CARE IMPACT Study COVID vs Normal Times (v06) 2018-2020 (to Date) Data David B. Brown, PhD, P.E. <u>brown@cs.ua.edu</u>

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This version v06 is the first with the COVID period that includes through part of July 2020. V06 and subsequent versions have been updated with the more recent data.

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1. Introduction

It was early in the first week (March 4-10, 2020) that the COVID pandemic began to be recognized as a major sociological issue. The original questions that arose involved the extent to which people were observing the various governmental recommendations and mandates attempting to reduce its effects. It was surmised that one way to establish the conformance would be to determine the effects that it was having on motor vehicle traffic volume. This is difficult to monitor directly on a weekly basis, other than through some sampling plan. However, the correlation between traffic volume and crash frequency has been well established for decades. It was further validated with crash and volume information within Alabama. See Section 6 of: http://www.safehomealabama.gov/wp-content/uploads/2020/06/Response-to-COVID-Wk15.pdf

Crash reduction would provide an overall measure of the reduction in the number of vehicles on the road. However, it was also postulated that considerable behavioral characteristics could be determined by looking at how the various crash types changed from the pre-COVID (also called the normal) period to the days and weeks after the COVID crisis was recognized to be in effect. These various crash type and the number of confirmed COVID cases in Alabama have been plotted on a weekly basis, and these reports are readily available on <u>http://www.safehomealabama</u> by considering the COVID topic.

This current report considers the data in a different way, giving a more complete look at the summary of pre- and post-COVID effects, as opposed to a weekly view. The pre-COVID time period was January 1, 2018 through March 10, 2020. The COVID time period was March 11, 2020 through June 15, 2020, which was the most recent data we had at the time this report was assembled. These are the two time periods that create the subsets of data that are being compared in the IMPACT displays below.

The tables on the next page indicate the number of crashes per month in the two periods of time that are being compared. More detail on the numbers by severity are given in C025 in Section 3. The two filters were created by first assigning the applicable whole months to either the Normal or the COVID time periods. The March was partitioned and the first ten days were assigned to the Normal period, while the remainder of the month was assigned to the COVID period.

This report continues by presenting the major findings organized by attributes that are in the CARE data ordering. A final section gives more concentrated attention to the ID/DUI proportionate increase that was experienced in the COVID time period.

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2018-2020	🖞 2018-2020 Nabama Integrated Crash Data 🗸 22018-2020 Normal FLUS March 🗸 🕎 😡 1/ 1/2018 🗸 7/14/2029 🗸 🚺 Killed Sum: 2036 Serious Injuries Sum: 37787 🕨 🖗 🌑													
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	January	February	March	April	Мау	June	July	August	September	October	November	December	TOTAL	
2018	12248	11523	13444	13441	13977	12812	12419	13930	13293	14140	14221	14607	160055	
2019	12739	12160	13465	13826	13707	12187	12054	13884	12799	14737	13284	14018	158860	
2020	12259	12260	4611	0	0	0	0	0	0	0	0	0	29130	
TOTAL	37246	35943	31520	27267	27684	24999	24473	27814	26092	28877	27505	28625	348045	

Frequency Distribution of Months in the Before Period

Note: March is for the first ten days (March 1-10)

Frequency Distribution of Months in the After Period (2020)



Notes: (1) March is for March 11-31 (21 days inclusive), the first weeks of the COVID period (2) April, May and June are full months

(3) July is for July 1-14 (14 days inclusive, with 12-14 being only the early reports)

2. Major Findings and Recommendations

The details for the summaries in this section are given in the several subsections of Sections 3 and 4 that follow. These are referenced by general classification and crash attribute numbers (Cnnn). The names we have assigned to the two subsets are *Normal* and *COVID*. An asterisk (*) on the Odds Ratio value indicates that there is a significant difference in this item between the COVID and the Normal periods.

2.1 Geographical Findings (Section 3.1)

- C011 Highway Classification. This reflects the rural/urban findings in C020 below. About 35% of the COVID crashes were on County and State roadways. For the most part, there was little deviation in most of the roadways, with the possible exception of County roads, which had a significant increase of nearly 15%.
- C020 Rural or Urban. Rural areas were significantly over-represented probably because of the requirement for obtaining groceries and other necessities from the rural areas.
- C033 Locale. As expected, Shopping or Business, School and Manufacturing/Industrial locales were significantly under-represented. Relative increases were observed in Residential and Open Country travel. This reflects that major redistribution in traffic volumes during the COVID period.

2.2 Time and Weather Findings (Section 3.2)

- C006 Day of the Week. Saturday and Sunday are the only two days that have significant over-representations. As is usual, traffic volume decreases on these weekend days, but they have not dropped as much in the COVID time period than in the Normal times. While it does not seem reasonable that weekends would be over-represented in the COVID time frame, perhaps it is more the reduction in travel for work during the week that is the causes this difference.
- C008 Time of Day. Over-represented times are primarily week-days from 10 AM through 4 PM, with the largest over-representations being before the afternoon rush hours (3:00 to 5:59 PM). This shows a major shift of traffic in the COVID period to earlier in the afternoon. Compare this with the DUI findings for C008 in Section 4.
- C032 Weather. Chances are good that the same reasoning that applies to darkness also applies to bad weather. Since sight is limited there is a reluctance to take a chance on any illegal behavior. This might tend to confirm the reasons given above for the relative drop off in the proportion of COVID crashes in darkness.

2.3 Driver Related Findings (Section 3.3)

• C015 Primary Contributing Circumstance. The most significant over-representations are seen in Speed, DUI and Aggressive Operation, which is consistent with the graphs in the *Response of Various Crash Types to COVID Quarantine* documents. There were 12 items that showed significant over-representations, the top three were Speed, DUI and

Aggressive Operation followed by several others that account for the large number of crashes.

- C023 Manner of Crash. Collectively, how do those items that are over-represented reflect some change in driver attitude indicated by the COVID crashes? The very much higher (about 25%) proportion of single vehicle crashes is indicative of there being fewer "second vehicles" on the road to crash into. Side impacts are fairly typical of Failure to Yield issues. The Sideswipe – Opposite Direction and Head Ons probably go together in showing the crossing of the centerline. This can be indicative of a loss of control due to excessive speed.
- C107 CU Driver Raw Age. The youngest drivers (aged 16-20) were all under-represented, with the 16-17s significantly so. Very few of the other ages showed any pattrns for either over- or under-representation.
- C109 CU Driver Gender. Males were over-represented above that which is typically seen. We suspect that the liberties that some are taking due to the roads being relatively empty might be a male as opposed to a female characteristic.
- C120 CU Driver Employment Status. The fact that the unemployed were over-represented is clearly due to their increased number and proportion in the COVID period. While, significant (about 14% higher than in the Normal period), the degree of Unemployment is not as large as might be expected, probably because this would curtail their driving.
- C122 CU Officer Opinion Alcohol. The COVID period DUI crashes have a proportion that is 25% higher than the Normal crashes. This is statistically significant at the highest levels, and it is obvious that both drugs and alcohol have increased with COVID, and/or there is a much lower expectation of apprehension.
- C123 CU Officer Opinion Drugs. (Non-alcohol) drugs have about twice the over-representation as that found for alcohol. The proportion of COVID crash causal drivers who were under the influence of drugs was about 50% higher a proportion than that found for Normal drivers.
- C214 CU Emergency Status. The first two items are significantly over-represented, including On an Emergency Call, and In Police Pursuit, indicating that the COVID period required more emergency details.
- C225 CU Citation Issued. The citations given generally reflect the attributes discussed above. Note that there are three ID/DUI categories.

2.4 Severity Findings (Section 3.4)

- C025 Crash Severity. All of the more severe (top three) injury categories were over-represented at from about 10% to 25% more than the proportion for the Normal period. The two lowest severities, Possible Injury and Property Damage Only are significantly underrepresented. Two possible reasons for these results may be: (1) higher impact speeds see C224 below, and (2) rural locations where EMS is not s readily available (see C038 below).
- C038 Adjusted EMS Arrival Delay Time. While no one category shows statistical significance, the combined three lowest arrival times are all under-represented, while most of

the others are over-represented. So, collectively we would conclude that the COVID period had longer ambulance delay times, which could be caused by ambulances dispatched for other COVID-related emergencies.

- C052 Number of Vehicles. COVID period crashes are over-represented in single-vehicle crashes, with an Odds Ratio of 1.245. We expect the major proportionate increase in single vehicle crashes to be the result of fewer vehicles on the roads. Considering all crashes from 2018 to the most recently available in 2020, single vehicle crashes have about a one in 70 chance of being fatal, while those involving two vehicles have a one in 350 chance so the probability of a fatality in single vehicle crashes is five times that of two vehicle crashes. This would tend to explain some of the relative fatality increases in the COVID period. Multi-vehicle crashes tend to occur more in the urban areas where speeds are lower.
- C057 Number of Pedestrians. The proportion of crashes that involve pedestrians is virtually the same in the COVID as in the Normal time periods.
- C058 Number of Pedalcycles (Bicycles). Clearly, many people have chosen to either exercise or travel by bicycle in the COVID time frame. The proportion of bicycle crashes is about 42% higher in the COVID period than in the Normal period that we are using for a control.
- C224 CU Estimated Speed at Impact. All speeds 45 and above are over-represented in the COVID period, and generally, the higher the speed, the higher the proportionate over-representation. The causes for this in no particular order: (1) fewer vehicles on the road, (2) increased rural driving, and (3) a perception that the police are not giving speeding tickets (although we see no evidence of this).
- C323 CU Driver Safety Equipment. The "None Used" category is significantly higher for the COVID time period, but an Odds Ratio of 1.478. This is related to the ID/DUI findings in that those who drive while drunk are notorious for not being buckled up. For more information on this factor, see C323 in Section 4.5.

