



U.S. Department of Transportation
Federal Motor Carrier Safety Administration

FMCSA Data Quality Improvement Program

SAFETYNET Query Mechanics

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Learning Objectives

- Learn to save/retrieve a query
- Discuss what operators do
- Identify how to construct and run a query



Poll



What Can You Do with a Query?



Search your State SAFETNET database to show/count inspection or crash records that meet certain criteria



Respond to requests from inspectors, investigators, management, and the public



Identify issues with training or data quality

The “Query Applications” session will have more information on what you can do with queries.

Session Format: Demos and Exercises



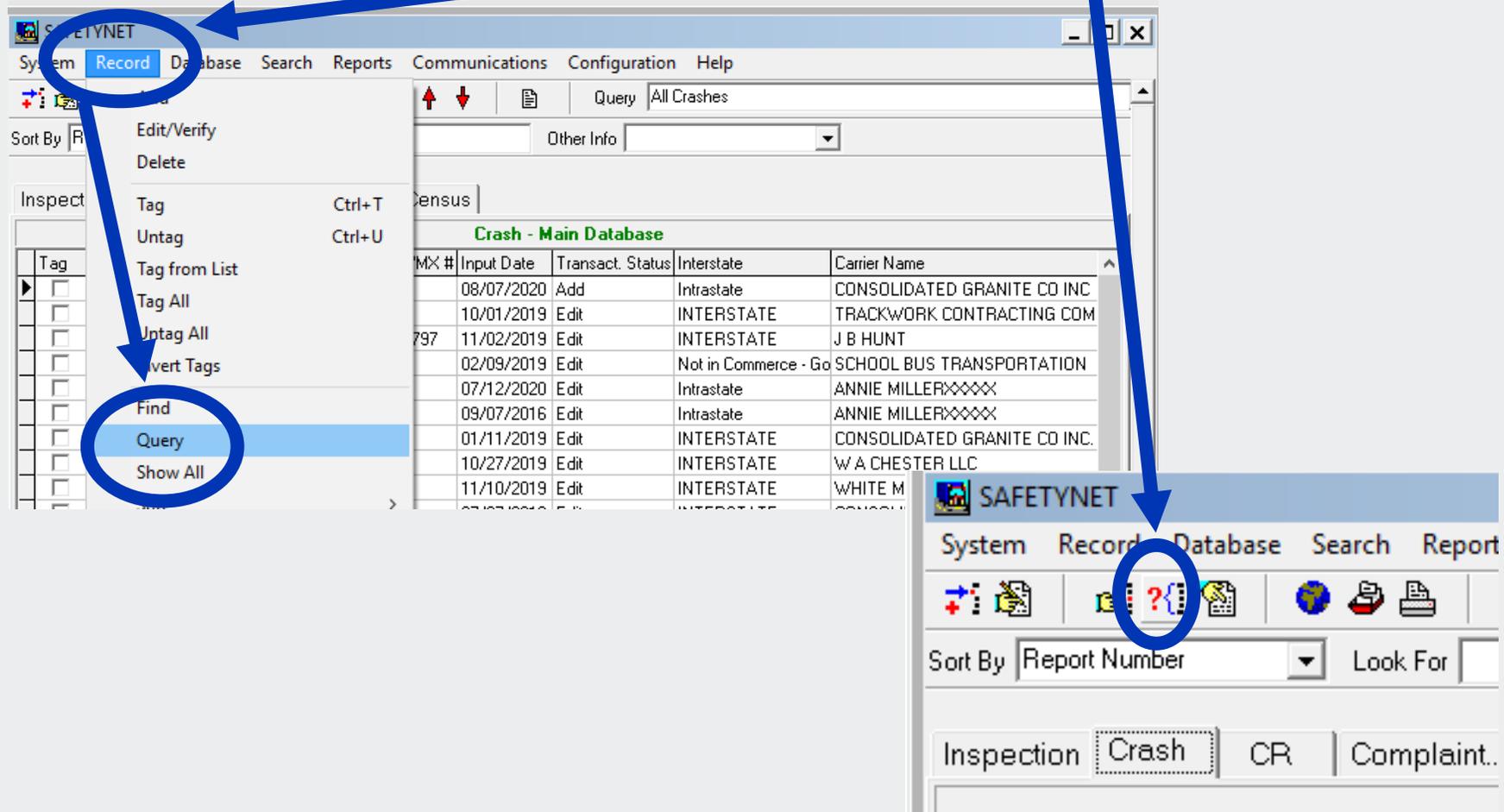
Demo: We'll show you how it's done.



