**Technical Report Documentation Page**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1. Report No.**  DOT HS XXX XXX | **2. Government Accession No.** | | **3. Recipient’s Catalog No.** | |
| **4. Title and Subtitle**  Cost and Weight Analysis of Blind Spot Detection Systems | | | **5. Report Date**  11 July 2018 | |
| **6. Performing Organization Code** | |
| **7. Author**  Ricardo Inc. | | | **8. Performing Organization Report No.** | |
| **9. Performing Organization Name and Address**  **Detroit Technical Center**  **Van Buren Twp., MI**  **48111 USA** | | | **10. Work Unit No. (TRAIS)** | |
| **11. Contract or Grant No.**  DTNH2216D00037/0002 | |
| **12. Sponsoring Agency Name and Address**  National Highway Traffic Safety Administration  Evaluation Division; National Center for Statistics and Analysis  1200 New Jersey Avenue SE.  Washington, DC 20590 | | | **13. Type of Report and Period Covered**  NHTSA Technical Report | |
| **14. Sponsoring Agency Code**  NSA-310 | |
| **15. Supplementary Notes** | | | | |
| **16. Abstract**  The National Highway Traffic Safety Administration (NHTSA) recognizes the safety benefits of driver alert systems and is engaged in considerable research related to evaluating the effectiveness of alterative collision warning interface designs and implementation, as well as procedures for gauging such effectiveness, including impacts on vehicle costs and weight. The purpose of this study was to establish reliable cost and weight estimates for Blind Spot Detection (BSD) Systems associated with passenger vehicles.  BSD systems use sensors to detect vehicles in adjacent lanes that may not be directly observed by the driver. The BSD alerts the driver that another vehicle may be present and to use caution if planning a lane change. The detection zones include lateral and rear zones. If any vehicle arrives to the predefined detection zone, a warning signal is issued. In contrast, a warning might not be followed, depending on the BSD system, when the other vehicle is in the rear zone. In detecting vehicles, the most frequent types are optical or radar. The sensor detects closing vehicle speed and its relative distance. Typical components associated with the BSD systems include the sensor (radar, optical), warning system (audible, haptic, side mirror indication), control unit, and associated wiring.  Ricardo Strategic Consulting (RSC) and NHTSA have selected and studied the BSD cost and weight impact on three light passenger vehicles: the Kia Sedona, Ford F-150, and Chrysler Pacifica. The study included dismantling of the BSD systems and evaluation of components to determine manufacturing methods, weights, and costs. For the three vehicles studied, it was found that the average increase in weight was 0.89 kg and the average manufacturing cost increase was $112.13 and the average retail price increase to the end user for these systems was determined to be $145.93. | | | | |
| **17. Key Words**  BSD, radar, haptic, optical, side mirror, detection zones, RCTA systems | | **18. Distribution Statement**  This report is free of charge from the NHTSA Web site at [www.nhtsa.dot.gov](http://www.nhtsa.dot.gov) | | |
| **19. Security Classif. (Of this report)**  Unclassified | **20. Security Classif. (Of this page)**  Unclassified | | **21. No. of Pages**  44 | **22. Price** |

**Form DOT F 1700.7** (8-72)