2.5 Vehicle Related Findings (Section 3.5)

- C080 CMV Involved. There was no measurable difference in the Commercial Motor Vehicle involvement between COVID and Normal times.
- C101 Causal Unit (CU) Type. The vast majority of COVID crashes (almost 70%) are caused by the drivers of Passenger cars (49.28%) and Pick-Ups (19.59%). However, only the Pick-Ups are significantly over-represented when compared to their expected proportion in the Normal population. Others that had significant over-representations (Odds Ratios) were Motorcycles (1.522), Single Unit (2 Axle) Trucks (1.236), and 4-Wheel Off Road All Terrain Vehicles (2.235).
- C208 CU Model Year. Vehicle years that are over-represented start at 2018 and later. All previous model year are under-represented. This indicates that the owners of such vehicles may have had more of a tendency to ignore the COVID quarantine rules than owners of older vehicles.

2.6 COVID ID/DUI Findings (Section 4)

- COVID vs Normal C008 Time of Day for DUI Crashes. Times are generally earlier in the evening (but not necessarily afternoons) for the COVID DUI crashes. Note the lack of COVID DUI crashes in the early morning hours. ID/DUI is typically over-represented in these hours.
- COVID vs Normal C025 Severity for DUI Crashes. There were fewer fatalities (proportionally) here than in the general comparison. Fewer DUI fatalities for the COVID crashes could be due to their not occurring very early morning. Also, this indicates that the problem is DUI itself and not COVID, with the exception that DUI was over-represented in the COVID time period.
- COVID vs Normal C033 Locale for DUI Crashes. Open Country and Residential are over-represented for the COVID DUI crashes as they were in general.
- COVID vs Normal C052 Number of Vehicles for DUI Crashes. A significantly larger proportion of Single Vehicle crashes for the COVID DUIs indicates more "unforced" errors during this time. This could be from people who typically do not use drugs or alcohol indulging due to their additional free time.
- COVID vs Normal C323 Safety Equipment Driver for DUI Crashes. The None Used for drivers under the influence of alcohol was 19.03%, and another 19.59% of the ID/DUI cases were listed as Unknown seatbelt use. Confirmed Shoulder and Lap Belt Used was 58.20%, indicating over 40% were not properly restrained. The differences for the Normal time period were not significantly different where both time periods were constrained to be DUI. This shows that the problem was DUI and not COVID; however it appears that COVID did play a large part in increasing the use of drugs and alcohol in persons who were driving.

3. 2020 COVID vs 2018-2020 Normal

3.1 Geographical Findings

C011 Highway Classification

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6	2018-2020 Alabama Integrated Crash D	ata	~ 202	0 COVID PLUS Mar	rch	~	Sec. 1/ 1/	/2018 ~ 7/14/2020	~	Kille 🕨	•	
Order:	order: Max Gain V Descending V Suppress Zero-Valued Rows Significance: Over Representation V Thres											
C011:	Highway Classifications	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 🔻 🗖	C008: Time of D C009: Data Sou	ay rce		^	
•	County	5610	15.63	47497	13.65	1.145*	712.437	C010: Rural or U	Jrban			
	State	6851	19.09	62387	17.92	1.065*	418.083	C011: Highway	Classificati	ons		
	Private Property	1158	3.23	11886	3.42	0.945	-67.602	C012: Controlle	d Access			
	Federal	4527	12.61	45603	13.10	0.963*	-175.267	C015: Primary C	Contributing	Circum	istanc	
	Interstate	3832	10.68	39501	11.35	0.941*	-241.071	C016: Primary C	contributing	i Unit Nu	umbei 🧅	
	Municipal	13910	38.76	141171	40.56	0.956*	-646.580 🗸	Sort by Sum of	Max Gain			
0) 🕼 🖉							Display Filter	Name			
		2018-2020 Alab	ama Integrated Cra	sh Data - Filter = 20	20 COVID PLUS N	March vs. 22018-20	20 Normal PLUS Mar	rch				
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	C	ounty	State	Private Proper	ty Feder	ral In	terstate	Municipal				
				C011: High	way Classification	5						

Mainly County, but also to some extent State. Interstates are generally lower, with a greater reduction than all crashes in the COVID times, consistent with the graphs.

C020 Rural or Urban



Rural over-representation is consistent with the graphs that show urban travel diminished more than rural in the COVID time period.

C033 Locale



Changes in location of traffic flow reflects the trend toward driving only for necessities.

3.2 Time and Weather Findings

C006 Day of the Week



It does not seem reasonable that weekends would be over-represented in the COVID time frame. Perhaps it is more the reduction in travel for work during the week that is the cause.

C008 Time of Day

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6	2018-2020 Alabama Integrated Cr	rash Data	\sim	2020 CO	VID PLUS March	I		✓ ♥ 1/ 1/2018 ∨ 7/14/2020 ∨
Order:	Natural Order V Desce	ending 🗸 🗸	Suppres	s Zero-Valued F	Rows	Sigr	nificance: Over	Representation V Threshold: 2.0
C008:	Time of Day	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C004: Month A
•	12:00 Midnight to 12:59 AM	513	1.43	4227	1.21	1.177*	77.141	C006: Day of the Week
	1:00 AM to 1:59 AM	394	1.10	3406	0.98	1.122	42.797	C007: Week of the Year
	2:00 AM to 2:59 AM	322	0.90	3113	0.89	1.003	1.009	C008: Time of Day
	3:00 AM to 3:59 AM	305	0.85	2788	0.80	1.061	17.521	C010: Rural or Urban
	4:00 AM to 4:59 AM	322	0.90	3277	0.94	0.953	-15.902	C011: Highway Classifications
	5:00 AM to 5:59 AM	601	1.67	5835	1.68	0.999	-0.665	C012: Controlled Access
	6:00 AM to 6:59 AM	875	2.44	9911	2.85	0.856*	-146.954	C013: E Highway Side
	7:00 AM to 7:59 AM	1142	3.18	21724	6.24	0.510*	-1098.029	C015: Primary Contributing Circumstance
	8:00 AM to 8:59 AM	1177	3.28	15739	4.52	0.725*	-445.897	C017: First Harmful Event
	9:00 AM to 9:59 AM	1327	3.70	13365	3.84	0.963	-51.107	C018: Location First Harmful Event Rel t
	10:00 AM to 10:59 AM	1767	4.92	15088	4.34	1.136*	211.229	C019: E Most Harmful Event
	11:00 AM to 11:59 AM	2227	6.21	18340	5.27	1.178*	335.906	C020: E Distracted Driving Opinion
	12:00 Noon to 12:59 PM	2673	7.45	22455	6.45	1.154*	357.595	C022: E Type of Roadway Junction/Featu
	1:00 PM to 1:59 PM	2738	7.63	22191	6.38	1.197*	449.817	C023: E Manner of Crash
	2:00 PM to 2:59 PM	2846	7.93	24170	6.94	1.142*	353.756	C024: School Bus Related
	3:00 PM to 3:59 PM	3071	8.56	30515	8.77	0.976	-75.496	C025: Crash Severity C026: Intersection Related
	4:00 PM to 4:59 PM	3082	8.59	29851	8.58	1.001	3.971	C027: At Intersection
	5:00 PM to 5:59 PM	2847	7.93	31692	9.11	0.871*	-420.860	C028: Mileposted Route
	6:00 PM to 6:59 PM	1954	5.44	21093	6.06	0.898*	-220.965	C029: National Highway System
	7:00 PM to 7:59 PM	1522	4.24	14161	4.07	1.042	61.815	C030: Functional Class
	8:00 PM to 8:59 PM	1395	3.89	11760	3.38	1.150*	182.390	C031: Lighting Conditions
	9:00 PM to 9:59 PM	1153	3.21	9621	2.76	1.162*	160.949	C033: Locale
	10:00 PM to 10:59 PM	894	2.49	7503	2.16	1.156*	120.342	C034: E Police Present at Time of Crash
	11:00 PM to 11:59 PM	670	1.87	5556	1.60	1.169*	97.104	C035: Police Notification Delay
	Unknown	71	0.20	664	0.19	1.037	2.533	C036: Police Arrival Delav *
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	201	8-2020 Alabama I	ntegrated Crash	n Data - Filter = 2	2020 COVID PLU	S March vs. 22	018-2020 Normal	PLUS March
				C008	B: Time of Day			
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		4:00 AM to 4:59	9 AM 9:	00 AM to 9:59	AM 2:00	PM to 2:59 P	M 7:00 P	M to 7:59 PM Unknown
					C008: Time of I	Day		

COVID period crashes seem to have moved away from the morning rush hours and into the late morning and early afternoon. Morning rush hours are under-represented.

