

## Policy Brief: Blood Alcohol Concentration (BAC)

### Summary:

In Michigan, a person is deemed to be operating while intoxicated by having a blood alcohol concentration (BAC) of 0.08 grams or more per 100 milliliters of blood. New proposed rules would reduce the legal limit from 0.08% BAC to 0.05% BAC. If passed, Michigan would join Utah as the second State to adopt a new, lower BAC limit for driving. In addition to Utah, many countries around the world have BAC limits of 0.05 or lower, including but not limited to: Australia (0.05%), France (0.05%), Spain (0.05%), Russia (0.04%), and Poland (0.02%).<sup>1</sup>

### Public Health Impact:

Research shows a reduction in BAC from 0.08% to 0.05% reduced traffic fatalities by 8-12 percent among those aged 18-49.<sup>2</sup> According to the National Academies of Sciences Engineering and Medicine, in 2016, alcohol-impaired driving was responsible for 10,497 lives lost, or approximately 28 percent of all highway traffic fatalities.<sup>3</sup> This represents a 1.7 percent increase from 2015.<sup>3</sup>

### BAC Effects on Driving:

According to the National Transportation Board (Table 1), research findings show the effects of alcohol on driving-related skills can occur at levels as low as 0.01% BAC.<sup>2</sup> In addition to impairing driving-related performance, alcohol use is associated with a decrease in seat belt use.<sup>2</sup>

Table 1		
BAC (g/dL)	Type of Impairment	
	By Lowest BAC at Which Impairment Was Found	By First BAC at Which 50% or More of Behavioral Tests Indicated Consistent Impairment
0.001–0.009	Driving Simulator Lane Deviations, Divided Attention	Driving Simulator Lane Deviations, Divided Attention
0.010–0.019	Drowsiness, Psychomotor Skills, Cognitive Tasks, Tracking	Drowsiness
0.020–0.029	Choice Reaction Time, Visual Functions	
0.030–0.039	Vigilance, Perception	Vigilance
0.040–0.049	Simple Reaction Time	Perception, Visual Functions
0.050–0.059		Tracking
0.060–0.069		Cognitive Tasks, Psychomotor Skills, Choice Reaction Time
0.070–0.079		
0.080–0.089		
0.090–0.099		
≥0.100	Critical Flicker Fusion <sup>a</sup>	Simple Reaction Time, Critical Flicker Fusion

<sup>a</sup> Determination of the lowest frequency at which a flickering on-off light appears to be constant.

### Alcohol-Impaired Driving in Michigan:

In 2017, there were 10,265 crashes that involved alcohol in Michigan, a 5 percent increase from 2016.<sup>4</sup> On average, that's 28 alcohol-related crashes per day. Of the 937 fatal crashes that occurred in Michigan, 320 (34.2 percent) were alcohol related.<sup>4</sup> Within those 320-alcohol related fatal crashes, there were a total of 359 lives lost, a 31 percent increase from 2016-2017.<sup>4</sup>

<sup>1</sup> World Health Organization. Legal BAC limits by country. Retrieved from: <http://apps.who.int/gho/data/view.main.54600>

<sup>2</sup> National Transportation Safety Board. 2013. Reaching zero: actions to eliminate alcohol-impaired driving.

<sup>3</sup> The National Academies of Sciences Engineering and Medicine. 2018. Getting to zero alcohol-impaired driving fatalities a comprehensive approach to a persistent problem.

<sup>4</sup> Michigan Traffic Crash Facts. 2019. Retrieved from: <http://publications.michigantrafficcrashfacts.org/2017/MTCFVol1.pdf>