

Federal Motor Carrier Safety Administration  
Office of Analysis, Research and Technology

# FMCSA State Data Quality Programs

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Analysis, Research and Technology

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ART Forum





# FMCSA State Data Quality Programs

## Background

- ◆ Data Quality – FMCSA – Priority
- ◆ TEA -21
- ◆ SAFETEA-LU

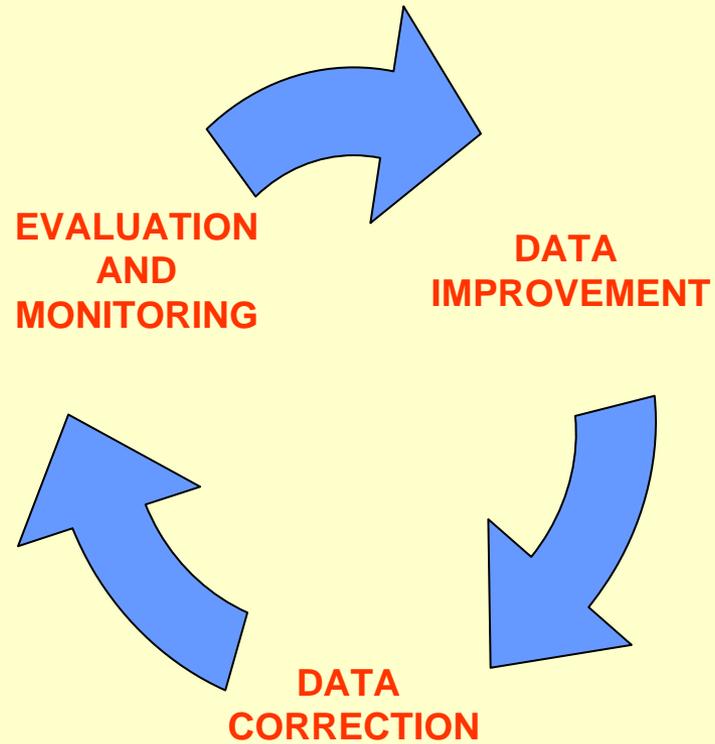


# Data Quality Program

- ◆ DQ Evaluation and Monitoring
  - State Safety Data Quality (SSDQ)
  - State Crash Data Analysis
- ◆ DQ Improvement
  - State Reviews
  - Technical Assistance
  - Analysis and Improvement of State Police Accident Reporting (PAR)
  - Training
  - Funding
- ◆ Data Correction
  - DataQs
  - FARS/MCMIS Matching Tool



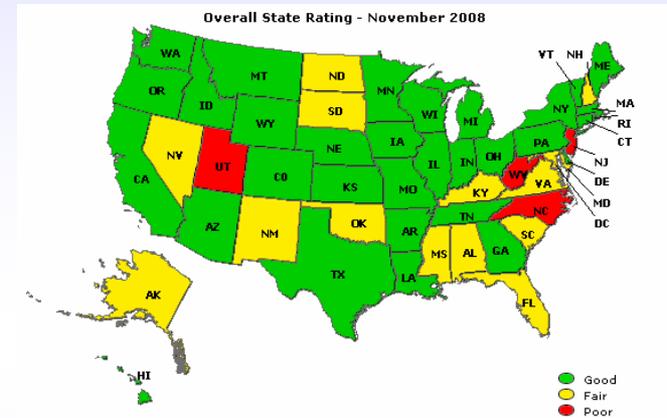
# Data Quality Program



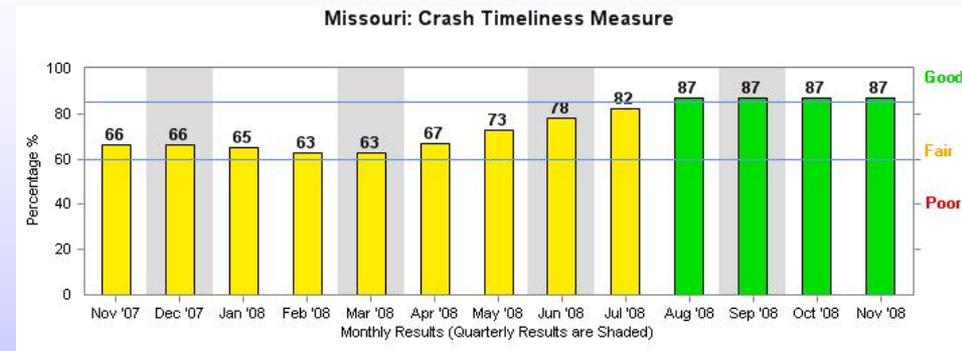
# DQ Evaluation

## State Safety Data Quality (SSDQ)

- ◆ 7 performance measures:
  - Completeness – Fatal crashes; Non-fatal crashes; Record
  - Timeliness – Crash & Inspection uploads;
  - Accuracy – Match of Carrier crash and inspection data to FMCSA Census file



