



**INSURANCE INSTITUTE
FOR HIGHWAY SAFETY**

Effects of Small Overlap Frontal Crash Test Results on Vehicle Sales: More Evidence with Small SUVs

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ABSTRACT

Objective: On May 16, 2013, the Insurance Institute for Highway Safety (IIHS) announced small overlap frontal crash test results for small SUVs. The Subaru Forester was one of two small SUVs to receive IIHS's *TOP SAFETY PICK+* award by earning a good or acceptable rating in the test, and the Jeep Patriot was one of five to earn the lowest rating of poor. A survey of U.S. Subaru and Jeep dealerships was conducted to determine if dealers had experienced a change in interest from consumers in the Forester and Patriot models.

Methods: Between June 17 and July 16, 2013, managers at 275 Subaru and 275 Jeep dealerships in the United States were interviewed.

Results: Following the mid-May release of the test results, more Subaru than Jeep dealers (75% vs. 12%) reported an increase in the number of customers calling or visiting the dealership because they were interested in purchasing a Forester or Patriot model, respectively. A higher percentage of Subaru than Jeep dealers reported an increase in the number of customers naming the safety performance of the automaker as a reason they were considering one of their vehicles (61% vs. 8%), and that customers had mentioned the performance of the automaker in recent crash tests (77% vs. 12%). Subaru dealers that reported sales figures experienced an 11% increase in the sales of all Subaru models from the week before the announcement to the week after and a 14% increase in Subaru Forester sales, compared with a 1% increase in sales of all Jeep models and a 2% decrease in sales of the Jeep Patriot.

Conclusion: Consistent with prior findings for the Volvo S60 model, dealers reported that the Subaru Forester model's good performance in IIHS's small overlap frontal crash test positively influenced consumer opinion and sales soon after the results were released. However, sales of the poorly rated Jeep Patriot and interest in it remained unchanged. Improving vehicle design to increase crashworthiness not only improves vehicle safety but also increases sales.

INTRODUCTION

The Insurance Institute for Highway Safety (IIHS) rates the crashworthiness of vehicles as good, acceptable, marginal, or poor based on their performance in five tests: moderate overlap front, small overlap front, side, rollover, and rear. The newest of these tests, the small overlap frontal crash test, was introduced in 2012. The test is designed to replicate the vehicle damage and motion that occurs in a head-on collision where a small portion of the vehicle's front end contacts the struck object, such as when the front corner of a vehicle collides with another vehicle, or when a vehicle strikes a tree or utility pole. In the test, 25% of a vehicle's front end on the driver side is crashed into a 5-foot-tall rigid barrier at 40 mph. Compared with the moderate overlap frontal crash test, involving 40% of the vehicle's front end, the small overlap test puts higher stress on the outer part of the vehicle's frame, which typically is less protected by the vehicle's crush zone structures. In a study of crash-involved vehicles with good ratings in IIHS's moderate overlap frontal crash test, small overlap crashes accounted for nearly a quarter of the frontal crashes involving serious or fatal injury to belted front-seat occupants (Brumbelow and Zuby, 2009).

To earn IIHS's *TOP SAFETY PICK+* award, vehicles must receive good ratings in at least four of five tests and no less than acceptable in the fifth test. The goal of IIHS's rating and award system is to influence consumer decisions about vehicle purchases, which in turn encourages automakers to manufacture safer vehicles. There is some evidence that safety ratings boost consumer interest in and sales of highly rated vehicles. In the inaugural small overlap crash tests of midsize luxury and near luxury cars, the Volvo S60 was a top performer. A survey of Volvo dealers conducted in the 2 weeks after the release of the test results in August 2012 found that nearly half of the dealers reported an increase in the number of customers calling or visiting the dealership because they were interested in purchasing a Volvo S60 (Cicchino, 2012). Fifty-five percent of dealers reported an increase the number of customers that mentioned the safety performance of Volvo as a reason they were considering purchasing a Volvo, and 68% reported that any customer had mentioned the performance of Volvo in recent crash tests as a reason they were considering Volvo. Additionally, dealers with sales data experienced an 18% increase in sales of all Volvo models from the week before the announcement to the week after and a 41% increase in Volvo S60 sales.

