

# INSURANCE INSTITUTE FOR HIGHWAY SAFETY

## NEWS RELEASE

July 4, 1997

### **CHILDREN ARE SAFEST IN BACK SEATS OF ALL CARS REGARDLESS OF WHETHER A PASSENGER AIRBAG IS PRESENT, INSTITUTE STUDY SHOWS**

ARLINGTON, VA – Among six 1997 large luxury cars the Insurance Institute for Highway Safety recently evaluated for crashworthiness, the BMW 5 SERIES and LEXUS LS 400 earned good overall ratings and are distinguished as “best picks.” Both of these models also offer advanced safety features not found in many other cars. Two more large luxury cars, the 1997 MERCEDES E CLASS and LINCOLN CONTINENTAL, earned acceptable evaluations. The INFINITI Q45 is marginal, and the CADILLAC SEVILLE received a poor overall evaluation.

The principal component of each crashworthiness evaluation is performance in a 40 mph frontal offset crash test. Also considered are head restraint design and bumper performance in low-speed crash tests.

“Given the high prices of these models, you should expect superior protection in a crash, and the BMW and LEXUS came through,” Insurance Institute for Highway Safety President Brian O’Neill points out. In both cars, the driver space was well maintained in the offset test. Measures of injury likelihood were low.

“The performances of the BMW and LEXUS in the high-speed crash test were good enough,” O’Neill explains, “to overcome their poor bumper performances in low-speed tests and earn ‘best pick’ designations. The bumpers on the Lexus are especially poor.”

The driver space was well maintained in the MERCEDES E CLASS model, too, but this good performance in the offset test was marred by the opening of the driver door during the crash. “This opening didn’t affect dummy movement in this particular

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test," O'Neill says, "but it's always undesirable because, in some crashes, it could allow partial or complete occupant ejection."

The LINCOLN CONTINENTAL performed reasonably well overall, although the forces on the crash dummy's left lower leg in the offset test were high enough to break a driver's leg. In the INFINITI Q45 test, the head injury criterion was high enough to indicate the possibility of head injury. Measures on the left leg indicated the possibility of injury.

The CADILLAC SEVILLE was the worst performer among the six large luxury cars tested. The driver space wasn't maintained well. There was major intrusion into the occupant compartment. And measures on the right leg indicated the likelihood of significant injury. "The SEVILLE has the oldest design of the six large luxury cars we tested. The rest have been recently redesigned, and this could be a reason the Cadillac didn't perform up to the other models," O'Neill says. He adds that "next year, this car will be redesigned, and we hope it does better in offset crashes."

"Expensive cars like the ones the Institute tested are those in which state-of-the-art safety designs and technologies typically are introduced," O'Neill notes. The four imported models tested come with side airbags and safety belt tensioners to reduce belt slack. Front airbags in the BMW and MERCEDES have higher deployment thresholds for belted occupants. These advanced safety features aren't yet found in most popular models.

#### **How Researchers Assess Vehicle Performance in the Frontal Offset Test**

Institute researchers use 40 mph offset crash tests to evaluate three important aspects of crashworthiness – how well vehicle structure manages the energy of the crash, injury risk measured on a dummy representing an average-size male driver, and how well dummy movement is controlled during impact.

Essentially the same test is used to evaluate new cars by the British and Swedish governments in cooperation with motor clubs and by a consortium of state govern-

ments and motor clubs in Australia. In addition, the Institute's crashworthiness evaluations reflect the adequacy of front-seat head restraint designs and bumper performance in a series of four low-speed (5 mph) impacts. Poor results in the federal government's crash test also may influence a vehicle's overall evaluation.

Vehicle structure, restraints, and injury measures in the 40 mph frontal offset test are evaluated separately – even though they're related – because good performance for any one of the three by itself in a single test isn't sufficient to reliably indicate good crashworthiness.

#### **Institute and Government Crash Tests Complement Each Other**

The federal government has been testing new passenger vehicles in 35 mph crash tests since 1978. This New Car Assessment Program has been a major contributor to crashworthiness improvements – in particular, improved restraint systems in new passenger vehicles. The Institute's offset test, which involves 40 percent of a vehicle's front end hitting a deformable barrier at 40 mph, complements the federal test involving the full width of the front end hitting a rigid barrier. The government test is especially demanding of vehicles' restraint systems but not so much so of vehicle structure. An offset test is more demanding of vehicle structure.

**Attachment follows page 3 of release.**

**Video News Release: Wed., June 18, 10-10:30 a.m. EDT.**

**Galaxy (C) 4/Transponder 14.**

**Re-feed: Thurs., June 19, 1-1:30 p.m. EDT.**

**Galaxy 9/Transponder 1.**

**Copy of report: P.O. Box 1420, Arlington, VA 22210.**

**On the Internet: <http://www.hwysafety.org>.**

# Crashworthiness Evaluations

## Large Luxury Cars

OVERALL EVALUATION

### Frontal Offset Crash Test Performance

Restraints & Dummy Kinematics

Injury Measures

Head/Neck Chest Leg/Foot, Left Leg/Foot, Right

Head Restraint Design

Bumper Performance



**BMW 5 SERIES**  
1997 models

G

G

G

G

G

G

G

M

A

P

depends on seat option



**LEXUS LS 400**  
1995-97 models

G

G

G

G

G

G

G

M

P

**MERCEDES E CLASS**  
1997 models

A

G

P

G

G

G

G

G

P

**LINCOLN CONTINENTAL**  
1995-97 models

A

A

G

A

G

P

A

P

G

**INFINITI Q45**  
1997 models

M

A

M

M

G

M

A

M

P

**CADILLAC SEVILLE**  
1993-97 models

P

P

P

G

G

G

P

P

A

### LEGEND

<b>G</b>	GOOD
<b>A</b>	ACCEPTABLE
<b>M</b>	MARGINAL
<b>P</b>	POOR

INSURANCE  
INSTITUTE  
FOR  
HIGHWAY  
SAFETY

**FOR DETAILS ABOUT THESE AND OTHER VEHICLES,** visit the Insurance Institute for Highway Safety's homepage on the Internet: <http://www.hwysafety.org>. Or write to 1005 North Glebe Road, Arlington, VA 22201. Phone 703/247-1500. The Institute is a nonprofit research and communications organization wholly supported by automobile insurers. This publication is printed on recycled paper. June 1997.