



CVSA and FMCSA

SSDQ Performance Measures: Crash Accuracy Inspection Accuracy

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CVSA Spring Workshop



Office of Research and Information Technology

Introduction

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Presenter, Improvement Strategies

Agenda

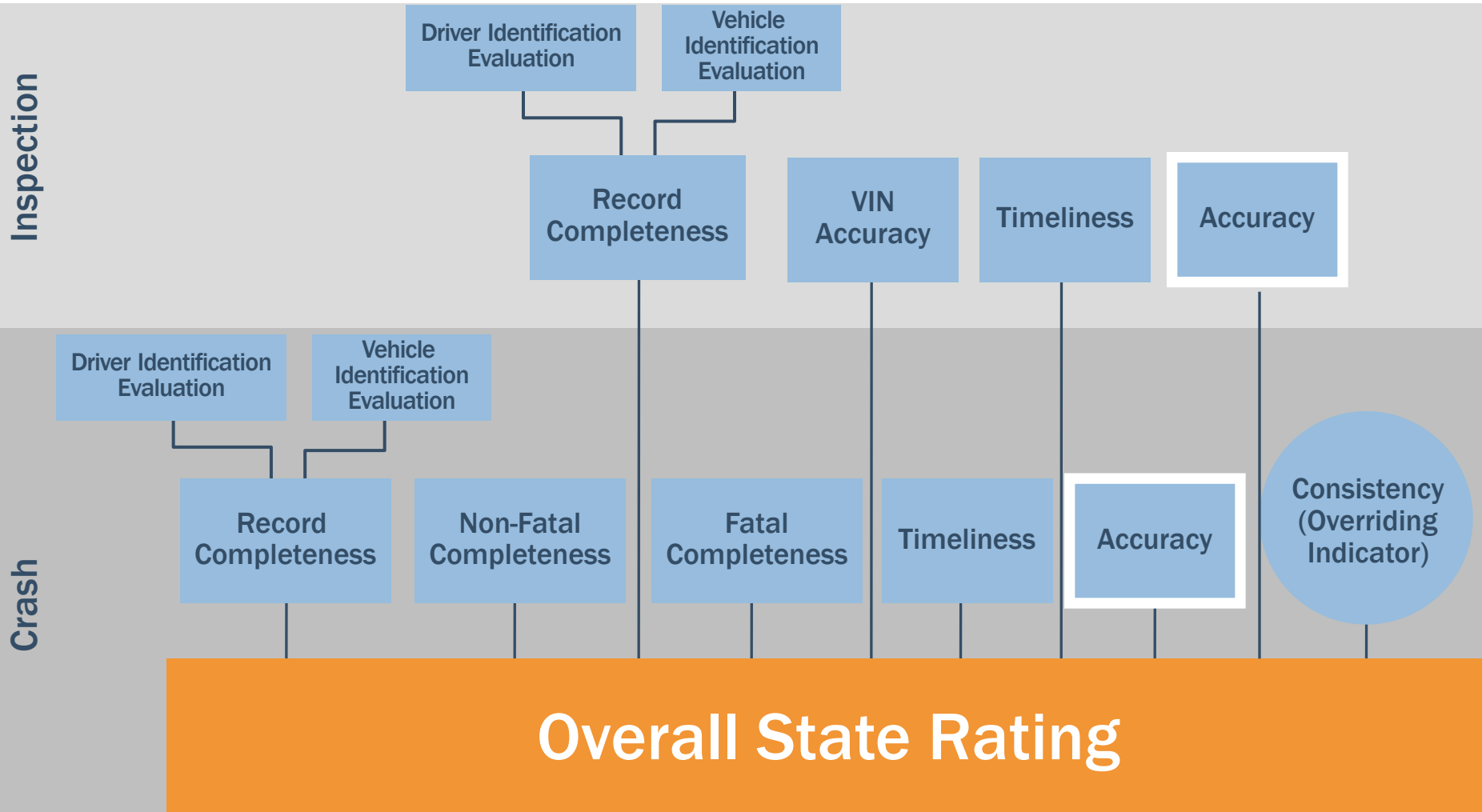
- Overview of Accuracy Measures
- Why Data Accuracy Matters
- Training Objectives and Expected Outcomes
- How State Ratings Are Determined
- How to Interpret Data Quality Reports
- How to Improve Data Quality



Overview of Accuracy Measures

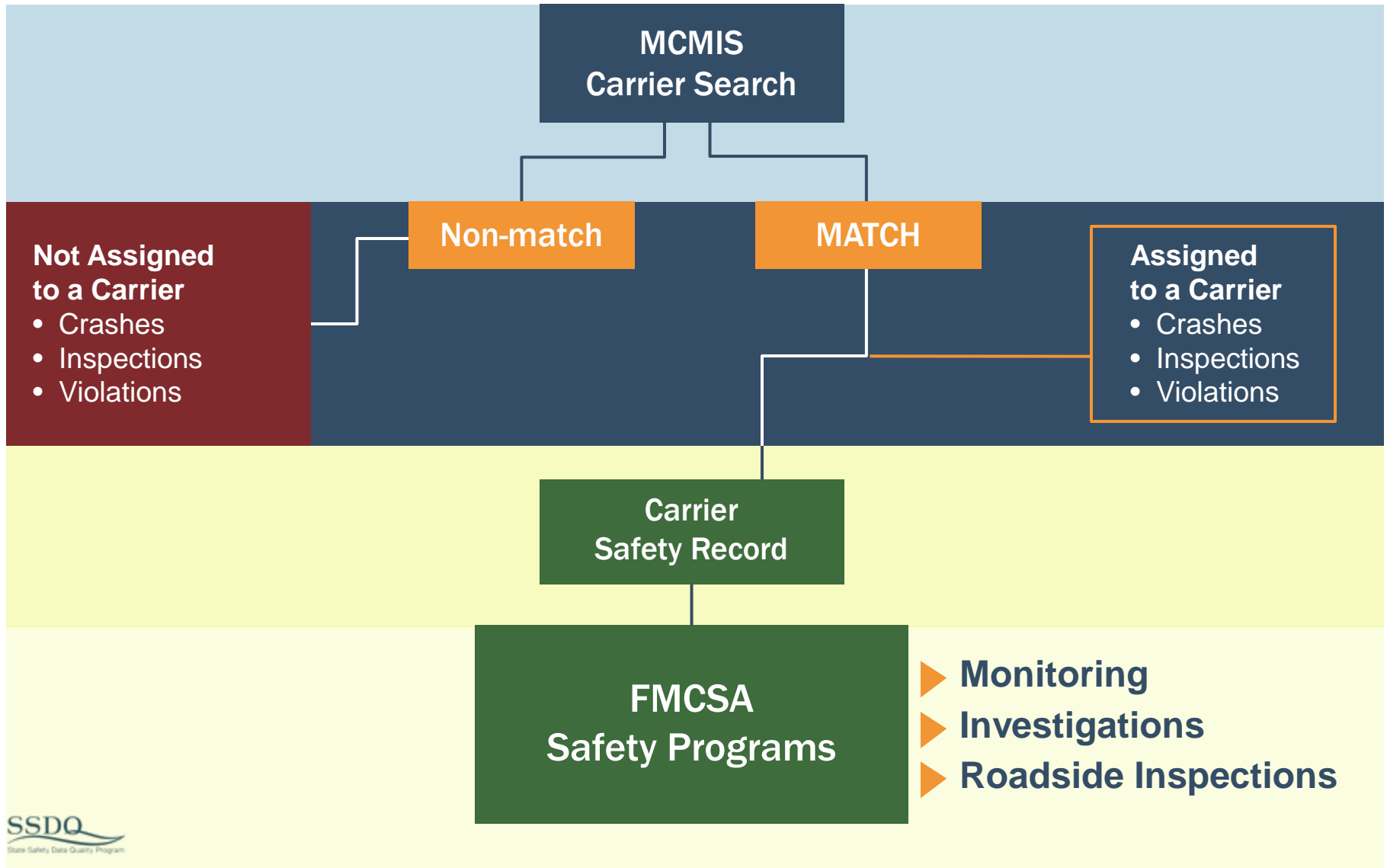
- **Crash Accuracy:** the percentage of crash records reported by a State over a 12-month period matched to a motor carrier registered in the Motor Carrier Management Information System (MCMIS)
- **Inspection Accuracy:** the percentage of inspection records reported by a State over a 12-month period matched to a motor carrier registered in MCMIS

