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Introducing a Global Maximum BAC Standard: Why It Matters

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Introducing a Global Maximum BAC Standard:

Why It Matters.

INTRODUCTION

The World Health Organization (WHO) estimates that each year approximately 1.24 million people die because of road crashes and between 20 and 50 million are injured.[i] Road crashes impact us all, whether young or old, male or female, rich or poor. They can impact us directly as a victim or a family member of a crash, or indirectly from the economic costs associated with future medical care, loss of productivity, and property damage. [ii]

In March 2010, the United Nations recognized this destructive and growing public health threat and proclaimed 2011-2020 as the Decade of Action for Road Safety. Focusing on five "pillars" of road safety (Road Safety Management; Safer Roads and Mobility; Safer Vehicles; Safer Road Users; and Post Crash Responses), the proclamation's intent is to have countries implement evidence-based steps to develop safer roads and highways for everyone. Since that historic proclamation, positive actions have been taken, however, more must be done.

The 4th pillar, Safer Road Users, focuses on human behavior examining five key risk factors: drinking and driving, speeding, failing to use motorcycle helmets, seat belts, and child restraints.[iii] Distracted driving, in particular when using cell phones, is also a growing concern that is discussed by the World Health Organization (WHO).[iv] The five key risk factors are activities that require we as humans change our behavior. However to change societal behavior in the short term, it takes strong laws, effective enforcement and public awareness campaigns to encourage and enforce societal change.

One of the five risk factors is drinking and driving. It is this behavior that not only impacts the person doing the behavior, but also those innocent drivers and passengers also on the road. It even impacts those who are doing everything they can to be safe drivers. Called by different names, Drunk Driving, Impaired Driving, Drink Driving, the idea is the same—a person who drinks too much alcohol and then drives.

This paper will look at the issues surrounding drinking and driving, and it will suggest important steps to aid in the reduction of road fatalities and injuries resulting from drink driving.

ALCOHOL

Research demonstrates that even a single drink has an impact on a person's judgment and abilities. It is also clear that a person's judgment and abilities become degraded even more as the person continues to drink.

To understand why there is a need for a Blood Alcohol Concentration (BAC) law, it is important to understand how alcohol affects each and every one of us. As we age, from birth to adulthood, our bodies experience significant changes. At birth, we start to breathe, and our bodies' vital functions develop. Over time, our control over our muscles improves and we learn to crawl, walk, and then run. Finally, the brain's higher learning skills develop, we learn how to think analytically and process vital information for our wellbeing. Alcohol is a central nervous system depressant, and it works on our bodies in reverse order. The first thing impacted by alcohol is our judgment and self-control. Next, we lose our muscle control, and then if we drink sufficient quantities, our vital functions will stop and we die. When the visible signs of intoxication are obvious to others because of a person stumbling or slurring their words, the "invisible" signs such as a person's judgment being affected have already occurred.

If a person has developed a tolerance for alcohol by regularly consuming it, the physical signs are not as obvious. To develop tolerance, a person typically will drink large quantities of alcohol over time and the body learns how to react to this impairment. Thus, there is the perception that the person can "hold their liquor" and be a safe driver. This is absolutely false. Tolerance is the ability to mask the outwards signs of intoxication, however, a person's judgment is still affected. He is not able to react appropriately to new situations. [v]

DRIVING

Driving is a "divided attention" task, it requires a high level of coordination between the hands, feet, and brain, as well as spatial awareness of a person's surrounding as the vehicle moves. Over time, some of these skills become second nature, thus the resulting perception that driving is easy. Yet keeping a vehicle at a constant safe speed, at a proper distance from vehicles in front, in the appropriate lane, and ready to respond to something that is in the distance, and staying alert to other vehicles behind and to the sides essentially all at the same time, require significant skills. These skills take years to fully develop. Because it takes time, new drivers are at the greatest risk for crashes. Inexperienced drivers are more likely to have risky driving behaviors and not recognize many of the hazardous situations. [vi]

ALCOHOL AND DRIVING

Alcohol causes our driving abilities to be diminished, with increased amounts of alcohol causing an even greater reduction. As noted previously, when it is obvious to another person that someone is impaired because of poor muscle control, that person's judgment has already been altered. The impaired [vii] driver is no longer able to properly judge distances or speeds, which puts everyone else on the road at risk.

It is clear that a large percentage of crashes are due to the combination of alcohol and driving.