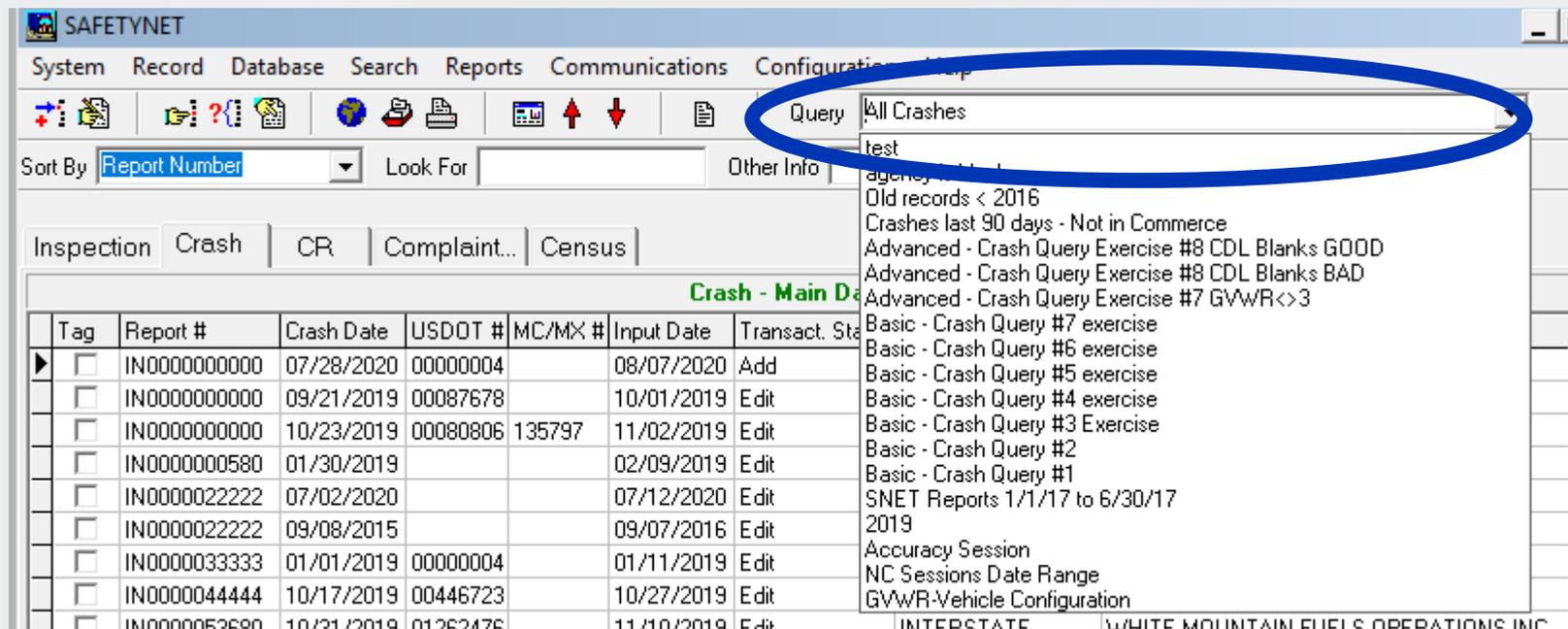
Exercise: Try it on your own and we'll review as a group.