State Safety Data Quality (SSDQ) Measures





Why Data Accuracy Matters



Training Objectives

- Explain the Crash and Inspection Accuracy performance measures
- Show how data collection and processing errors can affect Accuracy ratings
- Demonstrate the importance of assigning the correct carrier type to records and how to do so
- Explore new non-match reports
- Identify FMCSA resources for improving data quality

Expected Outcomes

- Understand Accuracy performance measure methodology
- Interpret Accuracy rating results
- Interpret Accuracy State Data Analysis Reports (SDAR)
- Identify potential sources of collection and reporting issues
- Use new non-match reports
- Assign correct carrier type

How State Ratings Are Determined



Methodology

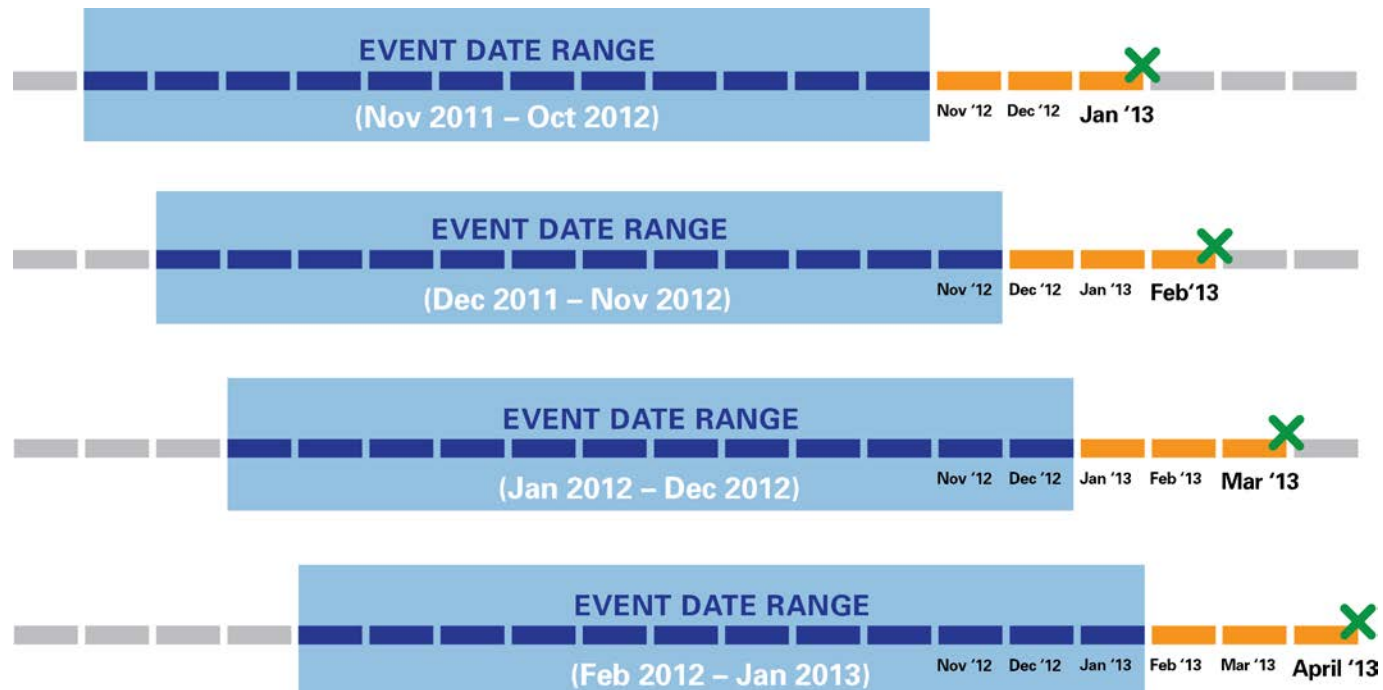
- Determines a rating (Good, Fair, Poor) based on percent of matched U.S. DOT numbers in MCMIS records over 12 months
- Does not evaluate records representing non-motor carriers
- Evaluates records with carrier types of:
 - Interstate
 - Intrastate HM



Evaluation Period = Event Date Range

12 Months of MCMIS Data

- Based on event date, not upload date
- “Rolling” 12-month period
- Excludes the most recent 3 months








Ratings

- Accuracy ratings calculated each month
- Results posted on the A&I Data Quality Website

$$\frac{\text{Number of Matched Records}}{\text{Number of Evaluated Records}} = \text{Percent of Matched Records}$$

Rating		Criteria
Good		Percentage of matched records is $\geq 95\%$
Fair		Percentage of matched records is 85 - 94%
Poor		Percentage of matched records is $< 85\%$

How to Interpret Data Quality Reports



How to Use Data Quality Reports

Three types of reports:

1 *Rating Results*

2 *State Data
Analysis Reports*

3 *Custom Reports*

What you can do with them:

