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NHTSA Defect Investigations (EWR)

- For EWR in general:
  - NHTSA is looking for areas where a particular Make – Model – Model Year stands out from the Industry Average
  - These "Outliers" need additional information to open an Investigation
    - NHTSA's own Consumer Complaint Database
    - TSB's
    - Other EWR Data, including Copies of Non-Dealer Field Reports
- For Aggregate EWR Data:
  - Crow-AMSAA Method
- For Copies of Non-Dealer Field Reports:
  - Bayesian Filtering
- For Reports of Death and Injury:
  - Reviewing each fatality via DI IR's
  - Reviewing some injury claims (TBD)

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NHTSA's Current Analysis

Based on recent discussions, NHTSA is:

- Using the Crow-AMSAA method to predict performance of "reliability" and "reliability growth"
  - Analyzing specific Make-Model-Model Year-Component Codes separately in each Category (Warranty, Property Damage, etc.)
  - Not comparing one manufacturer to another manufacturer (each manufacturer is a "different environment" and are difficult to compare)
- Filtering Copies of Non-Dealer Field Reports using a Bayesian Spam Filter
- Reviewing "filtered" copies of field reports after the analysis identifies an outlier
- Issuing Comprehensive Inquiries (CI) based on this analysis
- Proposing a Defect Investigation internally

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NHTSA Defect Investigations

- **Bayesian Filtering:**
  - NHTSA is using a system to filter out irrelevant field reports
  - The system is email spam filtering software modified to separate important reports from unimportant reports
  - Bayesian Filters are "trainable" to filter out "bad" reports based on certain words appearing in them
- **Comprehensive Inquiries:**
  - 2004 - 2005 Lexus RX330: TMA received an informal inquiry regarding the stop lamp switch
    - Toyota had recalled the stop lamp switch due to oxidation on early 2004 MY vehicles
    - NHTSA noticed an unusual number of warranty claims on the stop lamp switch, as well as the prior safety recall from Toyota
    - Based on input from TMC-CQE, TMA explained the issue to NHTSA and NHTSA will not open an investigation

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Summary

- **TMA is processing all of the information gathered about NHTSA's methods**
- **Currently evaluating:**
  - **Implementation of Crow-AMSAA method**
  - **Usefulness of Bayesian Filtering for Field Reports**
  - **Importance of Death and Injury Reports in Opening an Investigation**
- **Need to evaluate:**
  - **Comprehensive Inquiries**
- **Report out to TMC – November 9**
- **Toyota EWR Data evaluation Nov – Dec**
- **Final Recommendations – January 2008**