Access Query Dialog Box

Access box via: (1) Menu Bar, or (2) Icon



Additional Method to Run Existing Queries



The screenshot shows the SAFETYNET application window. The menu bar includes System, Record, Database, Search, Reports, Communications, and Configuration. A toolbar with various icons is located below the menu bar. The 'Query' dropdown menu is open, showing a list of queries. The 'All Crashes' query is highlighted with a blue oval. Below the menu, there are fields for 'Sort By' (set to Report Number) and 'Look For'. A tabbed interface shows 'Crash' as the active tab. A table with columns for Tag, Report #, Crash Date, USDOT #, MC/MX #, Input Date, and Transact. Sta is visible. The table contains several rows of data. A green header 'Crash - Main Data' is present above the table. The dropdown menu lists various queries such as 'test', 'agency', 'Old records < 2016', 'Crashes last 90 days - Not in Commerce', 'Advanced - Crash Query Exercise #8 CDL Blanks GOOD', 'Advanced - Crash Query Exercise #8 CDL Blanks BAD', 'Advanced - Crash Query Exercise #7 GVWR<>3', 'Basic - Crash Query #7 exercise', 'Basic - Crash Query #6 exercise', 'Basic - Crash Query #5 exercise', 'Basic - Crash Query #4 exercise', 'Basic - Crash Query #3 Exercise', 'Basic - Crash Query #2', 'Basic - Crash Query #1', 'SNET Reports 1/1/17 to 6/30/17', '2019', 'Accuracy Session', 'NC Sessions Date Range', 'GVWR-Vehicle Configuration', and 'INTERSTATE WHITE MOUNTAIN FUELS OPERATIONS INC'.

Tag	Report #	Crash Date	USDOT #	MC/MX #	Input Date	Transact. Sta
<input type="checkbox"/>	IN0000000000	07/28/2020	00000004		08/07/2020	Add
<input type="checkbox"/>	IN0000000000	09/21/2019	00087678		10/01/2019	Edit
<input type="checkbox"/>	IN0000000000	10/23/2019	00080806	135797	11/02/2019	Edit
<input type="checkbox"/>	IN0000000580	01/30/2019			02/09/2019	Edit
<input type="checkbox"/>	IN0000022222	07/02/2020			07/12/2020	Edit
<input type="checkbox"/>	IN0000022222	09/08/2015			09/07/2016	Edit
<input type="checkbox"/>	IN0000033333	01/01/2019	00000004		01/11/2019	Edit
<input type="checkbox"/>	IN0000044444	10/17/2019	00446723		10/27/2019	Edit
<input type="checkbox"/>	IN0000053690	10/31/2019	01262476		11/10/2019	Edit

Query Dialog Box

Access/Select Existing Queries

Edit Selected Query or Create a New One

SAFETYNET Query

Options: Display Queries
 My Queries Only Mine and Samples All Queries

Sort By
 Last Access Date Query Description Created By

Query Description	Last Access	Created By
test	12/13/2019	SNETADMIN
▶ agency is blank	10/24/2019	SNETADMIN
Old records < 2016	06/04/2019	SNETADMIN
Crashes last 90 days - Not in Commerce	09/30/2018	SNETADMIN
Advanced - Crash Query Exercise #8 CDL Blanks GOOD	09/29/2018	SNETADMIN
Advanced - Crash Query Exercise #8 CDL Blanks BAD	09/27/2018	SNETADMIN
Advanced - Crash Query Exercise #7 GVWR<>3	09/27/2018	SNETADMIN
Basic - Crash Query #7 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #6 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #5 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #4 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #3 Exercise	09/27/2018	SNETADMIN

Run

Rename

Add

Delete

Field	Comparison	Value	And/Or
Reporting Agency	Is blank		

Save

Save As

Tag Queried Records

Close Help

Query Dialog Box: Stored Queries Section

Display **Sort**

Options: Display Queries
 My Queries Only Mine and Samples All Queries

Sort By
 Last Access Date Query Description Created By

Stored Queries

Query Description	Last Access	Created By
test	12/13/2019	SNETADMIN
▶ agency is blank	10/24/2019	SNETADMIN
Old records < 2016	06/04/2019	SNETADMIN
Crashes last 90 days - Not in Commerce	09/30/2018	SNETADMIN
Advanced - Crash Query Exercise #8 CDL Blanks GOOD	09/29/2018	SNETADMIN
Advanced - Crash Query Exercise #8 CDL Blanks BAD	09/27/2018	SNETADMIN
Advanced - Crash Query Exercise #7 GVWR<>3	09/27/2018	SNETADMIN
Basic - Crash Query #7 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #6 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #5 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #4 exercise	09/27/2018	SNETADMIN
Basic - Crash Query #3 Exercise	09/27/2018	SNETADMIN

Run
Rename
Add
Delete

Query Dialog Box: Query Conditions Section

Enter Conditions

Delete Condition

[	[	Field	Comparison	Value	)	)	And/Or
		Reporting Agency	Is blank				

Tag Queried Records

Close Help

Save Save As

How Do You Construct a Query?