Spot trends in reporting

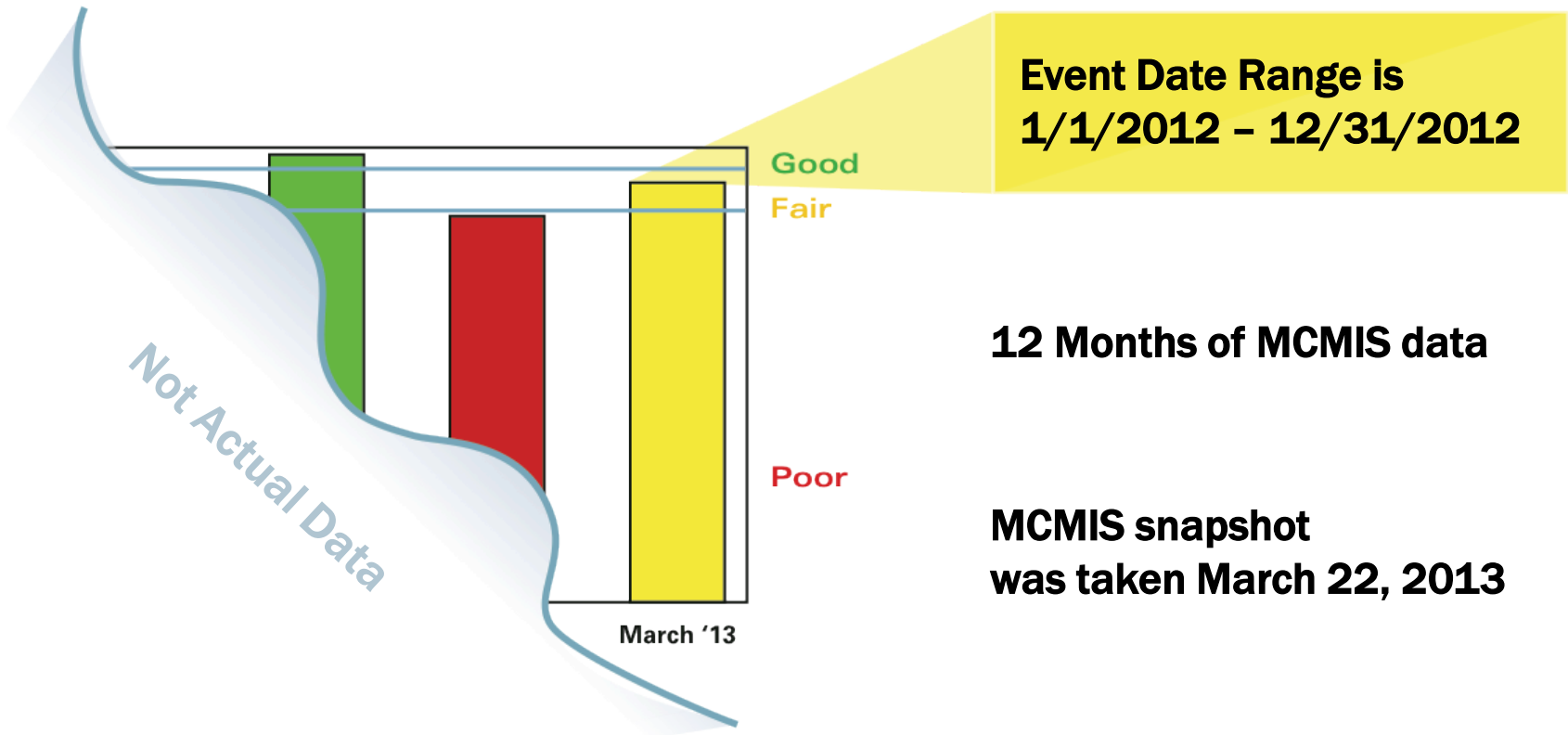


Identify problems with data collection

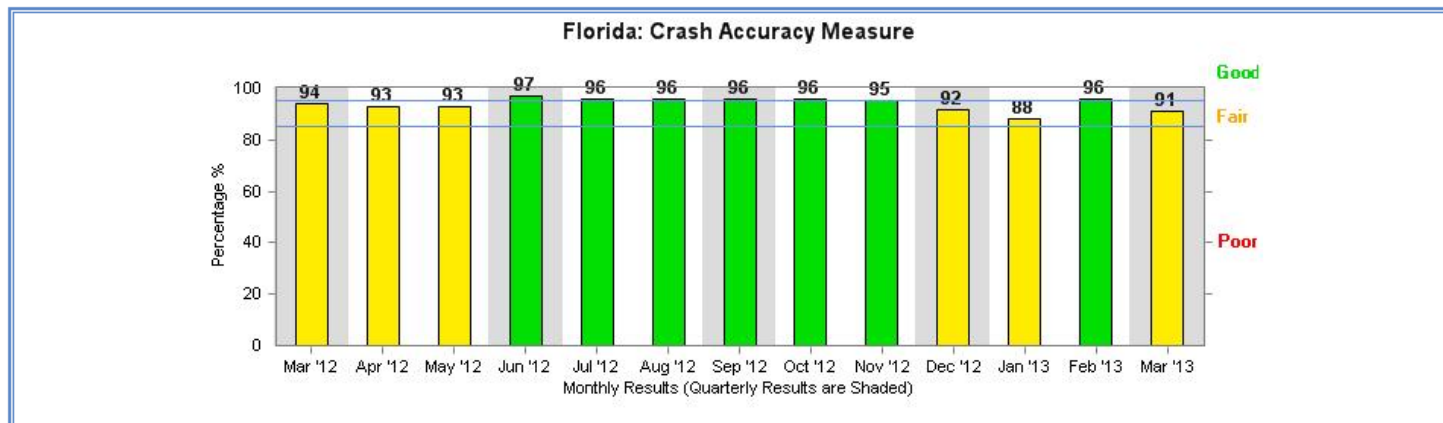
Review/correct specific records



Monthly Rating Results



Crash Accuracy Results



Florida: Crash Accuracy Measure									Download Data
Monthly Results	MCMIS Run Date	Event Date Range	Rating	# Interstate & HM Intrastate Crash Records	# UnMatched Records	% UnMatched Records	# Matched Records	% Matched Records	
Mar '13	3/22/2013	1/1/2012 - 12/31/2012	●	2,180	191	9%	1,989	91%	
Feb '13	2/22/2013	12/1/2011 - 11/30/2012	●	2,053	85	4%	1,968	96%	

How to Interpret

- Rating results display the last 13 ratings in a bar chart and a table
- Each rating based on the percentage of matched records in MCMIS
- Compare current and previous results to identify trends

When to Act

- Unusual or significant change in percent of matched records
- Slow decline in rating
- Even when the rating is Good



Inspection Accuracy Results

Room for improvement, even for Good ratings:

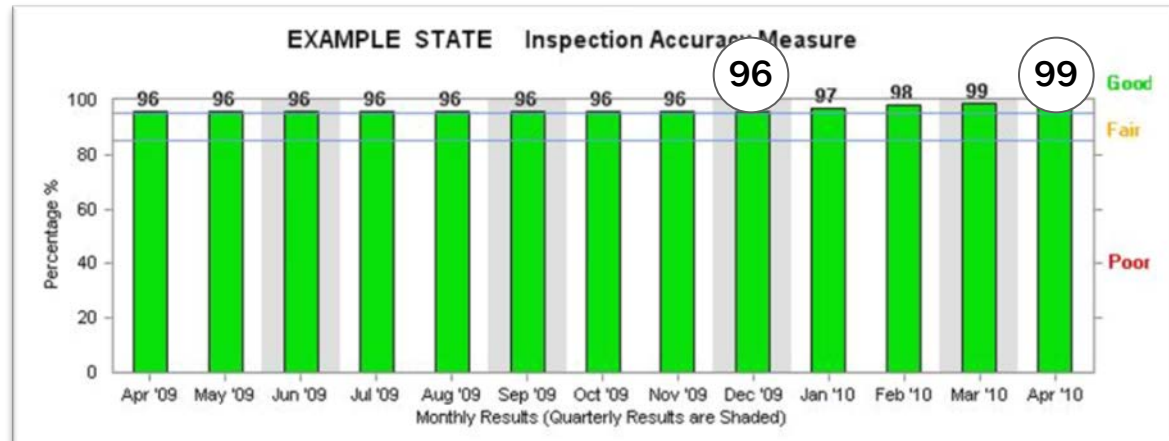
- Most States have a Good rating, but...
- A few percentage points can mean thousands of unmatched records

Example State improved:

- Carrier type assignment
- Research and correction
- Rating from 96% to 99%

▪ Reduced unmatched records by 1,817

▪ But still more than 1,000 unmatched!



