Technical Report Documentation Page

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16. Abstract

Systems that can prevent pediatric vehicular heat stroke are intended as an aid in reducing approximately 38 deaths that occur annually in the US from infants being left unattended in a hot vehicle [1]. Technology was found and categorized into 3 classes:

- OEM vehicle systems
- Pediatric car seat systems
- Aftermarket systems.

OEM vehicle systems were found with 3 sub-classes of technology:

- Rear seat reminder, exemplified in the GMC Acadia
- Ultrasonic sensor rear occupant alert, exemplified in the Hyundai Palisade
- Radar sensor rear occupant alert, exemplified in the Genesis GV70 Pediatric car seat systems were found with examples of two technologies:
  - Evenflo car seats using the SensorSafe chest clip
  - BeSafe car seats using a smart buckle sensor

Aftermarket monitoring systems were available covering a range of technical capabilities. The 5 systems investigated herein included:

- Elepho eClip – a smartphone connected belt clip
- Babi Smart Cushion – a smartphone connected pressure sensor
- Steel Mate – a weight sensitive pad for baby seats and a driver's seat belt sensor connected to an in-vehicle alert
- Feisike – a pediatric video camera to allow for monitoring infants in the rear seat on a dash-mounted

display. No alerting function included.

- Snookums – a physical mirror to allow for observing rear facing infants in the rear seat through the driver's rear-view mirror. No alerting function included.

The end-user cost increase was determined from the total manufacturing cost for the OEM vehicle system components and the car seat system components. Retail price was taken as the end-user cost for the aftermarket systems. End-user costs for each system are shown in the table below.

OEM Vehicle Systems	End-user cost increase	***Pediatric Car Seat Systems***	End-user cost increase	***Aftermarket Monitoring Systems***	Retail price
GMC Acadia Rear seat reminder	$0.00	Evenflo - SensorSafe chest clip	$20.19	Elepho eClip belt clip	$49.96
Hyundai Palisade Ultrasonic rear occupant alert	$20.33	BeSafe - smart buckle sensor	$38.59	Babi Smart Cushion	$59.99
Genesis GV70 Radar rear occupant alert	$19.49			Steel Mate baby seat alarm	$34.99
				Feisike video camera	$33.99
				Snookums fixed mirror	$27.99

17. Key Words	**18. Distribution Statement**
Pediatric Vehicular Heat Stroke,	This report is free of charge from the NHTSA Web site at www.nhtsa.dot.gov

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