



**Statement of Janet Bahouth, D.Sc., Transportation Safety Engineer
In Opposition to Senate Bill 712
Senate Judicial Proceeding Committee
Maryland General Assembly
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Good afternoon. I am Dr. Janet Bahouth from Impact Research – a transportation safety engineering firm in Columbia, Md. Impact Research is driven by safety in all aspects of our work as we inform decisions about safe transportation using investigations and analysis to reduce the number of crashes, or improve the outcome, on our roadways. We are a trusted partner to some of the world’s top vehicle manufacturers, and regularly collaborate with Federal and State government agencies. Our team is multidisciplinary. We are engineers, like myself, epidemiologists, statisticians, data scientists and medical personnel. Thank you for the opportunity to provide testimony today in opposition to Senate Bill 712, legislation that would repeal Maryland’s all-rider motorcycle helmet law.

Thank you also for the opportunity to share this. In regard to two of Maryland A.B.A.T.E.’s (Maryland division for A Brotherhood Against Totalitarian Enactments) principals, I agree. From their website, A.B.A.T.E. “perceive(s) the risks associated with motorcycling as being manageable through programs of rider and driver education.” In addition, “the only effective method of reducing motorcycle injuries is accident avoidance.” Yes, these A.B.A.T.E principals absolutely have merit. Today, from a safety engineering perspective, I’ll share why even these principals shouldn’t allow for a change in our all-rider helmet law.

With the Maryland Dept of Transportation’s Highway Safety Office and the Maryland State Police Motor Unit (i.e., motorcycle unit), I am directing research and a review of Maryland motorcycle crashes that were fatal or caused serious injury to the rider. This is a comprehensive look at the circumstances from pre-crash, during the crash itself, and post-crash. Our goal aligns with ABATE’s principal that risks can be mitigated through rider and driver education. Our goal is to identify those motorcycle safety concepts that, as evidenced by these riders’ fatal and serious injury outcomes, need more focus and attention in rider and driver education, safety courses and licensing. Because this effort is to improve the safety of our riders, our research goal is to determine which crash factors, on the part of the motorcyclist, would have changed the outcome had they been different. The review team has in-depth discussions about the hazards surrounding the riders in these crashes that ended up fatal or with serious injury. These circumstances include target fixation, perception reaction time, motion perception, being predictable, low-siding as an alternative to a catastrophic crash, tunnel vision, anticipating others’ actions, group riding with someone experienced in the lead and riding staggered, avoid lane changes at intersections, be familiar with the route and roadways, understand the limits of the bike, more importantly the limits of the rider on the bike, and absolutely, in every case and for every rider, stay focused and continually find an escape path. I understand the love of riding – and I know it is similar in many ways for all riders. There is a sense of freedom that comes with being on two wheels, getting hit

by fresh air, as well as the cool factor associated with being a motorcycle rider. Experience means a lot when you ride a motorcycle, but even the most experienced riders have to know, understand, and remember these safety concepts if they want to continue to feel the freedom, the fresh air, and the cool factor. As A.B.A.T.E's principal states, and as our team of experts is proving, Maryland riders would certainly benefit from this kind of education. But for those who already know, understand and remember these safety concepts – perhaps like many of the ladies and gentlemen in the gallery today, unfortunately sometimes that is just not enough.

In my work at Impact Research, I focus mainly on the injury biomechanics of crashes, i.e. how do injuries happen? My job is to figure out what caused an injury – what applied a force to the body - and how much force was applied. I think you'd be surprised to know that a typical crash lasts 350 milliseconds. That is about one-third of a second and is faster than a blink of your eye. The forces that a body sustains during only a fraction of a second either ends a life, changes it drastically, or isn't enough to compromise the body due to safety precautions – like seat belts, airbags, riding gear or helmets. The interesting part about these safety precautions is that they actually extend the time that a force is inflicted on a body. That's called impulse – force times the length of time the body is exposed to it. If you increase the time a body is exposed to a force, your chances of injury decrease. That is exactly why a helmet increases the chance of survival. It increases the time the head is exposed to the crash force. Take away the helmet and the skull doesn't take much to fracture and the brain even less to shear simply from rotational forces put on it.

Our work for the MD fatal and serious injury motorcycle crash review included some data analysis of police reported crashes by our epidemiologist. One very interesting and relevant point needs to be shared here today. With some background, I'll explain it.

We know that there are crashes with motorcycles involving other cars. And we know that there are crashes involving only motorcycles, i.e. single vehicle crashes. We looked at the distribution of injury severity – meaning no injury, non-incapacitating injury, incapacitating injury and fatal – across both types of crashes. What we saw is that the distribution of no injury crashes for motorcycle only crashes is far less than that for crashes involving another vehicle. The question is why? The crash forces aren't that dissimilar to account for the difference. We believe that there are far-fewer no-injury motorcycle only crashes than no-injury crashes involving two vehicles because there are far more unreported no-injury motorcycle only crashes. We believe this data is telling us that in Maryland, there are more motorcycle riders crashing – who are wearing a helmet – than we know about because they don't report it. Instead, they get up. Brush themselves off. And ride away. No police report. No insurance claim. Just a “Thank God that wasn't worse.” THIS is the reason why we cannot repeal our all-rider helmet law. If we change this law, there will surely be many more un-helmeted riders crashing and now NOT surviving.

It has been said that repealing the all-rider helmet law is acceptable because no one is hurt except the unprotected rider. I am not sure that the driver who ultimately killed the motorcyclist would agree. I hope and pray that I never crash, let alone with an unprotected rider, for I would be forced to live with his death, and his family's suffering for the rest of my life. And to know that the death could have been prevented by a helmet makes me shake my head in frustration at another senseless death.

Thank you for the opportunity to share my perspective. I urge you to oppose SB 712.

- Dr. Janet Bahouth