

In this exercise, you will read a passage and then answer the questions that follow. The suggested time for reading the passage and answering the questions is 20 minutes.

How Safe Are Air Bags?

Statistics have begun to accumulate on the side effects of air bags. A recent University of North Carolina (UNC) study reported that 60 per cent of driver's-side air bag deployments have resulted in injuries from the air bag. A report by the Insurance Institute for Highway Safety (IIHS) indicated that air bags caused injuries in 23 per cent of 1,200 crashes in which the bags were deployed. The National Highway Traffic Safety Administration (NHTSA) estimates that 25,000 people were injured by air bags in 66,000 deployments between 1988 and 1991, an injury rate of 38 per cent.

No matter whose statistics are most accurate, the devices clearly are not feather pillows. To prevent the occupant from hitting the car's interior, they must inflate quickly, in about a twentieth of a second. When the air bag deploys, it contacts the occupant's head, face, chest, and arms. In a study done by IIHS, 96 per cent of the injuries attributed to air bags weren't life-threatening, but were concussions, cuts, sprains, broken bones, and lacerations. 6 per cent involved the occupant's eyes; 3 people required eye surgery. That's because air bags inflate faster than the eye can blink. The other injuries recorded by IIHS were viewed as moderate threats to life and were probably less severe than injuries that would have occurred without an air bag.

Those who have been protected by air bags are impressed by them. In the UNC study, 96 per cent of drivers who had been in an accident in a car with an air bag said they wanted one in their next car.

Yet, NHTSA has reported a handful of moderate crashes in which occupants apparently were killed by air bags. In most cases, the driver was too close to the steering wheel or the passenger was unbelted when the bag deployed.

A car's structural design greatly effects the way the air bag must be deployed. GM, for example, uses a soft front structure and progressive deformation of the car body to delay and reduce the energy pulse reaching the occupants. This strategy allows sensors to detect the collision early and inflate the air bags relatively slowly. Aggressive inflation increases the chances of an air bag injury, explained Mitchell Scherba, director of crash performance at GM. "We put more engineering into sensing the accident so we can use less aggressive inflators," he said.

Until the mid-1970s, safety engineers at Mercedes-Benz also used a soft structure to absorb head-on impacts. But Mercedes discovered that 75 per cent of collisions classified as

head-on crashes actually involved only a partial overlap between the vehicles. In the early 1980s, they began designing their cars with rigid front structures to prevent intrusion into the passenger compartment in these offset frontal crashes.

Unfortunately, the rigid structure quickly transmits the crash pulse to the passenger compartment, making aggressive air bag inflation necessary. In a 1992 NHTSA study, the peak speed of a deploying Mercedes air bag was 167 mph versus 98 mph and 112 mph for two GM air bags. Mercedes acknowledges the increased risk of air bag injuries from rapid inflation, but claims its concerns for offset crash protection are of greater importance. "We will never be the best in full frontal tests because they poorly represent the real world," said Tom Bologna, manager of safety engineering for Mercedes-Benz North America. "We will not give up our position as promoters of offset crash testing." Most other manufacturers fall between Mercedes and GM in front stiffness and air bag speeds. And GM has lately begun building stiffer structures.

How can you reduce your chances of an air bag injury? First and foremost, wear your seat-belt. GM calculates that belts are 42 per cent effective at preventing fatalities; air bags alone are only 21 per cent effective. Used together, belts and air bags are 47 per cent effective. Seat-belts also lessen the chance of violent contact with the deploying air bag.

Experts from General Motors, Chrysler, Ford, and Mercedes all advise giving an air bag room to inflate. Front-seat passengers should move the seat as far back as they can while keeping the seat-belt low, over the strongest part of the pelvis.

On the driver's side, less space is available between the driver and the air bag housed in the steering wheel. Mercedes-Benz's Bologna recommends you try to sit at least eight to twelve inches from the wheel. For people with short arms, this can be a problem. "Smaller, shorter people are at higher risk than larger people," agreed GM spokesman Dick Thompson. GM researcher Scherba offered: "I tell my wife, make sure the seat-belt is tight, and sit as far back as you can and still comfortably control the car."

Questions 1-6

Do the following statements agree with the writer of the above passage? Please write

TRUE	<i>if the statement agrees with the writer;</i>
FALSE	<i>if the statement does not agree with the writer;</i>
NOT GIVEN	<i>if there is no information about this in the passage.</i>

Example:

Experts advise sitting as far back from
the dashboard as you comfortably can.

Answer:

TRUE

1. Experts are in close agreement concerning the rate of injury from air bag deployment.
2. In 96% of deployments, air bags caused serious injuries.
3. The eye requires more than 0.05 seconds to blink.
4. More than 19 out of 20 people who've been in an accident where an air bag is deployed are satisfied.
5. The number of accidents in which people have seemingly been killed by air bags is extremely small.
6. We can infer that Mercedes air bags inflate faster than those of any other car-maker.

Questions 7-13

Below are some words and phrases, some of which are taken from the reading passage *How Safe Are Air Bags?* Decide which word or phrase should go in each gap. Note that there are more words and phrases than gaps.

A. room	E. 60 per cent	I. less space
B. side effects	F. crash testing	J. offset crash
C. inflation	G. twentieth	K. violent contact
D. blink	H. life-threatening	L. less aggressive inflators

Studies done by several organizations have begun to show the side effects of air bags. A large number of injuries resulted from the too quick 7 of the air bags. An air bag usually has to inflate in about a 8 of a second, yet it takes the eye a little longer to 9. However, some people believe that these injuries were not 10, compared to 11, without an air bag. To reduce the risk of air bag injuries, many car producers began to adopt 12, and drivers are also advised to wear seat-belts and to leave enough 13 for an air bag to inflate.

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