

Governors Highway Safety Association

Behavioral Traffic Safety Cooperative Research Program

I. PERSON DEVELOPING THE PROBLEM STATEMENT December 21, 2023.

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III. Problem Title

An estimated 20 pedestrians and cyclists die each day due to right foot pedal errors.

This highlights the necessity of this request for a scientific research study comparing the traditional right foot braking method used on automatic transmission and electric vehicles with the Left Foot Braking Method (LFBM). The LFBM is believed to be easier to learn and retain with age, has shorter stopping distances and is immune from pedal misapplication thus making it potentially the safer braking method. It should be understood that casual braking using the left foot is not the Left Foot Braking Method. See leftfootbraking.org for a complete description.

III. Research Area

Cyclists and Pedestrian Safety

IV. Research Problem Statement

It has been estimated that each day approximately 20 cyclists/pedestrians will die and hundreds will receive life changing injuries. (These deaths are specific to the issue of braking and no other causes such as driver distraction, effects of alcohol or drugs etc.) These cyclists/pedestrians will be killed sitting in their favorite coffee shop or wherever (a car building/parking lot crash) or walking on a cross walk or cycling on a

roadway, etc. (a car-pedestrian/cyclist crash). They will die because they were crushed to death by an automatic transmission or electric vehicle which did not stop in time.

The crash will typically be reported in the media using one of the following phrases:

- (1) 'Driver hit the gas instead of the brake'.
- (2) 'Driver could not stop in time'.

(1) 'Driver hit the gas instead of the brake', is a right foot pedal error also known as pedal misapplication and can be tied directly to the right foot braking method which is highly susceptible to this braking error. This braking error in our view, can be classified in one of two types:

TYPE ONE: Driver needs to stop or slow down. Driver attempts to move the right foot from the gas pedal to the brake pedal. Right foot ends up on the gas pedal. Driver becomes aware of the error and attempts again to move the right foot to the brake. Driver may be able to avoid or minimize the crash.

TYPE TWO: Driver needs to stop or slow down. Driver attempts to move the right foot from the gas pedal to the brake pedal. Right foot ends up on the gas pedal. Driver is convinced that the right foot is on the brake pedal and pushes harder on what is actually the gas pedal. This error may occur over many, many seconds and is usually only terminated with the crash. In many cases the driver has little or no understanding of what went wrong and will tend to believe it to be a mechanical malfunction, a temporary medical condition, right foot stuck between the gas and brake pedal etc.

We believe that the Left Foot Braking Method is immune to this type of pedal error and believe that the proposed research study will prove that.

(2) 'Driver could not stop in time'. Even if the driver makes good contact between the right foot and the brake pedal the right foot braking method, stopping distances will be much greater than those of the Left Foot Braking Method. This is because the right foot braking method requires at least $\frac{3}{4}$ of a second longer to initiate and 30-40 more feet to stop even at slow school yard speeds.

We believe that the Left Foot Braking Method has superior stopping distances and that the proposed research study will prove that.

The proposed scientific research study objective would achieve at least two results:

- (1) If it is found that the Left Foot Braking Method is safer and superior to the traditional right foot braking method, we would expect for the sake of a reduction or elimination of pedestrian and cyclist deaths and injuries, that the teaching of the right foot braking method would be **banned** and replaced with the Left Foot Braking Method which would be taught by all driving schools and as a requirement for obtaining a driver's license.
- (2) If it is found that the right foot braking method is superior to the Left Foot Braking Method, then at least for the first time in history, this method would have some scientific justification, other than, *'That's the way it's always been taught'*. The only scientific research that has so far been carried out concerning this subject has been by NHTSA. See references: DOT HS 811 597ⁱ, 812 058ⁱⁱ and 812 431ⁱⁱⁱ and the work of Professor Richard A. Schmidt, UCLA^{iv}. These reports concluded that pedal braking errors were the fault of the drivers. There was never any suggestion or conclusion to the effect that, *"is it possible we are teaching student drivers the wrong way to brake an automatic or electric transmission vehicle?"*

V. Research Objective

To carry out a research program comparing the traditional right foot braking method used on automatic transmission and electric vehicles with the Left Foot Braking Method. The objective is to determine which braking method is superior in terms of:

1. The elimination of pedal misapplication.
2. The shortest reaction and stopping distances.
3. Is easiest to learn and retain with age.