In many high-income countries about 20% of fatally injured drivers have excess alcohol in their blood, [viii] i.e. blood alcohol concentration (BAC) in excess of the legal limit. In contrast, studies in low- and middle-income countries have shown that between 33% and 69% of fatally injured drivers and between 8% and 29% of non-fatally injured drivers had consumed alcohol before their crash. [ix]

For decades, one way to determine a person's impairment was to have the driver perform some type of sobriety test. Common tests include saying a person's alphabet, counting, walking a straight line or examining a person's balance. But these tests are subjective and depending on a person's tolerance to alcohol, they can be misleading.

For this reason, many countries have implemented an objective test, one that tests a person's BAC in addition to subjective tests. An individual's BAC is typically determined by a blood, breath or urine test with blood and breath tests as the most common and reliable indicators used. The test measures the weight of alcohol in a certain volume of blood, and typically it is reported as a percentage of ethanol in the blood or breath.

BAC TESTING

Initially, many states in the United States set the BAC level at 0.15%. New York State set the first such law in 1910.[x] Over the years and decades, this level was reduced as the research found impairment at lower BAC levels. Now in the United States, every state has set .08% as the BAC level. Other countries have considered what the BAC level should be, and have set it different levels, many significantly lower than .08%.

As the evidence grows, more countries are setting their BAC at .05% or lower and a number of national and international organizations are calling for a global BAC of .05% or lower. One such organization is the Association for the Advancement of Automotive Medicine (AAAM). After reviewing the evidence it stated:

The scientific evidence accumulated over the past 50 years indicates a direct relationship between rising BAC levels and the risk of being involved in a motor-vehicle crash and documents that driving performance begins to deteriorate significantly at .04–.05 g/dL BAC [citations]. Because alcohol has been shown to have a wide variation of effects from subject to subject, special attention needs to be given to the selection of a BAC level in which the vast majority of drinking drivers are likely to be affected. This level appears to be .05 g/dL BAC. When all of the international evidence on lowering BAC limits is assembled, reviewed, and summarized, it is concluded that lowering the illegal BAC limit to .05 g/dL (or lower for countries that have had .05 g/dL limits for several years) is an effective strategy in reducing impaired driving. [xi]

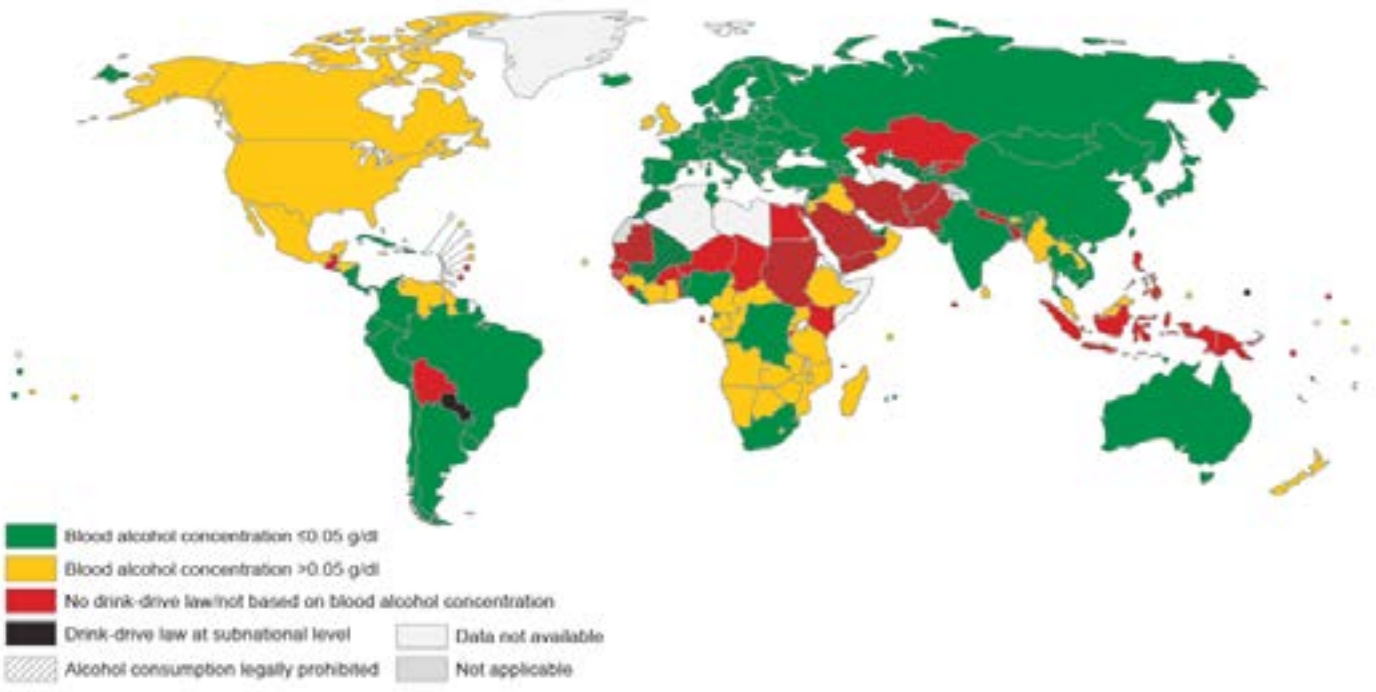
The American Medical Association (AMA) noted in its Scientific Affairs Report (1997) that there is driving-related impairment for many people at any BAC, with substantial and consistent impairment at .04%. It went on to note that as the BAC increased, the likelihood of impairment also increased. [xii]