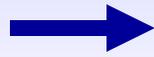
- ◆ 1 overriding indicator
- ◆ Monthly evaluation updates
- ◆ Historical perspective



# DQ Evaluation

## Impact...State Safety Data Quality Evaluation

SSDQ Implemented  
(March 2004)



3-yr Improvement  
(June 2007)

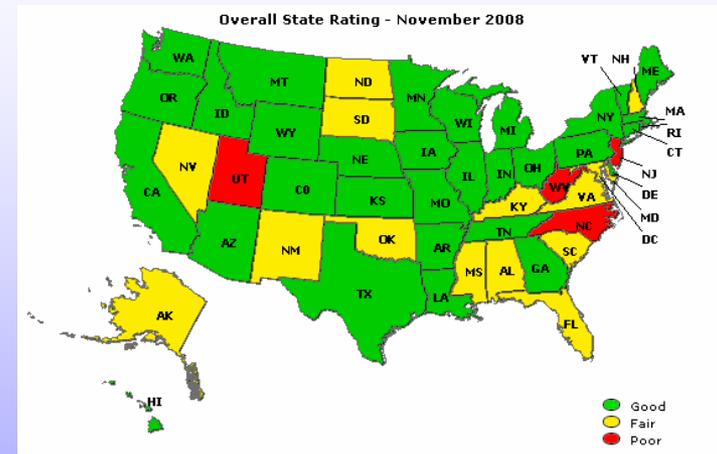


New Measures  
(September 2007)



16-month Improvement  
(January 2009)

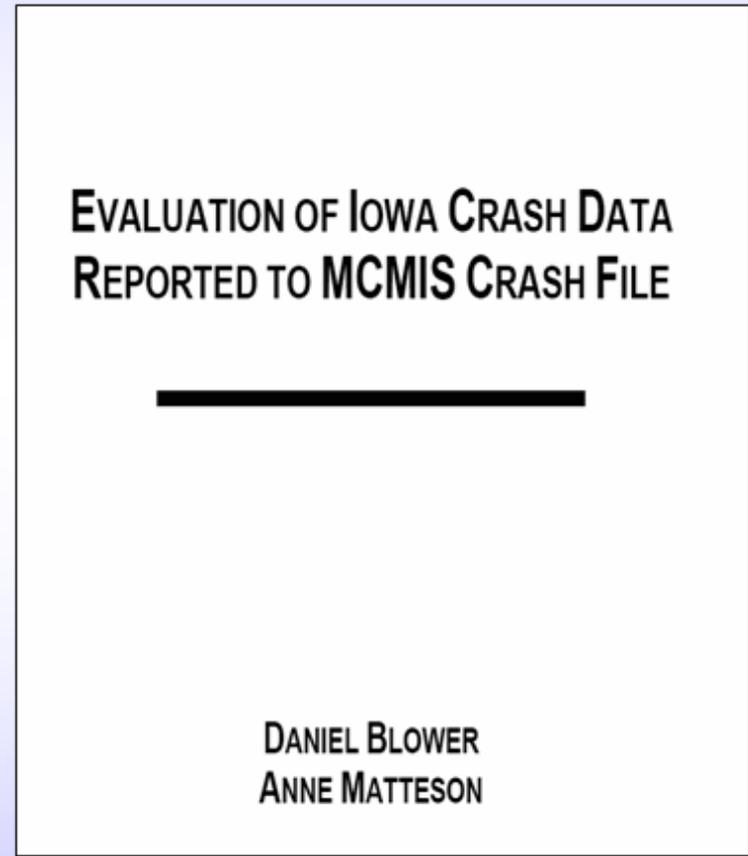
	Mar 2004	Jun 2007	Sep 2007	Jan 2009
<b>Good</b>	24	38	27	32
<b>Fair</b>	13	10	16	14
<b>Poor</b>	14	3	8	5