Methodology

While it would be the final responsibility of the BTSCRCP contractors to provide an outline of the proposed study we hope that it would look somewhat as follows:

1. Select a number of young people who are seeking driver training to obtain their driver licenses. Perhaps 50 to 100 in total. Driver training would be offered free.
2. The students would be advised that the objective of the study would be to attempt to determine whether the right foot braking method or the Left Foot Braking Method is the best way to brake an automatic or electric vehicle.
3. The students would then be divided into two groups. Both groups being 50% male and 50% female and an equal ratio of shapes and sizes etc. to represent the demographics of the population and would be assured that retraining would be given to the group that represented the losing braking method.
4. Both groups would be exposed to the typical classroom driver training with adjustments made if failures occurred so that the remaining candidates were equal in both groups.
5. The successful classroom graduates would then be exposed to two phases of hands on training:

Phase One

The use of the latest generation of driving simulators. After the students mastered the simulator they would then be exposed to a number of braking tests, maneuvers to test driver stability within the driver compartment, ability of the driver to function under unstable

and panic induced situations. An example might be to offer cash rewards to the driver for successfully answering skill testing questions via a hands free phone just prior to a roadway panic situation etc.

Examples of data that would be recorded include time to make contact with the brake pedal, stopping distance from a specified speed, instances of right foot pedal errors etc.

Phase Two

The use of driver training cars completely computer wired with all appropriate sensors to record similar data to what was recorded from the simulators. Again after the student had mastered the driver training cars they would be exposed to real life tests especially all aspects of parking lot driving and general roadway braking under severe panic situations. Panic tests would be carried out with extreme footwear, (high heels, construction boots, snowmobile boots, no footwear, flip flops etc.).

6. During all of the above tests data would be collected by the scientists (hopefully being 50% female) which would allow a final decision on which type of braking was superior when braking an automatic or electric vehicle.

It is of interest to note that one of the largest barriers to executing a fair and neutral study will probably be the selection of driver instructors. The scientists involved will have to select these instructors carefully to ensure that they will not carry their traditional right foot braking prejudice into the study. Perhaps just female instructors (e.g.: recent college/driving school graduates with good teaching skills), who have not been exposed to the “Real men brake with their right foot “lobby.

Why use student drivers? Simply put they have not been taught either braking method and therefore have no reason to favor one braking method over the other. Ten years of interaction with male drivers has clearly shown us that the average male driver has been so indoctrinated into the so called superiority of the right foot braking method that no amount of science will change their minds. Therefore they would certainly not be impartial participants in the project.

Supplementary braking tests:

Right foot braking method vs the Left Foot Braking Method

A final portion of the research project should involve the teaching and testing of a number of senior drivers. Again a ratio of male and female drivers 50% using the existing right foot braking method and 50% being trained and using the Left Foot Braking Method. It is felt that this exercise would show that the braking advantage of the Left Foot Braking Method increases with age, a further reason to explore retraining senior drivers.

It is of interest to note that some driving schools are teaching the Left Foot Braking Method to senior drivers to prevent “hit the gas instead of the brake” and to shorten their time and distance in a panic stop. However those responsible for driver training at the government level continue to simply blame pedestrian and cyclist deaths and injuries on drivers rather than the obsolete and dangerous right foot braking method!

WHAT WOULD BE THE ACTION PLAN IF THE LEFT FOOT BRAKING METHOD IS FOUND TO BE SAFER, SIMPLER, EASIER TO LEARN AND RETAIN WITH AGE AND FAIRER TO ALL GENDERS.

1. At the very least the report would be required reading by all driving school instructors and it would be made illegal for driving instructors to threaten students with failing grades for using the Left Foot Braking Method.
2. At best it would be required by driving schools to teach only the safer Left Foot Braking Method to students seeking to obtain a license to drive an automatic or electric vehicle. (As a point of interest, different licenses could be offered to students who want to drive clutch type cars in the same way as different licenses are issued for motorcycles, large trucks

etc. A license to drive an automatic or electric vehicle would still require a passing grade using the Left Foot Braking Method).

IF THE LEFT FOOT BRAKING METHOD IS FOUND TO BE SUPERIOR, WHAT DO WE DO ABOUT EXISTING DRIVERS?

Another similar study would presumably have to be carried out to determine if existing drivers could successfully be retrained. If the study was successful, driver training schools (for a fee) could be taught how to teach existing drivers and those drivers could (for a fee) be retrained in the Left Foot Braking Method.

Estimated funding requirements for the proposed research project:

In our rough estimates of the cost of the project we assumed that a driving school would be selected that could accommodate 100 students and would have sufficient simulators, extended time requirements for the simulators, special instructors and a special course to handle that number of students. Based on standard average industry estimates and increased due to the special nature of the project this could result in an estimated project cost of \$400,000 plus.