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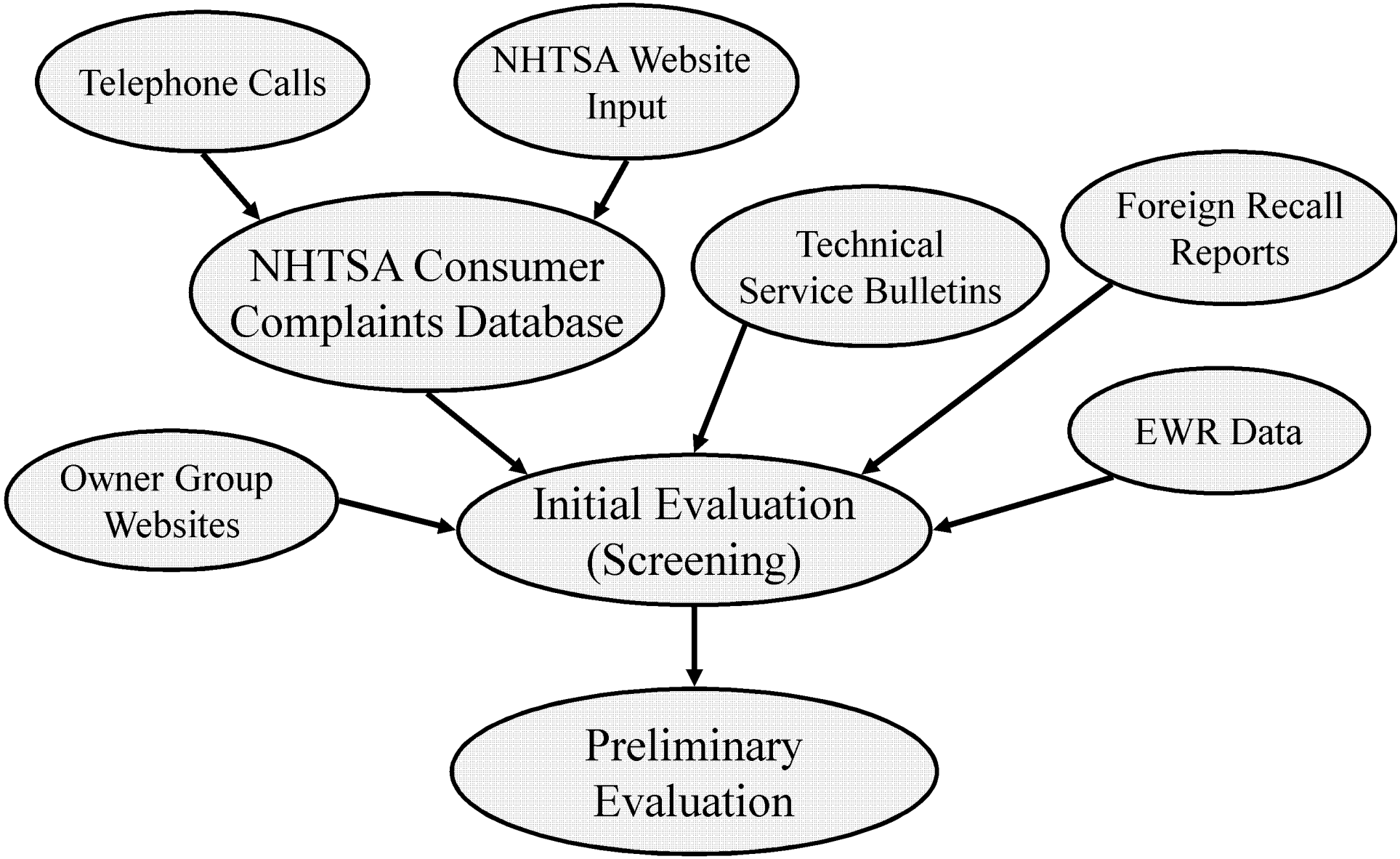
NHTSA Defect Investigations (Sources)



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NHTSA Defect Investigations (History)

2004	2005	2006	2007
2002 Toyota Camry Electronic Throttle	2002 Toyota Tundra Ball Joint (EA)	2004 Toyota Tundra Ball Joint (RQ-EA)	2004-2006 Toyota Sienna Liftgate Struts (PE-EA)
2002 Toyota Tundra Ball Joint (PE)	2004-2005 Toyota Sienna Seatbelt Bezel	2004-2006 Toyota Sienna TPWS/Runflat Tire	2007-2008 Lexus ES350 AWFM
	2004-2005 Lexus RX330 Brake Booster	2005-2006 Scion tC Moonroof	2003-2004 Pontiac Vibe Side Window
	2005 Scion tC Wind Deflector	2004-2006 Toyota Sienna Liftgate Struts (PE-EA)	
	2004-2005 Toyota Prius Engine Stalling	2006 Toyota Highlander Hybrid EPS	
2	5	5	

Red: Quality Problem Found

Grey: Quality Problem Unclear

Green: No Quality Problem Found

Current Production

EWR Influenced

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Other Factors

- **NHTSA is testing more vehicles (mostly in the NCAP), more exposure at initial launch of vehicle**

- **Number of UIO (units in operation) is increasing rapidly, and in addition, sales continue to increase (increased exposure for defects)**

- **NHTSA's new, more aggressive management includes more attorneys at the agency, even in the top ranks of rulemaking and enforcement. The new regime has less understanding of engineering issues and are primarily focused on legal issues.**

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