## Senior Driver Lighting Issues David B. Brown November 30, 2020

## Introduction

Senior drivers are defined to be those 65 and older. The data used here are the most recent available; 2018-2020, through about 1/3 of September 2020. The following display is a comparison of 65 and older drivers against those who are younger than 65 for *all lighting conditions* during this time period. Drivers 65 and above have the column labels of *Subset* for their two columns, while those aged less than 65 have the column labels of *Other*.

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<b>6</b> 2	2018-2020 Alabama Integrated Crash Data	~	Age	Causal Drvr 6	5 and above			~ 9	1/ 1/	/2018 ∨
Order	Max Gain V Descending V	Suppress Zero-Valued Rows			Significa	nce: Over f	Representatio	n ~	Threshold:	2.0
C031	Lighting Conditions	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C031: L	ighting Cond	itions
•	Daylight	33075	83.30	259694	70.70	1.178*	5004.330			
	Not Applicable	71	0.18	750	0.20	0.876	-10.068			
	Other	23	0.06	347	0.09	0.613	-14.508			
	Dark - Roadway Lighted	61	0.15	1062	0.29	0.531*	-53.793			
	E Dark - Unknown Roadway Lighting	79	0.20	1326	0.36	0.551*	-64.329			
	E Dark - Continuous Lighting One Side of Roadway	128	0.32	2012	0.55	0.589*	-89.480			
	Unknown	28	0.07	1368	0.37	0.189*	-119.869			
	Dusk	985	2.48	11186	3.05	0.815*	-224.110			
	Dawn	314	0.79	5419	1.48	0.536*	-271.747			
	E Dark - Continuous Lighting Both Sides of Roadway	729	1.84	12133	3.30	0.556*	-582.472			
	E Dark - Spot Illumination One Side of Roadway	756	1.90	12480	3.40	0.560*	-592.980			
	E Dark - Spot Illumination Both Sides of Roadway	1393	3.51	23537	6.41	0.548*	-1151.146			
	Dark - Roadway Not Lighted	2062	5.19	36005	9.80	0.530*	-1829.828	Sort b	y Sum of Max G	Gain
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	Not Applicable Dari	: - Roadway Lighted	E Dark Continuo Lighting One Side of Roadw	JS e ay	Dusk	E Dark - Con Lightin Both Sid of Roadv	tinuous E g I es vay c	Dark - Spot Illumination Both Sides of Roadway		
			C031:	Lighting Con	ditions					

Straight comparisons by time of day are skewed by the fact that older people choose to travel during the day and avoid the dark-time hours. To account for this, the further comparisons given below were limited to the nighttime darker conditions, i.e., dark, all dark artificial lighting conditions, and also including dusk and dawn. These were compared for various attributes between the 65 and older drivers and those aged less than 65 for their crashes that occurred during these lighting conditions only.

## Older Driver Compared to Younger Drivers, Both for Night-Time Only

#### **Summary of Findings**

Then following findings are given in the order that they appear in the displays below, which was generally in the order of the sum of Max Gain (those with the largest significance in their departure from expectation:

- C031 Lighting Conditions. Daylight was excluded in the comparisons. Clearly, the most significant time period for the older driver is dusk. This is over-represented by an Odds Ratio of 1.385, i.e., the proportion is over 38% higher than expected. See the discussion after the display for this item.
- C015 Primary Contributing Circumstances (PCCs). All of the significantly overrepresented PCCs could be linked to vision problems, as can most of the rest of the overrepresentations that are not statistically significant. See the discussion after the display.
- C023 Manner of Crash. Clearly there are major differences between the Manner of Crash of the older drivers at night and those of the younger drivers at night. The first 8 of these have significant over-representations. Their severity and chances of being caused by vision problems are discussed along with the display.
- C129 CU Vehicle Maneuvers. Older drivers are having major problems with Left Turns, followed by Changing Lanes and Turning Right. They are also significantly over-represented in being Stopped in Traffic. The "Changing Lanes" over-representation is potentially indicative of their not being able to see the lane division paint striping clearly.
- C017 First Harmful Event. Collisions with other vehicles in traffic (and parked) generally eclipses all other events. This is one of the few subsets that has an over-representation in the Collision with Vehicle in Traffic category. Clearly older drivers have most (over 65%) of their problems at night with other vehicles.
- C025 Number of Vehicles. As would be expected from C017, single vehicle crashes are significantly under-represented for senior drivers, while two-vehicle crashes are over-represented, occurring over twice as often as all other number of vehicle categories combined.
- C008 Time of Day. Senior drivers are significantly over-represented in the earlier dusk and night-time hours from 3 PM through 9 PM, after which they become significantly under-represented through 6 AM. These hours include the dusk times, which are the

lighting conditions that have the highest over-representation. Lighting problems tend to be magnified in these "in-between" conditions.