# DQ Evaluation

## State Crash Data Analysis

- ◆ Evaluation of State Crash Reporting
- ◆ Reports available online
- ◆ Ratio of Crash Severity Analysis (fatal to non-fatal crashes)



28 States

SC, ME, KY, ID, GA, CT, AL, IN, PA, AZ, TN, SD, WI, CA  
NE, LA, OH, MO, IA, MD, WA, IL, NC, NJ, FL, MI, AR, SC



# DQ Evaluation

## State Crash Data Analysis

### *Ratio of Crash Severity Analysis Using Fatal to Predict Non-fatal Crashes*

- ◆ State Data with dependable reporting of fatal and non-fatal crashes to estimate the non-fatal crashes in States that do not necessarily use our selection criteria
- ◆ 90% Prediction Interval
- ◆ Log-linear Regression
- ◆ 13 Data Points using 11 States



# Data Improvements

## State Reviews

### The State Review Process





# Data Improvements

## State Reviews

- ◆ Recommendation Categories
  - Crash Form Improvements
  - Electronic Collection at the Scene
  - Extract Logic/Coding
  - Criteria Applied for Hand-Selecting Crashes
  - Tracking Reports Throughout the Process
  - SAFETYNET Practices
  - Empty Fields Research
  - Organizational Coordination



Comprehensive—NH, NC, PA, NJ, IL TN, LA, IN, MA, NM, MD, WI, OH\*

Focus—SC, MS\*

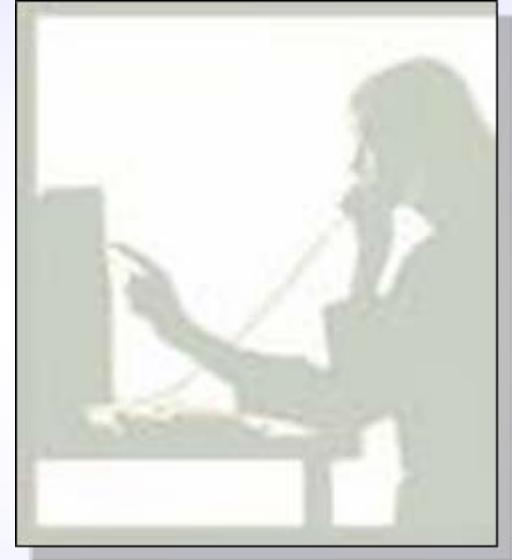
2009—WV, CA, UT, TX, AL



# Data Improvements

## Technical Assistance

- ◆ Monitor SSDQ Evaluation Reports
  - Review SSDQ Measures for improvement
  - Create/Analyze Custom Crash & Inspection Analysis Reports
  - Provide Information/Training to help improve SSDQ
  - Facilitate solutions to identified data quality improvement areas



# Data Improvements

## Analysis and Improvement of State Police Accident Reports and Training

- ◆ On-site & Online
- ◆ Extraction Logic

The screenshot shows the homepage of the FMCSA Crash Data Collection Resource. At the top left, there is a navigation bar with icons for a bus, a truck, and a semi-truck. To the right of the icons is a "HOME PAGE" link and the text "FMCSA Crash Data Collection Resource". Below this is a horizontal menu with five tabs: "Lesson 1", "Lesson 2", "Lesson 3", "Lesson 4", and "Lesson 5". The main content area is divided into two columns. The left column contains a paragraph of text: "These web-based materials are intended to be an educational resource for law enforcement officers, CMV inspection authorities, accident investigation trainers, and State department of transportation accident records developers and users. This resource defines and provides examples for FMCSA related crash data collected and reported to SAFETYNET. To return to this page to enter another selection at anytime, use the 'Home Page' bar at the top right of each page." Below this text is a red note: "NOTE: The companies and carriers shown in any photographs on this site are included for illustrative purposes only. These images in NO WAY indicate or imply unsafe or improper operating practices by those pictured." The right column lists the lessons: "Lesson 1: Selection Criteria", "Lesson 2: Motor Carrier Identification", "Lesson 3: Vehicle Configuration / Cargo Body Type", "Lesson 4: Crash Events", and "Lesson 5: Hazardous Materials". Below the text is a row of five photographs showing various truck accidents: a blue truck overturned, a white truck with a trailer, a black truck with a trailer, a white truck with a trailer, and a white truck with a trailer. Below the photographs is a "Links to Hot Topics" section with five links: "Carrier Identification" (with a blue box labeled "IMPORTANT"), "PAR Guidance" (with a photo of a truck), "GCWR Details" (with a photo of a truck), "Government Vehicles" (with a photo of a truck), and "Rental Vehicles" (with a photo of a truck).



