

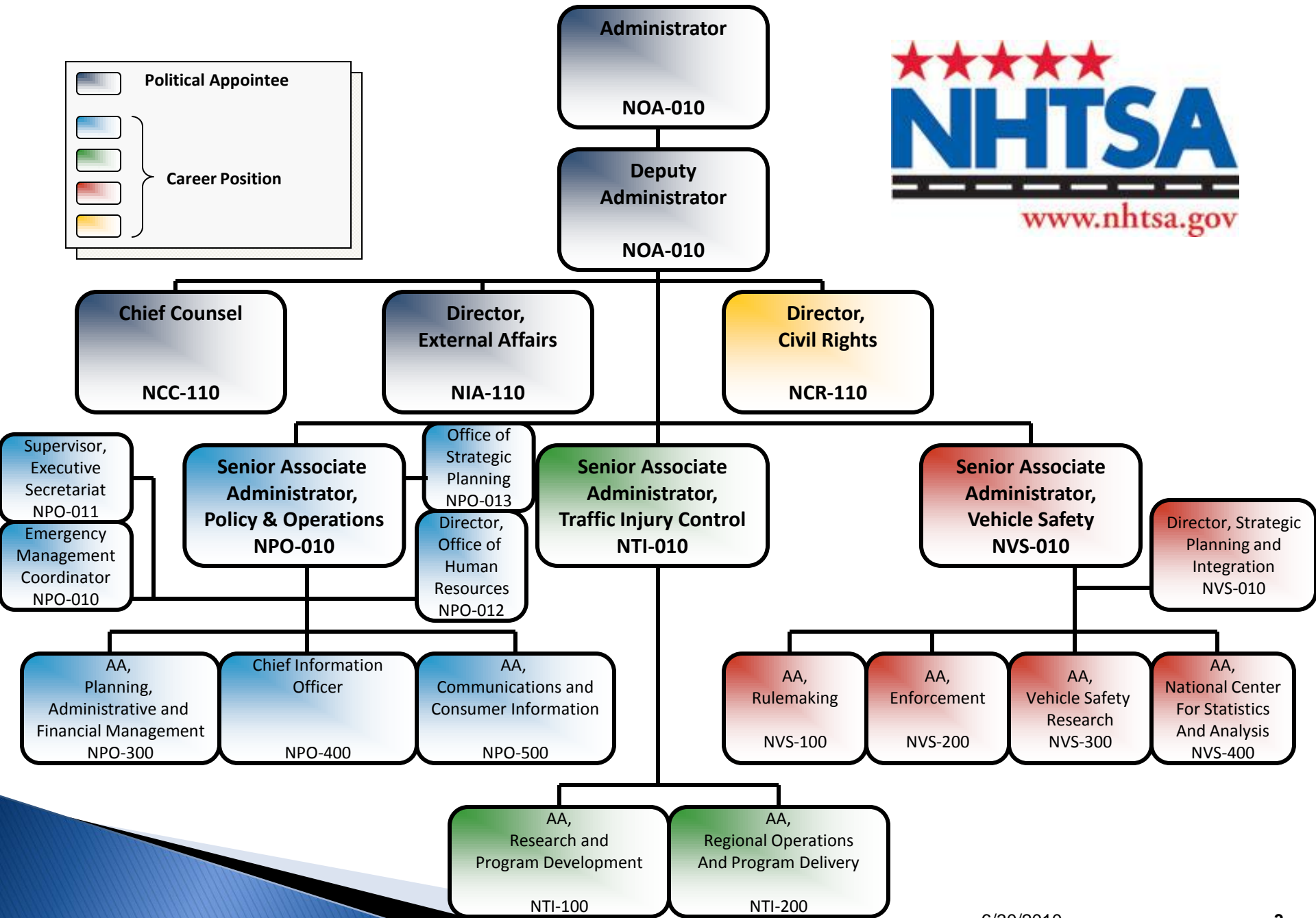
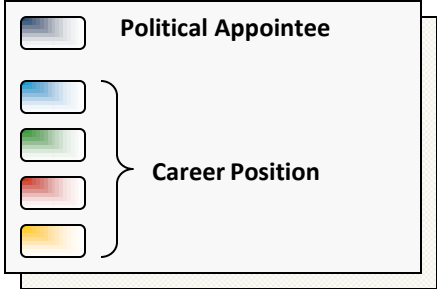
Overview of NHTSA and its Activities Related to Unintended Acceleration and Vehicle Electronics



