



U.S. Department  
of Transportation

National Highway  
Traffic Safety  
Administration

**Tabular Summary of NHTSA Toyota  
Pre-Crash EDR Field Inspections**

**January 2011**

## **DISCLAIMER**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

**Technical Report Documentation Page**

1. Report No. NHTSA-NVS-2011-ETC-SR11		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle  Tabular Summary of NHTSA Toyota Pre-Crash EDR Field Inspections				5. Report Date January 2011	
				6. Performing Organization Code NVS	
7. Author(s)				8. Performing Organization Report No. NHTSA-NVS-2011-ETC-SR11	
9. Performing Organization Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration 1200 New Jersey Ave., S.E. Washington, DC 20590				10. Work Unit No. (TR AIS)	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Ave., S.E. Washington, DC 20590				13. Type of Report and Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes  This report provides supplementary information to NHTSA Report No. NHTSA-NVS-2011-ETC, "Technical Assessment of Toyota Electronic Throttle Control (ETC) Systems," January 2011.					
16. Abstract					
17. Key Words  Sudden acceleration, unintended acceleration, electronic throttle control, "Silver Book,"				18. Distribution Statement	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages	22. Price

## Field Inspection Results Summary Tables

As part of its overall efforts<sup>1</sup> to identify vehicle- based causes of unintended acceleration (UA) not already covered by existing safety recalls in Toyota vehicles, NHTSA conducted 58 onsite inspections of vehicles reportedly involved in UA incidents from March to August of 2010. The primary objective of these inspections was to obtain pre-crash data from the vehicles' Event Data Recorders (EDR). The inspections also included physical examinations of the vehicle and, where possible, an examination of the crash scene, reviews of the vehicle history, and interrogation of the vehicle's other onboard computer systems. Incidents were selected primarily from consumer complaints, police contacts, and media reports.

The field inspections are grouped by incident type and unique case number on the following pages. Within each grouping, several data elements are listed. Those elements are briefly described below. Each field inspection is identified by a unique case number. The raw EDR outputs and additional information listed by the same case number are found in Appendix xx. Note when reviewing this material, that several of the incidents include more than one page of related EDR data<sup>2 3</sup>. Where this occurred, the latest one was summarized.

- **Driver Intent:** Similar to the consumer complaint review covered earlier in the report, NHTSA assessed the circumstances reported by the driver or other involved parties at the time the incident began to discern likely driver intent with respect to brake and accelerator controls. In most cases<sup>4</sup>, this is based directly on the driver's testimony. In some cases, it's based on NHTSA's assessment of the incident circumstances.
- **EDR Results (three categories):**
  - **Initiation Speed:** vehicle speed indicated by the EDR data at -5 seconds
  - **Brake:** brake light switch status (brake application) over the pre-crash period
  - **Accelerator:** accelerator pedal position indicated over the pre-crash period
- **NHTSA Review (two categories):**
  - **Initiation Maneuver:** driver maneuver at the time the incident initiated (e.g., deceleration)
  - **Outcome:** more detailed synopsis of the vehicle's movement during the incident
- **Severity:** worst injury experienced by anyone associated with the incident (includes occupants or pedestrians)

---

<sup>1</sup> For more information on this effort, see <Main Report Address>

<sup>2</sup> Several reasons exist for this: Incidents with multiple EDR data pages involved multiple impacts sufficient to enable the EDR algorithm. In some cases, the impacts were closely enough spaced so as to permit overlap. In other cases, the incident duration and timing between impacts was great enough to produce multiple related but non-overlapped EDR images.

<sup>3</sup> Some incidents show multiple pages of unrelated EDR data (earlier unrelated incidents). These are most readily discerned by comparing front seat occupancy and belt status, timing between the events, and the data's fidelity to physical evidence from the subject incident.

<sup>4</sup> 48 of the 58 incidents fall into the Apply Brakes scenarios. 81% (39) of those incidents are based on driver assertions that they were using the brakes.