- C004 Month. Consistent with the above findings, those months that have earlier dusk hours (e.g., November, December and January) are over-represented. The combination of time of day, month and the effects of daylight savings time all work together to create the problems that senior drivers have with dusk, which accounts for over 15% of senior driver nighttime crashes, and which is over-represented by nearly 40%.
- C011 Highway Classification. Interstates and county roads tend to be the most underrepresented for senior drivers, although the numbers on these roads are still significant, collectively accounting for 24.27% if their crashes in the darker hours. Their most overrepresented highway classifications are State, Federal and Municipal highways. As we have seen above, Municipal Highways may be over-represented because of the preference of Senior Drivers to drive near the large cities. The State and Federal overrepresentations are probably those that can only be addressed by ALDOT.

See the IMPACT displays below for more details on these findings.

# **IMPACT Displays**

### C031 Lighting Conditions (defined identically for both of the subsets)



The difference between this comparison and the one in the Introduction section is that this comparison is restricted to just the dark (including dusk and dawn) times for both age subsets. This serves also to define the comparisons for the remaining IMPACT displays in this section. The comparisons will be for all lighting conditions *except daylight*.

It is important to distinguish between what is causing crashes and what is just the results of the older driver preference. The IMPACT display immediately above tends to "readjust" the previous similar analyses to account for driver preference caused differences. For example, we do not see the over-representation at dusk to be caused by senior driver preference. Rather, we tend to believe it is the result of being "caught out after dark" as opposed to intentionally wanting to drive at that time.

The next four over-represented items, where the roadways are lit, could be the result of Senior Driver preference, especially the Continuous Lighting categories, which would generally be in the urban areas. Note that these differences are not statistically significant, so they should not be give too much emphasis in the problem identification process. The last four all have negative Max Gains, which is an indication that the number of crashes are less than expected. This is not something that would be caused by these four Lighting Conditions, so we can expect that at least some portion of the lower than expected values were caused by Senior Driver avoidance.

The Dark-Roadway Not Lighted is significantly under-represented, and thus quite interesting. The inference would be that senior drivers could be safer in areas where there is no lighting at all than in some of the areas that have lighting. However, the following cross-tabulation shows that the both the "Dark – Roadway Not Lighted" and the "Dark – Roadway Lighted" categories are predominantly rural categories. For those who live in the rural areas and know their roads well, it would be expected that the lighting might not have much of an effect on crash causation.