Results from the small overlap test have since been released for other categories of vehicles, including midsize moderately priced cars, small SUVs, and small cars. The performance of small SUVs was announced on May 16, 2013. Two of the 13 small SUVs tested, the Subaru Forester and Mitsubishi Outlander Sport, received *TOP SAFETY PICK+* awards by earning ratings of good or acceptable in the test; the Forester was the first vehicle with top ratings on all aspects of the test. Five small SUVs earned poor ratings: the Hyundai Tucson, Kia Sportage, Buick Encore, Jeep Patriot, and Ford Escape. The results of the small SUV tests received widespread print and broadcast media coverage. For example, the results reached an estimated television audience of 63.4 million viewers in the United States through 790 broadcasts.

The goals of the current study were to extend the understanding of how results of the small overlap frontal crash tests have affected sales and consumer interest. Surveys of dealers selling one of the top small SUV performers and dealers selling one of the poor small SUV performers were conducted. Because press coverage of the May 2013 test release tended to highlight the Subaru Forester and Jeep Patriot as examples of good and poor performers, respectively, these vehicle models were the focus of this study.

METHODS

Phone numbers were obtained for the 600 Subaru dealerships and 2,883 Jeep dealerships in the United States from publicly available directories. Telephone interviews were conducted between June 17 and July 16, 2013 by OpinionAmerica, Inc. (Cedar Knolls, NJ), a professional survey organization, with the goal of completing 275 interviews with dealers from each automaker. All Subaru and 2,643 Jeep dealerships were called at least once. Up to 10 attempts were made to reach dealerships; more than 95% of completed interviews were conducted during the first three calls.

Interviewers asked to speak with the dealership's sales manager or with the general manager or owner if the sales manager was unavailable. Of the 359 Subaru dealers that were reached, 20 (6%) refused to participate, 4 (1%) began but did not complete the interview, 60 (17%) requested to be called back, and 275 (77%) completed the interview. Among the 535 Jeep dealers that were reached, 116 (22%) refused, 6 (1%) began but did not complete the interview, 138 (26%) requested to be called back, and 275 (51%) completed the interview. Interviews lasted about 5 minutes, on average.

RESULTS

As summarized in Table 1, most Subaru (74%) and Jeep (70%) dealer representatives who were interviewed were sales managers. Ninety-three percent of Subaru representatives reported that they were aware of the Forester model's good rating in the small overlap test prior to the interview; far fewer Jeep dealer representatives (38%) had previously known about the Patriot model's poor rating.

Table 1. Job title of dealer representative that completed survey (percent)

	Subaru (N=275)	Jeep (N=275)
Sales manager	74	70
General manager or owner	12	10
Sales representative or sales consultant	11	15
Other	3	5

Dealer representatives were asked if there was a change in the number of people who had contacted or visited their dealerships since mid-May because they were interested in purchasing a Subaru Forester or Jeep Patriot, and if more or fewer customers who had contacted the dealership since the release had mentioned the safety performance of Subaru or Jeep as a reason for considering the automaker (Table 2). A larger percentage of Subaru than Jeep dealers reported an increase in calls and visits from customers interested in purchasing the tested vehicle (75% vs. 12%), and Subaru dealers were likewise more likely to report that more customers had mentioned the safety performance of the automaker as a reason for considering it (61% vs. 8%). When Jeep dealers were asked if any potential customer since mid-May had mentioned Jeep's performance in recent crash tests as a reason why they were having second thoughts about buying a Jeep, 14 dealers (5%) said yes.

Table 2. Change in interest in Subaru or Jeep and mentions of automaker's safety performance since mid-May (percent)

		Subaru (N=275)	Jeep (N=275)
Change in number of people who have contacted or visited dealership because they are considering purchasing a Subaru Forester or Jeep Patriot	More	75	12
	Same	24	86
	Less	1	2
	Don't know/Refused	1	0
Change in number of customers who mentioned safety performance of automaker as reason for considering Subaru or Jeep	More	61	8
	Same	35	87
	Less	1	4
	Don't know/Refused	3	1

Note: Percentages do not always sum to 100 due to rounding.

Dealer representatives also were asked to estimate the number of people that contacted or visited the dealership because they were interested in purchasing a Subaru Forester or Jeep Patriot in a typical week. Then they were asked about contacts and visits per week since the mid-May release. The 261 Subaru dealers that provided this information for both a typical week and since the release estimated an average of 25.3 contacts and visits in a typical week and 31.4 since the release, which is an increase of 24%; the 269 Jeep dealers that reported for both time periods estimated an 11% increase from 8.7 contacts in a typical week to 9.7 per week since mid-May.

Seventy-seven percent of Subaru dealers reported that since mid-May at least some of their customers had mentioned Subaru's performance in recent crash tests as a reason they were considering the automaker, compared with 12% of Jeep dealers (Table 3). Thirty-six percent of Subaru dealers said that at least half of their customers who were considering buying a Subaru mentioned Subaru's recent crash test performance.