The U.S. National Transportation Safety Board (NTSB) recently examined the research on setting an effective BAC level.[xiii] Based on the science and also on the actions of many countries, it recommended that all states and territories in the U.S. set a BAC level of .05. The report noted that over 100 countries now have a BAC at .05 or lower. [xiv]

In its 2013 Global Status Report on Road Safety, Supporting a Decade of Action, while calling for a .05% BAC law in every country (including in countries that prohibit alcohol consumption), the WHO noted that high-income countries were more likely to have a .05% BAC law when compared to middle- or low-income countries.[xv] The report also noted that a significant percentage of countries have either no drinking and driving law or have a law that relies on an officer's subjective decision.

Below is a map from the 2013 Global Status Report on Road Safety by WHO showing which countries have implemented a .05 BAC law.

Figure 14
Drink–drive laws, by country/area



As noted, the U.S. NTSB called for a .05 BAC in the United States that resulted in a number of challenges on the need for such a reduction. However, the research is clear, a .05 BAC results in a significant reduction in people killed. As Dr. Mark Rosekind formerly with NTSB stated: "If you actually look at the scientific data available, we know that when you go from .08 to .05 lives get saved. [xvi]

Dr. Rosekind continued saying:

"What is interesting is the NTSB is really trying to focus on the data and safety…what is important about this is that people can debate all they want, . . and I'm waiting for the discussion that addresses it from a scientific standpoint or from a safety standpoint. People can ask all kinds of other questions on this, on enforcing, or social this, or… you can debate all you want, but our recommendation is based on science and safety, trying save lives and prevent injuries." [xvii]

One such research study found the state of Queensland in Australia had a 14 percent reduction in all serious crashes and an 18 percent reduction in fatal crashes when it reduced the BAC law from .08 to .05. [xviii] In New South Wales, another Australian state, it is estimated that the reduction of .08 to .05 prevented 7,291 serious crashes, over 900 fatalities and 3,500 single night-time crashes from 1980 through 1992. [xix]

Today, a majority of countries in Europe have .05 or lower as their legal BAC. Daniel Albalate did a study of those European countries and found that the lower BAC .05 resulted in an 8-12 percent reduction of traffic fatalities for people aged 18-49. In conclusion, he stated:

"To sum up, we have seen that lowering illegal BAC limits has been an effective policy for the whole population when it is accompanied by random checks on the road. Moreover, in disaggregated cases, we have checked that males and young road users, especially in urban zones, are clearly affected by the policy. The rest of drivers from 30 to 49 years old also receive the positive impact of lowering BAC levels." [xx]

As an aside, Mr. Albalate did note that the reduction did not happen overnight.

The research on lowering the BAC to .05 is not as plentiful as it is for reducing the BAC to .08 from .10, which was accomplished in every state in the United States by 2004. The .08 law impacted not just those individuals who might drink to excess and drive regardless of the legal limit, but also the general public. The law acts as a general deterrent and changes the behavior of all drivers at every BAC level.

Finally, why a .05 BAC? It is critical to return to one of the main considerations; the fact that our driving skills significantly deteriorate with a .05 BAC. We are not safe drivers if we have a .05 BAC.