Inspection Accuracy Measure									Download Data
Monthly Results	MCMIS Run Date	Event Date Range	Rating	# Interstate & HM Intrastate Inspection Records	# UnMatched Records	% UnMatched Records	# Matched Records	% Matched Records	
Apr '10	4/23/2010	2/1/2009 - 1/31/2010	●	79,781	1,111	1%	78,670	99%	
Mar '10	3/26/2010	1/1/2009 - 12/31/2009	●	79,469		1%	78,340	99%	
Feb '10	2/19/2010	12/1/2008 - 11/30/2009	●	78,680	1,210	2%	77,410	98%	
Jan '10	1/22/2010	11/1/2008 - 10/31/2009	●	78,630	2,552	3%	76,078	97%	
Dec '09	12/18/2009	10/1/2008 - 9/30/2009	●	78,179	2,869	4%	75,310	96%	
Nov '09	11/20/2009	9/1/2008 - 8/31/2009	●	76,922	2,858	4%	74,064	96%	
Oct '09	10/23/2009	8/1/2008 - 7/31/2009	●	76,938	2,928	4%	74,010	96%	



State Data Analysis Reports (SDAR)

Crash Accuracy – Records Reported by Agency and Badge Number

Crash Accuracy - Records Reported by Agency and Badge #					Download Data
<u>Agency</u> Click link to show/hide badge #s	UnMatched Records		Matched Records		<u># Interstate & HM Intrastate Crash Records</u>
	<u># Records</u>	<u>% Records</u>	<u># Records</u>	<u>% Records</u>	
State Total	86	13%	591	87%	677
COUNTY SHERIFF (111 Badge #s)	53	22%	191	78%	244
HIGHWAY PATROL (113 Badge #s)	21	6%	339	94%	360
CITY POLICE (63 Badge #s)	11	15%	60	85%	71
: PD (2 Badge #s)	1	50%	1	50%	2

How to Interpret

Sort by:

- Agency and/or badge number
- Number or percent of unmatched and matched records
- Total evaluated records

When to Act

- Individual or agency with high numbers or percent of unmatched records
- Widespread distribution of unmatched records

SDAR (cont.)

Inspection Accuracy – Records Reported by Inspector ID

Inspection Accuracy - Records Reported by Inspector ID					Download Data
Inspector ID #	UnMatched Records		Matched Records		# Interstate & HM Intrastate Inspection Records
	# Records	% Records	# Records	% Records	
Insp ID #'s hidden from view	374	1%	73,124	99%	73,498
	32	10%	297	90%	329
	16	3%	610	97%	626
	11	2%	550	98%	561

How to Interpret

Sort by:

- Inspector ID
- Number or percent of unmatched and matched records
- Total evaluated records

When to Act

- Inspectors (single or groups) with high numbers or percent of unmatched records
- Widespread distribution of unmatched records



Custom Reports

Explore specific data quality issues:

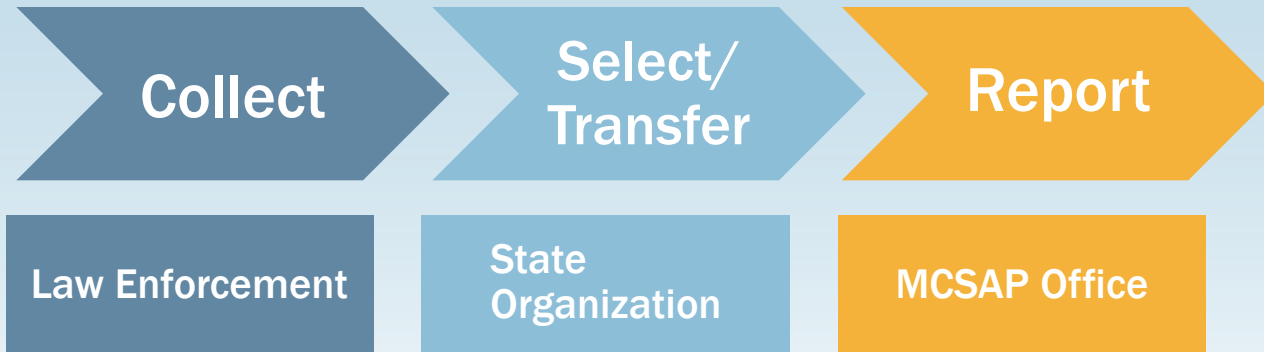
- Identify inspection collection method (Aspen or other)
- Target by month of inspection or crash to highlight trends
- Identify all non-matched records and supporting details



Data Collection and Reporting Process

Key to improving crash and inspection accuracy:
Apply FMCSA reporting requirements throughout the reporting process

FMCSA Requires Complete Carrier Information





Report to Federal Systems



MCSAP Office

- Responsible for uploading complete, accurate safety data to FMCSA systems
- Includes resolving unmatched records if carrier information is incomplete

