

# Smog Check in California

Allen Lyons  
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# Topics

- Overview of California's Smog Check Program
- OBD Focused Inspections
- Consumer Assistance Program
- Enforcement

# Smog Check Program Overview

- Established in 1982
- Program Administered by Bureau of Automotive Repair (BAR) since 1984
- Designed in Consultation with ARB
- De-centralized program design
  - Privately owned stations licensed by BAR



# Smog Check Inspections

- Four Inspection Types
  - Two Speed Idle (non-diesel)
  - Acceleration Simulation Mode (ASM)
    - With an OBD II Test for 1996-1999 non-diesel
  - OBD II OIS Test (2000+ gasoline)
  - OBD II OIS Test (1998+ diesel)



# When is a Smog Check Required?

- Biennially (every other year)
  - 6 year new vehicle exemption for gasoline, hybrid, alt fuel vehicles
- Change of Ownership
  - 4 year new vehicle exemption for gasoline, hybrid, alt fuel vehicles
- Initial Registration in State
- All are Registration Based
  - Completing the Smog Check is a requirement to receive registration (either initial or renewal)

# California Smog Check Statistics

- 22 Million vehicles in program
  - 11 Million “initial” inspections/year
- 7,000 Smog Check Stations
  - Test and Repair
  - Test Only
- 21,000 Inspectors/Technicians
- Overall Failure rate (2015): 12.06%
- Average Inspection Cost (2015): \$48
  - Market based



# Smog Check Station Requirements

- To become a licensed Smog Check station, the facility must:
  - Be registered with BAR as an Automotive Repair Dealer (ARD)
  - Meet minimum equipment and facility requirements
  - Employ licensed inspectors
  - Retain service and repair records for three years

# Smog Check Inspector Requirements

- To become a licensed Smog Check inspector, the candidate must:
  - Meet minimum experience requirements
  - Meet minimum training requirements
  - Pass a BAR licensing examination



# STAR Stations



- Voluntary certification program began January 1, 2013
- Stations and inspectors must meet specified performance standards established by BAR
- Perform tests on directed vehicles and gross polluters
- Perform Repair Assistance services under BAR's Consumer Assistance Program (CAP)

# Referee Network

- Contractor Run
- Unusual Configurations (Kit Cars, Engine Changes, etc.)
- Inspection Compatibility Issues
- Inspection Disputes
- Able to Bypass Normal Inspection Procedures



# BAR 97 System

ASM Testing (with dyno)

TSI Testing

Basic OBD system testing

Systems are Certified by BAR



# OBD Inspection System (OIS)

- Provides in-depth OBD focused testing
- Vendors certify systems through BAR

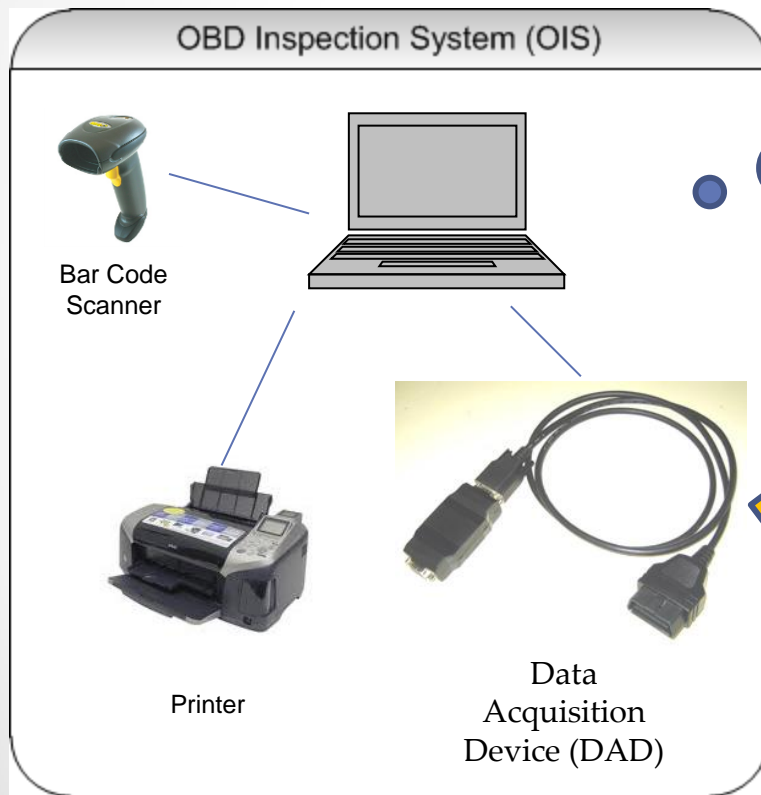


Data Acquisition Devices



OIS System Packages

# OBD Inspection System (BAR-OIS) Conceptual Design



Web based software

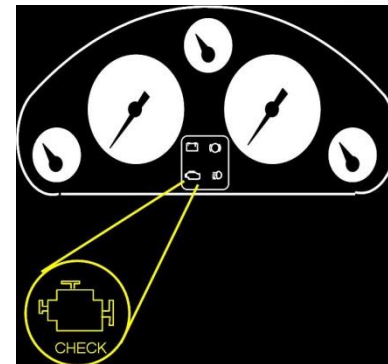
Internet Connection



BAR certified DAD from equipment vendors  
Off-the-shelf equipment from DAD/other vendors

