SAFETYNET: How to Improve Completeness in Inspections and Crashes
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U.S. DOT Volpe Center

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Learning Objectives

• How to find incomplete records
  • What fields count toward the Completeness measures?
• How to correct incomplete records
• How to make use of new option to indicate legitimately incomplete records
Why Completeness Matters

• Improves data quality and the accuracy of reports

• Helps FMCSA associate crashes and inspections to the appropriate driver, vehicle, and motor carrier – and then prioritize efforts accordingly

• This information drives the safety information used by SMS to identify the motor carriers that pose the greatest safety risk to our Nation’s roads
What Are SSDQ Completeness Measures?

**Crash** and **Inspection Record Completeness** each have a **Driver and Vehicle component** that are averaged together for the overall rating.

- **Driver Identification Evaluation**
- **Vehicle Identification Evaluation**
- **Record Completeness**

You can find methodology details for all measures in the Data Quality Help Center: [https://ai.fmcsa.dot.gov/DataQuality/HelpCenter.aspx](https://ai.fmcsa.dot.gov/DataQuality/HelpCenter.aspx)
Exercise 1: Find Your State’s Completeness Issues

Exercise 1: Inspection Record Completeness SDAR Reports

• Log in at: https://portal.fmcsa.dot.gov/login
• Click “A&I(SMS)” at left
• Choose “Data Quality” → “State Data” and select your State and Measure
• View your State’s Measures: https://ai.fmcsa.dot.gov/DataQuality/StateOverall.aspx
Finding Incomplete Records
Tools for Identifying Incomplete Records and Trends

- State Data Analysis Reports
- SAFETynet Data Quality Tool
- Queries
### SAFETYNET Data Quality Tool:
Inspection Driver Completeness

**FIRST and LAST NAME:**
Initials only, numbers, non-alphanumeric characters, words like ‘PUBLIC,’ ‘STATED,’ etc.

**DATE OF BIRTH:**
age <16 >90 years

**LICENSE NUMBER:**
Three characters or less, non-alphanumeric characters, words like ‘UNREADABLE,’ ‘LICENSE,’ etc.

<table>
<thead>
<tr>
<th>REPORT NUMBER</th>
<th>INSPECTION DATE</th>
<th>INSPECTION TIME</th>
<th>DRIVER/CODRIVER</th>
<th>DRIVER FIRST NAME</th>
<th>DRIVER LAST NAME</th>
<th>DRIVER DATE OF BIRTH</th>
<th>DRIVER LICENSE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN0000577607</td>
<td>01-DEC-19</td>
<td>12:30</td>
<td>Driver</td>
<td>BOB</td>
<td>ROGERS</td>
<td>01-JAN-05</td>
<td>4470933</td>
</tr>
<tr>
<td>IN0000711011</td>
<td>09-NOV-19</td>
<td>13:10</td>
<td>Driver</td>
<td>MAGGIE</td>
<td>GRAHAM</td>
<td>22-OCT-83</td>
<td>UNKNOWN</td>
</tr>
<tr>
<td>IN0000732434</td>
<td>10-MAY-19</td>
<td>16:02</td>
<td>Driver</td>
<td>CARLOS</td>
<td>ACEVEDO</td>
<td>22-FEB-14</td>
<td>19135746</td>
</tr>
</tbody>
</table>
Finding Incomplete Records – Driver

SAFETYNET Data Quality Tool:
Crash Driver Completeness

**FIRST and LAST NAME:**
initials only, numbers, non-alphanumeric characters, words like ‘PUBLIC,’ ‘STATED,’ etc.

**DATE OF BIRTH:**
age <16 or >90 years

**LICENSE NUMBER:**
three characters or less, non-alphanumeric characters, words like ‘UNREADABLE,’ ‘LICENSE,’ etc.

**LICENSE CLASS:**
Blank or not equal to A, B, C, D or M

<table>
<thead>
<tr>
<th>REPORT NUMBER</th>
<th>CRASH DATE</th>
<th>CRASH TIME</th>
<th>SEQ#</th>
<th>FIRST NAME</th>
<th>LAST NAME</th>
<th>DATE OF BIRTH</th>
<th>LICENSE NUMBER</th>
<th>LICENSE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN00000000000</td>
<td>28-JUL-20</td>
<td>12:00</td>
<td>1</td>
<td>DRIVER</td>
<td>123415</td>
<td>11-NOV-11</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>IN00000444444</td>
<td>17-OCT-19</td>
<td>09:15</td>
<td>1</td>
<td>MARY</td>
<td>QUINN</td>
<td>16-AUG-76</td>
<td>AC037213</td>
<td></td>
</tr>
<tr>
<td>IN0011009246</td>
<td>17-MAR-19</td>
<td>12:28</td>
<td>1</td>
<td>BOB</td>
<td>ALLEN</td>
<td>21-JAN-64</td>
<td>47010139</td>
<td></td>
</tr>
</tbody>
</table>
## Finding Incomplete Records – Vehicle