How to Resolve Unmatched Records



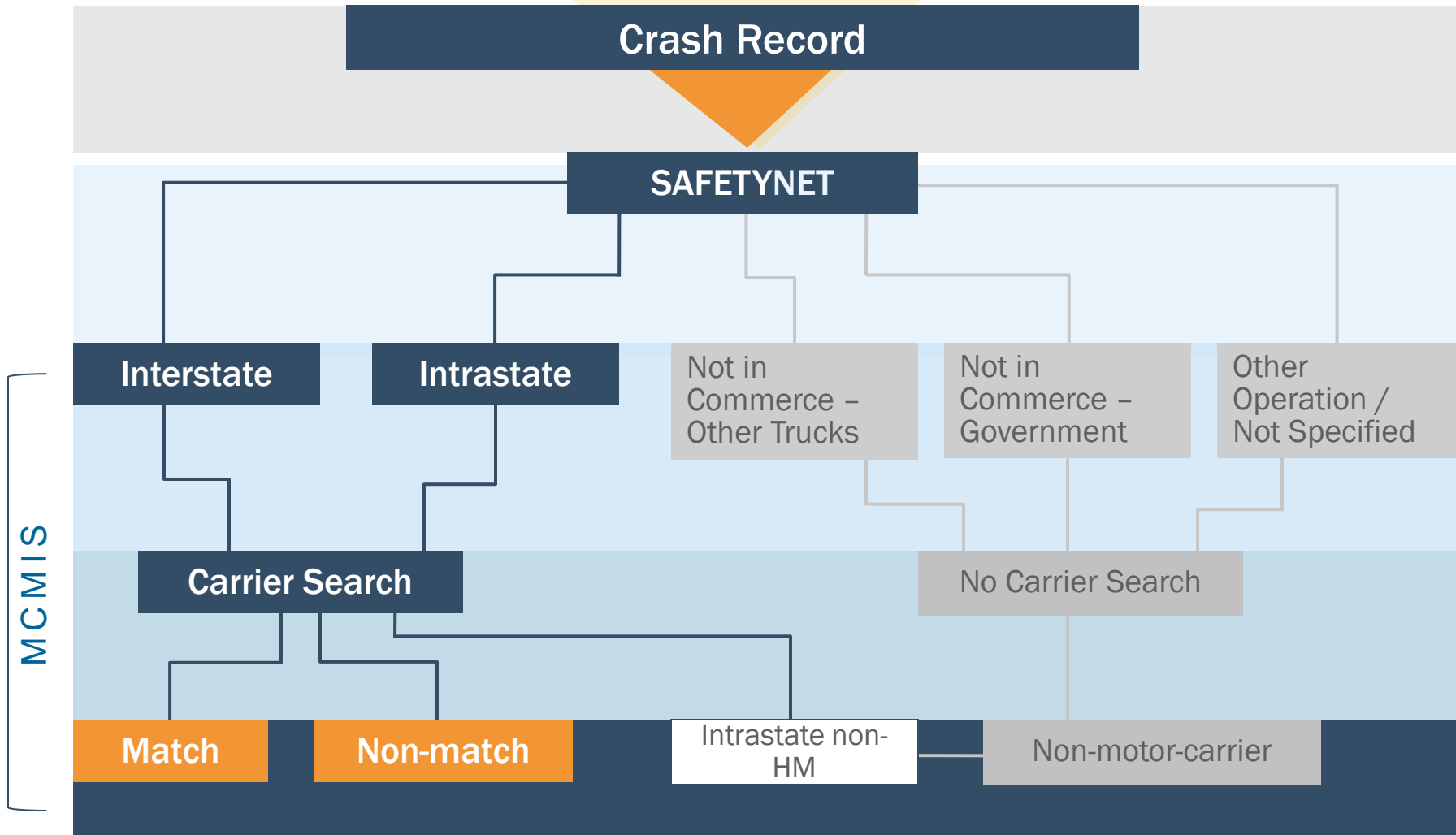
How to Resolve Unmatched Records

Research and complete blank or incorrect carrier fields:

- Assign correct carrier type
- Review non-match report of existing unmatched crash or inspection records *
- Use carrier search tool in SAFETYNET on new records
- Research using FMCSA and State systems; call the carrier
- Correct carrier information per your State's procedures

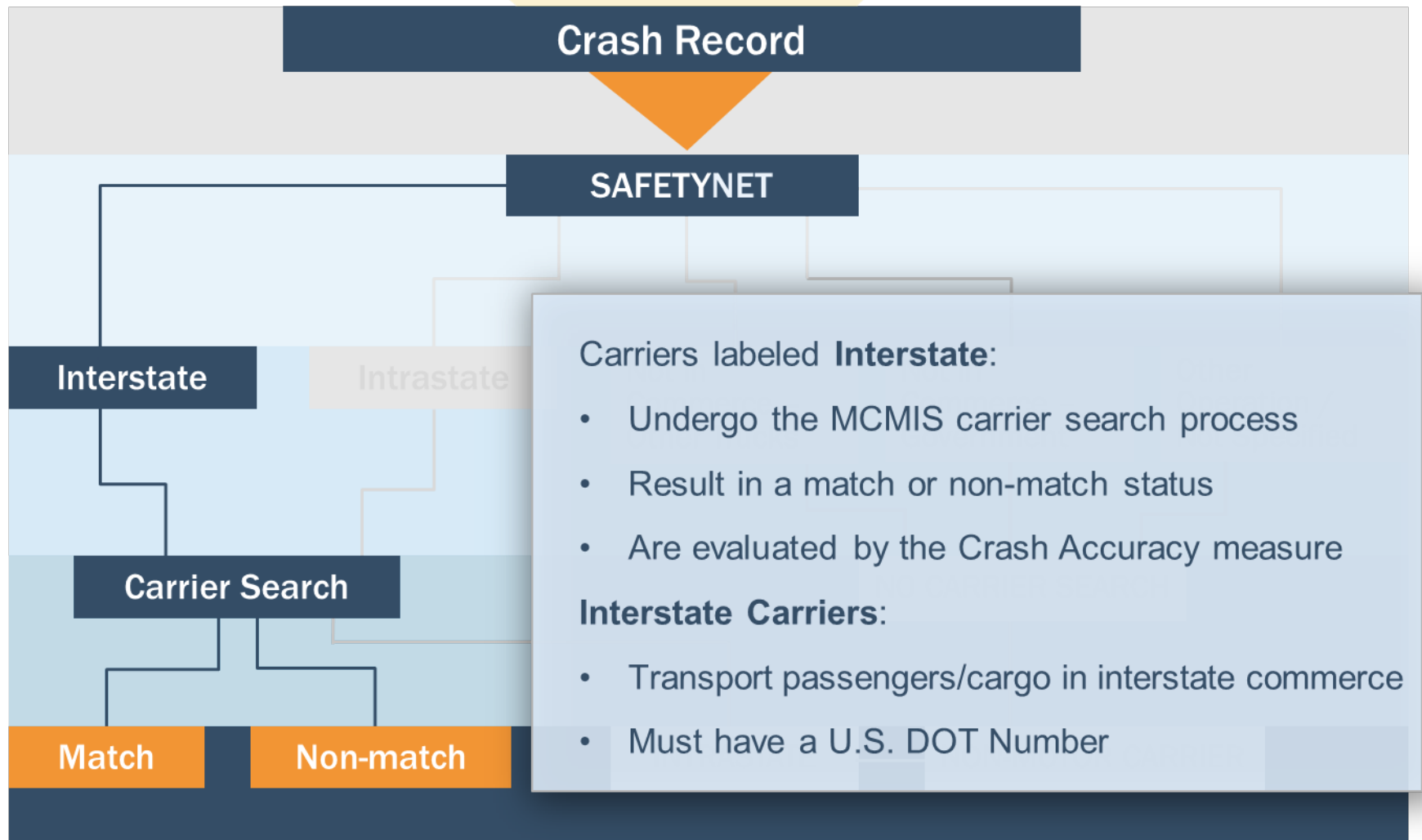
*Custom report available through the Technical Analyst (TA)