No Relevant EDR Data Collected										
Case	Driver Intent	EDR Data			Vehicle Movement (NHTSA Observation)		Incident Specifics			
		Initiation Speed (mph)	Brake	Accelerator	Initiation Maneuver	Outcome	Model	MY	Worst Severity	Driver Age (yrs)
B1	Apply Brakes	--	--	--	Exiting Parking Space	Backing out of residential driveway; Struck mailbox	Corolla	2010	None	55 - 64
B2	Apply Brakes	--	--	--	Driving vehicle- Steady	Rear impact of vehicle in traffic	Corolla	2009	None	UNK
B3	Apply Brakes	--	--	--	Decelerating	Struck a parking curb	Prius	2010	None	UNK
B4	Apply Brakes	--	--	--	Driving Vehicle- Stop & Go	Vehicle accelerated and struck dumpster in spite of brake application; Struck dumpster; EDR in vehicle does not appear to be the original EDR. Looking for disposition of original	Corolla	2010	Injury	75+
B5	Apply Brakes	--	--	--	Entering Parking Space	Pulling into driveway; Struck parked vehicle	Prius	2010	None	55 - 64
B6	Apply Brakes	--	--	--	Stopped / Idling	While stopped at stop sign, engine sped up, forcing car into intersection; Struck vehicle in traffic;	Corolla	2009	None	65 - 74

UA- Pedal Entrapment										
Case	Driver Intent	EDR Data			Vehicle Movement (NHTSA Observation)		Incident Specifics			
		Initiation Speed (mph)	Brake	Accelerator	Initiation Maneuver	Outcome	Model	MY	Worst Severity	Driver Age (yrs)
15	Release Accelerator	57	Sustained	Sustained Application	Driving vehicle- Steady	Approaching highway exit, vehicle accelerated; continued down exit ramp, traversed intersection, departed the roadway	ES350	2007	None	65 - 74

Non-UA Incidents										
Case	Driver Intent	EDR Data			Vehicle Movement (NHTSA Observation)		Incident Specifics			
		Initiation Speed (mph)	Brake	Accelerator	Initiation Maneuver	Outcome	Model	MY	Worst Severity	Driver Age (yrs)
10	Apply Brakes	44	Late	Off	Driving vehicle- Steady	Vehicle was driving on roadway; rear impact of stopped vehicles	RAV4	2007	Injury	35 - 44
12	Unknown	63	None	Sustained Application	Driving vehicle- Steady	Vehicle tracked straight through a curve and crossed the centerline during heavy rainfall; Struck another vehicle head-on	ES350	2007	Fatal	55 - 64
14	Unknown	76	None	Sustained Application	Driving vehicle- Steady	Vehicle left the highway; Struck guard-wire, tree, rolled over	Camry	2007	Fatal	75+
16	Apply Brakes	19	Late	Off	Decelerating	Deceleration to stop sign; Traversed intersection, struck vehicle	Camry	2010	None	55 - 64
24	Release Accelerator	51	Significant-Midevent	Ramping Application	Driving vehicle- Steady	Driving at high speed on local roads; left roadway part way through a left turn	Matrix	2009	None	20 - 34
31	Apply Accelerator	0	None	Spike	Entering Parking Space	On-street parallel parking; Struck pedestrians and building	RX350	2009	Injury	55 - 64
38	Unknown	48	None	Sustained Application	Driving vehicle- Steady	Vehicle left the roadway; Struck a utility pole	Yaris	2007	Fatal	55 - 64
40	Apply Brakes	35	None	Off	Driving vehicle- Steady	Driving on straight road; Left the roadway, struck a tree	Camry HEV	2008	Injury	55 - 64
43	Apply Brakes	35	Late	Off	Driving vehicle- Steady	Rear impact of other vehicles stopped in roadway	Sienna	2004	Injury	45 - 54
44	Apply Brakes	11	Late	Sustained Application	Decelerating	Deceleration to traffic light; Struck vehicle in traffic	Matrix	2009	Injury	45 - 54
47	Unknown	78	None	Ramping Application	Driving vehicle- Steady	Vehicle left the roadway; traversed grass, struck guard rail & pole	RX330	2006	Fatal	55 - 64
48	Unknown	58	Early / None	Ramping Application	Driving vehicle- Steady	Vehicle crossed centerline, struck a tree	Camry	2007	Fatal	35 - 44