# Data Improvements Funding

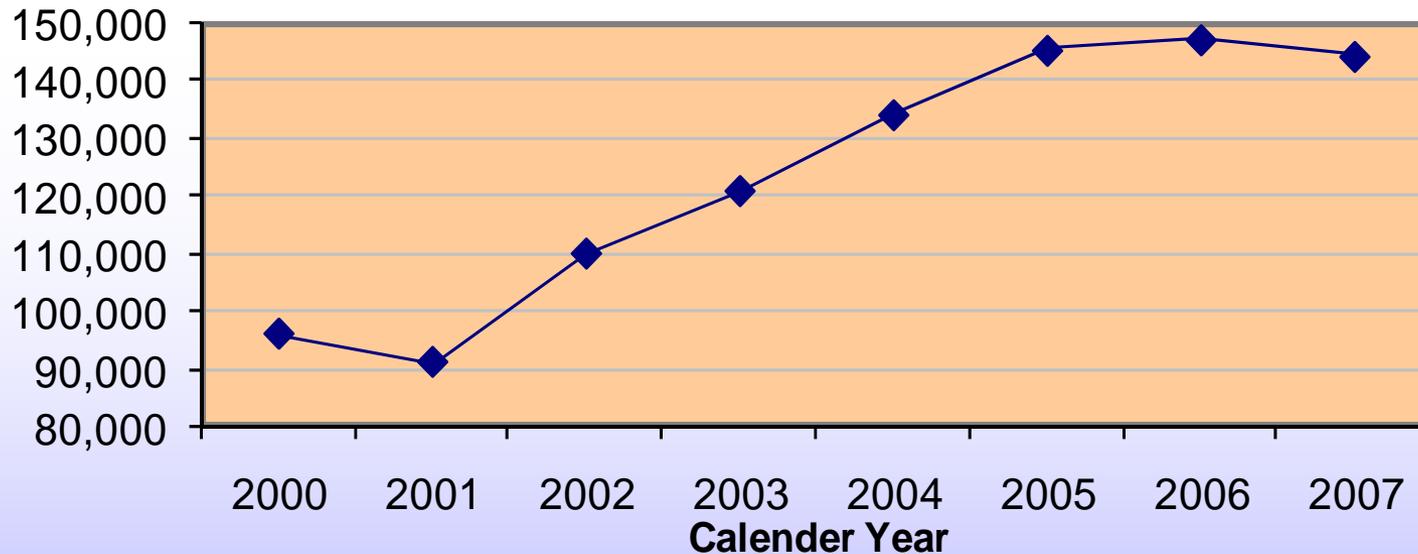
- ◆ Safety Data Improvement Program (SaDIP) Grant Funding
  - 42 States
  - \$32,000,000
  - 2009 – \$3 Million
  - January 30, 2009
  - [Grants.gov](http://Grants.gov)
  - CFDA – 20.234