### SAFETYNET Data Quality Tool:
Inspection Vehicle Completeness

**LICENSE NUMBER:** Three characters or less, non-alphanumeric characters, words like ‘UNREADABLE,’ ‘LICENSE,’ etc.

**GVWR:** Blank or values between 0 and 1,000.

<table>
<thead>
<tr>
<th>REPORT NUMBER</th>
<th>INSPECTION DATE</th>
<th>INSPECTION TIME</th>
<th>UNIT NUMBER</th>
<th>VEHICLE LICENSE NUMBER</th>
<th>GVWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN0000475027</td>
<td>29-MAY-19</td>
<td>08:30</td>
<td>1</td>
<td>P147112</td>
<td></td>
</tr>
<tr>
<td>IN0000475030</td>
<td>24-NOV-19</td>
<td>10:00</td>
<td>2</td>
<td>98X22H</td>
<td></td>
</tr>
<tr>
<td>IN0000475030</td>
<td>24-NOV-19</td>
<td>10:00</td>
<td>1</td>
<td>980CF2</td>
<td></td>
</tr>
</tbody>
</table>
### Finding Incomplete Records – Vehicle

**SAFETYNET Data Quality Tool:** Crash Vehicle Completeness

**Vehicle Configuration:** Blank  
**Cargo Body Type:** Blank  
**GVWR:** Blank

**LICENSE NUMBER:** Three characters or less, non-alphanumeric characters, words like 'UNREADABLE,' 'LICENSE,' etc.

<table>
<thead>
<tr>
<th>REPORT NUMBER</th>
<th>CRASH DATE</th>
<th>CRASH TIME</th>
<th>SEQ#</th>
<th>VEHICLE CONFIG</th>
<th>CARGO BODY TYPE</th>
<th>GVWR</th>
<th>LICENSE PLATE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN000000000000</td>
<td>28-JUL-20</td>
<td>12:00</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>111111111</td>
</tr>
<tr>
<td>IN0000022222</td>
<td>08-SEP-15</td>
<td>10:05</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td>B42856</td>
</tr>
<tr>
<td>IN000000222222</td>
<td>02-JUL-20</td>
<td>10:05</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td>B42856</td>
</tr>
</tbody>
</table>
Exercise 2: Using the SAFETYNET Data Quality Tool

Exercise 2: Data Quality Tool

- Run the tool for crashes for _____ to _____
- Run the tool for inspections for _____ to _____
- Review the results to identify the specific problem(s) for each returned record
State Data Analysis Reports (SDARs)

- Visit [https://ai.fmcsa.dot.gov/DataQuality/](https://ai.fmcsa.dot.gov/DataQuality/)
- Click on your State
- Scroll down and click Crash or Inspection Record Completeness
- When logged in, you will see “Supplemental Reports”

<table>
<thead>
<tr>
<th>Crash</th>
<th>Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supplemental Reports</strong></td>
<td></td>
</tr>
<tr>
<td>Prior Methodology Results</td>
<td></td>
</tr>
<tr>
<td>Records to Research</td>
<td></td>
</tr>
<tr>
<td>Complete Record Analysis</td>
<td></td>
</tr>
<tr>
<td>Driver Evaluation by Upload Month</td>
<td></td>
</tr>
<tr>
<td>Vehicle Evaluation by Upload Month</td>
<td></td>
</tr>
<tr>
<td><strong>Supplemental Reports</strong></td>
<td></td>
</tr>
<tr>
<td>Prior Methodology Results</td>
<td></td>
</tr>
<tr>
<td>Records to Research</td>
<td></td>
</tr>
<tr>
<td>Driver Evaluation by Upload Month</td>
<td></td>
</tr>
<tr>
<td>Vehicle Evaluation by Upload Month</td>
<td></td>
</tr>
<tr>
<td>Driver Records Reported by Inspector ID</td>
<td></td>
</tr>
<tr>
<td>Vehicle Records Reported by Inspector ID</td>
<td></td>
</tr>
</tbody>
</table>
Resources to Improve SAFETYNET Completeness
Crash and Inspection Resources for Missing Data

**Driver’s Name, DOB, License (# and Class)**
- DIR
- DSMS
- NLETS
- Query Central
- MCMIS
- SAFER
- SMS
- Call the carrier

**GVWR, Vehicle Configuration, Cargo Body Type, License Number, VIN**
- DIR
- DSMS
- NLETS
- Query Central
- VIN decoder
- Call the carrier
Discussion: Best Practices
Exercise 3: Improving Completeness

Exercise 3: Finding Missing Data

• Look at the results from the Data Quality Tool
• Pick a record to investigate
• Consult your job aid “Finding Missing Information” for ideas and conduct research to complete the record
Coding Legitimately Incomplete Records

• Optional

• Only use after research shows data are not available or applicable

• Enter keywords in the driver “last name” field of a crash record to exclude the record from the driver evaluation:
  • Attenuator
  • Autonomous
  • Hit and run
  • Parked
  • Stolen
  • Driverless
  • Unknown
Other Known Issues

<table>
<thead>
<tr>
<th>Situation</th>
<th>Accounted for in SSDQ Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimately missing data (parked, driverless, stolen, attenuator, hit and run, autonomous)</td>
<td>X</td>
</tr>
<tr>
<td>Driver with no license and a citation</td>
<td></td>
</tr>
<tr>
<td>New vehicles with no plates</td>
<td></td>
</tr>
<tr>
<td>Glider kit VINs</td>
<td>X (mostly)</td>
</tr>
<tr>
<td>VINs that are not 17 digits</td>
<td></td>
</tr>
</tbody>
</table>
Have Questions? Let Us Know!

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Additional Resources:
Data Quality Website
http://ai.fmcsa.dot.gov/DataQuality

DataQs Website
http://dataqs.fmcsa.dot.gov/

Thank You!