C032	Weather
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6	2018-2020 Alabama Integrat	ed Crash Data	~	202	0 COVID PLUS I	March		✓ ♥ 1/ 1/201	8 ~ 7/14/202
Order	: Max Gain 🗸 [Descending	V Supp	oress Zero-Valu	ied Rows	Signi	ficance: Over	Representation V Threshol	d: 2.0 🜩
C032	: Weather	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C026: Intersection Related C027: At Intersection	^
•	Clear	24850	69.24	228206	65.57	1.056*	1318.971	C028: Mileposted Route	
	Severe Winds	34	0.09	96	0.03	3.435*	24.101	C029: National Highway Syst	tem
	Unknown	125	0.35	1100	0.32	1.102	11.576	C030: Functional Class	
	Other	3	0.01	120	0.03	0.242	-9.374	C032: Weather	
	Sleet/Hail/Freezing Rain	1	0.00	292	0.08	0.033	-29.109	C033: Locale	
	Fog	111	0.31	1706	0.49	0.631*	-64.911	C034: E Police Present at Tir	me of Crast
	Cloudy	6353	17.70	62705	18.02	0.983	-112.707	C035: Police Notification Del C036: Police Arrival Delay	ay
	E Mist	581	1.62	9539	2.74	0.591*	-402.596	C037: EMS Arrival Delay	~
	Rain	3830	10.67	43974	12.63	0.845*	-704.296	Sort by Sum of Max Gain	
10) 🛯 🖉								Display Filte
				2018-2020 Alab	ama Integrated	Crash Data			
				С	032: Weather				
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	0-1	Severe Winds	Snow	s	E Blowing and/Soil/Dirt	Sleet/Hail/Free Rain	ezing	Cloudy Rain	
					C032: Weath	er			

Significantly higher proportion of clearer weather would facilitate higher speeds, which are further documented in C224 below.

3.3 Driver Related Findings

C015 Primary Contributing Circumstances (PCC)

*	2018-2020 Alabama Integrated Crash Data	\sim	2020 COVID PLU	JS March		~ 9	1/ 1/2	018 🗸 7/14/2020 🗸 🖡 Kille 🕨 🛞
Order:	Max Gain V Descending V	Suppress Zero-	Valued Rows			Sig	nificance: Over	Representation V Threshold: 2.0
C015:	Primary Contributing Circumstance	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 🔻	C015: Primary Contributing Circumstance
•	Over Speed Limit	755	2.47	4486	1.51	1.636*	293.403	
	DUI	1182	3.87	8934	3.01	1.286*	262.716	
	E Aggressive Operation	864	2.83	5891	1.98	1.425*	257.832	
	E Ran Traffic Signal	1167	3.82	9705	3.27	1.169*	168.382	
	Defective Equipment	709	2.32	5381	1.81	1.280*	155.310	
	E Ran off Road	918	3.00	7617	2.56	1.171*	134.231	
	E Failed to Yield Right-of-Way from Stop Sign	1822	5.96	16587	5.58	1.068*	115.243	
	Improper Backing	995	3.25	8647	2.91	1.118*	105.247	
	E Fatigued/Asleep	695	2.27	5849	1.97	1.155*	93.154	
	E Ran Stop Sign	424	1.39	3354	1.13	1.229*	78.882	
	E Over Correcting/Over Steering	427	1.40	3449	1.16	1.203*	72.107	
	E Crossed Centerline	522	1.71	4450	1.50	1.140*	64.107	
	Driving too Fast for Conditions	1503	4.91	14014	4.72	1.042	60.997	
	E Distracted by Use of Electronic Communication Device	361	1.18	2959	1.00	1.186*	56.527	
	Improper Passing	349	1.14	2909	0.98	1.166*	49.672	
<u> </u>	E Failed to Yield Right-of-Way from Traffic Signal	605	1.98	5732	1.93	1.026	15.193	
	Made Improper Turn	711	2.32	6791	2.28	1.017	12.225	
	E Other Distraction Inside the Vehicle	809	2.65	7745	2.61	1.015	12.061	
	E Swerved to Avoid Animal	364	1.19	3438	1.16	1.029	10.239	
<u> </u>	E Swerved to Avoid Vehicle	878	2.87	8481	2.85	1.006	5.328	
	E Other - No Improper Driving	400	1.31	3998	1.35	0.972	-11.383	
	E Other Failed to Yield	321	1.05	3494	1.18	0.893	-38.523	
<u> </u>	E Other Improper Action	537	1.76	5753	1.94	0.907	-54.968	
<u> </u>	E Other Distraction Outside the Vehicle	575	1.88	6158	2.07	0.907	-58.641	
	E Failed to Yield Right-of-Way from Driveway	608	1.99	6585	2.22	0.897*	-69.579	
	Improper Lane Change/Use	2002	6.55	20189	6.79	0.964	-75.393	
<u> </u>	Unseen Object/Person/Vehicle	2124	6.95	21763	7.32	0.948*	-115.354	
	E Failed to Yield Right-of-Way Making Left or U-Turn	1344	4.39	14518	4.88	0.900*	-149.863	
I	Misjudge Stopping Distance	2598	8.50	30553	10.28	0.826*	-545.821	
	Followed too Close	4013	13.12	4//75	16.07	0.816*	-902.918	Sort by Sum of Max Gain
0) @ 19							Display Filter Name
			2018-2020	Alabama Integrate	ed Crash Data			
			C015: Prim	ary Contributing (Circumstance			
	20							
	. 15							
	5							
	Defective Equipment	E Ran Sto	ip Sign	Improper Passir	ng ESwe	erved to Avoid Vehic	cle E Fai Right-of-Wa	led to Yield Followed too Close ay from Driveway
			C015:	Primary Contribut	ting Circumstanc	e		

All items with less than 300 crashes were removed. Speed, DUI and Aggressive Operation are all consistent with the COVID time graphs in the Response of Various Crash Types to COVID Quarantine documents.

C023 Manner of Crash

CA	RE 10.2.1.0 - [IMPACT Results - 2018-	2020 Alabama Integ	rated Crash Data	- 2020 COVID PLU	S March vs. 22018-	2020 Normal PLUS	March]	- 🗆 X				
🕴 Ei	J Ele Dashboard Eilters Analysis Impact Tools Window Help - ♂ × 2018-2020 Alabama Integrated Crash Data × 2020 COVID PLUS March × ♥ № 1/ 1/2018 × 7/14/2020 × KILE A											
6	2018-2020 Alabama Integrated Crash Data V 2020 COVID PLUS March V 💡 😨 1/ 1/2018 V 7/14/2020 V 🖁 Kill k 🕨 🗊 🚱											
Order	Max Gain V Descending	V Su	ppress Zero-Value	ed Rows		Si	gnificance: Over F	Representation V Threshold: 2.0 荣				
C023:	E Manner of Crash	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 🔻	C018: Location First Harmful Event Rel t A C019: E Most Harmful Event				
<u>۲</u>	Single Vehicle Crash (all types)	8514	23.72	66256	19.04	1.246*	1682.138	C020: E Distracted Driving Opinion				
	Side Impact (90 degrees)	3394	9.46	31370	9.01	1.049*	159.342	C021: Distance to Fixed Object				
	Angle (front to side) Opposite Direction	1193	3.32	10234	2.94	1.131*	137.741	C022: E Type of Roadway Suffcion/Feat				
	Non-Collision	321	0.89	2357	0.68	1.321*	77.962	C024: School Bus Related				
	Other	981	2.73	8767	2.52	1.085*	77.007	C025: Crash Severity				
	Sideswipe - Opposite Direction	705	1.96	6178	1.78	1.107*	67.967	C026: Intersection Related				
	Head-On (front to front only)	791	2.20	7205	2.07	1.065	48.070	C027: At Intersection				
	Causal Veh Backing: Rear to Side	685	1.91	6201	1.78	1.071	45.596	C029: National Highway System				
	Angle (front to side) Same Direction	1017	2.83	9499	2.73	1.038	37.529	C030: Functional Class				
	Angle Oncoming (frontal)	881	2.45	8344	2.40	1.024	20.624	C031: Lighting Conditions				
	Causal Veh Backing: Rearto Rear	226	0.63	2046	0.59	1.071	15.031	C032: Weather				
	Side Impact (angled)	3107	8.66	30172	8.67	0.999 -4.129		C033: Locale C034: E Police Present at Time of Crast				
	Unknown	214	0.60	2295	0.66	0.904	-22.645	C035: Police Notification Delay				
	Sideswipe - Same Direction	3179	8.86	33025	9.49	0.934*	-226.310	C036: Police Arrival Delay				
	Rear End (front to rear)	10680	29.76	124096	35.66	0.835*	-2115.924	Sort by Sum of Max Gain				
0) @ <i>\$</i>							Display Filter Name				
		2018-2020 Alabam	a Integrated Crasł	h Data - Filter = 202	0 COVID PLUS Mar	ch vs. 22018-2020 N	lormal PLUS March					
				C023: E Ma	inner of Crash							
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	2 2											
	a 20-											
	ш.											
	0		Other		Arela	Oppoming (frants		Peer End (front to rear)				
			Other	C000. F	Mannas of Cra-b	Cheoming (nonta	9	Real End (Ironicio lear)				
				C023: E	manner or Crash							

Very much higher proportion of single vehicle crashes is indicative of there being fewer "second vehicles" on the road to crash into.