# DQ Evaluation

## Impact...Comprehensive Data Quality Program

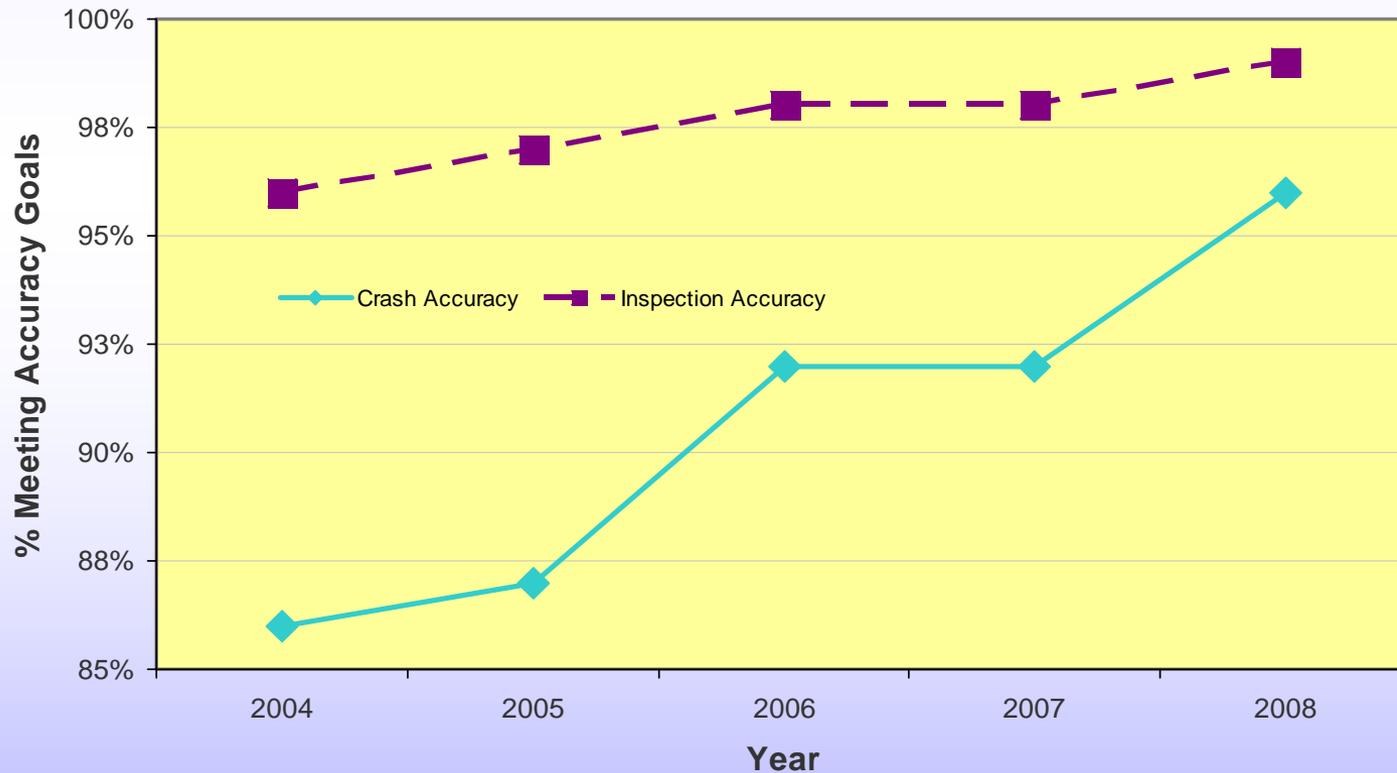
**State Reported Large Trucks Involved in  
Fatal and Non-Fatal Crashes**