Daniel C. Smith

Associate Administrator

Enforcement



NHTSA Resources

▶ Budget (FY 2010)

- Total appropriation: **\$ 872,777,000**
- Grant programs: \$ 601,000,000
- Behavioral programs: \$ 71,517,000
- National Driver Register: \$ 5,850,000
- Vehicle safety: \$ 75,310,000
- Administrative Expenses: \$ 119,100,000

▶ Personnel

- Overall staffing level: **617 FTE**
- Grants programs: 82 FTE
- Behavioral programs: 70 FTE
- National Driver Register: 11 FTE
- Vehicle safety programs: 283 FTE
- Administrative: 171 FTE

National Center for Statistics and Analysis

- ▶ Several important data bases, including:
 - **Fatality Analysis Reporting System (FARS):** complete census of highway fatalities
 - **Crashworthiness Data System (CDS):** nationally representative sample of police-reported crashes, focused on crashworthiness
 - **General Estimates System (GES):** sample of police-reported crashes
 - **Special Crash Investigations (SCI):** in-depth investigations of limited number of crashes
- ▶ Significant analytical capabilities support:
 - Public awareness campaigns
 - Rulemaking, research, and enforcement activities

Vehicle Safety Research

▶ Three Areas of Focus & Key Programs:

- Crashworthiness
 - Frontal and Side Impact, Dynamic Rollover, Child Protection, Alternative Energy Vehicles...
- Crash Avoidance
 - Advanced Collision Avoidance, Intellidrive, Distraction, Alcohol...
- Biomechanics
 - Human Injury Mechanisms, Crash Test Dummies, Injury Criteria...
- **Prioritized based on potential for fatality/injury reductions**
 - With consideration for special populations and risk scenarios
- **Primarily focused on regulatory outcomes**
 - But with some continuing component of exploratory & innovative “pure” research

Rulemaking

- NHTSA issues Federal Motor Vehicle Safety Standards (FMVSS) covering many aspects of vehicle and equipment safety
- Standards must be practicable, meet the need for motor vehicle safety (i.e., protect against unreasonable risk of accidents, death or injury), and be stated in objective terms
- Rulemakings prompted by
 - Data indicating specific need to address an area of risk (e.g., frontal or side crashes)
 - Congressional mandate
 - Petition from public

Rulemaking (cont'd)

- FMVSS generally contain performance standards; manufacturers must certify that they meet them
- Standards supported by research on need, options, countermeasures, test procedures
- Standards address specific areas of risk (e.g., rollover) and technologies likely to address the risk (e.g., ESC)
- But FMVSS have not looked at broad subject areas (e.g., electronics and software) that are common to various crashworthiness and crash avoidance technologies: is there a need to address these broad areas? Are federal standards the best method?

Enforcement

- Compliance with FMVSS
 - NHTSA's Office of Vehicle Safety Compliance selects vehicles and equipment for testing and inspection to determine compliance
 - Vehicles or equipment that do not comply must be recalled
- Defect investigations
 - Vehicles or equipment that contain defects related to safety (i.e., they present an unreasonable risk) must be recalled

Defect Investigation Process

- NHTSA's Office of Defects Investigation constantly screens information for evidence of possible defect trends in particular vehicles or equipment:
 - Complaints (VOQs) from consumers (over 38,000 complaints in 2009, and already that many in 2010)
 - Information from manufacturers (early warning data, technical bulletins, foreign recalls)
- NHTSA investigates where a defect trend appears to exist, focusing on specific make, model, and model years showing trend
- Where it can demonstrate a defect and that it is safety related, NHTSA insists on recall

Defect Investigation Process (cont'd)

- NHTSA must be able to show a significant number of failures that are vehicle-based and that the failures create an unreasonable risk
- ▶ As with FMVSS development, defect investigations do not entail broad examinations of entire technological areas such as the electronic systems that support many vehicle functions

Recalls

- ▶ More than 600 recalls of vehicles and equipment in an average year
- ▶ About 75 percent of recalls are related to defects; the remainder concern compliance
- ▶ Although only about 23 percent of recalls result from NHTSA investigations, those recalls account for 50 to 60 percent of products recalled