The scientific evidence accumulated over the past 50 years indicates a direct relationship between rising BAC levels and the risk of being involved in a motor-vehicle crash, and documents that driving performance begins to deteriorate significantly at .05 BAC (Moore & Gerstein, 1981; DHHS, 1987; TRB, 1987). Because alcohol has been shown to have a wide variation of effects from subject to subject, special attention needs to be given to the selection of a BAC level in which the vast majority of drinking drivers are likely to be affected. This level appears to be .05 BAC. [xxi]

SETTING A GLOBAL MINIMUM STANDARD

TABLE 1: Alcohol Crash Risk Estimate - BrAC Relative Risk Unadjusted and Adjusted for Age and Gender

BrAC	Unadjusted Risk	Adjusted Risk (Age and Gender)
0.00	1.00	1.00
0.01	0.51	0.54
0.02	0.82	0.85
0.03	1.17	1.20
0.04	1.57	1.60
0.05	2.05	2.07
0.06	2.61	2.61
0.07	3.25	3.22
0.08	3.98	3.93
0.09	4.83	4.73
0.10	5.79	5.64
0.11	6.88	6.67
0.12	8.11	7.82
0.13	9.51	9.11
0.14	11.07	10.56
0.15	12.82	12.18
0.16	14.78	13.97
0.17	16.97	15.96
0.18	19.40	18.17
0.19	22.09	20.60
0.20+	25.08	23.29

A study by the US Department of Transportation-National Highway Traffic Safety Administration (Feb 2015) determined that the risk of collision for drivers increases 50% between .05 to .08*, due to significantly

increased impairment.[xxii] By establishing a maximum legal allowable BAC of .05, the benchmark can be set and provide nations with a target that is based on fact, reason and worlds best practice.

Table 1 shows the increased crash risk as the BrAC[1] increases. The second column has the unadjusted risk with the third column showing the adjusted risk when age and gender are considered.

OTHER HIGH-RISK DRIVERS AND BAC

Any person who drives while impaired is a high-risk driver; however, inexperienced drivers are even at a greater risk for death or injury. Developing the skills necessary for safe driving takes time. When inexperienced drivers consume alcohol and drive, their crash risk is at least three times greater than the risk for experienced drivers. [xxiii] Their judgment is already limited by the lack of experience. Combine that inexperience with alcohol and the research demonstrates increased risk for those drivers and others on the road. In the U.S., zero tolerance laws for drivers under the age of 21 resulted in a 20 percent reduction of traffic fatalities involving drivers 18 to 20 years old. [xxiv]

Also of concern are commercial drivers. Commercial drivers put in long hours driving resulting in fatigue. Many commercial drivers are driving vehicles that are of a greater size/weight than the typical motor vehicle and/or they are transporting members of the public, such as bus drivers or similar public transportation efforts. These individuals have a greater responsibility for the safety and well-being of those also using the road. Fatal crashes involving commercial drivers can result in even greater consequences, such as the impaired truck driver in India that rammed into a bus killing 30 people [xxv] or the truck driver in Mexico that hit a bus killing eleven. [xxvi] These types of news stories can be found around the world. Clearly transportation professionals significantly threaten public safety when they are drinking while "working." For that reason commercial drivers should be held at a higher standard, or in reverse, a lower BAC.

MORE THAN STRONG LAWS

It is important to note that strong laws are a basic requirement for any effective effort to end drinking and driving. But strong laws are not enough. For a comprehensive approach, it is vital to have effective enforcement and an active public awareness campaign in addition to strong laws.

Enforcing the law increases the belief that if a person drives after drinking too much, they will be apprehended. It is that belief that encourages a person to make other choices such as: have a designated driver; use public transportation; or not to drink at all.

However, for the change to last, it is vital to have a continuing public education campaign to publicize any legislative changes. Initially, the changes will spark a national debate on the pros and cons of such a law. This will allow for a discussion for the need and implementation. However, with the implementation of the law, and strong enforcement, people will be arrested and prosecuted. There will be some outcry, "why me?" and push back. The discussion has to continue well beyond the initial implementation, otherwise, the push back could result in weakening the law.

Any societal change in behavior requires an understanding why that change is necessary. It is important to "drive" the message home that this law is making the roads safer for everyone.

As noted in the International Road Federation (IRF) Driver Behaviour Education and Training Subcommittee Position Statement and Guidelines Statement:

Without the laws, the behaviour is not improper; without the messaging there is no understanding of the reason for the laws; and without the enforcement there are no consequences thus no reason to change, education alone is usually insufficient. It takes all three factors combined to change behaviour.

CONCLUSION

Behavioural change does not happen overnight, it takes continued effort and it takes time. The International Road Federation recommends that change starts with (1) every country passing a law that requires anyone with a BAC of .05 or higher be considered driving illegally and be prosecuted for drink driving and (2) a lower BAC limit be implemented for inexperienced or commercial motor vehicle drivers. Any long-term behavioral change also requires that these laws are supported with strong enforcement and a broad public campaign on the need for a .05 BAC.

1 BrAc stands for Breath Alcohol Content. BAC looks at the alcohol content of blood; BrAC looks at the alcohol content in breath. Both are valid when looking at a legal level.