# DQ Evaluation

## Impact...Comprehensive Data Quality Program

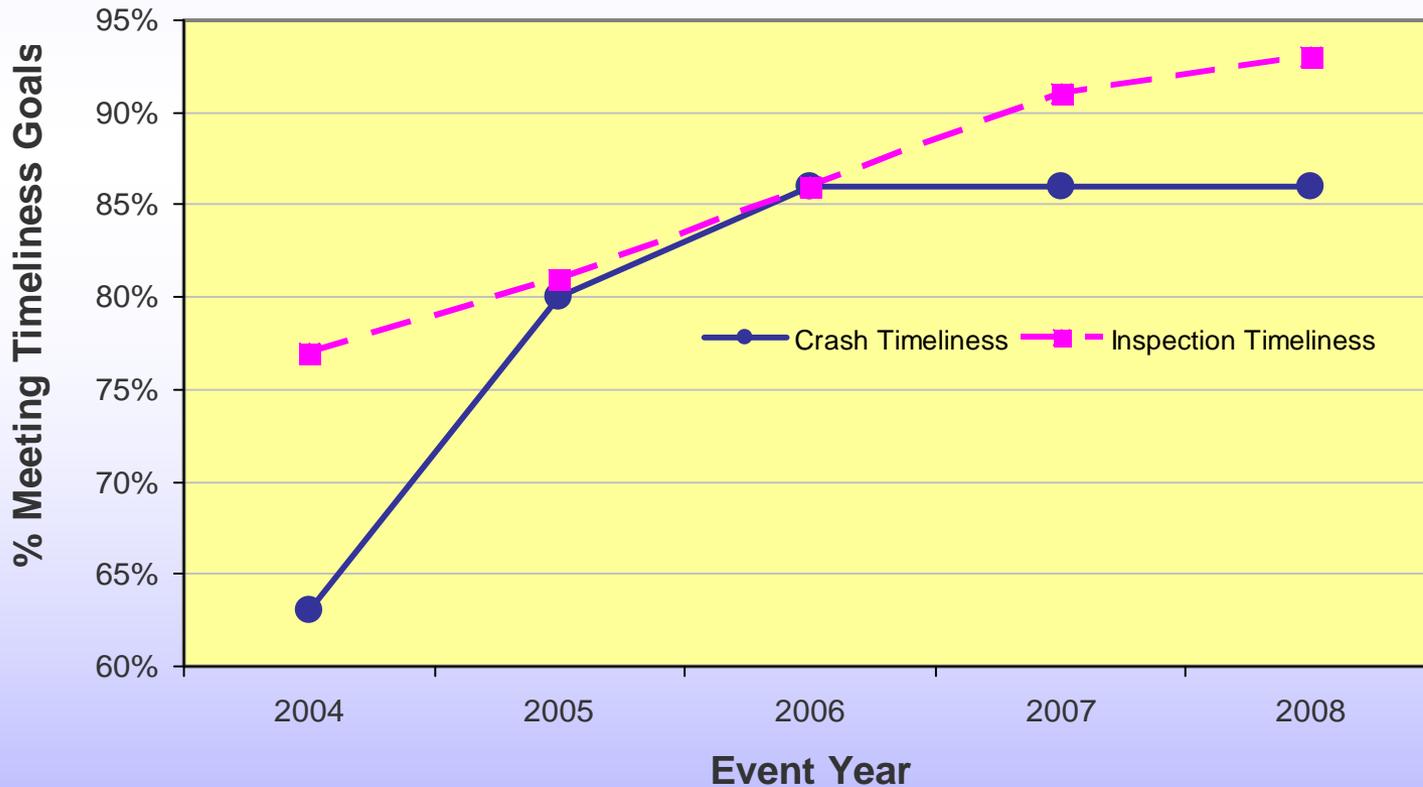
Crash and Inspection Reporting Accuracy Measure



# DQ Evaluation

## Impact...Comprehensive Data Quality Program

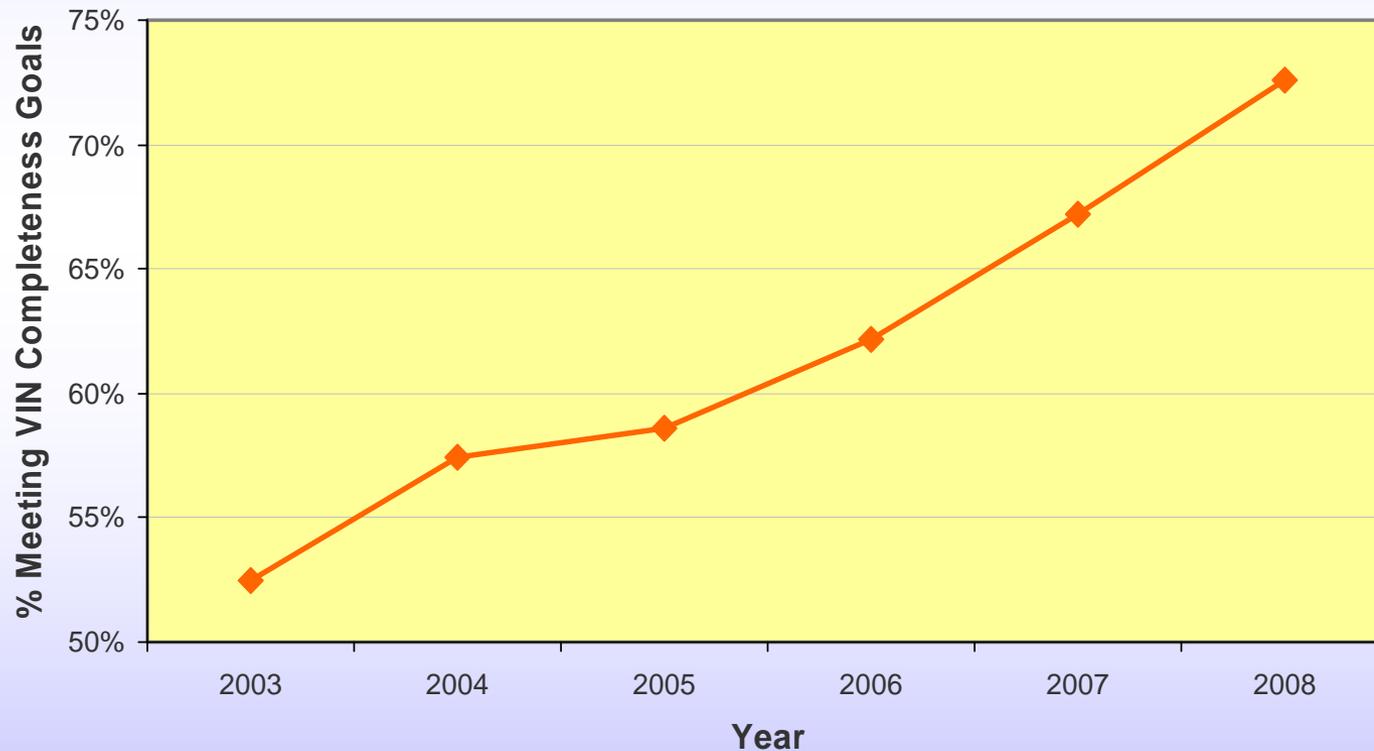
Crash and Inspection Reporting Timeliness Measure