- Each row is a **condition**
 - Query will return all records that meet the logic and conditions
- Type and/or select condition from **drop-down** in each cell
- **Single-condition query:**
 - Choose a field
 - Choose an operator in the “comparison” column
 - Choose a value (if applicable)

Query Conditions									
{	{	{	Field	Comparison	Value	)	)	)	And/Or
			Cargo Body Type	=	3 - Van/Enclosed Box				▼

Query Conditions									
{	{	{	Field	Comparison	Value	)	)	)	And/Or
			Reporting Agency	Is blank					

Operators

We will include a subset of the below depending on the field selected:

=
<> (not equal to)
Is blank
Is not blank
< (less than)
> (greater than)
<= (less than or equal to)
>= (greater than or equal to)
Like (for use with wildcard... stay tuned)
Not like (for use with wildcard... stay tuned)

Searching by Date

- If searching by event date
 - Inspection: use “start date” field
 - Crash: use “crash date” field
- “Import date” can be used for Crashes and Inspections
- Other “date” fields to define timeframes
 - Archive Date
 - ASPEN Upload Date (inspection only)
 - End Date (inspection only)
 - Export Date
 - Input Date
 - Last Edit Date
 - Transact. Date
 - Upload Date
 - Upload to SAFER Date (inspection only)
 - Verification Date

What the Operators Mean When Used with Date Fields

= (identifies ONE specific date)

<> (NOT a specific date)

> (AFTER a date)

< (BEFORE a date)

>= (ON OR AFTER a date)

<= (ON OR BEFORE a date)

Can also specify relative to current date, e.g.:

Import Date > **Current Date - 365 days**

The screenshot shows a 'Query Conditions' dialog box with a table and several buttons. The table has columns for Field, Comparison, Value, and And/Or. The first row contains 'Import Date', '>', 'Current Date - 365', and is empty. Below the table, there is a checkbox for 'Tag Queried Records', a 'Days' field with a dropdown menu showing '35', and buttons for 'Close' and 'Help'. A blue arrow points to the '35' in the 'Days' field, which is circled in blue.

Field	Comparison	Value	And/Or
Import Date	>	Current Date - 365	

Tag Queried Records 35 Days - 1 7 30 365 0 Close Help

How Do You Create a Two-Condition Query?

- Create first condition
- Choose the relationship with the next condition
 - “And”
 - “Or”
- Create second condition

(((Field	Comparison	Value	) ) )	And/Or
(((Start Date	>=	01/01/2020	) ) )	And
(((End Date	<=	03/01/2020)))	<input type="checkbox"/>

Query Conditions				
(((Field	Comparison	Value	) ) )	And/Or
(((Interstate	=	INTERSTATE	) ) )	Or
(((Interstate	=	Intrastate)))	<input type="checkbox"/>

(((Field	Comparison	Value	) ) )	And/Or
(((Start Date	>=	01/01/2020	) ) )	And
(((Insp. Level	=	1 - Full Inspection)))	<input type="checkbox"/>

Creating Queries – Inspection Module



Demo: Crash Query # 1

How many crashes occurred in the fourth quarter of calendar year 2020?