C107 CU Driver Raw Age

🔋 CA	RE 10.2.1.0 - [IMPACT Results - 2	018-2020 Alabama In	tegrated Crash Da	ta - 2020 COVID PL	US March AND N	ot CU Driver Raw	Age = 104 OR 10)3 OR	102 OR 101 OR 100] —		×
<u>e</u> i	le <u>D</u> ashboard <u>F</u> ilters <u>A</u> na	alysis <u>I</u> mpact <u>T</u> o	ools <u>W</u> indow	<u>H</u> elp							_ 6	×
¢°	2018-2020 Alabama Integrated Cras	h Data	~ 20	20 COVID PLUS Mar	ch	~	S 1	/ 1/2	018 ~ 7/14/2020	V 🚺 Kille	•	0
Order	Max Gain v Descen	ding 🗸 🗸	Suppress Zero-Val	ued Rows			Significance:	Over l	Representation	V Threshold:	2.0	•
C107:	CU Driver Raw Age	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	^	C107: CU Driver	Raw Age		
•	16	758	2.45	8887	2.93	0.836*	-148.684	ī				
	17	877	2.83	9507	3.13	0.904*	-92.939					
	18	1062	3.43	11129	3.67	0.935	-73.422	2				
	19	1138	3.67	11253	3.71	0.991	-10.072	2				
	20	1080	3.49	10638	3.50	0.995	-5.328	8				
	21	1003	3.24	9895	3.26	0.994	-6.524	-				
	22	966	3.12	9479	3.12	0.999	-1.082	2				
	23	881	2.84	8648	2.85	0.999	-1.301	_				
	24	805	2.60	8250	2.72	0.956	-36.695					
<u> </u>	25	776	2.50	7851	2.59	0.969	-24.988					
<u> </u>	26	835	2.70	7693	2.53	1.064	50.132	2				
<u> </u>	2/	/62	2.46	/440	2.45	1.004	2.944	-				
<u> </u>	28	/22	2.33	/308	2.41	0.968	-23.589	-				
<u> </u>	29	731	2.36	6814	2.24	1.002	35.811					
<u> </u>	30	724	2.34	6493	2.14	1.093	61.060	-				
	22	550	2.00	5829	1.55	0.925	41.122		Carthy Sum of M	Caia		
			1.70	5025	1.02	0.020	44.000	~				
00	1 Sr 🖉								Display Filter N	ame		_
				2018-2020 Alaban	na Integrated Crash	n Data						
				C107: CU	Driver Raw Age							
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		3	5		55		75			95		
				C10	07: CU Driver Raw	Age						

C109 CU Driver Gender



Potential cause could be that more males are on the road due to the necessities of their jobs.

C120 CU Driver Employment Status

C/	ARE 10.2.1.0 - [IMPACT Results - 2018-	2020 Alabama Inte	grated Crash Data	- 2020 COVID PLU	S March vs. 22018	-2020 Normal PLU	S March]	- 0	×			
B E	ile <u>D</u> ashboard <u>F</u> ilters <u>A</u> nalysi	s <u>I</u> mpact <u>T</u> oo	ls <u>W</u> indow <u>H</u>	<u>H</u> elp				_ ť	7 ×			
6 2	2018-2020 Alabama Integrated Crash Da	ta	~ 2020	COVID PLUS March	h	~	7 1/ 1/20	018 🗸 7/14/2020 🗸 🔋 Kille 🕨 🕞	۲			
Order	Order: Max Gain v Descending v Suppress Zero-Valued Rows Significance: Over Representation v Threshold: 2.0 😜											
C120	E CU Driver Employment Status	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain 🔻	C117: CU DL Restriction Violations #2 C118: CU Endorsement Violations #1	^			
•	Unemployed	4701	13.10	39933	11.47	1.142*	583.384	C119: E CU Endorsement Violations #	2			
	Self-Employed	1292	3.60	12088	3.47	1.037	45.569	C120: E CU Driver Employment Status				
	CU is Unknown	1382	3.85	13391	3.85	1.001	1.212	C121: CU Driver Condition				
	CU is Not a Vehicle	99	0.28	978	0.28	0.982	-1.845	C123: CU Driver Officer Opinion Drugs				
	Unknown	10507	29.28	102142	29.35	0.998	-25.179	C124: CU Driver Alcohol Test Type Give	en			
	Retired	1955	5.45	20462	5.88	0.927*	-154.900	C125: E CU Driver Drug Test Type Give	•n 🗸			
	Employed	15952	44.45	159051	45.70	0.973*	-448.242	Sort by Sum of Max Gain				
1	à 🐟 🖉							Display Filter Name				
		2018-2020 Alaban	na Integrated Crash	Data - Filter = 202	0 COVID PLUS Mar	ch vs. 22018-2020	Normal PLUS March	h				
				C120: E CU Drive	er Employment Statu	IS						
	60											
	6 40											
	ju 20											
	Unemp	oyed Self-Em	ployed CU is	Unknown CU is	Not a Vehicle	Unknown	Retired	Employed				
				C120: E CU Driv	ver Employment Sta	atus						

With the downturn in the economy, we would expect the unemployed to have an even greater proportion. This demonstrates that a large proportion of unemployed may be staying off the road.

C122 CU Driver Officer's Opinion Alcohol

C/	ARE 10.2	2.1.0 - [MPACT Res	ults - 2018-20	20 Alabar	ma Integrated Cr	ash Data - 2020 (COVID PLUS Ma	rch AND Not CU	Driver Officer O	pinion Alcohol =	5 OR 6 OR 3 OR 4] — 🗆 🗙	
E E	ile <u>D</u>	ashboa	rd <u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact	<u>T</u> ools <u>W</u> in	dow <u>H</u> elp					_ 8 ×	
S.	2018-2	020 Alab	ama Integrat	ed Crash Data		~	2020 COVID	PLUS March		~ 9	1/ 1/2	018 🗸 7/14/2020 🗸 🔋 Kille 🕨 💮 🥥	
Order	: Max G	àain	~	Descending	~	Suppress Z	ero-Valued Rows			Sig	gnificance: Over	Representation V Threshold: 2.0	
C122	CUD	river Of	licer Opinio	n Alcohol		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C122: CU Driver Officer Opinion Alcohol	
•	Yes - I	Driver W	as Under Infl	uence of Alcol	nol	1203	4.02	9509	3.22	1.248*	239.260		
	No - Driver Was Not Under Influence of Alcohol 28722 95.98 285754 96.78 0.992* -239.260 Sort by Sum of Max Gain												
	〕 ⓑ l � ≠ 🖉												
							2018-20	20 Alabama Integ	rated Crash Data				
							C122: 0	CU Driver Officer	Opinion Alcohol				
			100										
		5	100										
		duene	50		-								
		Ē											
	L 0 Yes - Driver Was Under Influence of No - Driver Was Not Under Influence of Alcohol C122: CIU Driver Officer Oninion Alcohol												

C123 CU Driver Officer's Opinion Drugs

C C	ARE 10.2.1.0 -	IMPACT Resul	ts - 2018-20	20 Alabam	a Integra	ted Crash Dat	a - 2020 COVID PL	US March AND No	t CU Driver Office	r Opinion Drugs = 5	OR 6 OR 3 OR 4 v]	_		×
	ile <u>D</u> ashbo	ard <u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact	Tools	<u>W</u> indow	<u>H</u> elp						-	. 🗗 🗙
6	2018-2020 Ala	bama Integrated	d Crash Data		~	202	0 COVID PLUS Man	ch	~	9 1/ 1/2	018 ~ 7/14/2020	\sim	Kille ⊨	•
Orde	r: Max Gain	√ D	escending	~	Supp	oress Zero-Vali	ued Rows			Significance: Over	Representation	 ✓ ThresI 	iold: 2	0 ≑
C123	CU Driver C	fficer Opinion I	Drugs	Subset Frequency	t /	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C123: CU Drive	Officer Op	inion Dr	ugs
	Yes - Driver \	Vas Under Influe	ence of		468	1.59	3190	1.09	1.452	145.668				
	No - Driver W	as Not Under Ir	fluenc	2	8992	98.41	288365	98.91	0.995*	-145.668	Sort by Sum of	Max Gain		
] 🕼 📽 🎾 🗌 Display Filter Name													
							2018-2020 Alabam	a Integrated Crash I	Data					
							C123: CU Driver	Officer Opinion Dru	gs					
		100												
	2	100												
	Ineuc	50												
	Free													
		0		Y	′es - Driv	ver Was Unde	er Influence of	No - Driver Was	Not Under Influe	nce of				
						Drugs	C123: CU Driver Of	ficer Oninion Drugs	Drugs					

Both Alcohol and non-alcohol Drugs were over-represented in the COVID period. While there were over twice the number of alcohol as opposed to drugs, the proportion of drug involvement was higher as evidenced by the Odds Ratio.