# DQ Evaluation

## Impact...Comprehensive Data Quality Program

Completeness of Vehicle Identification Number (VIN)



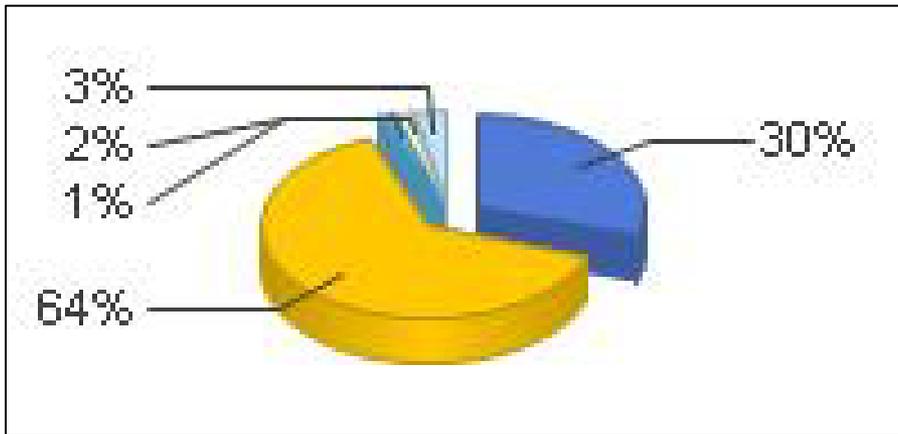


# Data Corrections

## DataQs



**DataQs Data Challenges**  
Feb 2004 – Dec 2008



- Total Crash
- HHG Complaint - Duplicate (Two identical complaints)
- Carrier Information (MCS-150)
- Operating Authority (OP-1, OP-2)
- Insurance Information
- Interstate Carrier - Unregistered (No US DOT #)
- Inspection - Report Request
- HHG Complaint - Fraudulent (Did not do business)
- Total Inspection
- Compliance Review
- Safety Audit
- Enforcement Action
- Other

~45,000 data challenges filed (66% resulting in data updates)  
 ~1,200 new challenges per month  
 ~15,000 general public/motor carrier registrations  
 ~350 new general public/motor carrier registrations per month

# Data Corrections

## FARS/MCMIS Fatal Crash Record Matching Tool

- ◆ A tool designed to help reconcile differences between the number of fatal crash records in the FARS and MCMIS databases:
- ◆ “Match” fatal large truck and bus crash records
- ◆ Record must contain the same information in several key fields (e.g., county, date, time, VIN, DOT #, etc.).



**National Results**   
Provides FARS to MCMIS (fatal crash records) matched counts across all States

**Individual State Results**   
Provides FARS to MCMIS (fatal crash records) matched, potentially matched, and not matched records for each State



# Future Program Improvements

- ◆ DQ Evaluation and Monitoring
  - Enhance SSDQ Evaluation
  - Release New Evaluation Reports
  - Continue State Crash Data Analysis
- ◆ DQ Improvement
  - Conduct more State Reviews
  - Expand Technical Assistance
  - Continue PAR Analysis and Training



# Contact Information

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