Query Construction:

- Crash Date \geq 10/01/2020 **AND**
- Crash Date \leq 12/31/2020

Creating Queries – Inspection Module



Demo: Inspection Query #1

How many **Driver Only (Level 3)** inspections were conducted during the first quarter of calendar year 2020?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Insp. Level = 3 – Driver Only Inspection

When To Use Parentheses

For queries with three or more conditions:

IF

combining “AND” statements with “OR” statements in the same query

THEN

use parenthesis

(xyz)

Importance of Parentheses



Demo: Inspection Query #2

Find all inspections conducted January - June 2020 with at least one Hazmat material where the U.S. DOT Number **and** State Census # are blank

Query Construction:

Start Date \geq 01/01/2020 **AND**

Start Date \leq 06/30/2020 **AND**

HMs – Total $>$ 0 **AND**

U.S. DOT Number is blank **AND**

State Census # is blank



Using Parenthesis



Demo: Inspection Query #3

Find all inspections conducted January - June 2020 with at least one Hazmat material where **either** the U.S. DOT Number **or** the State Census # is blank

Query Construction:

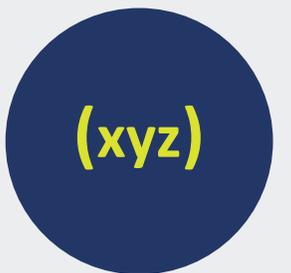
Start Date >= 01/01/2020 **AND**

Start Date <= 06/30/2020 **AND**

HMs – Total > 0 **AND**

(U.S. DOT Number is blank **OR**

State Census # is blank)



Reminder: Modifying the Grid

You can customize the grid to clearly display the results you need

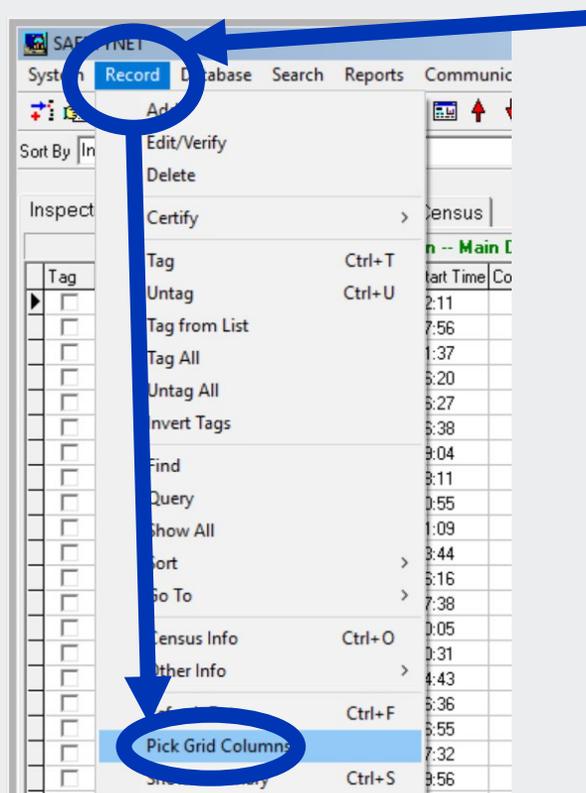
Add a
column

Rearrange
columns

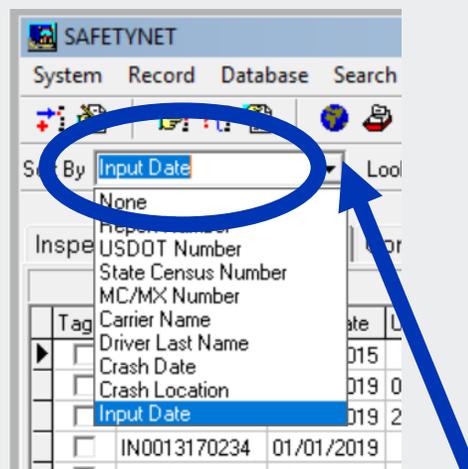
Sort
results

Tips: Customize Grid to Find Information You Need

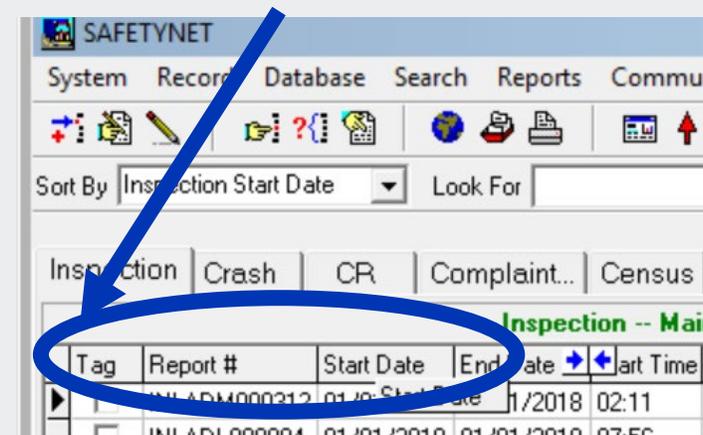
Choose columns/order to display columns (persistent)



