

Consumer Knowledge of Tire Maintenance and Aging Hazard

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ABSTRACT

The U.S. National Highway Traffic Safety Administration estimates that 6,000 traffic crashes are caused by improper vehicle maintenance and defective tires annually. A number of studies, including a large-scale survey conducted by the American Automobile Association (AAA) Foundation, indicate that many consumers lack adequate knowledge and skills to carryout proper maintenance on their tires.

One aspect of tire safety that has received relatively little attention is aging. Older tires, approximately six years old or more, can be unsafe despite having proper amounts of air pressure and tread. The reason is that tire components dry out with age and can separate. Anti-aging agents are added to tire components at the time of manufacture, but apparently these compounds are mainly active only when a tire is in use. Thus, spare tires, tires in storage or on a shelf, or tires that spend a long time on a trailer or a recreational vehicle may be at greater risk of failure due to premature aging than tires that are used at least some of the time. Older tires are more susceptible to failure as for example when operated at high speeds or in hot weather. Several European manufacturers (and more recently Asian tire manufacturers) have included warnings in owner's manuals. In 2001, the Tyre Industry Council (TIC) in the U.K. issued a warning to consumers about the dangers of old tires. However, much less information has been made available by U.S. manufacturers.

The present research concerns two studies conducted to assess U.S. consumers' knowledge of factors critical to tire care, mostly focusing on aged tires. In Study One, 378 participants (230 males and 148 females) completed a survey assessing their knowledge of basic tire maintenance and safety. 66% of the sample ($n=251$) were students ($M = 21$ years, $SD=3.9$), whereas the others ($n=127$) were non-students ($M = 34$ years, $SD=14.1$). Results showed that most of the participants indicated incomplete knowledge on how to perform basic tire maintenance tasks. For example, many participants indicated they either did not know how to check tire pressure or relied on someone else to check it (such as a relative or mechanic). Of those who indicated they were the main person who checked their vehicle's air pressure, many reported doing it infrequently and some indicated not at all. About a third (34%) of all participants reported that they did not know the proper procedures for changing a flat tire.

In Study Two, 208 student and non-student participants (108 males and 100 females) completed a similar survey, but the items requested greater detail regarding knowledge of tire maintenance and safety than the first study. The mean age of the group was 29.7 ($SD=14.7$). The results confirmed the results of Study 1 and also showed that many participants either did not know their tires' safe life span or dramatically over-estimated it. For example, 26% of the respondents' estimates were considerably longer (i.e., 10 years or longer) than current recommendations for disposal. Similar results emerged for participants' estimates of the useful safe life of a vehicle's spare tire. On average, participants believed that spare tires can be stored in the trunk for 7.7 years ($SD=6.3$). As indicated by the standard deviation for this mean value, some participants' estimates went well beyond the actual safe limit (i.e., estimates ranged between 1 and 50 years). According to the Tyre Industry Council (TIC), the useful safe lifespan of spare tires is about six years, although this estimate depends on a number of factors (e.g., exposure to heat, light, and air).

This research suggests that many consumers in the U.S. do not have the knowledge and skills required to carryout proper maintenance on their vehicles tires—including knowing when to replace them. Many participants in this study did not know that tires have a limited useful safe lifespan with some participants substantially over-estimating it. Consumers need better and more accessible information about tire safety and maintenance, including explicit warnings about the dangers associated with older tires and date of manufacture or expiration dates. Given the significant risk associated with driving with tires that are past their recommended lifespan (e.g., loss-of-control, collisions, and rollovers), manufacturers should develop more effective ways of getting this important information to consumers.