Comment on "Accident Experience of Passenger Vehicles with Four-Wheel Antilock Brake Systems" By Lau and Padmanaban

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Several studies have compared the crash performance of cars with and without antilock brake systems. All have reported either no overall crash reductions or only slight reductions (See attached Bibliography of Antilock Brake Studies). Only the most recent study by Edmund Lau and Jeya Padmanaban of Failure Analysis and Associates (FAaA) of antilock brake system performance reports significant reductions in crashes for cars with antilock brakes. This study, however, has serious flaws and its conclusions cannot be accepted without additional analyses. There are four major areas of concern with the study.

- The results are derived from comparisons of pairs of car models that were claimed to be essentially the same except for the presence or absence of antilock brakes. However, several of the pairs of cars selected are inappropriate because the cars had significant design changes beyond the addition of antilocks. (See attached list.) In addition, some obvious large selling pairs of car models that would have been appropriate for the study (for example, the 1991 and 1992 Chevrolet Corsica and Beretta) were inexplicably excluded from the comparisons.
- 2. The study did not include any control group comparisons (i.e., pairs of cars from the same model years as the antilock/non-antilock pairs with no design or brake system changes). Therefore, it is impossible to say that the reported differences are solely due to the addition of antilock brakes. It is a prerequisite for research of this type in which the results are based on potentially biased comparisons that control groups be used. Surprisingly, the study presents a number of comparisons of the results by state but none for any vehicle subgroups. This is done despite the fact that it is differences among vehicles that are being studied, not differences among states.
- 3. The study reports inexplicably large reductions in crashes (6-8 percent) and in injuries (up to 17 percent) on dry road surfaces. This effect is difficult to explain since antilock brakes should not be expected to make a large difference on dry road surfaces. The magnitude of this effect raises questions about the validity of the comparisons and emphasizes the need for control group comparisons.

4. The study reports no differences in the involvement in fatal crashes of the cars with and without antilock brakes. This result is based on a very carefully constructed and possibly misleading comparison. Instead of comparing occupant deaths in the cars with and without antilock brakes, and separately comparing the fatality risk for pedestrians and people in other vehicles struck by cars with and without antilock brakes, all fatal crash involvements are combined together. This construction almost certainly obscures important subfindings, in particular, the increased risk of single vehicle occupant deaths associated with antilock brake systems that have been reported elsewhere.

Bibliography Antilock Brakes in Passenger Vehicles

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Hertz, Ellen; Hilton, Judith; and Johnson, Delmas M. 1995. An Analysis of the Crash Experience of Passenger Cars Equipped with Antilock Braking Systems. DOT HS 808 279. Washington, DC: National Highway Traffic Safety Administration; U.S. Dept. of Transportation.

Inappropriate Vehicles Used in FAaA ABS Study

Make/Series	Comments
Buick Estate Wagon	Redesigned for 1991.
Buick Regal Limited, Grand Sport	The Limited had optional ABS in 1991.
Buick Skylark	Redesigned for 1992.
Cadillac DeVille	Four-door was redesigned for 1989. ABS was optional in 1988.
Cadillac Fleetwood (no 60 special)	Redesigned for 1989. ABS was optional in 1988.
Jaguar XJ Sedan	Redesigned for 1988.
Mercedes 300 Series Sedan	ABS standard in 300SD and 380SE for 1985.
Mercedes S, SEL, SEC	No S model.
Oldsmobile Achieva 1991 Calais International	Redesigned for 1992. The S Coupe had optional ABS in 1991.
Pontiac Grand Am	Redesigned for 1992.
Sterling 825SL, 827SLI	ABS was optional on the S.
Volvo 740 Series	ABS was optional in 1987 on the four-door.
	ABS was optional on the base and GL models in
	1990. Large span of years between pre and
	post ABS.
Volvo 760 Series	ABS not available on the station wagon in 1988.