C214 CU Emergency Status

🔋 C/	ARE 10.2	2.1.1 - [IMP/	ACT Resu	lts - 2018-20	20 Alabama	Integrated	Crash Data	- 2020 COVI	D PLUS Mar	ch AND Not	t E CU Emergency St — 🛛 🗙		
E E	ile <u>D</u>	ashboard	<u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact	<u>T</u> ools <u>W</u>	indow <u>H</u>	lelp			_ 8 >		
*	2018-2	020 Alabama	a Integrate	d Crash Data		~	2020	COVID PLUS	6 March		✓ ♥ 1/ 1/2018 ∨ 7		
Orde	r: Max G	àain	~ D	escending	~	Suppress	Zero-Value	d Rows	Signific	ance: Over	Representation V Threshold: 2.0		
C214	ECU	Emergency	Status		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C214: E CU Emergency Status		
	On an	Emergency	Call		58	0.17	375	0.11	1.500*	19.331			
	In Poli	ce Pursuit			22	0.06	89	0.03	2.397*	12.822			
	No Em	nergency or l	Pursuit		171	0.50	1606	0.48	1.033	5.392			
	Not Ap	oplicable/No	t Emergen	cy Vehicle	34081	99.27	330868	99.38	0.999*	-37.545	Sort by Sum of Max Gain		
	2018-2020 Alabama Integrated Crash Data Point Labels C214: E CU Emergency Status												
		100											
	requency	50											
		0											
		0-		On an Er	mergency Call	In Po	lice Pursuit	No Emer	gency or Pursui	t Not Ap Emerg	pplicable/Not gency Vehicle		
	C214: E CU Emergency Status												

The police pursuit category is in red background because its Odds Ratio is greater than twice that expected.

C225 CU Citation Issued

🔋 CA	CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March AND Not CU Citation Issued = E No											
🔋 Ei	le <u>D</u> ashboard <u>F</u> ilters <u>A</u> nalysis <u>I</u> mpact <u>T</u> ool	s <u>W</u> ind	ow <u>H</u> el	lp						_ 8 ×		
6	2018-2020 Alabama Integrated Crash Data	~	2020 CO	OVID PLUS	March			~ 9	1/ 1/2018	~ 7/14/20		
Order	Max Gain V Descending V St	ippress Zei	ro-Valued	Rows		Significan	ice: Over F	Representation	✓ Threshold:	2.0 🚖		
C225:	CU Citation Issued	Subset requency	Subset Percent	Other requency	Other Percent	Odds Ratio	Max Gain	C225: CU Cita	ation Issued			
•	No Driver License	833	15.65	6185	13.19	1.186*	130.825					
	Driving While Revoked	236	4.43	1510	3.22	1.377*	64.572					
	Driving Under the Influence	650	12.21	5268	11.24	1.087	51.931					
	Leaving the Scene of an Accident	322	6.05	2539	5.42	1.117	33.751					
	E Driving Under the Influence of Any Substance	60	1.13	312	0.67	1.694*	24.579					
	Driving Under the Influence of Drugs	87	1.63	640	1.37	1.197	14.342					
	Driving While Suspended	447	8.40	3849	8.21	1.023	10.028					
	E Driving Under the Influence of Alcohol and Drugs 52 0.98 402 0.86 1.139 6.361											
	E No Tag	16	0.30	116	0.25	1.215	2.831					
	E Window Tint	3	0.06	7	0.01	3.775	2.205					
	E No Registration in Vehicle	8	0.15	54	0.12	1.305	1.869					
	E Improper Class or Endorsements on License	4	0.08	31	0.07	1.137	0.481					
	E Driving a Commercial Vehicle without First Being Licensed	2	0.04	28	0.06	0.629	-1.179					
	Violation of Restrictions	22	0.41	207	0.44	0.936	-1.500					
	Eluding Police	34	0.64	347	0.74	0.863	-5.394					
	CU is Not a Vehicle	99	1.86	978	2.09	0.892	-12.031					
	Improper Tag or Expired Tag	32	0.60	482	1.03	0.585*	-22.721					
	CU is Unknown	1382	25.97	13391	28.57	0.909*	-138.263					
	E No Proof of Insurance	1033	19.41	10497	22.39	0.867*	-158.711	Sort by Sum o	of Max Gain			
00	i 🕼 🖉									Display Filte		
		2018-202	20 Alabam	a Integrated	d Crash Da	ta						
			C225: CU	Citation Iss	ued							
	40											
	₽°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°											
			_									
		-										
	E Driving Under the			E Window 1	Tint		Eludin	g Police				
	Influence of Any Substance											
11			C225	o: CU Citati	on Issued							

Speeding citations are not listed here because they are not issued as part of the crash investigation. The issuing officer has to witness the speeding. The No Citation Issued item was removed to get a better picture of the distribution. This amounted to 30,018 cases in the COVID period, which was 84.94% of the crashes during this period that we not given citations. The citations reflect the general characteristics that are discussed for the other attributes.

3.4 Severity Findings

C025 Crash Severity

CA	CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March vs. 22018-2020 Normal PLUS March] — 🛛 🗙												
E E	ile <u>D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis <u>I</u> m	pact <u>T</u> ools	<u>W</u> indow	<u>H</u> elp					- 8	×		
6 2	2018-2020 Alabama Integrated	Crash Data	~	2020	COVID PLUS	March		~ 💡 🏆	1/ 1/2018	~ 7/14/	/202		
Order	r: Natural Order 🗸 Des	cending	🖂 🖂 Supp	ress Zero-Valu	ed Rows	Sign	ificance: Over F	Representation 、	 Threshold: 	2.0	ŧ		
C025	Crash Severity	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C021: Distance to C022: E Type of F	o Fixed Objec Roadway Jun	t ction/Featu	^		
•	Fatal Injury	240	0.67	1864	0.54	1.249*	47.797	C023: E Manner of	of Crash				
	Suspected Serious Injury	1096	3.05	9714	2.79	1.094*	94.359	C024: School Bus	s Related				
	Suspected Minor Injury	3190	8.89	26875	7.72	1.151*	418.835	C026: Intersection	n Related				
	Possible Injury	3074	8.57	32544	9.35	0.916*	-281.713	C027: At Intersect	ion				
l	Property Damage Only	27353	76.22	267855	76.96	0.990*	-266.360	C028: Mileposted	Route		\mathbf{v}		
	Unknown 935 2.61 9193 2.64 0.986 -12.919 Sort by Sum of Max Gain												
1	🕽 🕼 🚭 🖉												
	2018-2020 Alabama Integrated Crash Data - Filter = 2020 COVID PLUS March vs. 22018-2020 Normal PLUS March C025: Crash Severity												
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	×									_			
	50												
	Ledu												
	-												
	0	Fatal Injury	Suspected Serious Injury	Suspec Minor In	ted Poss jury	sible Injury	Property Damage Only	Unknown					
	C025: Crash Severity												

The fatal crash result contrasts to the DUI crashes that recorded a proportionate reduction in fatal crashes (we speculated due to their not occurring as much in the early morning hours). However, the higher proportion (many un-recorded as such) ID/DUI crashes, lack of constraints in ID/DUI crashes and the increases in speed, collectively, contribute to the increased fatal crash proportion.

