Independent Studies Confirm That Volvo WHIPS Offers Best Whiplash Protection System

Whiplash is the most frequently reported injury in car accidents.

Safe car seats halve the number of reported whiplash injuries

Volvo’s Whiplash Protection System (WHIPS) offers proven good protection.

Greatest demonstrated safety benefit for women.

In Sweden, seven out of ten accidents involving personal injuries lead to whiplash, whereby the victim suffers neck injuries. New survey results reveal that Volvo’s car seats with the WHIPS anti-whiplash system offer far greater protection from this type of injury.

The Volvo Accident Research Commission has carried out in-depth studies of rear-impact collisions in Sweden over the past four years, monitoring the effects on front-seat passengers. Passengers in seats with and without WHIPS were compared.

WHIPS reduces short-term injuries by 33 percent and long-term injuries (longer than one year) by 54 percent

The largest reduction is noted for women – 50 percent for short-term and 75 percent for long-term injuries.

These results point in the same direction as studies presented by the American Insurance Institute for Highway Safety (IIHS). The average injury reduction with factory-fitted whiplash-protection seats is topped by Volvo at 49 percent. Studies carried out by Swedish insurance institute Folksam have also shown similar findings.

Whiplash injuries have been reported in all types of collision, but the greatest risk of injury stems from rear impacts.

The symptoms of whiplash injury are neck pains, stiffness, headache, dizziness, tingling in the arms and so on. Just how whiplash actually occurs has not yet been precisely established. What is likely is that damage to ligaments, muscles, discs, facet joints and the nerve system occurs during the neck’s three movement sequences – the initial S-shaped movement (retraction) between the head and upper spine, followed by the rearward motion (extension) of the head, and the final forward movement of the head (flexion).

Typically, whiplash symptoms disappear quickly, but more than one-quarter of those reporting injury are put on sick leave for periods lasting from a week or so to several months.

In Sweden, about 1,500 people a year suffer permanent injury. Some of these people experience such severe problems that they cannot return to work.

Public authorities and regulators seek solutions

The high rate of whiplash injuries results in considerable cost to society in the form of health care,
rehabilitation, loss of manpower and workplace productivity. Public authorities and regulators are seeking solutions to remedy this problem.

Intensive work is under way to amend regulations in Europe to further address whiplash injuries in rear impacts. However, the introduction of legislative proposals requires sufficient crash research work to fully understand the effects of new regulations. It may take many years to implement any new decisions.

Work is therefore proceeding in parallel on the establishment of a rating system for the evaluation of in-car protection in rear impacts. Within one year, a rating system will be in place by the EuroNCAP pan-European safety organisation. An insurance company task force made up of European and American partners, IIWPG, is also working cooperatively to find solutions to the problem.

**Automobile industry leads safety research and technical development**

Throughout the history of the automobile, the Swedish car manufacturers’ seats have offered some of the best features for reducing the likelihood of neck injuries. Volvo and Saab were the first car makers to introduce head restraints in cars, back in the 1970s. In 2000, insurance company Folksam presented a comparative study of the head restraints offered by various car manufacturers from the 1980s to the end of the 1990s. Volvo and Saab came out among the leaders. And it was the Swedish manufacturers who were responsible for the next technological breakthrough at the end of the 1990s.

**Volvo’s development strategy**

Volvo’s development of the neck protection system is guided by the principle that the entire spine and the head must be properly supported in a collision. For this reason, Volvo has not focused only on the development of a head restraint but has instead worked on a combination of good head restraint design and a dynamic support function in the seat backrest.

Volvo’s Whiplash Protection System (WHIPS) consists of a good head restraint (a robust, high restraint that sits close to the head) along with a well thought-out seat backrest that provides uniform support. This is combined with an energy-absorption system built into the articulated joint between the backrest and seat cushion. In a rear impact, the backrest moves rearward with the seat’s occupant, first in a parallel movement before tipping backward slightly. The impact on the occupant’s back is further reduced via the deformation elements fitted in the link between the backrest and seat cushion.

WHIPS was introduced in the Volvo S80 in 1998. As of autumn 1999 (model year 2000) all Volvo models have been fitted as standard with WHIPS in both front seats.

**Occupant protection surveys confirm the benefits of WHIPS**

In October 2002, the American Insurance Institute for Highway Safety (IIHS) issued its findings from a survey in which car models with newly developed head restraints were compared with the previous model year’s versions. Clear improvements were noted in most cases. Volvo topped the average neck injury reduction rating, with a 49 per cent drop in neck injuries.

The results recently published by Volvo’s accident research commission point in the same direction. WHIPS reduces initial whiplash-related injuries by 33 per cent and long-term injuries (lasting one year or more) by 54 per cent. These findings have been statistically proven. The greatest reduction has been noted for women – approximately 50 per cent for whiplash-related initial injuries and about 75 per cent for long-term injuries.