# OBD Based I/M Procedure

1. Does the MIL work? (Key on engine off)
2. Is the vehicle ready for an inspection?
  - No recent code clearing
3. Is the MIL commanded off?
  - ⊙ If YES to all 3: PASS
  - ⊙ If NO, remedy as necessary:
    - Fix MIL lamp or wiring
    - Conduct more in-use driving and return for re-inspection
    - Fix detected fault and return for re-inspection



# Benefits over Tailpipe I/M

- More comprehensive fault detection
  - All emission-related components individually monitored
  - Cold start problems detected
  - Evaporative emission problems detected
  - Broad in-use testing conditions
  - Still works on vehicles meeting very stringent standards
- Convenience
  - Faster (less than 5 minutes)
  - No surprises (MIL off = pass, unless recently serviced)
  - Less expensive
    - No dynamometer
    - No emissions analyzers



# OBD Performance in Roadside Data

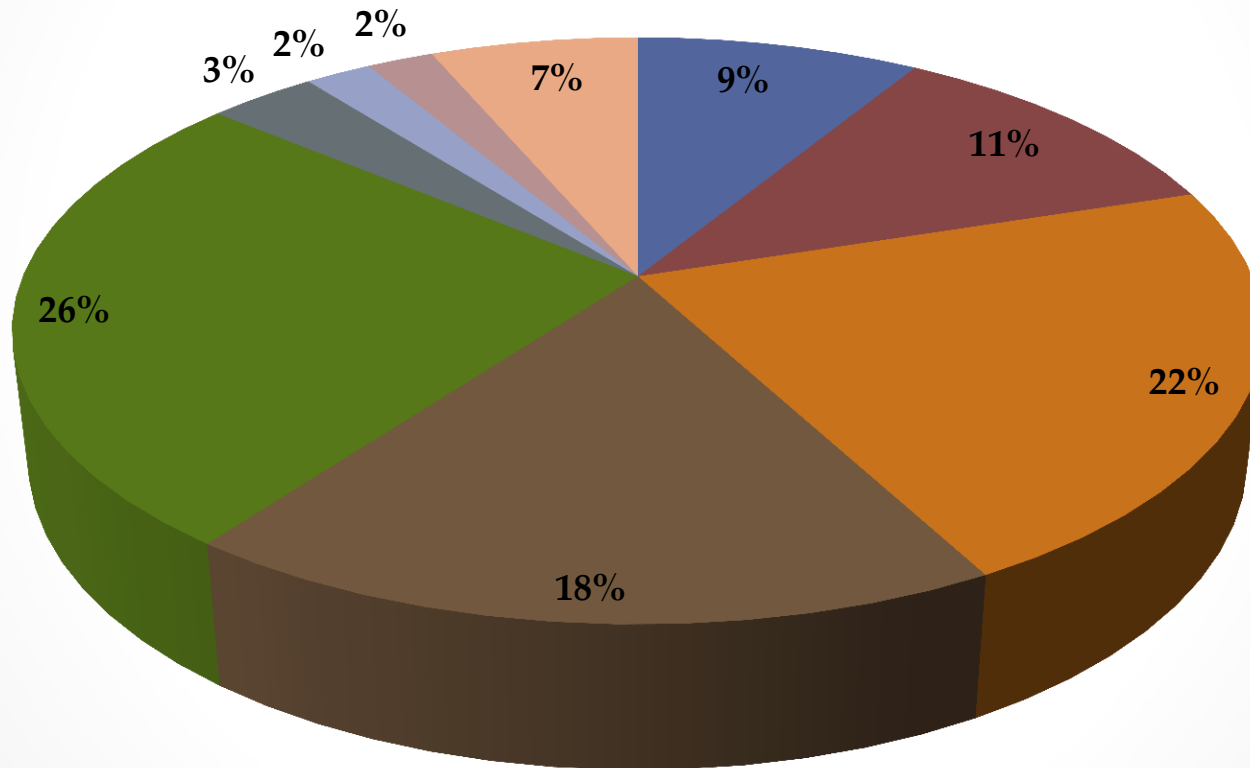
- Smog Check data collected on vehicles randomly pulled over for data collection
- Test is not mandatory, and no enforcement action is taken
- OBD systems caught about 4.5 times as many problems as ASM (2016 data)