C038 Adjusted EMS Arrival Delay Time

🔋 CA	🔋 CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March AND Not Adjusted EMS Arriv – 🛛 🗙										
Ei	le <u>D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis	mpact <u>T</u> o	ols <u>W</u> indov	v <u>H</u> elp					. 8 ×	
6	2018-2020 Alabama Integrated	l Crash Data		\sim	2020 COVID P	LUS March		~ 9	1/ 1/201	18 ~ 7/	
Order:	Max Gain 🗸 De	escending		Suppress Zero-	-Valued Rows	Signit	ficance: Over I	Representation	Threshold: 2	.0 🖨	
C038:	Adjusted EMS Arrival Delay	Subset	Subset	Other	Other	Odds	Max	C038: Adjusted E	MS Arrival Delay		
	Valac	Frequency	Percent	Frequency	Percent	Ratio	Gain				
►	0 to 5 minutes	2451	26.31	21567	26.54	0.991	-22.044				
	6 to 10 minutes	2989	32.08	26522	32.64	0.983	-52.223				
	11 to 15 minutes	1686	18.10	14755	18.16	0.996	-5.926				
	16 to 20 minutes	926	9.94	7866	9.68	1.027	24.022				
	21 to 30 minutes	798	8.56	6548	8.06	1.063	47.154				
	31 to 45 minutes	311	3.34	2725	3.35	0.995	-1.470				
	46 to 60 minutes	83	0.89	688	0.85	1.052	4.108				
	61 to 90 minutes	50	0.54	375	0.46	1.163	7.000				
	91 to 120 minutes	7	0.08	81	0.10	0.754	-2.288				
	121 to 180 minutes	9	0.10	74	0.09	1.061	0.515				
	Over 180 minutes	7	0.08	51	0.06	1.197	1.152	Sort by Sum of M	ax Gain		
0	1 🕸 🖉									Displa	
				2018-2020 Ala	bama Integrate	d Crash Data					
				C038: Adj	usted EMS Arri	val Delay					
				-		-				_	
	40									-	
										-	
	-										
	2										
	ang 20									-	
						_					
	0	6 to 10 minutes	s 16 to 3	20 minutes	31 to 45 min	utes 61	to 90 minutes	121 to 180 minute	s		
				C038:	Adjusted EMS	Arrival Delay			-		

C052 Number of Vehicles

🚦 CA	RE 10.2.1.1 - [IMP/	ACT Resul	ts - 2018-20	20 Alabar	na Integra	ted Crash Da	ta - 2020 COVID	PLUS March v	rs. 22018-2020 N	Normal PLUS March]	- (⊐ ×
🖡 Ei	le <u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact	<u>T</u> ools	<u>W</u> indow	<u>H</u> elp					_ 8 ×
6 °	2018-2020 Alabama	a Integrated	l Crash Data		~	20	20 COVID PLUS	March		~ 💡 😨	1/ 1/2018	~ 7/14/202
Order	Natural Order	∼ De	escending	~	🖂 Supp	oress Zero-Va	lued Rows	Signi	ificance: Over l	Representation \lor	Threshold:	2.0 🚖
C052:	Number of Vehicle	es	Sub Freque	iset Si ncy Pe	ubset rcent	Other Frequency	Other Percent	Odds Ratio	<mark>M</mark> ax Gain	C049: MPO C050: Has Coordin	ate	^
•	1 Vehicle		9	378	26.13	73054	20.99	1.245*	1845.175	C051: E MapClick U	lsed	
	2 Vehicles		24	847	69.23	255373	73.37	0.944*	-1485.303	C052: Number of V	ehicles	
	3 Vehicles		1	439	4.01	16870	4.85	0.827*	-300.518	C053: Number of D	rivers Reco	rded
	4 Vehicles			189	0.53	2225	i 0.64	0.824*	-40.427	C055: Number of M	otorists Rec	corded
	5 Vehicles			28	0.08	394	0.11	0.689	-12.627	C056: Number of N	on-Motorist	s Record
	6 Vehicles			4	0.01	83	0.02	0.467	-4.558	C057: Number of P	edestrians	v
	7 Vehicles			3	0.01	26	0.01	1.119	0.319	Sort by Sum of Max	Gain	
	Image:											
	100 50 0	1	Vehicle	2 Vehi	cles	3 Vehicles	4 Vehicles 52: Number of Ve	5 Vehicle	es 6 Vehic	les 7 Vehicles		

We expect the major proportionate increase in single vehicle crashes to be the result of fewer vehicles on the roads. Considering all crashes in 2018 to the most recently available in 2020, single vehicle crashes have about a one in 70 chance of being fatal, while those involving two vehicles have a one in 350 chance – so the probability of a fatality in single vehicle crashes is five times that of two vehicle crashes. This would tend to explain some of the relative fatality increases in the COVID period.

C057 Number of Pedestrians



C058 Number of Pedalcyclists

🖡 CA	ARE 10	.2.1.1 - [IN	/IPACT Resi	ults - 2018-20	20 Alabar	na Integra	ted Crash Dat	a - 2020 COVID	PLUS March	h vs. 22018-2020 N	Normal PLUS Ma	rch] —		×
E E	ile	<u>D</u> ashboar	d <u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact	<u>T</u> ools	<u>W</u> indow	<u>H</u> elp					-	₽×
6 2	2018-	2020 Alaba	ama Integrat	ed Crash Data		~	202	0 COVID PLUS	March		~ 9	1/ 1/20	18 🗸 🗍	7/14/202
Order	: Max	Gain	~ [Descending	~	🖂 Supp	oress Zero-Valu	ued Rows	Si	gnificance: Over	Representation	✓ Thresho	ld: 2.0) 📫
C058	Num	ber of Ped	acyclists	Sub Freque	oset Si ncy Pe	ubset rcent	Other Frequency	Other Percent	Odds Ratio	Max – Gain –	C057: Numbe	er of Pedestria er of Pedacyclis	ns sts	^
•	1 Pe	dacyclist In	volved		78	0.22	533	0.15	1.419	9* 23.041	C059: Numbe	er Injured (Non	-Fatal)	~
	No P	edacyclists	Involved	35	810	99.78	347505	99.84	0.999	9* -22.319	Sort by Sum	of Max Gain	ideo Fot	alitic
1	□ Display Filte													
	2018-2020 Alabama Integrated Crash Data - Filter = 2020 COVID PLUS March vs. 22018-2020 Normal PLUS March C058: Number of Pedacyclists													
)1 Frequency	50											
					1 P	edacycli	st Involved	No Pe	dacyclists	Involved				
							C058: Num	her of Perlacycli	ete					

Bicycles had a much greater proportionate increase than did pedestrians.

🔋 CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March AND Not CU Estimated Speed at Im... × đΧ E <u>F</u>ile <u>D</u>ashboard **Filters** <u>Analysis</u> Impact Tools Window <u>H</u>elp 2020 COVID PLUS March 2018-2020 Alabama Integrated Crash Data 1/2018 7/14/20 12 Order: Max Gain Descending Over Representation \sim Suppress Zero-Valued Rows Significance: Threshold: 2.0 ÷. \sim C224: CU Estim Subset Subset Other 224: CU Estimated Other Odds Max Frequency Percent Frequency Percent Ratio Gain 1 to 5 MPH 2542 14.12 27481 16.30 0.867 -391.382 6 to 10 MPH 1881 10.45 19560 11.60 0.901* -206.877 11 to 15 MPH 1321 7.34 13304 7 89 0.930* -99 098 16 to 20 MPH 980 5.44 9578 5.68 0.959 -42.377 21 to 25 MPH 879 4.88 8498 5.04 0.969 -28.095 26 to 30 MPH 872 4 84 8754 5 19 0.933 -62 421 31 to 35 MPH 1004 5.58 10512 6.23 0.895* -118.074 36 to 40 MPH 1058 5.88 9837 5.83 1.008 7.977 41 to 45 MPH 1781 9.89 16013 9.50 1.042 71.738 5.08 7802 4.63 1.097* 81,198 46 to 50 MPH 914 51 to 55 MPH 1484 8.24 12425 7.37 1.119* 157.729 56 to 60 MPH 780 4.33 5933 3.52 1.232* 146.699 7032 1.230* 61 to 65 MPH 923 5.13 4.17 172.389 66 to 70 MPH 1000 5.56 8065 4.78 1.162* 139.124 71 to 75 MPH 1.48 1791 1.397* 75.825 267 1.06 76 to 80 MPH 150 0.83 1176 0.70 1.195 24.471 81 to 85 MPH 54 0.30 1.515* 18.348 334 0.20 86 to 90 MPH 58 0.32 255 0.15 2.131* 30.781 91 to 95 MPH 13 0.07 51 0.03 2.388 7.556 96 to 100 MPH 23 0.13 158 0.09 1 364 6 135 Over 100 MPH 17 0.09 81 0.05 1.966 8.354 Sort by Sum of Max Gain 📋 🕼 📾 🖉 Display Filte 2018-2020 Alabama Integrated Crash Data C224: CU Estimated Speed at Impact 20 15 Frequency 10 5 0 21 to 25 MPH 96 to 100 MPH 46 to 50 MPH 71 to 75 MPH C224: CU Estimated Speed at Impact

C224 CU Estimated Speed at Impact

All speeds 45 and above are over-represented in the COVID period, and generally, the higher the speed, the higher the proportionate over-representation. The causes for this in no particular order: (1) fewer vehicles on the road, (2) increased rural driving, and (3) a perception that the police are not giving speeding tickets (we see no evidence of this).