Pedal Misapplication Incidents (1 of 2)										
Case	Driver Intent	EDR Data			Vehicle Movement (NHTSA Observation)		Incident Specifics			
		Initiation Speed (mph)	Brake	Accelerator	Initiation Maneuver	Outcome	Model	MY	Worst Severity	Driver Age (yrs)
1	Apply Brakes	0	None	Ramping Application	Entering Parking Space	Turning to pull into a parking space; Intrusion into building	Camry	2007	None	65 - 74
2	Apply Brakes	4	Dual	Ramping Application	Exiting Parking Space	Shifted into Drive, struck curbs	Camry	2010	None	75+
3	Apply Brakes	26	None	Sustained Application	Decelerating	Vehicle was driving in local traffic; Traversed intersection, struck wall	RAV4	2007	None	55 - 64
4	Apply Brakes	11	Late	Sustained Application	Entering Parking Space	Pulling into residential garage, vehicle struck interior wall twice.	Camry	2007	None	55 - 64
5	Apply Brakes	40	None	Sustained Application	Driving Vehicle- Stop & Go	Driving through commercial parking lot; Struck a light pole	ES350	2007	Injury	65 - 74
6	Apply Brakes	66	None	Sustained Application	Driving vehicle- Steady	Vehicle was driving on local road; Sideswiped another vehicle, struck utility pole, rolled over	Camry	2010	Injury	75+
7	Apply Brakes	29	None	Sustained Application	Driving Vehicle- Stop & Go	Driving through commercial parking lot, approaching intersection; Struck parked vehicles	Camry	2009	None	75+
8	Apply Brakes	5	None	Ramping Application	Entering Parking Space	Pulling into parking space; Intrusion into building	Camry	2009	None	45 - 54
9	Apply Brakes	24	Late	Ramping Application	Decelerating	Started to pull forward to enter traffic; Traversed roadway, struck vehicle	Corolla	2009	None	45 - 54
11	Apply Brakes	2	None	Spike	Entering Parking Space	Pulling into parking space; Struck tree	Camry	2008	None	65 - 74
13	Apply Brakes	17	None	Sustained Application	Exiting Parking Space	Exited parking spot, vehicle traversed parking lot; Struck a dumpster and tree before intruding into a building	Highlander	2004	None	75+
17	Apply Brakes	24	Early / None	Ramping Application	Decelerating	Had begun braking to make a turn from a local road; Struck tree	RAV4	2007	Injury	75+
18	Apply Brakes	1	None	Ramping Application	Exiting Parking Space	Shifted into Drive after backing out of a parking space; Struck parked vehicle	LS460	2008	None	65 - 74
19	Apply Brakes	0	None	Ramping Application	Entering Parking Space	Pulling into parking space; Struck building	Camry HEV	2007	None	35 - 44
20	Apply Brakes	0	None	Ramping Application	Exiting Parking Space	Shifted into Drive after backing out of residential driveway; Struck carport frame, traversed lawn, struck tree	Camry	2009	Injury	55 - 64
21	Apply Brakes	15	Significant-Midevent	Sustained Application	Exiting Parking Space	Descending parking garage ramp; Struck building, electrical transformer	LS430	2004	Injury	75+
22	Apply Brakes	0	Early / None	Ramping Application	Driving Vehicle- Stop & Go	Creeping behind other vehicle in school pickup line; Rear impact of vehicle ahead	Corolla	2009	Injury	75+
23	Apply Brakes	6	None	Ramping Application	Entering Parking Space	Pulling into parking space; Struck parked vehicle	Highlander	2006	None	55 - 64
25	Apply Brakes	2	None	Sustained Application	Exiting Parking Space	Vehicle stopped in self-serve carwash bay; Struck curb and wall	ES350	2008	Injury	75+
26	Apply Brakes	21	None	Sustained Application	Driving vehicle- Steady	Vehicle accelerated while traversing a long rural gravel driveway; Struck small trees, rolled over	RAV4	2009	None	75+
27	Unknown	40	None	Sustained Application	Exiting Parking Space	Was traversing a long private driveway, left the road surface; Struck tree	RX400h	2006	Fatal	55 - 64
28	Apply Brakes	6	Late	Spike	Entering Parking Space	Vehicle was entering parking spot; Struck a sign pole	Sienna	2004	None	65 - 74
29	Apply Brakes	10	None	Ramping Application	Entering Parking Space	Vehicle was pulling into a parking space; Traversed lawn, struck building	Camry	2009	Injury	75+