Table 3. Proportion of customers since mid-May that mentioned Subaru's or Jeep's performance in recent crash tests as reason they were considering buying a Subaru or Jeep (percent)

	Subaru (N=275)	Jeep (N=275)
Three-quarters or more	12	1
Between half and three-quarters	25	3
Between one-quarter and half	25	4
Less than one quarter	15	4
None	22	88
Don't know/refused	1	1

Respondents were asked about the dealership's sales of the Subaru Forester or Jeep Patriot, and of all Subaru or Jeep models, for 3 weeks in 2013: May 5-11 (the week before the release), May 12-18 (the week during the release), and May 19-25 (the week after the release). Sales numbers for all models and the test model in each of the 3 weeks were provided by 261 Subaru dealers (95%) and 269 Jeep dealers (98%). Subaru dealers reported an increase of 11% in total sales for all Subaru models (from 3,970 the week before to 4,397 the week after) and an increase of 14% in total sales for the Subaru Forester model (from 1,243 the week before to 1,422 the week after) (Table 4). Jeep dealers reported a smaller increase of 1% in total sales for all Jeep models (from 2,314 the week before to 2,325 the week after), and a decrease of 2% in sales for the Jeep Patriot model (from 426 the week before to 419 the week after).

Table 4. Sales of Forester, Patriot, and all Subaru and Jeep models in the week before, during, and after release of IIHS small overlap test results

	Subaru (N=261)	
	All Subaru models	Subaru Forester model
Week before	3,970	1,243
Week of	3,795	1,203
Week after	4,397	1,422

	Jeep (N=269)	
	All Jeep models	Jeep Patriot model
Week before	2,314	426
Week of	2,206	398
Week after	2,325	419

DISCUSSION

This study collected information from a sample of U.S. Subaru and Jeep dealers on customer interest and vehicle sales following the May 16, 2013 announcement of the Subaru Forester model's good rating and Jeep Patriot's poor rating in IIHS's small overlap frontal crash test. Consistent with the previous IIHS survey of the effects of the Volvo S60 model's good performance in the small overlap test on business (Cicchino, 2012), at least three-fifths of Subaru dealers reported that more customers were interested in the Forester, more customers mentioned Subaru's safety, and many customers mentioned Subaru's performance in crash tests as a reason they were considering a Subaru. These were reported by far fewer Jeep dealers. Sales of the Forester model increased by a larger percentage than sales of all Subaru models from the week before to the week after the small overlap test result announcement. In comparison, sales of the Jeep Patriot model declined slightly. Although few Jeep dealers reported increased interest in the Jeep Patriot following the release of its small overlap performance, few also reported decreased interest or customers who said they had second thoughts because of the Patriot's poor performance. Dealers reported that sales and interest largely remained unchanged.

Some limitations of this survey should be noted. The Jeep Wrangler two-door model's marginal rating on the small overlap test was announced along with the ratings of the Subaru Forester and Jeep Patriot. Consumers' opinions of Jeep may have been affected by what they had heard regarding the performance of both the Patriot and Wrangler models. A larger percentage of Jeep than Subaru dealers refused to participate in the survey, and it is possible that those who refused had different experiences than those who were interviewed. However, it seems unlikely that dealers with positive experiences

would disproportionately decline to be interviewed. The final week for which sales data was collected included the Saturday of Memorial Day weekend, a weekend when many dealers hold sales. Because holiday sales tend to incorporate all vehicle models at a dealer, it is encouraging that Subaru Forester sales increased by a larger percentage than sales for all Subaru models.

Studies of the effects of crash test ratings on sales of rated vehicles corroborate past surveys of consumers, which have indicated that most consumers know about the safety ratings programs of IIHS and other organizations and name safety as an important factor when choosing a new vehicle (e.g., McCartt and Wells, 2010). Vehicle manufacturers have improved vehicle designs to increase crashworthiness in response to safety ratings with increasing speed since IIHS introduced its ratings program in 1995 (Highway Loss Data Institute, 2013), and this has led to safer vehicles. For instance, virtually all new cars are rated good in IIHS's moderate overlap frontal crash test, and drivers of vehicles with good ratings in this test have a lower risk of dying in a head-on collision than drivers of poorly rated vehicles (Farmer, 2005). The current evidence demonstrates that improving vehicle design to boost safety ratings benefits not only consumers with safer vehicles but also automakers with increased sales.

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