C323 CU Driver Safety Equipment

🔋 CA	ARE 10.2.1.1 - [IMPACT Results	- 2018-2020 AI	abama Integra	ted Crash Data	a - 2020 COVID	PLUS March A	ND Not CU Dr	iver/Non-Motorist S	. – [- X	
₿ E	<u>ile D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis <u>I</u> m	pact <u>T</u> ools	<u>W</u> indow	<u>H</u> elp					- 8 ×	
6	2018-2020 Alabama Integrated (Crash Data	~	202	0 COVID PLUS I	March		~ 💡	1/ 1/2018	~ 7/14/202	
Order	: Max Gain 🗸 Desi	cending	Supp	oress Zero-Valu	ied Rows	Signi	ficance: Over	Representation ~	Threshold:	2.0 🜻	
C323	: CU Driver/Non-Motorist Safe	ety Equipment Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C323: CU Driver/N	Ion-Motorist S	Safety Equipi	
•	None Used - Motor Vehicle	1470	4.96	9875	3.36	1.478*	475.118				
	Dot-Compliant Motorcycle H	243	0.82	1550	0.53	1.556*	86.841				
	E Helmet Used	40	0.13	207	0.07	1.918*	19.145				
	No Motorcycle Helmet Used	22	0.07	131	0.04	1.667	8.802				
	E CU Non-Motorist Not Rec	22	0.07	131	0.04	1.667	8.802				
	E Other Motorcycle Helmet	16	0.05	93	0.03	1.708	6.630				
	E Child in Arms of Restraine	3	0.01	4	0.00	7.444	2.597				
	Lap Belt Only Used	89	0.30	861	0.29	1.026	2.256				
	Reflective Clothing (Jacket/	2	0.01	9	0.00	2.206	1.093				
	E Rear Facing Child Safety	1	0.00	5	0.00	1.985	0.496				
	E Other Safety Equipment U	2	0.01	16	0.01	1.241	0.388				
	E Forward Facing Child Saf	1	0.00	10	0.00	0.993	-0.007				
	Shoulder Belt Only Used	122	0.41	1356	0.46	0.893	-14.614				
	E CU Driver Not Recorded	531	1.79	5472	1.86	0.963	-20.291				
	Shoulder and Lap Belt Used	27071	91.35	274406	93.29	0.979*	-574.739	Sort by Sum of Ma	ax Gain		
1) 🛯 🖉							-		Display Filte	
			:	2018-2020 Alab	ama Integrated	Crash Data					
			C3	23: CU Driver/N	Non-Motorist Sat	ety Equipment					
	Lead neuros										
	E CU Non-Motorist Not Recorded E Rear Facing Child Safety Seat Used Properly Shoulder and Lap Belt Used C323: CU Driver/Non-Motorist Safety Equipment										

See Section 4.5 for the same comparison where both subsets are DUI. The None Used for drivers under the influence of alcohol was 19.03%, and another 19.59% of the ID/DUI cases were listed as Unknown seatbelt use. Confirmed Shoulder and Lap Belt Used was 58.20%, indicating over 40% were not properly restrained. The differences for the Normal time period were not significantly different where both time periods were constrained to be DUI.

3.5 Vehicle Related Findings

C080 CMV Involved

8	CARE 1	0.2.1.1 - [МРАСТ	Results	s - 2018-202	20 Alaban	na Integr	ated Crash Da	ita - 2020 COVI	D PLUS Mai	rch vs. 22018	3-2020	Normal PLUS Mar	ch]	_		×
B	<u>F</u> ile	<u>D</u> ashboa	rd <u>F</u> i	lters	<u>A</u> nalysis	<u>I</u> mpact	Tools	<u>W</u> indow	<u>H</u> elp							-	₽ ×
6	2018	3-2020 Alab	ama Int	egrated	Crash Data		~	20	20 COVID PLUS	March			~ 9	12	1/ 1/201	8 ~ 7	7/14/20
Ord	er: Ma	k Gain		∽ Des	scending	~	🖂 Sup	press Zero-Va	lued Rows	S	Significance:	Over	Representation	~	Threshold	: 2.0	•
C08	0: CM	VInvolved			Sub: Frequen	set Su ncy Per	bset cent	Other Frequency	Other Percent	Odds Ratio	Ma Gai	n –	C063: Has Rai C080: CMV Invo	lroad olved	Crossing	Numb	er 🔺
	СМ	V is Not Inv	olved		339	950	94.60	329028	94.54	1.0	01 2	2.902	C081: E Has Ti	ruck E	Bus Supp	lement	~
L	CM	V is Involve	d		19)38	5.40	19017	5.46	0.9	188 -2	2.902	Sort by Sum of	Max (Gain		
Ũ	📋 🕼 🗇 🖋																
	2018-2020 Alabama Integrated Crash Data																
								C0	80: CMV Involve	ed							
		100)														
		5	-8														
		50 E)			_											
	I	2				- 1											
		C					. T										
						CM	V is Not	Involved		CMV is Inv	olved						
								C080:	CMV Involved								

No measurable difference in the CMV involvement between COVID and Normal times.

C101 Causal Unit (CU) Type

🖡 CA	RE 10.2.1.1 - [IMPACT Results	- 2018-2020 AI	abama Integra	ted Crash Data	a - 2020 COVID	PLUS March A	ND Not Causa	I Unit (CU) Type :	= 4 —	
Ei	le <u>D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis <u>I</u> m	pact <u>T</u> ools	Window	<u>H</u> elp					- 8 ×
6	2018-2020 Alabama Integrated (Crash Data	~	202	0 COVID PLUS I	March		~ 9	1/ 1/2018	~ 7/14/202
Order	Max Gain 🗸 Des	cending	✓ ✓ Supp	oress Zero-Valu	ied Rows	Signi	ficance: Over	Representation	✓ Threshold:	2.0
C101:	Causal Unit (CU) Type	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C101: Causa	Unit (CU) Type	
•	Pick-Up (Four-Tire Light Tru	6702	19.59	58598	17.67	1.109*	658.602			
	Motorcycle	358	1.05	2280	0.69	1.522*	122.856			
	E Single-Unit Truck (2-Axle/	421	1.23	3302	1.00	1.236*	80.454			
	E 4-Wheel Off Road ATV	56	0.16	243	0.07	2.235*	30.939			
	E Cargo Van (10000 lbs or L	296	0.87	2615	0.79	1.098	26.307			
	E Single-Unit Truck (3 Axles	164	0.48	1372	0.41	1.159	22.501			
	E Passenger Van	107	0.31	1071	0.32	0.969	-3.456			
	Station Wagon	81	0.24	819	0.25	0.959	-3.466			
	E Truck (6 or 7) with Trailer	91	0.27	974	0.29	0.906	-9.452			
	Pedestrian	61	0.18	711	0.21	0.832	-12.328			
	E Unknown Type of Motoriz	393	1.15	3949	1.19	0.965	-14.273			
	E Tractor/Semi-Trailer	694	2.03	7080	2.13	0.950	-36.183			
	E Mini-van	677	1.98	7290	2.20	0.900*	-74.841			
	E Sport Utility Vehicle (SUV)	7249	21.19	72741	21.93	0.966*	-253.011			
	Passenger Car	16860	49.28	168570	50.82	0.970*	-525.161	Sort by Sum	of Max Gain	
00) 🕼 🖉] Display Filte
			:	2018-2020 Alab	ama Integrated	Crash Data				
				C101: Ca	ausal Unit (CU)	Туре				
	<u></u>									_
	60									
	a 40									
	nen - nen						_			
.	L									
	20									
							_			
	0									
		E Ca	argo Van (100	UU Ibs or Less	5)	Pedest	rian		Passenger Ca	ar
				C10	1: Causal Unit (CU) Type				

Removed all items with less than 50 crashes.

There was a significant increase in pick-ups and motorcycles; a reduction in SUVs and passenger cars.

C208 CU Model Year

Excluded model	years with less than	1000 vehicles, i.e.,	those 2001 and older.
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CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March AND Not CU Model Year = 48 OR 47											
E E	ile <u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis <u>I</u> m	pact <u>T</u> ools	<u>W</u> indow	<u>H</u> elp					_ 8 ×
6 2	2018-2020 Alabama	Integrated	Crash Data	~	202	0 COVID PLUS N	March		~ 9	1/ 1/2018	/ 7/14/202
Orde	r: Max Gain	∨ De	scending	🖌 🖂 Supp	oress Zero-Valu	ied Rows	Signi	ficance: Over f	Representation	✓ Threshold:	2.0 🜩
C208	: CU Model Year		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C208: CU Mo	del Year	
•	2002		1064	3.87	10769	4.06	0.954	-51.866			
	2003		1167	4.24	13103	4.94	0.860*	-190.711			
	2004		1434	5.21	14952	5.63	0.926*	-115.302			
	2005		1579	5.74	16092	6.06	0.947	-88.427			
	2006		1626	5.91	17328	6.53	0.906*	-169.499			
	2007		1857	6.75	18688	7.04	0.959	-79.420			
	2008		1622	5.90	16502	6.22	0.949	-87.910			
	2009		1030	3.75	10676	4.02	0.931	-76.230			
	2010		1272	4.63	12609	4.75	0.974	-34.524			
	2011		1299	4.72	14125	5.32	0.888*	-164.609			
	2012		1480	5.38	16098	6.07	0.887*	-188.048			
	2013		1651	6.00	17105	6.45	0.932*	-121.392			
	2014		1659	6.03	17353	6.54	0.923*	-139.089			
	2015		1875	6.82	18756	7.07	0.965	-68.466			
	2016		1777	6.46	17217	6.49	0.996	-6.997			
	2017		1606	5.84	15913	6.00	0.974	-42.879			
	2018		1448	5.27	11734	4.42	1.191*	232.142			
	2019		1361	4.95	5673	2.14	2.315*	773.173			
	2020		693	2.52	704	0.27	9.500*	620.053	Sort by Sum	of Max Gain	
	D 🗠 🖉										Display Filte
				:	2018-2020 Alat	ama Integrated	Crash Data				
					C208	CU Model Yea	r				
	8—										
	Ŭ.										
	6									-	
	ouer 4										
	2									In L	
	0			2006		2011		20	016		
					(C208: CU Model	Year				

The only model years that were over-represented were the most recent: 2018, 2019 and 2020. This would indicate that the owners of such vehicles may have had more of a tendency to ignore the COVID quarantine rules than owners of older vehicles.