ENDNOTES

i. Global Status Report on Road Safety 2013: Supporting a Decade of Action, World Health Organization (WHO), 2013. It can be obtained at: http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/en/

ii. Fact Sheet #1, Road Safety Basic Facts, WHO. It can be obtained at: http://www.who.int/violence_injury_prevention/publications/road_traffic/1_Road_Safety_Basic_Facts.pdf

iii. Fact Sheet #1, Road Safety Basic Facts, WHO.

iv. Global Status Report on Road Safety 2013: Supporting a Decade of Action, WHO, 2013. Pg. 28.

v. Alcohol and Tolerance, National Institute on Alcohol Abuse and Alcoholism, No 28 PH 356, April 1995. Obtained at: http://pubs.niaaa.nih.gov/publications/aa28.htm

vi. Teen Drivers: Get the Facts, United States Centers for Disease Control and Prevention. Obtained at: http://www.cdc.gov/motorvehiclesafety/teen_drivers/teendrivers_factsheet.html

vii. In this paper, the term impaired is used as opposed to drunk or drink driving. They are all considered the same in this document. Additionally, while "drunk" is a common term used by many, it can be misleading as it implies that a person has to be falling down intoxicated before his or her judgment and abilities are diminished. For a majority of the countries, that is not a correct statement of their laws; a person can be arrested while "impaired" for driving after drinking too much alcohol. In some countries, impairment is not even required.

viii. In the United States it is closer to 33% of all fatal crashes are due to alcohol impairment.

ix. Drinking and Driving: A road safety manual for decision-makers and practitioners Global Road Safety Partnership, (2007) Pg. 4.

x. N.Y. Stats 1910, ch. 374, p. 673, 683 § 290 (May 31, 1910).

xi. Blood Alcohol Concentration Limit for Driving, Association for the Advancement of Automotive Medicine, October 2009, Pg. 7.

xii. Summaries and Recommendations of Council on Scientific Affairs Reports, 1997 AMA Annual Meeting, Pg. 19.

xiii. Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving, National Transportation Safety Board (NTSB), NTSB/SR 13/01 (2013).

xiv. Reaching Zero: Actions to Eliminate Alcohol-Impaired Driving, NTSB, NTSB/SR 13/01 (2013), Pg. 23.

xv. Global Status Report on Road Safety 2013: Supporting a Decade of Action, WHO, Pg. 16.

xvi. Dr. Mark Rosekind, NTSB Board Member (at the time of the interview) being interviewed on NTSB's recommendation for ending impaired driving. Interview by David Wallace, the Traffic Safety Guy, for the Highway to Safety podcast. It can be found at: http://highwaytosafety.com/ntsbs-plan-end-impaired-driving/ Released September 28, 2013.

xvii. Dr. Rosekind, interview for Highway to Safety Podcast, September 28, 2013

xviii. Henstridge, J. Homel, R, Mackay, P. The Long-Term Effects of Random Breath Testing in Four Australian States: A Time Series Analysis, Department of Transport and Regional Development, April 1997, page 102.

xix. Henstridge, J. Homel, R, Mackay, P. The Long-Term Effects of Random Breath Testing in Four Australian States: A Time Series Analysis, Department of Transport and Regional Development. (April 1997), page 49.

xx. Albalate, D. Lowering Blood Alcohol Content Levels to Save Lives: The European Experience, University of Barcelona. (2008) page 22.

xxi. Fell, J., Voas, R., The Effectiveness of Reducing Illegal Blood Alcohol Concentration (BAC) Limits for Driving: Evidence for Lowering the Limit to .05 BAC in Canada, Pacific Institute for Research & Evaluation (May 2003).

xxii. Drug and Alcohol Crash Risk, Traffic Safety Facts Research Note, National Highway Traffic Safety Administration, DOT 812 117 (February 2015)

xxiii. World Report on Road Traffic Injury Prevention, WHO (2004). Pg. 81.Alcohol and Transportation Safety, National Institute on Alcohol Abuse and Alcoholism, No. 52. (April 2001). It can be found at: http://pubs.niaaa.nih.gov/publications/aa52.htm

xxiv. For more information on the crash go to: http://archive.indianexpress.com/news/drunk-truck-driver-rams-in-to-bus-30-killed-in-collision/1177785/For more information on the crash go to: http://www.nhregister.com/general-news/20090318/drunken-truck-driver-hits-bus-in-mexico-killing-11

xxv. Drinking and Driving: A road safety manual for decision-makers and practitioners Global Road Safety Partnership, (2007).

xxvi. Position Statement and Guidelines & Five-Year Action Plan International Road Federation, Driver Behaviour Education and Training Subcommittee (DBET), (2015). Pg. 20.

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