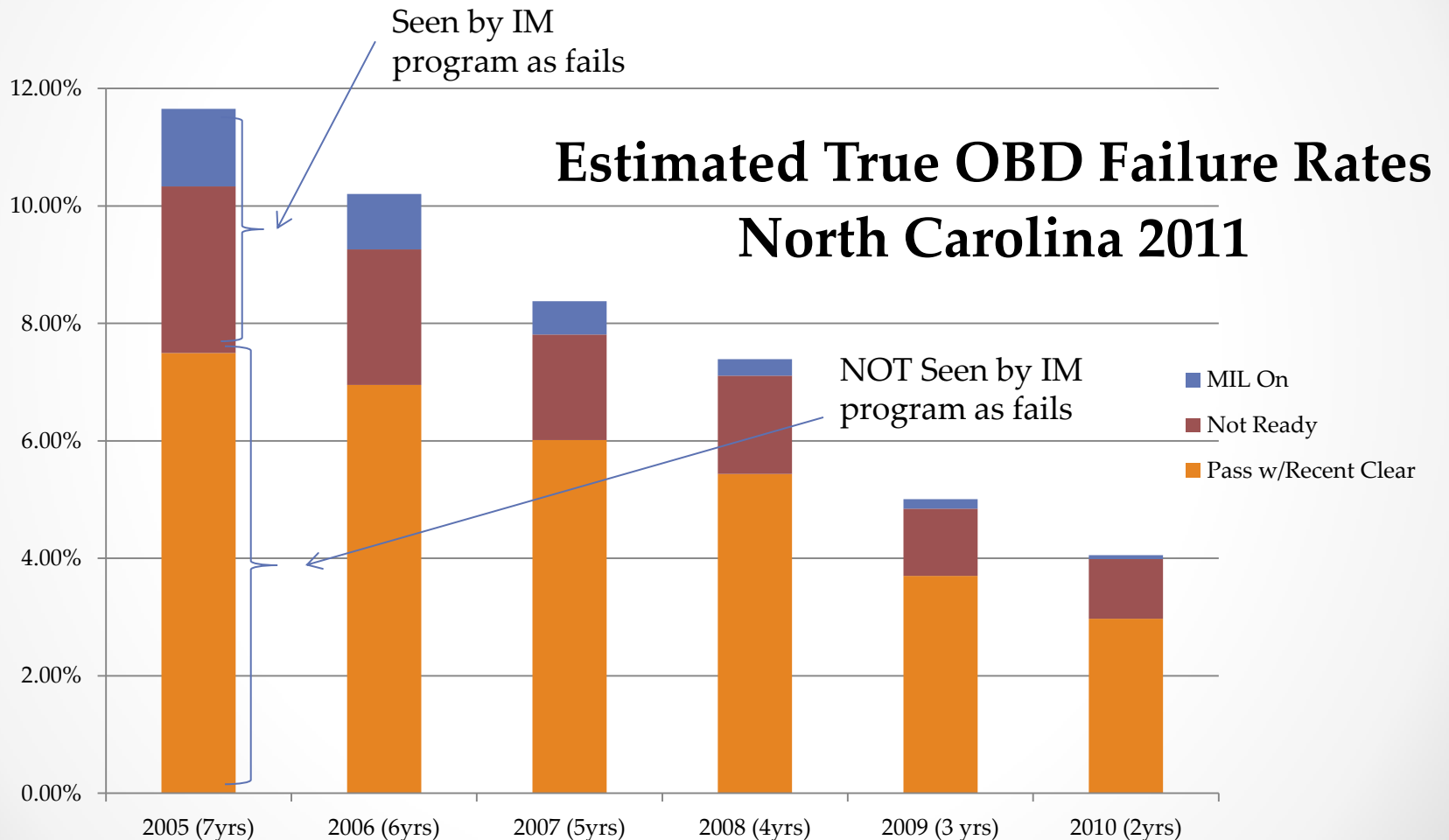


# Problem Areas (vehicles passing ASM with MIL On)

■ MSF ■ FUEL ■ CCM ■ CAT ■ EVAP ■ O2 ■ O2H ■ SAIR ■ EGR

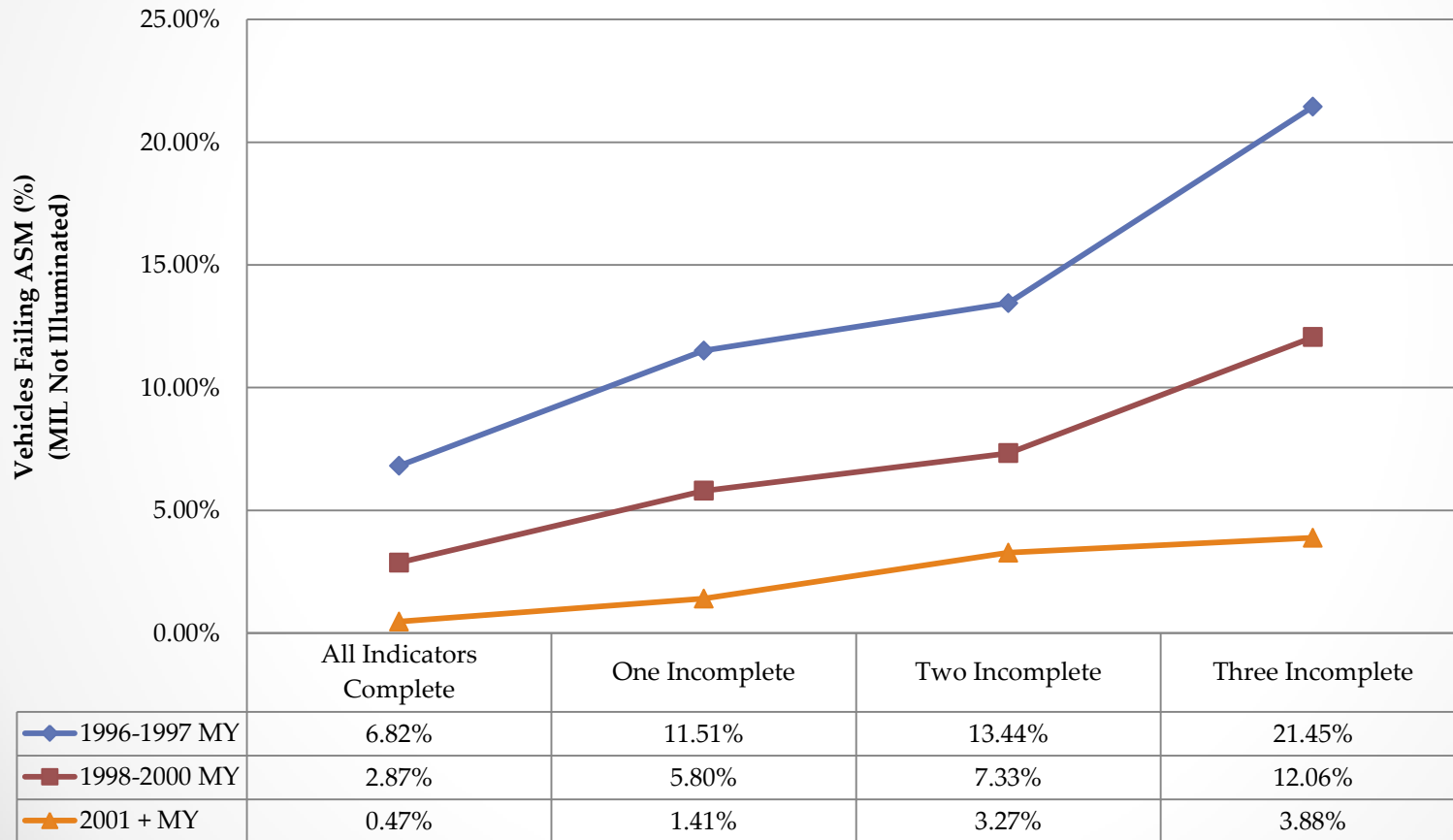


# Only a Fraction of the Benefit is Seen in Smog Check Database



# More Stringent Readiness Improves Benefits

## ASM Failure Rate vs OBD Ready Status



# Consumer Assistance Program (CAP)

- Provides low income motorists with up to \$500 to fix failing vehicle
  - Testing and diagnosis costs paid by owner
- Also includes vehicle retirement option
  - \$1,000 to \$1,500 to have vehicle scrapped
- Money for the program comes through Smog Check and vehicle registration fees.

# Program Enforcement Activities (2015)

- Enforcement in a decentralized program is important maintain program benefits/integrity
- Initial Compliance Inspections (1,407)
  - Ensures that new stations are in compliance before beginning inspections
- Equipment Audits (1,896)
  - Gas analyzers
  - Dynamometers
  - Signs of tampering
- Undercover Runs (973)
  - Vehicles in known condition are taken to stations for undercover inspections

# Enforcement Results (2015)

- Station Citations
  - 1,210 Issued
  - \$891,250 in total fines
- Inspector Citations
  - 1,281 Issued
  - 3,924 hours of re-training
- Disciplinary Actions
  - 292 Total Cases
  - 183 Licenses Revoked
  - 109 Suspensions/Probation

# Summary

- California's Smog Check is working effectively to identify and repair polluting vehicles
- The test procedure relies on the power of vehicle OBD systems for vehicles so equipped
  - Faster and more cost effective than tailpipe testing
  - Stronger OBD designs will produce better results
- Effective means to fix broken vehicles and to enforce the program's objectives are necessary components