**The unique Volvo safety database**

The accident data that Volvo’s accident research commission systematically gathers is valuable not just for the company’s own development of safer cars – it also makes it possible to gauge the effectiveness of implemented safety equipment in a scientific manner.

Data from rear collisions involving Volvo cars is collected by Volvo’s accident research commission working together with insurance company Volvia. Details about the car, damage to the car, the passengers and their position inside the car are registered together with data about any personal injuries. After one year, information is collated about the initial neck injury (if any) and current injury status. The database currently holds 2870 case studies.

It includes 264 adult front-seat occupants who never had any previous history of neck problems, but whose car was hit from behind with such force that the WHIPS system was deployed or would
have been deployed had the car been so equipped. Information about these persons is analysed, and passengers protected by WHIPS are compared with passengers in seats without WHIPS (model year 1999).

**Women receive highest safety benefit from whiplash protection system (WHIPS)**
The fact that WHIPS tends to show a higher protection rating for women is an interesting reason for continued investigation. It is widely known that women represent the largest risk group for whiplash injuries. Just why this is so is not known with any degree of certainty. What is likely, however, is that Volvo’s successful integration of the seat backrest and the head restraint into a single interacting protection structure has immense benefits in terms of personal safety, particularly for women in cars.

http://www.folksam.se

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Descriptions and facts in this press material relate to Volvo Cars’ international car range. Described features might be optional. Vehicle specifications may vary from one country to another and may be altered without prior notification.

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Volvo WHIPS offers best whiplash protection system

Independent studies confirm that Volvo's WHIPS offers the best whiplash protection system in the world. WHIPS, which stands for Whiplash Protection System, is a unique occupant protection system that provides effective protection against neck injuries caused by whiplash in rear end collisions.

Volvo's WHIPS system consists of a good head restraint (a robust, highQuality head restraint) along with a well thought-out seat backrest that provides support to the occupant's back. The backrest moves rearward with the occupant's back during a rear impact, reducing the risk of damage to the spine.

The greatest reduction has been noted for women — approximately 50 percent for short-term injuries and 75 percent for long-term injuries (lasting one year or more) by 54 percent. These findings have been statistically proven.

The unique Volvo safety database, which is the world's largest, has been used to gather accident data systematically. The database is valuable not just for the company's own development of safer cars — it also makes it possible to gauge the effectiveness of other manufacturers' safety features.

Accuracy of the results

WHIPS was introduced in the Volvo S80 in 1998. As of autumn 1999 (model year 2000) all Volvo passenger cars are equipped with WHIPS. Clear improvements were noted in most cases. Volvo topped the list in a survey in which car models with newly developed head restraints were compared with the previous model year's versions.

Occupant protection surveys confirm the benefits of WHIPS

Volvo's development of the neck protection system is guided by the principle that the entire spine should be protected. The car manufacturer's safety engineers have been working on the development of a new neck protection system that is due to be launched in the second half of 2003.

Both the IIHS and Folksam have also shown similar findings. The average injury reduction with factory-fitted whiplash-protection systems is 33 percent, with long-term injuries (longer than one year) reduced by 54 percent.

In Sweden, seven out of ten accidents involving personal injuries lead to whiplash, whereby the victim suffers neck injuries. New survey results reveal that Volvo's car seats with the WHIPS anti-whiplash system offer far greater protection from this type of injury.

The high rate of whiplash injuries results in considerable cost to society in the form of health care, compensation payments and lost workdays. Public authorities and regulators seek solutions to the problem of whiplash injuries.

In October 2002, the American Insurance Institute for Highway Safety (IIHS) issued its findings regarding occupant protection. The institute compared car models with newly developed head restraints with the previous model year's versions. Information about these persons was analysed. After one year, information was collated about the initial neck injury (if any) and whether the person had been put on sick leave for periods lasting from a week or so to several months.

The largest reduction is noted for women — 50 percent for short-term and 75 percent for long-term injuries. Volvos are among the cars with the highest injury reduction. Sweden is the only country to have conducted surveys regarding the incidence of neck injuries.

In Sweden, about 1,500 people a year suffer permanent injury. Some of these people experience such severe problems that they cannot return to work.

The average injury reduction with factory-fitted whiplash-protection systems is 33 percent, with long-term injuries (longer than one year) reduced by 54 percent. These results point in the same direction as studies presented by the American Insurance Institute for Highway Safety (IIHS). The average injury reduction with factory-fitted whiplash-protection systems is 33 percent, with long-term injuries (longer than one year) reduced by 54 percent. These results point in the same direction as studies presented by the American Insurance Institute for Highway Safety (IIHS).

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