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	Rural	Urban	TOTAL									
Dusk	177	808	985									
Dawn	87	227	314	1								
Dark - Roadway Lighted	57	4	61	1								
Dark - Roadway Not Lighted	1289	773	2062									
E Dark - Unknown Roadway Lighting	3	76	79	1								
E Dark - Spot Illumination One	107	649	756									
E Dark - Spot Illumination Both	87	1306	1393									
E Dark - Continuous Lighti	14	114	128	]								
E Dark - Continuous Lighti	E Dark - Continuous Lighti 24 705											
TOTAL	1845	4662	6507									
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<b>6</b>	2018-2020 Alabama Integrated Crash Data		$\sim$	Age	Causal Dr	65+ Darke	er Times	✓ ♥ 1/ 1/2018
Order	Max Gain V Descending V	⊡ Si	uppress Z	Zero-Valu	ed Rows	Signific	ance: Ove	r Representation V Threshold: 2.0 🛓
C015	Primary Contributing Circumstance	Subset	bset Subset Other Other Odds quency Percent Ratio					C007: Week of the Year C008: Time of Day
•	E Failed to Yield Right-of-Way from Stop Sign	441	6.78	2875	3.30	2.052*	226.0	C010: Rural or Urban
	Improper Lane Change/Use	481	7.39	3505	4.03	1.836*	218.9	C011: Highway Classifications
	Made Improper Turn	260	4.00	1390	1.60	2.502*	156.0	C012: Controlled Access
	E Failed to Yield Right-of-Way Making Left or U	389	5.98	3382	3.89	1.539*	136.1	C015: Primary Contributing Circumstance
	Unseen Object/Person/Vehicle	695	10.68	7703	8.85	1.207*	119.1	C016: Primary Contributing Unit Numbe
	E Failed to Yield Right-of-Way from Driveway	141	2.17	952	1.09	1.981*	69.831	C017: First Harmful Event
	E Crossed Centerline	132	2.03	898	1.03	1.966*	64.868	C018: Location First Harmful Event Rel t
	Other	248	3.81	2579	2.96	1.286*	55.202	C019: E Most Harmful Event
	E Failed to Yield Right-of-Way from Yield Sign	75	1.15	365	0.42	2.749*	47,714	C020: E Distracted Driving Opinion
	E Ban off Road	276	4.24	3082	3.54	1.198*	45.599	C022: E Type of Roadway Junction/Featu
	Improper Backing	161	2.47	1558	1.79	1.382*	44.529	C023: E Manner of Crash
	E Other Improper Action	113	1 74	991	1 14	1.525*	38 916	C024: School Bus Related
	Vision Obstructed	63	0.97	357	0.41	2.361*	36.312	C025: Crash Severity
	E Other Failed to Yield	82	1.26	619	0.71	1 772*	35 725	C026: Intersection Related
		100	1.54	910	1.05	1.470*	31.971	C028: Mileposted Route
	E Failed to Yield Bight of Way Making Bight Turn	52	0.90	286	0.33	2 / 32*	30.619	C029: National Highway System
		50	0.00	415	0.49	1.902*	27.976	C030: Functional Class
	F Failed to Xald Dickt of Way from Taffia Stand	140	0.91	410	1.02	1.302	27.370	C031: Lighting Conditions
<u> </u>	E Pailed to Held Night-or-Way from Tranic Signal	140	2.27	10/3	1.52	1.102	22.702	C032: Weather
		168	2.58	1967	2.26	1.142	20.953	C033: E0Cale
	E Failed to Yield Right-of-Way at Uncontrolled I	38	0.58	2/5	0.32	1.848*	17.442	C035: Police Notification Delay
	Improper Parking/Stopped in Road	32	0.49	268	0.31	1.597*	11.965	C036: Police Arrival Delay
	E Failed to Yield Right-of-Way Making Right Tur	13	0.20	65	0.07	2.675	8.141	Sort by Sum of Max Gain
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	2018-2020 Alabama Integrated C	irash Data	a - Filter⊧	= Age Cau	isal Dr 65+	Darker 1	Times vs. Ag	ge Cau Dr LT 65 AND Dark
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# **C015** Primary Contributing Circumstances

C015: Primary Contributing Circumstance

The above presents all of the over-represented categories (asterisk on the Odds Ratio). Those with a red background had more than twice their expected proportion of crashes. The table is in Max Gain order so those that had fewer crashes will fall lower on the list even though they may have a higher Odds Ratio than those above. The reason for this is the number of crashes that are under consideration – those with a large number will tend toward a higher Max Gain.

The top 7 of these, which are the ones that have significant over-representations, could easily have been caused by vision deficiencies. Looking down the list, many of the others could also be caused by vision problems.

#### **C023 Manner of Crash**



Clearly there are major differences between the Manner of Crash of the older drivers at night and those of the younger drivers at night. The first 8 of these have significant over-representations. These tend to be more sever crashes as well as shown by the Severity by Manner of Crash cross-tab given below. Note the red in the first three columns, which indicates a percentage for that cell that is greater than 10% higher than that of the corresponding Total column value.

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2018-2020 /	Nabama Integrated C	Crash Data	$\sim$	Age Causal Drvr 65	and above	~	P 😨 1/ 1	/201
Suppress Zero Va	lues: Rows and Col	umns 🗸 Select	Cells: 🔳 🗸 🔣	9	Column	: Crash Severity ; R	ow: E Manner of Cra	sh
	Fatal Injury	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	Property Damage Only	Unknown	TOTAL	
Non-Collision	0	4	14	18	185	13	234	
Single Vehicle Crash (all types)	100	410	795	476	3310	120	5211	1
Head-On (front to front only)	30	77	133	126	438	25	829	
Angle Oncoming (frontal)	12	63	179	176	772	38	1240	
Angle (front to side) Same Direct	5	17	71	104	1412	40	1649	
Angle (front to side) Opposite Dir	9	45	184	215	1061	61	1575	
Rear End (front to rear)	16	132	566	1096	8390	222	10422	]
Side Impact (angled)	16	108	404	567	4114	124	5333	
Side Impact (90 degrees)	76	237	758	791	3416	95	5373	]
Sideswipe - Same Direction	2	21	92	156	4396	74	4741	]
Sideswipe - Opposite Directio	2	10	40	33	594	20	699	
Causal Veh Backing: Rear to	0	1	5	16	1085	34	1141	
Causal Veh Backing: Rear to	0	0	4	3	293	10	310	
Other	4	24	79	45	716	38	906	
Unknown	0	0	3	3	22	13	41	
TOTAL	272	1149	3327	3825	30204	927	39704	

## Crosstab: Crash Severity by Manner of Crash

# Manner of Crash

Side Impact (angled)	699
Sideswipe - Same Direction	670
Side Impact (90 degrees)	675
Angle (front to side) Same Direction	245
Angle (front to side) Opposite Direction	269
Sideswipe - Opposite Direction	164
Angle Oncoming (frontal)	222
Causal Veh Backing: Rear to Side	103

Nun	nber of Crashes	Potential Vision Cause
	699	Medium
	670	High
	675	High
	245	High
tion	269	Medium
	164	Medium
	222	Medium
	103	High

## C129 CU Vehicle Maneuvers

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C129: C	U Vehicle Maneuvers	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C123: CU Driver Officer Opinion Drugs						
<u>۲</u>	Furning Left	1117	17.22	9514	10.95	1.572*	406.344	C125: E CU Driver Drug Test Type Given						
E	Changing Lanes	465	7.17	3926	4.52	1.586*	171.744	C126: CU Driver Alcohol Test Results						
Т	Furning Right	446	6.87	3821	4.40	1.563*	160.587	C127: E CU Driver Drug Test Results						
E	Entering Main Road	200	3.08	1606	1.85	1.667*	80.039	C129: CU Vehicle Maneuvers						
B	Backing	281	4.33	2753	3.17	1.366*	75.363	C130: E CU Non-Motorist Maneuvers						
U	Jnknown	55	0.85	299	0.34	2.463*	32.666	C201: CU Vehicle Most Harmful Event						
S	Stopped in Traffic	40	0.62	257	0.30	2.084*	20.803	C202: CU Contributing Circumstance						
E	Stopped for Sign/Signal	29	0.45	234	0.27	1.659*	11.521	C204: E CU Sequence of Events #1						
N	Making U-Tum	46	0.71	480	0.55	1.283	10.146	C205: E CU Sequence of Events #2						
L	egally Parked	5	0.08	29	0.03	2.308	2.834	C206: E CU Sequence of Events #3						
	legally Parked	13	0.20	144	0.17	1.209	2.244	C207. E CO Sequence of Events #4 C208: CU Model Year						
0	Other	59	0.91	762	0.88	1.037	2.082	C209: CU Make						
E	Leaving Main Road	28	0.43	454	0.52	0.826	-5.912	C210: CU Body (Passenger Cars Only)						
E	Overtaking/Passing	33	0.51	779	0.90	0.567*	-25.188	C211: E CU Owners State						
S	Slowing/Stopping	224	3.45	3468	3.99	0.865	-35.045	C212: CU License Tag State						
E	Negotiating a Curve	271	4.18	6699	7.71	0.542*	-229.387	C214: E CU Emergency Status						
	Novement Essentially Straight	3176	48.95	51634	59.45	0.823*	-680.841	Sort by Sum of Max Gain						
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	2018-2020 Alabam	a Integrated Cr	ash Data ·	-Filter = Age	Causal Dr 68	5+ Darker T	imes vs. Age	Cau Dr LT 65 AND Dark						
				C129: CU V	ehicle Maneu	ivers								
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		Bac	king		Legal	ly Parked		Slowing/Stopping						
				C129:	CU Vehicle M	laneuvers								

Older drivers are having major problems with Left Turns, followed by Changing Lanes and Turning Right. They are also significantly over-represented in being Stopped in Traffic.

#### C017 First Harmful Event

CA	ARE 10.2.1.3 - [IMPACT Results - 2018-2020 A	labama Int	egrated C	rash Data	- Age Cau	usal Dr 65+	- Darker Ti	mes AND Not First 🗕 🗆 🕻	×
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<b>6</b>	2018-2020 Alabama Integrated Crash Data		$\sim$	Age (	Causal Dr 6	5+ Darker	Times	✓ ♥ ♥ ♥ ♥ ♥ 1/ 1/20	18
Order	Max Gain V Descending	~ 🗹	Suppress	Zero-Value	ed Rows	Significar	nce: Over	Representation V Threshold: 2.0	÷
C017	: First Harmful Event	Subset requency	Subset Percent	Other requency	Other Percent	Odds Ratio	Max Gain	C017: First Harmful Event	
<b>•</b>	Collision with Vehicle in Traffic	4094	65.45	45640	55.60	1.177*	615.909		
	Collision with Parked Motor Vehicle	324	5.18	3520	4.29	1.208*	55.751		
	E Collision with Vehicle in (or from) Other Ro	136	2.17	1340	1.63	1.332*	33.883		
	E Crossed Centerline	68	1.09	690	0.84	1.293	15.417		
	E Collision with Non-Motorist: Pedestrian	32	0.51	256	0.31	1.640*	12.491		
	E Collision with Animal: Farm/Ranch	64	1.02	720	0.88	1.166	9.131		
	E Ran Off Road Straight	49	0.78	670	0.82	0.960	-2.059		
	E Collision with Cable Barrier	31	0.50	544	0.66	0.748	-10.457		
	E Collision with Other Non-Fixed Object	75	1.20	1125	1.37	0.875	-10.733		
	E Collision with Curb/Island/Raised Median	34	0.54	654	0.80	0.682	-15.839		
	Collision with Fence	32	0.51	649	0.79	0.647*	-17.458		
	Collision with Mailbox	31	0.50	658	0.80	0.618*	-19.144		
	Collision with Other Fixed Object	47	0.75	878	1.07	0.702*	-19.910		
	E Evasive Action (Swerve/Brake)	50	0.80	997	1.21	0.658*	-25.978		
	Collision with Utility Pole	65	1.04	1202	1.46	0.710*	-26.601		
	E Collision with Animal: Deer	254	4.06	3688	4.49	0.904	-27.052		
	E Collision with Embankment	31	0.50	778	0.95	0.523*	-28.289		
	Collision with Sign Post	32	0.51	824	1.00	0.510*	-30.795		
	E Collision with Guardrail Face	32	0.51	873	1.06	0.481*	-34.529		
	Overtum/Rollover	41	0.66	1276	1.55	0.422*	-56.240		
	Collision with Ditch	205	3.28	3751	4.57	0.717*	-80.853		
	E Ran Off Road Left	142	2.27	2948	3.59	0.632*	-82.658		
	Collision with Tree	150	2.40	3581	4.36	0.550*	-122.898		
	E Ran Off Road Right	236	3.77	4759	5.80	0.651*	-126.669	Sort by Sum of Max Gain	
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	E Collision with Non-Motorist: Pede	n strian C	E Collis Curb/Island/F	sion with Raised Media	Col in	ision with Uti	ility Pole	Overturn/Rollover	
				C017: Fin	st Harmful	Event			

All items with less than 30 crash occurrences have been eliminated from the above display. Collisions with other vehicles in traffic (and parked) generally eclipses all other events. This is one of the few subsets that has an over-representation in the Collision with Vehicle in Traffic category. While the number of such crashes is generally high, it is most often under-represented for most crash types.

#### **C025** Number of Vehicles

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E E	i <b>le <u>D</u>ashboard <u>F</u>il</b>	ters <u>A</u> naly	sis <u>I</u> mpa	ct <u>L</u> ocat	ions <u>T</u> oo	ls <u>W</u> indo	w <u>H</u> elp		- 8 ×					
<b>6</b>	😢 2018-2020 Alabama Integrated Crash Data V Age Causal Dr 65+ Darker Times V 💡 🍞													
Order	Order: Natural Order Versentation Versentati													
C052	Number of Vehicles	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C201: CU Vehicle Most Harmful E C204: E CU Sequence of Events #	vent 🔨 #1					
•	1 Vehicle	1792	27.54	34499	39.63	0.695*	-787.042	C542: V2 Contributing Circumstar	nce					
	2 Vehicles	4438	68.20	48503	55.72	1.224*	812.061	C019: E Most Harmful Event						
	3 Vehicles	249	3.83	3490	4.01	0.954	-11.902	C052: Number of Vehicles						
	4 Vehicles	16	0.25	448	0.51	0.478	-17.491	C562: V2 Speed Limit						
	5 Vehicles	9	0.14	71	0.08	1.696	3.692	C226: CU Vehicle Damage	~					
	6 Vehicles	3	0.05	21	0.02	1.911	1.430	Sort by Sum of Max Gain						
00	) 😪 🔎													
			2	2018-2020 A	Alabama Inte	grated Crash	Data							
				C05	2: Number o	of Vehicles								
			-						-					
	80													
	> 60													
	40	-												
	Freq													
	20													
	0													
	,	1 Vehicle	2 Vehic	les 3V	/ehicles	4 Vehicle	s 5Veh	icles 6 Vehicles						
				C	052: Numbe	r of Vehicles								

As would be expected from C017, single vehicle crashes are significantly under-represented for senior drivers, while two-vehicle crashes are over-represented, occurring over twice as often as all other number of vehicle categories combined.

C008	Time	of	Day
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🚦 CA	CARE 10.2.1.3 - [IMPACT Results - 2018-2020 Alabama Integrated Crash Data - Age Causal Dr 65+ Darker Times vs — — — — — — — — — — — — — — — — —													
Ei	le <u>D</u> ashboard <u>F</u> ilt	ters <u>A</u> nal	lysis <u>I</u> m	pact <u>L</u> oc	ations <u>T</u>	ools <u>W</u> in	dow <u>H</u> e	elp	_ & ×					
¢?	2018-2020 Alabama Inte	grated Crash	Data		$\sim$	Age Cause	al Dr 65+ Da	arker	Times 🗸 🖓 📆					
	Natural Orden	Descend					r							
Urder		Descend	ing	<u> </u>	uppress ∠er	o-Valu Signi	ficance:	Jver	Representation V Threshold: 2.0					
C008:	Time of Day	Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds	Max Gain	^	C106: CU Driver Age Range 2					
	7:00 AM to 7:59 AM	27	0.41	415	0.48	0.870	-4.024		C120: E CU Driver Employment Status					
	8:00 AM to 8:59 AM	10	0.15	69	0.08	1.939	4.842		C211: E CU Owners State					
	9:00 AM to 9:59 AM	4	0.06	49	0.06	1.092	0.337		C015: Primary Contributing Circumstanc					
	10:00 AM to 10:59 AM	4	0.06	42	0.05	1.274	0.860		C008: Time of Day					
	11:00 AM to 11:59 AM	8	0.12	51	0.06	2.098	4.187		C573: V2 Point of Initial Impact					
	12:00 Noon to 12:59	9	0.14	34	0.04	3.541	6.458		C023: E Manner of Crash					
	1:00 PM to 1:59 PM	8	0.12	46	0.05	2.326	4.561		C129: CU Vehicle Maneuvers					
	2:00 PM to 2:59 PM	11	0.17	67	0.08	2.196	5.991		C017: First Harmful Event					
	3:00 PM to 3:59 PM	40	0.61	321	0.37	1.667*	16.003		C201: CU Vehicle Most Harmful Event					
	4:00 PM to 4:59 PM	325	4.99	2792	3.21	1.557*	116.278		C204: E CU Sequence of Events #1					
	5:00 PM to 5:59 PM	1244	19.12	9792	11.25	1.699*	511.979		C542: V2 Contributing Circumstance					
	6:00 PM to 6:59 PM	1195	18.36	10030	11.52	1.594*	445.187		C511: V2 Driver License State					
	7:00 PM to 7:59 PM	963	14.80	10453	12.01	1.232*	181.565		C052: Number of Vehicles					
	8:00 PM to 8:59 PM	837	12.86	10265	11.79	1.091*	69.619		C562: V2 Speed Limit					
	9:00 PM to 9:59 PM	530	8.15	8571	9.85	0.827*	-110.742		C226: CU Vehicle Damage					
	10:00 PM to 10:59 PM	281	4.32	6795	7.81	0.553*	-226.974		C516: V2 DL Restriction Violations #1					
	11:00 PM to 11:59 PM	154	2.37	5136	5.90	0.401*	-229.952		C541: V2 Vehicle Most Harmful Event					
	Unknown	2	0.03	84	0.10	0.318	-4.280	~	Sort by Sum of Max Gain					
00	) 🗞 🖉													
				2018-2020	) Alabama Ir	ntegrated Cra	ash Data							
					C008: Tin	ne of Day								
	20							_						
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	0	4:00 AM t	o 4:59 AM	9:00 AM	to 9:59 AM	2:00 PM	1 to 2:59 PM	M	7:00 PM to 7:59 PM Unknown					
					C008	3: Time of Da	av .							

Senior drivers are significantly over-represented in the earlier dusk and night-time hours from 3 PM through 9 PM, after which they become significantly under-represented through 6 AM.

#### C004 Month

CARE 10.2.1.3	3 - [IMPAC	T Results - 2018-	2020 Alaban	na Integrate	d Crash Data	a - Age Caus	al Dr 65+ Da	rker Times vs. Age C	–		×
🖡 <u>F</u> ile <u>D</u> ash	board <u>I</u>	<u>F</u> ilters <u>A</u> nalysi	s <u>I</u> mpact	<u>L</u> ocation	s <u>T</u> ools	<u>W</u> indow	<u>H</u> elp			-	ð ×
2018-2020	Alabama In	ntegrated Crash Da	ta	~	Age	Causal Dr 65	+ Darker Time	s	~ 9	12	1/ 1/
Order: Natural Or	rder	✓ Descending	~	Suppre	ss Zero-Valu	ed R Signific	ance: Over	Representation	✓ Threshole	d: 2.0	÷
C004: Month		Subset Frequency	Subset Percent	Other Frequency	Other Percent	Odds Ratio	Max Gain	C225: CU Citatio C054: Number o	n Issued f Persons R	ecorded	^
▶ January		1000	15.37	11487	13.20	1.165*	141.266	C007: Week of th	e Year		
February		807	12.40	9819	11.28	1.099*	72.961	C004: Month	f Motoriste E	ocordod	
March		507	7.79	7793	8.95	0.870*	-75.581	C114: CU Driver	License Sta	tus	
April		304	4.67	5885	6.76	0.691*	-135.945	C324: CU Driver	Airbag Statu	s	
May		279	4.29	5514	6.33	0.677*	-133.210	C018: Location F	irst Harmful	Event R	elt
June		291	4.47	5104	5.86	0.763*	-90.560	C203: CU First H	larmful Even	t Locatio	n
July		284	4.36	5149	5.92	0.738*	-100.924	C409: CU Traffic	Control	ms #5	
August		372	5.72	5914	6.79	0.841*	-70.113	C021: Distance t	o Fixed Obje	ect	
Septembe	r	353	5.42	5169	5.94	0.914	-33.419	C011: Highway C	lassification	is	
October		497	7.64	6300	7.24	1.055	26.031	C121: CU Driver	Condition	ninian	
November	r	836	12.85	8924	10.25	1.253*	168.868	C020: E Distract	a Driving O d Route	pinion	~
December	r	977	15.01	9984	11.47	1.309*	230.626	Sort by Sum of N	lax Gain		
	2018-20	020 Alabama Inte <u>c</u>	rated Crash	Data - Filter :	= Age Causal C004: Mon	I Dr 65+ Dark th	er Times vs.	Age Cau Dr LT 65 AN	D Dark		
20 - 15 - المعناد مع المعناد المعناد مع المعناد مع المعناد مع المعناد مع المعناد مع المعناد مع المعان المعاما مع المعان المعاما مع المعان المعان المعان المعاما مع المعان الما المعان المعان المعان المعان المعان المعان		February		<b>D</b>	June			october	December		
					C004:	Month					

The combined effects of the shorter days during the autumn months and daylight savings time work together to create the problem time that we see at dusk. Dusk is just a short half hour compared to the other lighting conditions, but it is accounts for over 15% of the nighttime crashes, which is close to 40% more than are expected.



# **C011 Highway Classification**