 200.50 210.50 221.00 247.00 257.00 268.00	
linimum Crashes 50	Hotspot Rou 10 mi. I-6 10 mi. I-6 Fat Crs In 0 12 2 2 0 12 0 12 0 11 0 22 0 11 0 22 0 12 0 12 0 12 0 12	106 106 15 107 108 107 106 106 106 106 106 106 106 106 106 106	Hotspots 10 Crs Tot Crs 53 54 80 102 50 67	Hotspot Crashes 634 Deaths 2 0 0 2 0 0 2 0 0 0	8 1 1 Injury Crashes 403 Injuries 35 20 34 35 25 24	PDO Crashes Cr 952 Cr 09 110 PDO S2 Cr 052 Cr 053 Cr 054 Sev/ 0.13 9.06 0.09 5.37 0.13 5.75 0.14 6.47 0.04 5.40 0.03 5.82) 111 otal sshes sshes Killed 22 Crs County Butler Autauga Chilton Chilton Shelby Jefferson	112 Persons Injured 577 City Rural Butler Rural Autau Rural Chilton Rural Chilton Rural Chilton Pelham Hoover	Beg MP 103.80 190.50 200.50 211.00 237.00 247.00	End MP 113.80 200.50 210.50 221.00 247.00 257.00	

Interesting that the first hotspot, which is shown on the strip map is not in the dense traffic in Mobile (which is typical of most hotspot filters for I-65), but is shown at Milepost 103.80, over 100 miles north, giving drivers adequate time to become drowsy.