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Measuring Risks

To the Editors:

The interesting article by Leonard Evans in the May-June issue ("Traffic Crashes") leaves me with questions. When comparing the risk of dying on the road in different countries, he measures risk in terms of the number of vehicles driven. The data presented do not really address differences in risk while driving a car for different lengths of time in the various countries. Risk is usually assessed in terms of exposure to the hazard involved; thus, airplane safety is usually stated in terms of casualties per million passenger miles—*not* in terms of the number of aircraft.

George A. Paulikas
Palos Verdes, California

To the Editors:

Leonard Evans states that airbags "were mandated by a lawyer-led safety agency that claimed benefits far in excess of published technical estimates and ignored technical information documenting their harmful effects." But published technical estimates do state significant benefits from airbags. From www.nhtsa.gov, one finds: In purely frontal crashes, air bags have a fatality reducing effectiveness of 34 percent. And for people who are concerned about harmful effects of airbags, on-off switches are available.

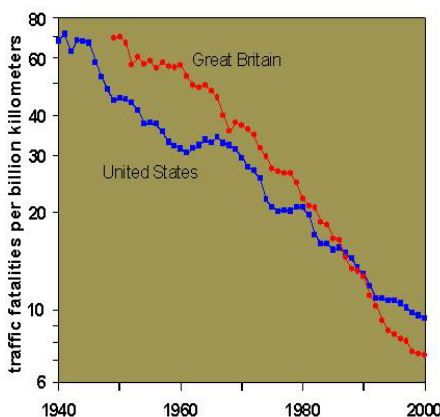
Don Sellers
Dallas, Texas

Dr. Evans replies:

Airplane safety is commonly measured by fatal crashes per million departures and not casualties per million passenger miles. Since air crashes generally occur soon after takeoff or just prior to attempted landing, flight distance has little influence on risk. For ground transportation, risk is approximately proportional to travel distance (or time). My article focused on changes in fatality rates over

the years—so most conclusions based on deaths per vehicle apply similarly to deaths per mile of travel because distance of travel per vehicle per year does not change much from year to year. Britain and the United States are among only a few countries that systematically estimate national vehicle travel—their fatality rates based on travel distances are compared in the figure below. If the U.S. rate change had matched that in Britain, then 14,700 fewer Americans would have died in 2000, compared to the estimate of 14,400 fewer deaths derived in Figure 12 of my article.

The 34 percent effectiveness cited by Don Sellers is for the type of crash in which airbag effectiveness is greatest, namely center-front impacts by illegally unbelted drivers. Crashes with left-front or right-front impacts are excluded, as are crashes in all other directions and all rollover crashes. Safety belts reduce driver fatality risk by 82 percent when rollover is the first harmful event. However, it is not this highest value but the 42 percent effectiveness averaged over all crashes that is invariably quoted. For airbags the corresponding overall value is 11 percent. The airbag mandate was introduced based on the absurd claim of 40 percent overall effectiveness. More than 200 people have been killed by airbags in crashes they would otherwise



Traffic fatalities per distance traveled can be graphed for just a few countries.

have survived with no more than minor injuries. Airbags increase harm, on average, to belted female drivers. Drivers known to be at increased risk may indeed petition for government permission to pay extra to disconnect a device government forced them to buy. Even then, businesses are often unwilling to honor such permissions for fear that the same legal system that spearheaded the airbag mandate will aim to profit from liability litigation against them for legally disconnecting airbags.

