

Step 1. Problem Outline

What	Problem(s)	Recall acceleration problem	
	When	Recall announced September 29, 2009	
Where	Differences	Recall in vehicles sold since 2004	
	Geographical location	Rapid acceleration problem	
Impact to the Goals	Equipment	USA and Canada	
	Equipment	2007-2010 Toyota Camry	
	Equipment	2005-2010 Toyota Avalon	
	Equipment	2004-2009 Toyota Prius	
	Equipment	2005-2010 Toyota Tacoma	
	Equipment	2007-2010 Toyota Tundra	
	Equipment	2007-2010 Lexus ES 350	
	Equipment	2006-2010 Lexus IS 250	
	Equipment	2006-2010 Lexus IS 350	
	Equipment	Driving	
Impact to the Goals	Safety	At least 5 fatalities	
	Cust. Service	At least 17 vehicle crashes	
	Production-Schedule	At least 100 NHTSA* complaints	
	Property	Recall of 4.26 million vehicles	
		Replace accelerator pedals and floor mats	~\$250 M**

*NHTSA = National Highway Transportation Safety Administration

There have been at least 5 fatalities addressed by the National Highway Transportation Safety Administration (NHTSA), though some media outlets have reported more. Additionally, the NHTSA has reported 17 accidents (again, some claim more) and has received at least 100 complaints. The fatalities and accidents are impacts to the safety goal. Complaints are impacts to the customer service goal. The recall of more than 4 million cars is an impact to the production/schedule goal, and the replacement of the accelerator pedals and floor mats as a result of the recall is estimated to cost \$250 million, which is an impact to the property goal.

The fatalities are caused by vehicle crashes resulting from a loss of control of the vehicle. The loss of control is caused by a sudden surge of acceleration, inability to brake, and sometimes an inability to shut down the engine of the car. Toyota says the sudden bursts of acceleration are caused by entrapment of the accelerator pedal due to interference from floor mats. Toyota refutes the possibility that there may be a malfunction in the electronic control system, saying it's been ruled out by Toyota research.

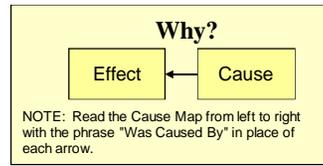
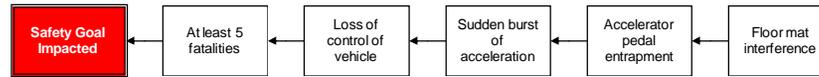
The vehicles are unable to brake because the brake is non-functional when the accelerator pedal is engaged, as it is in these cases. Additionally, owners whose models are equipped with keyless ignition cannot quickly turn off their ignition. These models require the ignition button to be pressed for 3 seconds to prevent inadvertent engine stops, and the instructions are not posted on the dashboard, so owners who weren't meticulous about reading (or remembering) instructions from the owners' manual may not know how to turn off the car while moving at very quick speeds.

Step 3. Action Items

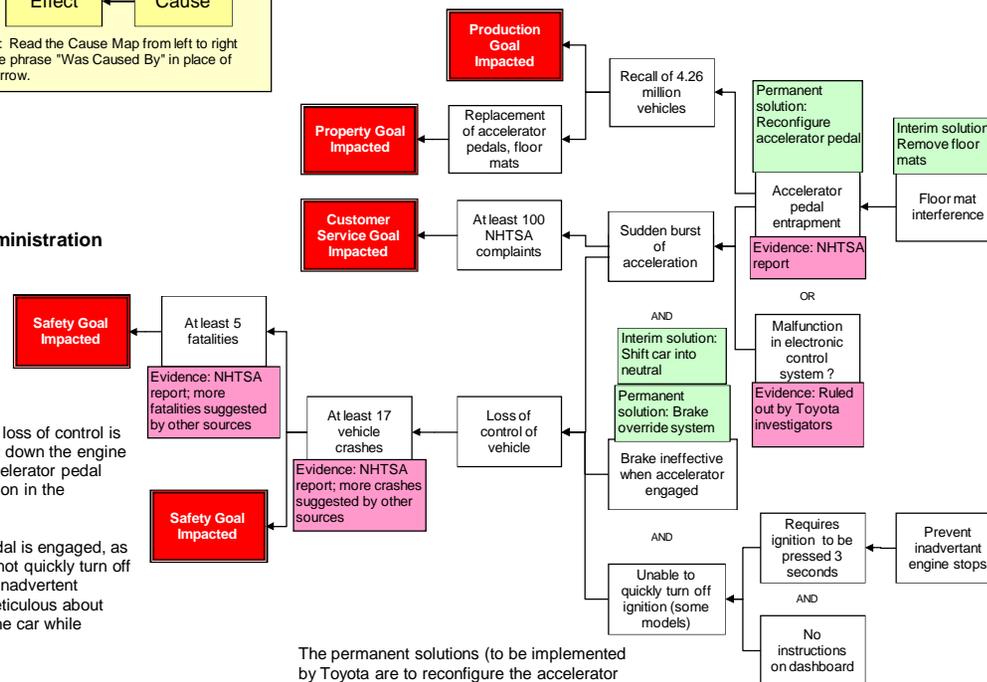
No.	Cause	Action Item	Owner	Type	When?
1	Accelerator pedal entrapment	Reconfigure accelerator pedal	Toyota	Permanent	Ongoing
2	Floor mat interference	Replace floor mats	Toyota	Permanent	Ongoing
3		Remove floor mats	Owners	Interim	Immediately
4	Brake ineffective when accelerator engaged	Shift car into neutral	Driver	Interim	If unable to control acceleration
5		Brake override system	Toyota	Permanent	Ongoing

Toyota/Lexus Model Year 2004-2010 Recall

Step 2. Cause Map 5-Why Level



Step 2. Cause Map Detail Level



The permanent solutions (to be implemented by Toyota) are to reconfigure the accelerator pedal, replace the floor mats, and install a brake override system which will allow the brakes to function even with the accelerator pedal engaged. In the meantime, Toyota has asked owners to remove floor mats, and has put out guidance that drivers who are in an uncontrolled acceleration situation should shift the engine into neutral, which will disengage the engine and allow the brake to stop the car.