Why NHTSA Sought Help from This Panel

- ▶ Agency has done several investigations of UA in Toyota and other vehicles, leading to many recalls of millions of vehicles (discussed later)
- ▶ However, despite several investigations of Toyota's ETC system, NHTSA has not been able to find a defect
- ▶ NHTSA retained NASA to help it identify any possible defects in Toyota ETC system that can realistically be expected to cause UA in real-world use; may lead to a defect investigation
- ▶ The ETC issue has brought to the fore two important and broader issues
 - Causes and possible remedies for UA generally, which is an issue affecting all vehicle manufacturers
 - The general need for greater attention to safety-critical electronics systems in vehicles

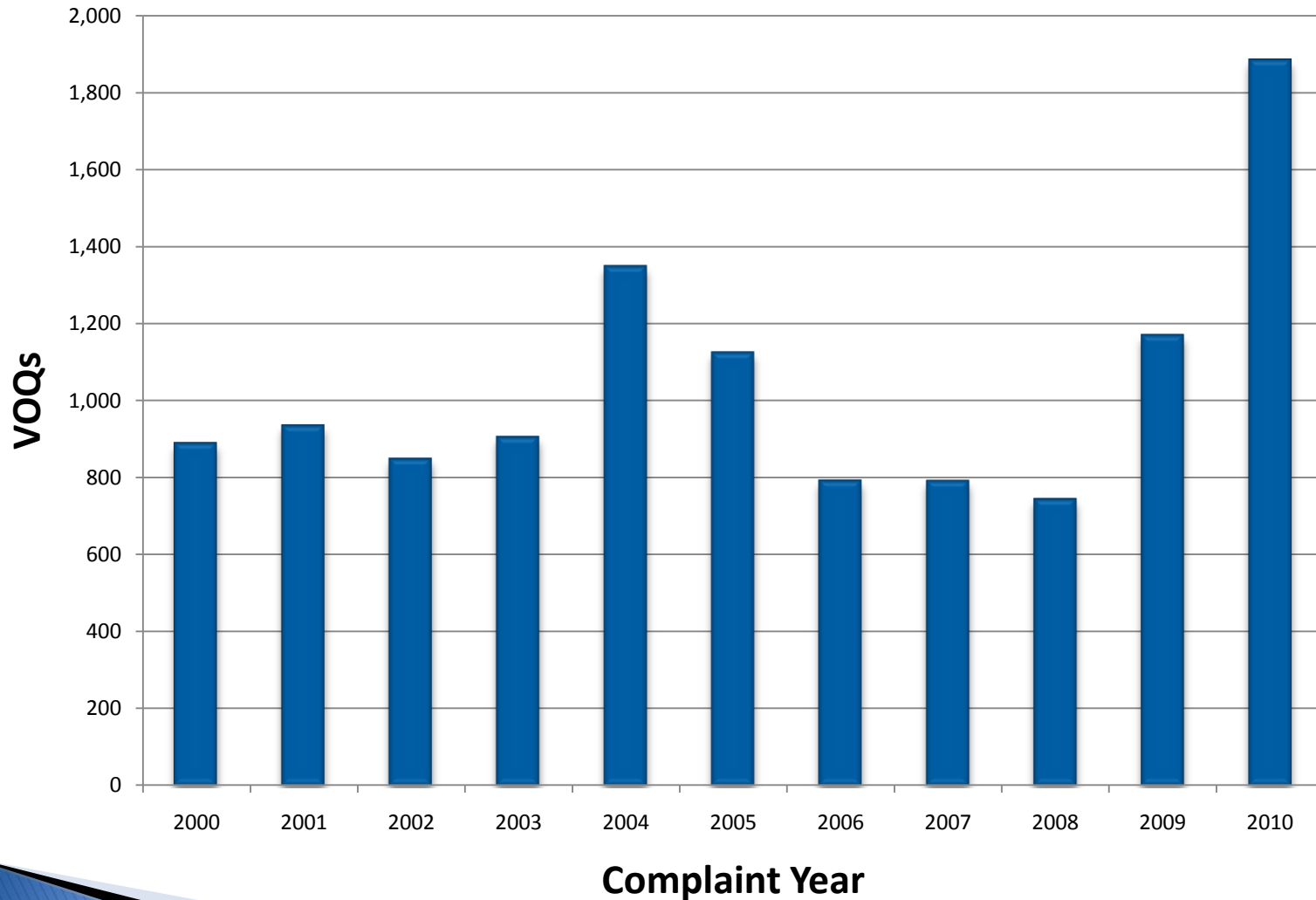
Why NHTSA Sought Help from This Panel

- ▶ This year, Congress raised several questions about NHTSA's expertise in electronics and its resources to address possible electronic issues
- ▶ Pending bills would
 - Require NHTSA to obtain and focus more resources on vehicle electronics
 - Require NHTSA to issue standards on UA-related subjects such as brake override, pedal placement, transmission position marking, push-button ignition, EDRs, and electronic control systems