Pedal Misapplication Incidents (2 of 2)										
Case	Driver Intent	EDR Data			Vehicle Movement (NHTSA Observation)		Incident Specifics			
		Initiation Speed (mph)	Brake	Accelerator	Initiation Maneuver	Outcome	Model	MY	Worst Severity	Driver Age (yrs)
30	Apply Brakes	27	None	Ramping Application	Decelerating	Decelerating for traffic ahead; Rear impact of other vehicles stopped in roadway	Camry	2007	Injury	45 - 54
32	Apply Brakes	6	Late	Ramping Application	Entering Parking Space	Pulling into residential driveway; Struck building	ES350	2008	Injury	65 - 74
33	Apply Brakes	4	None	Spike	Entering Parking Space	Pulling into parking space; Intrusion into building	Camry	2009	None	35 - 44
34	Apply Brakes	5	None	Ramping Application	Exiting Parking Space	Backing the vehicle in a rural gravel driveway; Struck multiple trees	RAV4	2007	None	20 - 34
35	Apply Brakes	5	None	Ramping Application	Entering Parking Space	Entering parking space; Struck wall	ES350	2007	Injury	75+
36	Apply Brakes	0	Late	Ramping Application	Entering Parking Space	Pulling into; Struck a building	RAV4	2008	None	20 - 34
37	Apply Brakes	0	None	Spike	Stopped / Idling	Vehicle lunged from parking spot; Climbed curb, struck small tree, vehicle	Highlander	2010	None	45 - 54
39	Apply Brakes	6	None	Ramping Application	Entering Parking Space	Pulling into parking spot; Intrusion into building	RAV4	2010	None	65 - 74
41	Apply Brakes	8	None	Ramping Application	Entering Parking Space	Pulled into parking space; Intrusion into building	Camry	2007	None	55 - 64
42	Apply Brakes	4	None	Ramping Application	Entering Parking Space	Entering driveway; Drove through garage door	Camry	2009	Injury	65 - 74
45	Apply Brakes	25	None	Ramping Application	Decelerating	Approach to intersection; Traversed intersection, struck tree	Camry	2009	None	55 - 64
46	Apply Brakes	50	None	Sustained Application	Driving vehicle- Steady	Driving on local road; Entered parking lot, struck pay phone, large sign, rolled over, struck another vehicle	ES350	2008	Injury	75+
49	Apply Brakes	31	None	Sustained Application	Decelerating	Approached stop sign; Traversed intersection, entered parking lot, traversed lawn, struck fence	Corolla	2010	Injury	75+
50	Apply Brakes	8	None	Ramping Application	Driving Vehicle- Stop & Go	Driving in commercial parking lot; Climbed curb, struck parked vehicles	Camry	2010	None	75+
51	Apply Brakes	4	None	Ramping Application	Entering Parking Space	Pulling into parking space; Struck concrete sign base	Camry	2007	None	75+
A1	Unknown	26	Late	Ramping Application	Decelerating	Rode up on curb, struck spot light, another vehicle, rolled over, struck another vehicle.	Corolla	2009	Injury	75+