Carrier Types in MCMIS

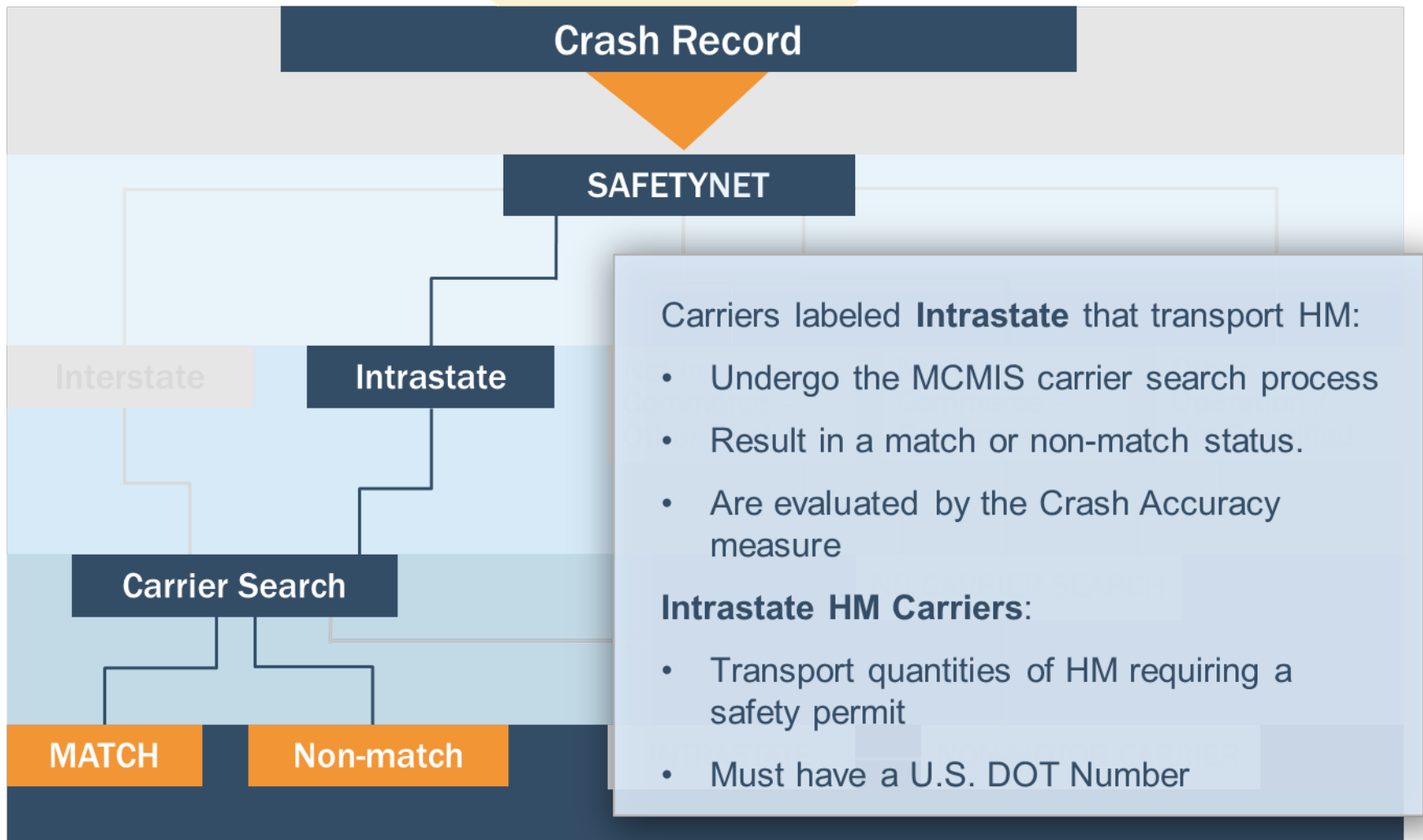


MCMIS

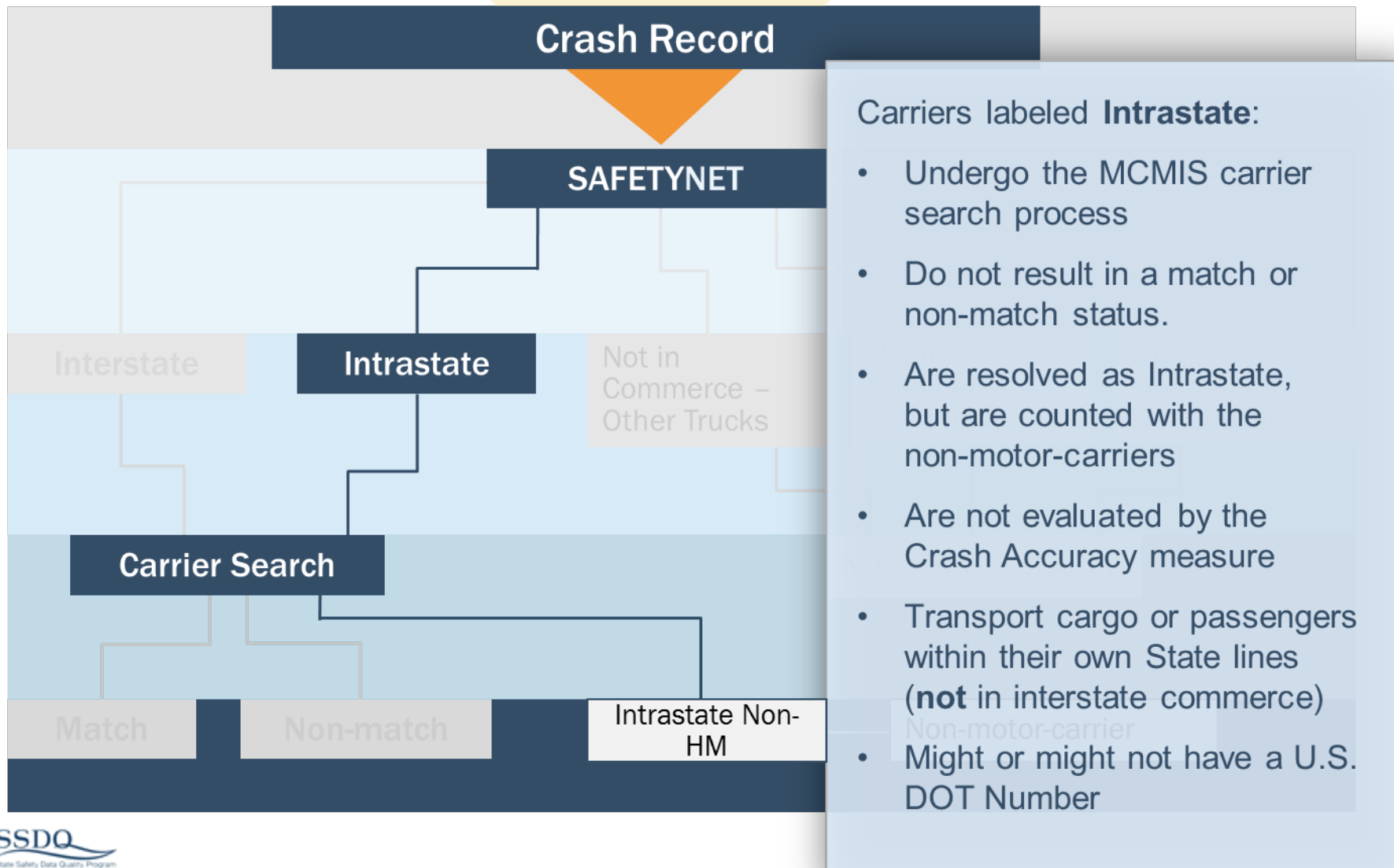
Interstate Carrier



Intrastate Carrier HM



Intrastate Carrier Non-HM



Carriers labeled **Intrastate**:

- Undergo the MCMIS carrier search process
- Do not result in a match or non-match status.
- Are resolved as Intrastate, but are counted with the non-motor-carriers
- Are not evaluated by the Crash Accuracy measure
- Transport cargo or passengers within their own State lines (**not** in interstate commerce)
Non-motor-carrier
- Might or might not have a U.S. DOT Number

Not in Commerce – Other Trucks

Crash Record

Carriers labeled **Not in Commerce – Other Trucks**

- Do not undergo the MCMIS carrier search process
- Are resolved as non-motor-carriers
- Are not evaluated by the Crash Accuracy measure

Not in Commerce – Other Trucks

- Applies to crashes involving rental trucks over 10k lbs. GVWR/GCWR and where it is known that the vehicle was rented for a non-commercial purpose
- The responsible party or entity should be entered as “individual,” with the carrier address fields set to “unknown”

SAFETYNET

Not in
Commerce –
Other Trucks

Not in
Commerce –
Government

Other
Operation /
Not Specified

No Carrier Search

Intrastate non-HM

Non-motor-carrier

Not in Commerce – Government

Crash Record

Carriers labeled **Not in Commerce – Government**:

- Do not undergo the MCMIS carrier search process
- Are resolved as non-motor-carriers
- Are not evaluated by the Crash Accuracy measure.