Drag column headers to change order (temporary)



Sort the results



Tips: Show All Records

- Click **this button** to display all records before/after querying



“Wild Card” Symbol (“%”)

- Allows you to get results *containing* a character or phrase, rather than requiring an exact match
- Helpful for searching free text fields (e.g. Location Description) and finding partial matches



“Wildcard” Symbol

- **Wildcard – %**

- Matches any character or set of characters – letters, numbers, punctuation
- Must use “like” or “not like” operators

- **Placement matters!**

- You’ll get very different results, putting the % at the beginning, middle, or end of a word
 - %example (ends with “example”)
 - example% (starts with “example”)
 - %example% (contains “example” anywhere)
 - exam%ple (starts with “exam” and ends with “ple”)
 - %exam%ple% (contains “exam” followed by “ple”)
 - Etc.



“Wildcard” Stretch

Stand up and stretch if this is **true**...

<your name> is like %e% OR

<your name> is like %a% OR

<your name> is like %i% OR

<your name> is like %o% OR

<your name> is like %u% OR

<your name> is like %y%



Wildcards



Demo: Crash Queries #2-4

- Carrier Name LIKE %TRANS
- Carrier Name LIKE TRANS%
- Carrier Name LIKE %TRANS%TRUCK%



Wildcards: Practice



Exercise: Inspection Query #4

- Find any inspection records where the driver's last name is "Cooper."

Exercise: Inspection Query #5

- Use the wildcard symbol to get Level 3 inspections from 2020 with any violation that starts with 392.8



Creating Queries – Inspection Module



Exercise: Inspection Query #6

How many Level 1 inspections of a “motor coach” vehicle type were completed during the first quarter of calendar year 2020?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Insp. Level = 1 – Full Inspection
- Vehicle Type = Semi Trailer

Creating Queries – Inspection Module



Exercise: Inspection Query #7

How many Level 1 inspections did an inspector complete during the first quarter of calendar year 2020?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Insp. Level = 1 – Full Inspection
- Inspector Code = XXXXX (specific to your state)

Creating Queries – Inspection Module



Exercise: Inspection Query #8

How many inspections were conducted during the first quarter of calendar year 2020 **excluding Jurisdictional Mandate (Level 7) inspections?**

Query Construction:

- Start Date >= 01/01/2020 **AND**
- Start Date <= 03/31/2020 **AND**
- Insp. Level <> 7 – Jurisdictional Mandated

Creating Queries – Inspection Module



Demo: Inspection Query #9

How many **Traffic Enforcement** inspections were conducted during the first quarter of calendar year 2020?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Traffic Enforcement = Yes

Creating Queries – Inspection Module



Exercise: Inspection Query #10

How many inspections were conducted during the first quarter of calendar year 2020 that found a “No Seat Belt” Violation (code 392.16)?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Federal Violation = 392.16

Creating Queries – Inspection Module



Demo: Inspection Query #11

How many inspections were completed during 2020, on a particular road?

Query Construction:

- Start Date \geq 01/01/2020 **AND**
- Start Date \leq 12/31/2020 **AND**
- Location Description Like %SR-161%
 - Modify location description to a road in your state

Creating Queries – Inspection Module



Demo: Inspection Query #12

How many inspections during March 2020 are missing the VIN on Unit 1?

Query Construction:

- Start Date \geq 03/01/2020 **AND**
- Start Date \leq 03/31/2020 **AND**
- Vehicle Unit Num = 1 **AND**
- Vehicle VIN is blank

Creating Queries – Inspection Module



Exercise: Inspection Query #13

How many inspection records imported during June 2020 are missing a DOT#?

Query Construction:

- