

# Young Driver Crash Trends by Age for 2006-2015

David B. Brown

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

October 2016

This summary report of recent causal driver age was motivated by a GHSA study that is available on the SHA GHSA page: <http://www.safehomealabama.gov/ServiceGroups/GHSA.aspx>

The study reported by GHSA found that older teen-age drivers were trending higher in their involvement in fatal crashes. This result was based on national FARS data, and the results should be considered by all states as they design their countermeasure programs.

An attempt was made to replicate these results in Alabama, recognizing that the comparatively small sample size of fatal crashes within Alabama might not yield statistically significant results. We were unable to replicate the findings of the GHSA reported research. However, in the process of the research some other factors were uncovered with regard to the 21-25 year old age group that could be of use in designing countermeasures for this age group in the future.

The following shows the 5-year trend in crashes caused by the 16-20 and 21-25 age groupings:

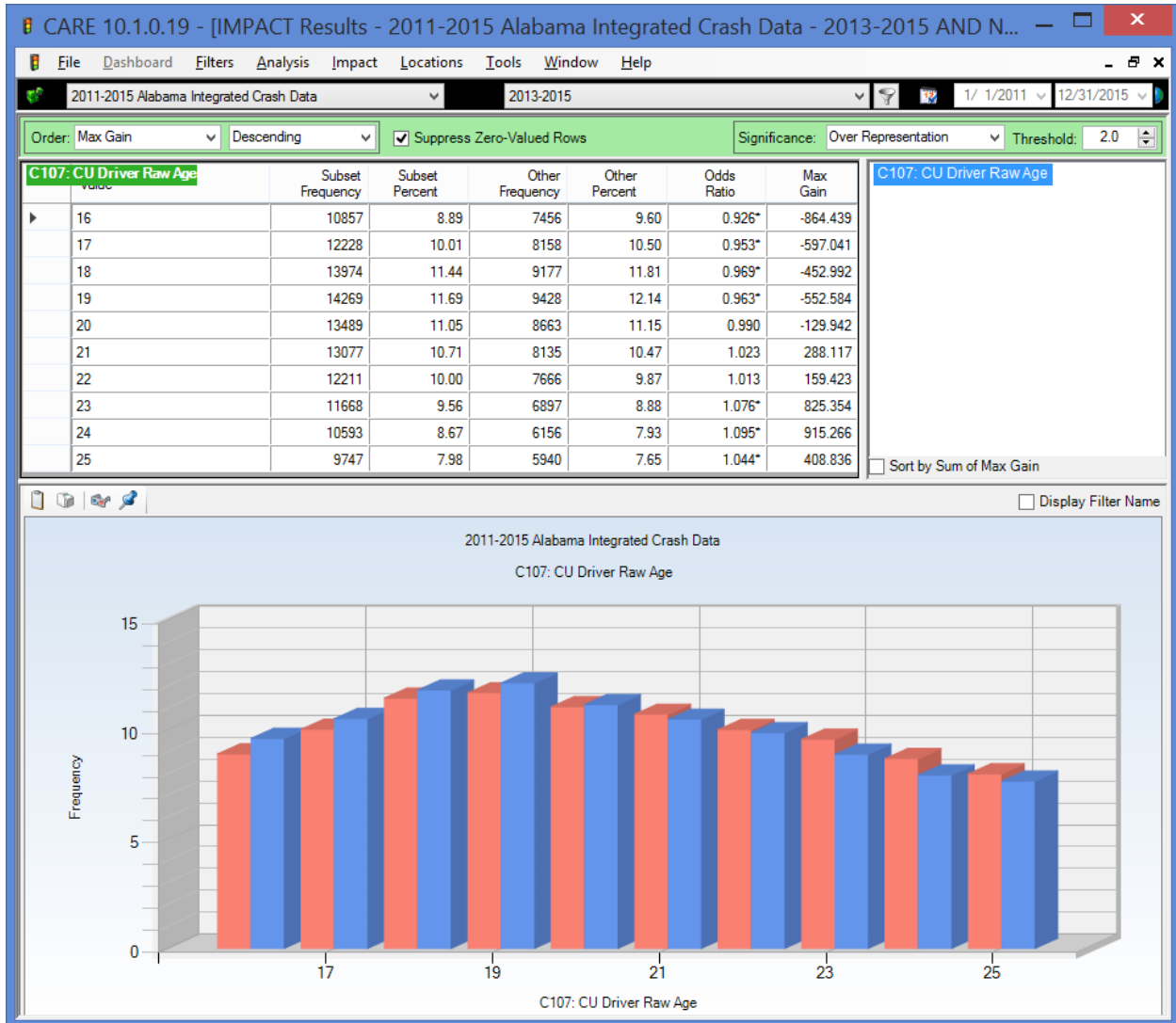
	2011	2012	2013	2014	2015	
16 to 20 Years	21580	21302	20696	20442	23679	107699
	16.78%	16.58%	16.24%	15.33%	16.06%	16.19%
21 to 25 Years	17398	17396	17929	18556	20811	92090
	13.53%	13.54%	14.06%	13.92%	14.11%	13.84%

In the ten year study a further subdivision by older and younger teenage drivers was performed, but the results did not vary from the expected random variation. The results of the table above, which were significant, are contrary to the national findings of the GHSA in its recent report. Instead of increases within the 16-20 age range, this shows a problem emerging, and a potential trend, for increased crashes caused by 21-25 aged drivers in the 2013-2015 three-year time frame.

Display 1 compares ages for the 2013-2015 time period (represented by red bars in the chart) to the 2011-2012 years (blue bars in the chart). The 2011-2012 time frame in this regard was not significantly different from the previous five years, and therefore it serves as a proxy for that time. Changes measured in the most current years are most relevant to the development of traffic safety policies.

The next step in the research was to try to find out what countermeasures might be most effective in reversing the increasing trend for this age group. To do this we formed a subset of the crashes with 23-25 aged causal drivers in years 2013-2015. The control subset was its complement in the entire five-year dataset.

Display 1. Comparison of Causal Driver Ages in 2013-2015 vs 2011-2012



Considering Display 1, the comparison to determine crash attributes and other demographic was essentially between a test subset of the three over-represented cells (ages 23, 24 and 25 for years 2013-2015) against a control subset that was the complement of this, which would be all other records (all other ages over all of the years except those in the test subset). The following findings present an over-representation factor, which is the corresponding odds ratio (OR), the odds of a driver in the subset having that attribute divided by the odds of those outside the subset having that same attribute. As an example, the odds ratio (OR) for employment was 1.383, so its proportion was 38.3% higher than expected. Statistical tests were performed on all ORs calculated, and all of those presented were found to be statistically significant. If there were absolutely no difference in the proportions, the OR would be 1.000. The following attributes showed significant differences, presented roughly in the order of their significance:

- Employed over-represented by an OR factor of 1.383 – their employment probably required more driving than those unemployed. This does show a sense of independence on the part of the test group.
- Alcohol tests significantly over-represented (1.56 OR factors averaged over) for 0.04-0.079; 0.08 to 0.099 and 0.1 to 0.199. Close to 600 person were recorded to have been DUI out of the 32,008 in the subset. Officers' opinion positive for DUI had a significant OR factor of 1.236. There was no corresponding evidence of an over-representation of drug abuse. Single vehicle crashes were significantly higher (1.110). Saturday and Sunday were over-represented, Sunday was significant with a 1.11 OR. Early mornings after midnight were also over-represented with significant ORs ranging from 1.211 at 7 AM to 1.618 at 3-4AM. These time correlations are mentioned for two reasons: (1) they are highly correlated with alcohol abuse, and (2) it is well known that DUI is very largely under-reported with well less than 10% of perpetrators being apprehended.
- No driver license included 1406 of the subset, and it was over-represented by a factor of 1.60, which often tends to indicate a loss of license due so DUI.
- Order of top significantly over-represented Causal Unit Contributing Circumstances: Followed too Close (OR=1.34), Driving too Fast for Conditions (1.44), Misjudge Stopping Distance (1.14), E Swerved to Avoid Vehicle (1.38), E Fatigued/Asleep (1.53), DUI (1.22), E Ran off Road (1.18), Over Speed Limit (1.20). All of these Contributing Circumstances tend to be correlated with DUI.
- Distractions that were most significantly over-represented: Distracted by Passenger (1.27), Distracted by Use of Electronic Communication Device (1.42), Distracted by Use of Other Electronic Device (1.32), Distracted by Fallen Object (1.19), Fatigued/Asleep (1.38).
- Roadway classifications: Interstates were significantly over-represented, Federal and County roads were significantly under-represented.
- Factors for which there were no significant differences, indicating that they should probably not enter into the decision-making: Month, Rural/Urban, Intersection Related, CMV Involved, Gender.

Causal driver age changes should continue to be monitored so that the appropriate changes can be made to policy to assure the optimal allocation of traffic safety resources. The primary countermeasures recommended are those related to the use of alcohol.