Not in Commerce – Government

Carrier Name could include:

- City
- Town or township
- County
- Commonwealth
- Department or Dept.
- Fire
- School
- Transit
- US
- Postal

SAFETYNET

Not in
Commerce –
Other Trucks

Not in
Commerce –
Government

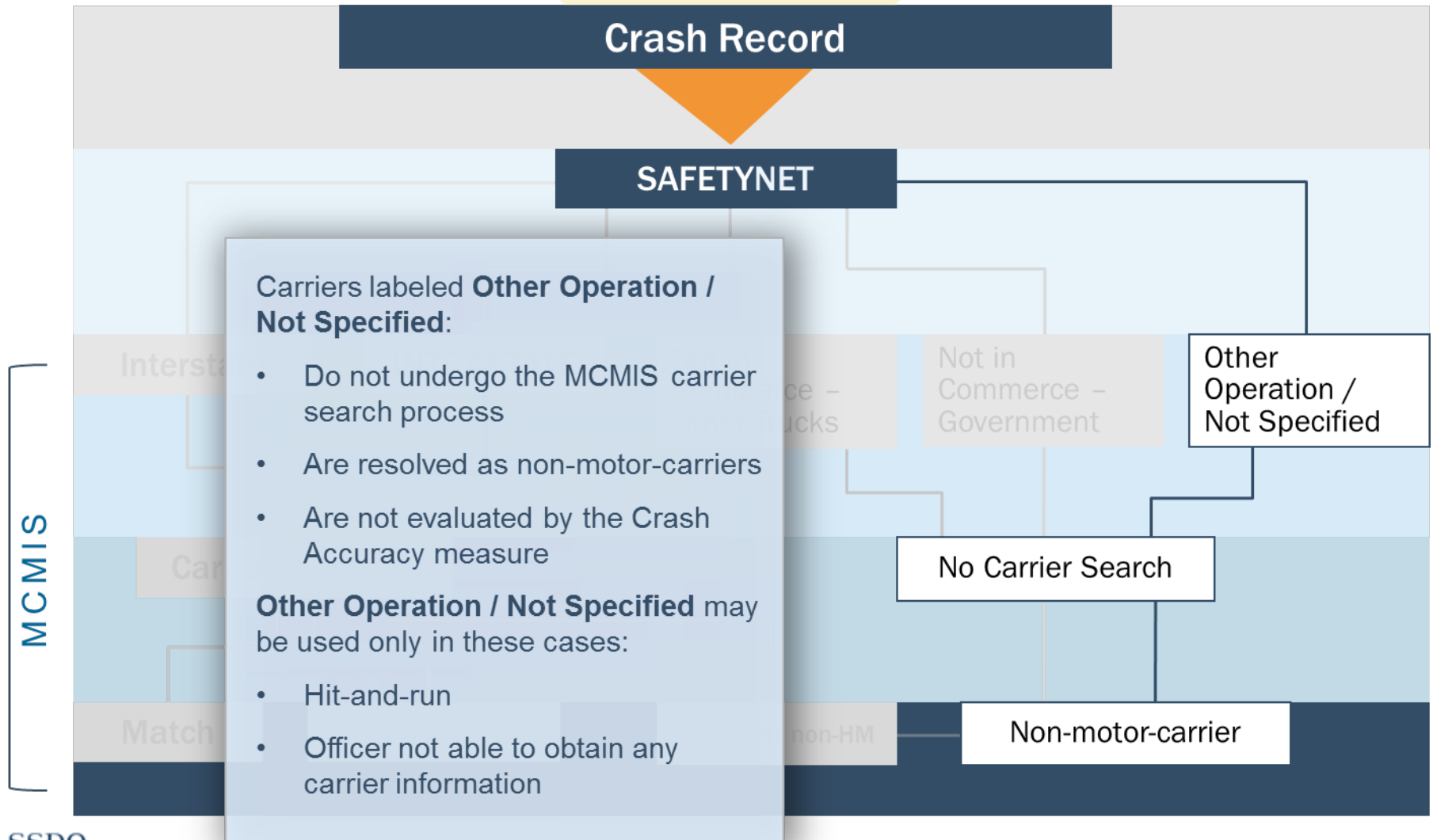
Other
Operation /
Not Specified

No Carrier Search

Interstate non-HM

Non-motor-carrier

Other Operation / Not Specified



Example: How Carrier Type Affects Crash Accuracy



Crash Accuracy Measure Evaluation

Carrier Type Breakdown Example	
Interstate	3,545
Intrastate HM	9
Intrastate Non-HM	558
Not in Commerce – Other Trucks	37
Not in Commerce – Government	493
Other Operation/Not Specified	233
Total	4,875

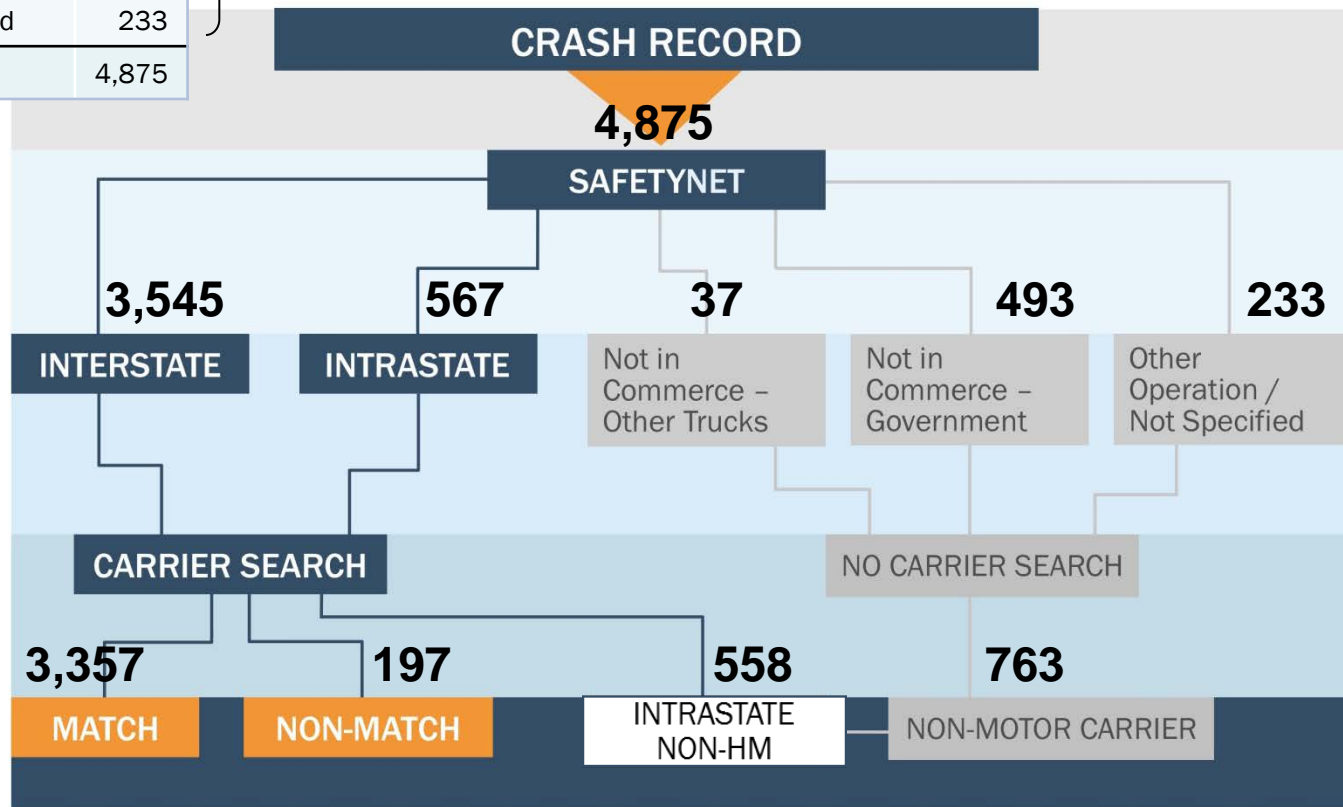
Crash Accuracy Measure Evaluation

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Total	4,875

Evaluated

Not Evaluated

Crash records evaluated	3,554		
Crash records matched	3,357	→ 94% →	Fair
Crash records not matched	197	→ 6%	