4. COVID <u>DUI</u> vs. Normal <u>DUI</u> Crashes

The following IMPACT displays were further restricted DUI (Alcohol or Drugs) for both the COVID and the control (Normal) subsets. These were run to establish if there were differences in behavior with regard to Impaired Driving (ID) in the COVID time as opposed to the normal time, since DUI showed such an proportionate increase after the COVID procedures went into effect.



4.1 C vs Normal C008 Time of Day for DUI Crashes

Times are generally earlier in the evening (but not necessarily afternoons) for the COVID crashes. Note lack of COVID DUI crashes in the early morning hours.



4.2 C vs Normal C025 Severity for DUI Crashes

Fewer fatalities for the COVID crashes could be due to their not occurring very early morning.

4.3 C vs Normal C033 Locale for DUI Crashes

🚦 C/	ARE 10	0.2.1.1 - [IMP	ACT Result	s - 2018-20	20 Alab	ama Integra	ted Crash Da	ta - 2020 COVID	PLUS March A	And DUI (Alcoho	ol or Drugs) vs. 2018	-		×
E E	ile	<u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpa	ct <u>T</u> ools	<u>W</u> indow	<u>H</u> elp					-	8×
¢?	2018	-2020 Alabam	a Integrated	Crash Data		~	202	20 COVID PLUS	March And DUI	(Alcohol or Drugs) 🗸 💡 🏆	1/ 1/2018	~ 7/	/14/202
Order	Order: Natural Order V Descending V Suppr						ress Zero-Val	ued Rows	Signi	Significance: Over Representation V Threshold:			2.0	÷
C033	C033: Locale		Sub Freque	ncy	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C030: Functional C C031: Lighting Cor	Class nditions		^	
•	Оре	n Country]	756	47.16	4255	44.85	1.052	37.117	C032: Weather			
	Res	idential			464	28.95	2598	27.38	1.057	25.067	C033: Locale	cont at Time	of Cra	net
	Sho	pping or Busin	ess	_	334	20.84	2382	25.11	0.830*	-68.440	C035: Police Notifi	cation Delav	01012	151
	Man	ufacturing or I	ndustrial		28	1.75	117	1.23	1.416	8.233	C036: Police Arriva	l Delay		
	Sch	ool			10	0.62	75	0.79	0.789	-2.671	C037: EMS Arrival [Delay		
	Play	ground			0	0.00	5	0.05	0.000	0.000	C038: Adjusted EM	IS Arrival Del	ay	~
	Othe	er			11	0.69	56	0.59	1.163	1.539	Sort by Sum of Max	x Gain	iaman	
	Frequency	2018-202 60 40 20 0	20 Alabama	Integrated (Crash Da	ata - Filter = 2	2020 COVID F	PLUS March And C033: Locale	DUI (Alcohol or	Playgrou	-2020-Normal PLUS M	arch DUI	Displa	ny Filte
								C033: Locale						

Open Country is over-represented for the COVID DUI crashes.

4.4 C vs Normal C052 Number of Vehicles for DUI Crashes

CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March And DUI (Alcohol or Drugs) vs. 2018 – 🛛 🗙												
🔋 Ei	le <u>D</u> ashboard	<u>F</u> ilters	<u>A</u> nalysis <u>l</u> ı	mpact <u>T</u> ools	<u>W</u> indow	<u>H</u> elp			_ & ×			
6	2018-2020 Alabama	Integrated	Crash Data	~	202	0 COVID PLUS	March And DUI	(Alcohol or Drugs	s) 🗸 🌱 🌠 1/ 1/2018 🗸 7/14/202			
Order:	Natural Order	∼ De:	scending	🖂 🖂 Sup	press Zero-Valu	ued Rows	Sign	ificance: Over	Representation V Threshold: 2.0			
C052:	Number of Vehicle	es	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C050: Has Coordinate C051: E MapClick Used			
▶	1 Vehicle		972	60.64	5281	55.66	1.089*	79.774	C052: Number of Vehicles			
	2 Vehicles		554	34.56	3729	39.30	0.879*	-76.015	C053: Number of Drivers Recorded			
	3 Vehicles		66	4.12	395	4.16	0.989	-0.735	C055: Number of Motorists Recorded			
	4 Vehicles		8	0.50	69	0.73	0.686	-3.658	C056: Number of Non-Motorists Record V			
	5 Vehicles			0.19	5	0.05	3.551	2.155	Sort by Sum of Max Gain			
0) 😪 🖉								🗹 Display Filte			
	2018-2020 Alabama Integrated Crash Data - Filter = 2020 COVID PLUS March And DUI (Alcohol or Drugs) vs. 2018-2020-Normal PLUS March DUI C052: Number of Vehicles											
Frantioned	60 40 20 0		20 Vet	icles	40 Vehi	clas	60 Vehic		80 Vehicles			
	20 venicies 40 venicies 60 venicies 60 venicies											

A significantly larger proportion of Single Vehicle crashes for the COVID DUIs indicates more "unforced" errors during this time. This could be from people who typically do not use drugs or alcohol indulging due to their free time.

4.5 C vs Normal C323 Safety Eqip Driver for DUI Crashes

CARE 10.2.1.1 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - 2020 COVID PLUS March And DUI (Alcohol or Drugs) v											
🔡 Ei	ile <u>D</u> ashboard <u>F</u> ilters	<u>A</u> nalysis	<u>I</u> mpact <u>T</u> oc	ols <u>W</u> indow	v <u>H</u> elp			_ @ ×			
😵 2018-2020 Alabama Integrated Crash Data 🗸 2020 COVID PLUS March And DUI (Alcohol or Drugs) 🗸 🖓 🔢 1/ 1/2018 🗸 7/											
Order	: Max Gain 🗸 De	escending	~	ouppress Zero-	Valued Rows	Signif	ficance: Over	Representation V Threshold: 2.0			
C323:	CU Driver/Non-Motorist Sa	afety Equipmen Frequency	t Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C321: CU Driver/Non-Motorist Seating P C322: CU Driver/Non-Motorist Victim/Oci			
•	None Used - Motor Vehicl	305	19.03	1673	17.63	1.079	22.346	C323: CU Driver/Non-Motorist Safety Eq			
	CU is Unknown	4	0.25	0	0.00	0.000	4.000	C324: CU Driver Airbag Status			
	Not Applicable 14		0.87	60	0.63	1.381	3.863	C325: CU Driver/Non-Motorist Gender			
	Shoulder Belt Only Used	7	0.44	23	0.24	1.801	3.114	C327: CU Driver Ejection Status			
	E CU Driver Not Recorded	7	0.44	29	0.31	1.429	2.100	C328: CU Driver/Non-Motorist Injury Type			
	Lap Belt Only Used	3	0.19	9	0.09	1.973	1.479	C329: CU Driver/Non-Motorist First Aid B			
	E CU Non-Motorist Not R	1	0.06	0	0.00	0.000	1.000	C330. CO Driver/Non-Motorist Transport			
	Unknown	314	19.59	1853	19.53	1.003	0.935	C401: E CU Involved Road/Bridge			
	No Motorcycle Helmet Used	3	0.19	16	0.17	1.110	0.297	C402: E CU Road Surface Type			
	E Helmet Used	1	0.06	6	0.06	0.986	-0.014	C403: CU Roadway Condition			
	Other	1	0.06	7	0.07	0.846	-0.183	C404: E CU Environmental Contributing			
	Dot-Compliant Motorcycle 10		0.62	70	0.74	0.846	-1.827	C406: CU Contributing Material Source V			
	Shoulder and Lap Belt Used 933		58.20	5728	60.37	0.964	-34.747	Sort by Sum of Max Gain			
0) 🗞 🎾							🗌 Displa			
			:	2018-2020 Ala	bama Integrate	d Crash Data					
			C3	23: CU Driver/	Non-Motorist S	afety Equipme	ent				
	80										
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	2										
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	0			1 1							
	cu	J is Unknown	Shoulder Be Only Used	lt Lap Belt	Only Used	Unknown	E Helmet U	Jsed Dot-Compliant Motorcycle Helmet Used			
	C323: CU Driver/Non-Motorist Safety Equipment										

The None Used for drivers under the influence of alcohol was 19.03%, and another 19.59% of the ID/DUI cases were listed as Unknown seatbelt use. Confirmed Shoulder and Lap Belt Used was 58.20%, indicating over 40% were not properly restrained. The differences for the Normal time period were not significantly different where both time periods were constrained to be DUI.