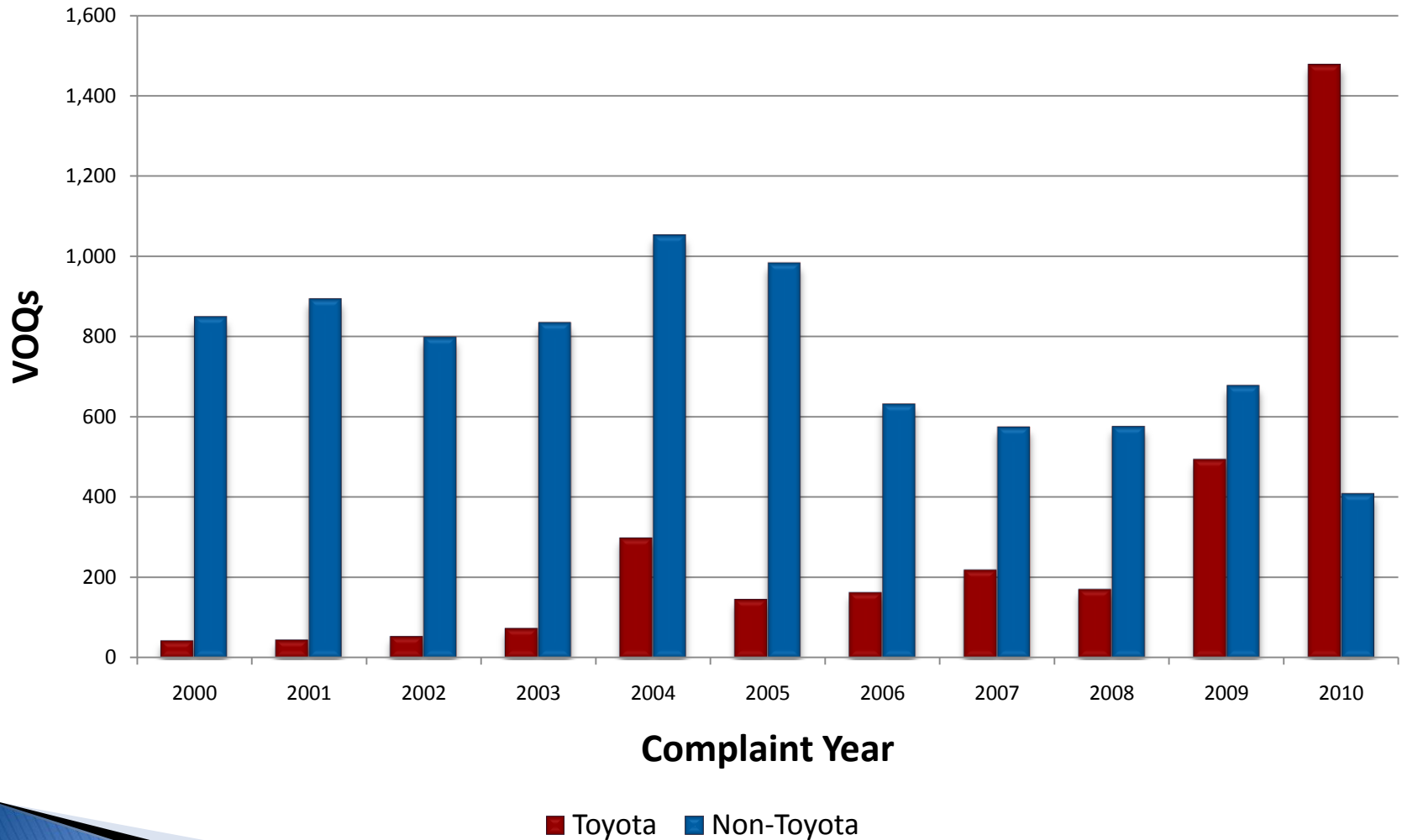
Why NHTSA Sought Help from This Panel

- ▶ UA continues to be an issue affecting all manufacturers (see following slides)
- ▶ Therefore, NHTSA enlisted aid of NAS to set up independent panel to:
 - Study causes of UA across the industry, and
 - Make recommendations to NHTSA about actions it should take to address safety of all electronic vehicle control systems