Resolving Non-Matches

Resolving the 197 non-matches	
Not in Commerce – Other trucks	32
Not in Commerce – Government	22
Other Operation/Not Specified	7
Intrastate Non-HM	13
Interstate (Resolved) now used in SMS	63
Total	137
New Total of Non-matches	60

Crash Accuracy Measure Evaluation

Carrier Type Original Breakdown		Resolved	New Breakdown
Interstate	3,545	- 74	3,471
Intrastate HM	9	0	9
Intrastate non-HM	558	+ 13	571
Not in Commerce – Other Trucks	37	+ 32	69
Not in Commerce – Government	493	+ 22	515
Other Operation/Not Specified	233	+ 7	240
Total	4,875		4,875

Crash Accuracy Measure Evaluation

Outcome:

- Reduced the number of non-matches from 197 to 60
- SSDQ Crash Accuracy Rating rose from 'Fair' to 'Good'
- 74 carrier types reassigned from the 197 carriers wrongly labeled as Interstate; the number of evaluated records reduced from 3,545 to 3,480
- 63 crashes have been resolved to interstate carriers, leaving that many more records for the SMS to use

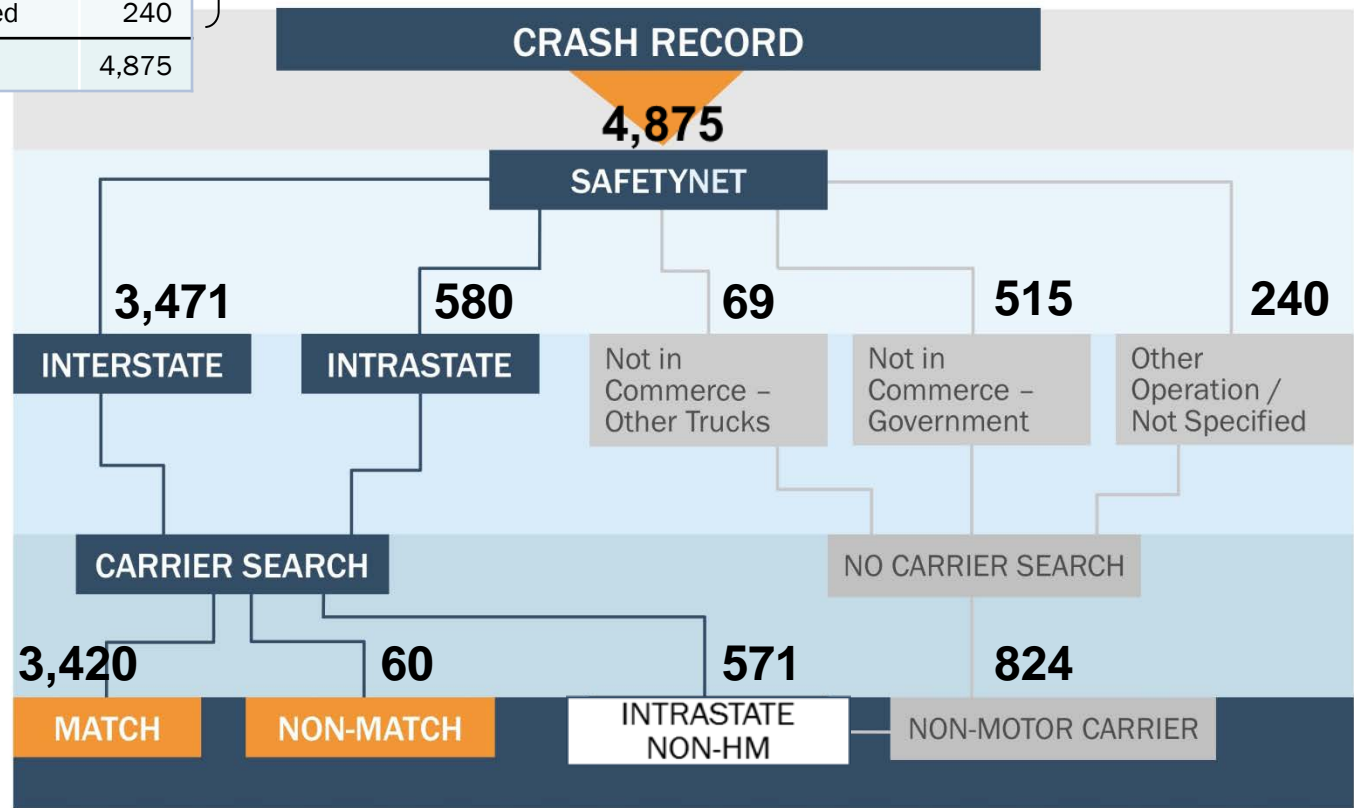
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Other Operation/Not Specified	240
Total	4,875

Evaluated

NOT EVALUATED

Crash records evaluated	3,480		
Crash records matched	3,420	→ 98% →	Good
Crash records not matched	60	→ 2%	



Carrier Matching Examples



Non-Match Carrier Data

Searching for Carrier Information on The Internet

Example 1	Original Carrier Information	Match Found
U.S. DOT #		970412
Carrier Name	ANDY STIEYA	ANDY STIEVA TRUCKING LTD
Carrier Address	4628 BARTLETT RD	4628 BARTLETT RD
Carrier City	BEAMSVILLE	BEAMSVILLE
Carrier State	UK	ON
Carrier Zip Code	99999	LOR 1B1



Non-Match Carrier Data

Searching for Carrier Information on The Internet

Example 2	Original Carrier Information	Match Found
U.S. DOT #		199151
Carrier Name	P W CHAMBERLIN TRUCKING INC	CHAMBERLIN FARMS
Carrier Address	P O BOX 82	7135 ST ROUTE 613
Carrier City	LEIPSIC	LEIPSIC
Carrier State	OH	OH
Carrier Zip Code	45856	45856

Non-Match Resolutions Steps

- Use custom reports
 - List of all uploaded records to compare matched to unmatched records
 - List of non-matches
- Identify non-motor-carriers first
- Use SAFETYNET's carrier search function
- Use Internet searches
- Call the carrier

Contacts

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Training Recap

I am now able to:

- ✓ Understand the Accuracy measure methodology
- ✓ Interpret the Accuracy rating results
- ✓ Interpret Accuracy SDAR
- ✓ Identify potential sources of collection and reporting issues
- ✓ Use the new non-match reports
- ✓ Assign correct carrier type to resolve non-matches
- ✓ Identify FMCSA resources for improving data quality