VI. Urgency and Potential Benefits

Unfortunately specific data on right foot braking errors has never been collected by those in charge of driver legislation and training. However our organization has spent the past 10 years observing crash reports by the media, some official data, and feedback to our website. Therefore, we believe the information we have gathered underlines the urgency and potential benefits of the proposed scientific study:

1. From a scientific point of view, it can be noted that of the 40,000 estimated yearly automotive deaths, 7,000 - 8000 of those deaths can be attributed to either the direct cause (pedal misapplication) and/or to the inefficiencies of the right foot braking method.

2. From a social point of view it can also be noted that since the introduction of the automatic transmission, it is estimated that right foot pedal errors have accounted for the deaths of over 300,000 pedestrians/cyclist, many of whom have been children, as well as life changing injuries to millions and costs in the billions.
3. Right foot pedal errors occur 40,000 times each day. This results in 60 car-building/parking lot crashes and over 100 pedestrian/cyclist crashes that very day. Driver error is almost always listed as the cause.
4. The right foot braking method is particularly difficult to learn and retain by young and old drivers. According to the late Professor, Richard A. Schmidt, of UCLA, when it comes to right foot braking, old may be defined as the age when one cannot successfully complete several basketball free throws, one after the other!
5. A large number of right foot pedal errors are committed by young and old female drivers. Never has there been any thought by those in charge as to why? Implied of course is the age old male assumption that women drivers are inferior. Never thoughts like can we make the braking method easier to learn and retain with age as well as more efficient and safer. 'ME TOO' may not be the only victim of a male systemic belief!
6. ***The obvious potential impacts of failure to fund this research project is the continuation of unnecessary deaths due to right foot pedal errors.***

Miscellaneous comment:

It might be argued as to whether this is an important enough issue on which to spend money, given that we are soon to be all riding in a driverless vehicle? In the writers view this issue is extremely urgent and worthwhile. We are turning out millions of new drivers each year and when it comes to safe braking, they have all been set up to fail. We will be graduating these drivers for many years to come as it will be sometime before the average

male driver will be convinced or forced to accept driverless vehicles, perhaps 2040.

On what bases do we make such predictions? We make them based on 10 years of male driver feedback (Some would call it hate mail!) to our website. These people not only feel they are the world's greatest drivers but they can also vote! From the feedback then, here are some generalized predictions, comments, etc. that we remember. We won't list their comments regarding the Left Foot Braking Method. We think you already know what they were:

1. Most women drivers and all old drivers should not be allowed to drive.
2. If we were allowed to vote, there would be no seat belts, ADAS, etc. and Vision Zero would not be allowed to ruin the roads.
3. Driverless vehicles? "I will give my gun and my pickup when you pry them from my cold dead hand."
4. Politicians will never allow our drive vehicles to be outlawed. Driverless vehicles will only take over when the insurance costs become prohibitive and the cops will catch us for 'no insurance'. The rich will still drive their cars on the open road.
5. Real men don't drive vehicles with automatic transmissions anyway.
6. Adaptive cruise control (Doesn't get back up to speed fast enough or get close enough to the vehicle I am following, people can cut in).
7. Lane wandering and departure alarm (Bugs the hell out of me, I don't need to be between the lines all the time anyway (The cyclists have nightmares about these guys).
8. Back up camera (I liked the original version which just warned you and you decided the need to brake. The new one stops the car so I have turned it off).
9. Automatic emergency braking (Scares the hell out of me. I can stop faster myself because I am the best driver in the world). Emergency crash avoidance with adaptive steering. (A dog runs out on the road and my car decides to save the dog and do front end contact with a semi!).
10. Google will tell you how to disconnect all these ADAS.

VII. Implementation Planning

1. The appropriate target audience for the research results would be those in charge of driver legislation and training at the state level.
2. The key decision makers who could approve, influence or champion the research results would we hope be the TRB, GHSA and NHTSA.
3. Organizations with likely responsibility for adoption of the results would again be those in charge of state legislation and driver training who via the appropriate legislation, would champion the safety and efficiencies of the Left Foot Braking Method.
4. Early adopters would hopefully be the premier driving schools who could put aside their past prejudices to any braking method other than the right foot braking method.
5. The barriers to implementation are mainly the average male driver as described in section VI. Some politicians will be reluctant to take on the right foot braking lobby but hopefully like the issue of seat belts, the lifesaving benefits will be too great to ignore. We have been made WELL aware by radical groups of the hell, fire and damnation that would be rained down upon us after they read the headline, "After scientific study, states and federal government ban the teaching of the right foot braking method, presently used to brake automatic and electric vehicles"

Concerning the testing and evaluation of the research findings – leftfootbraking.org is a grassroots organization interested only in reducing the deaths and injuries of pedestrians and cyclists by proposing what we feel is a safer and more efficient braking method for automatic and electric vehicles. As such we would not be capable of testing or evaluating the research results.

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