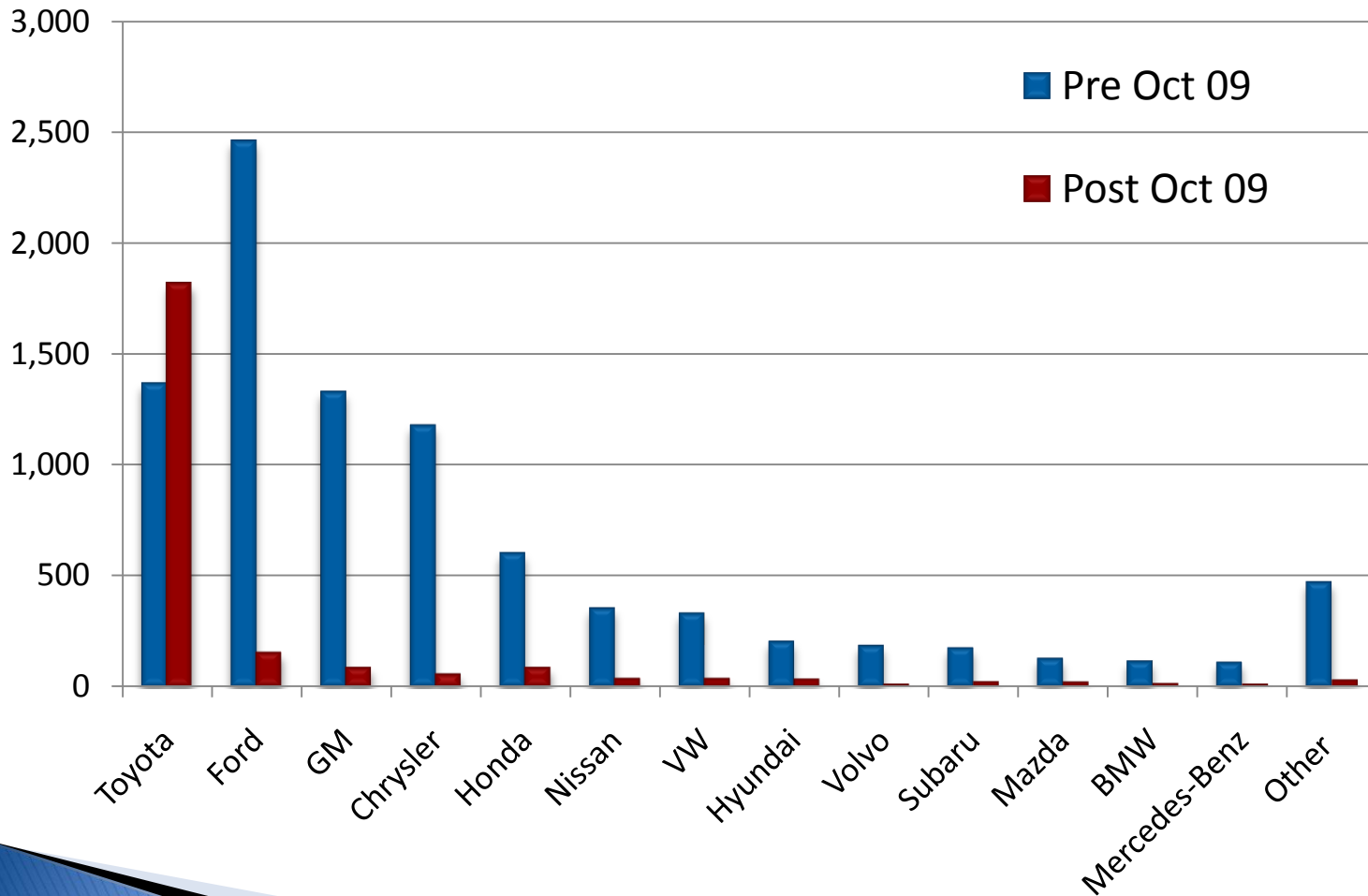
Industry-Wide Alleged UA Complaints



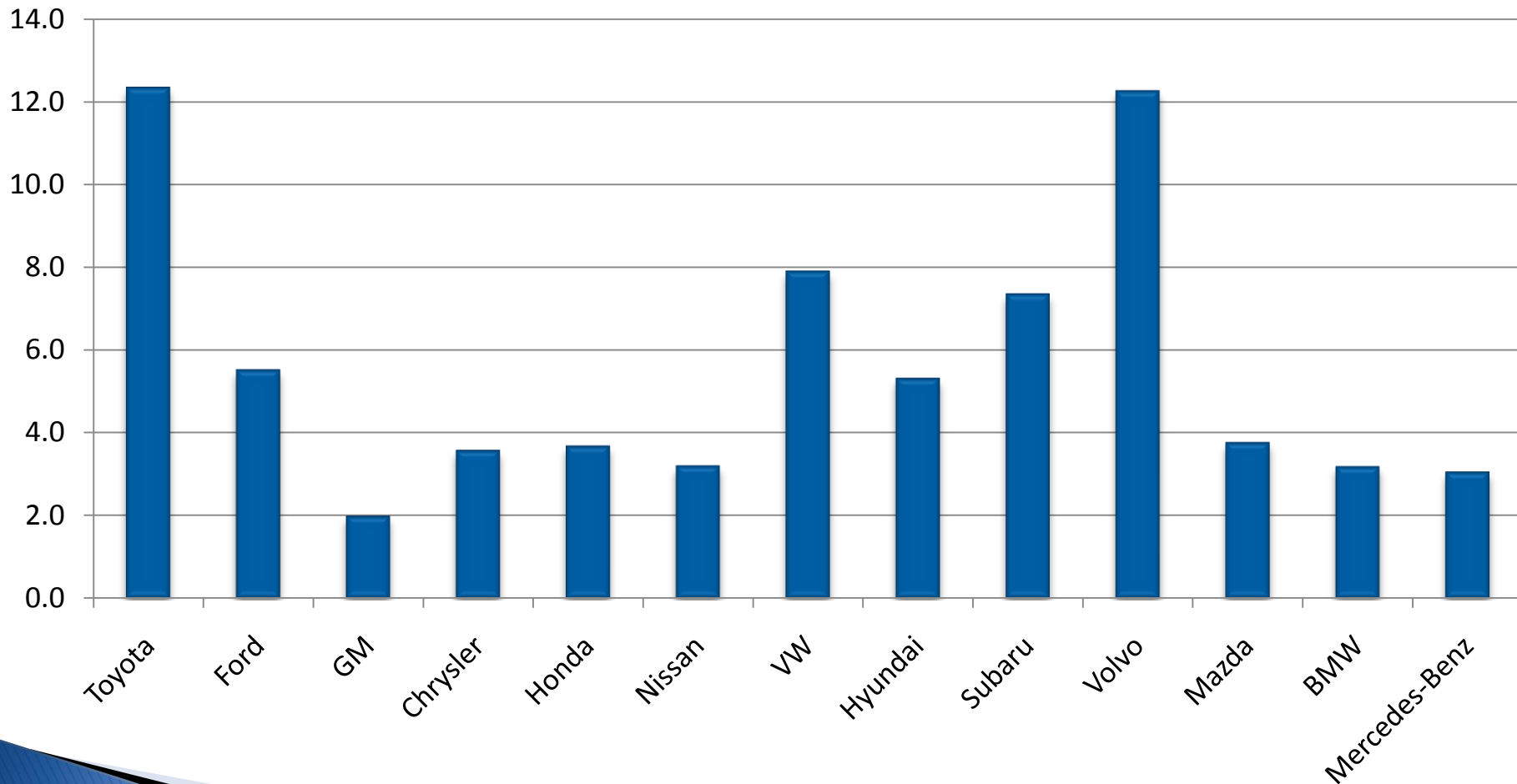
Industry-Wide Alleged UA Complaints



UA VOQs After Manual Review



Alleged UA Complaint Rate per 100K MY 1998-2010



Today's Program

- **Known vehicle-based factors:** what investigations and recalls have occurred with regard to vehicle-based causes of UA
- **Human factors:** their role in UA and ongoing research on that subject
- **Other possible electronic causes:** what NHTSA, with NASA's help, is doing currently to determine if flaws in Toyota ETC systems may be responsible for some of the UA events in those vehicles
- **Standards:** current standards relevant to UA and standards under consideration
- **Research on electronics:** activities NHTSA currently has underway related to vehicle electronics and areas where further research may be needed
- **Recommendations:** areas where the agency desires specific recommendations on the subject of UA and vehicle control systems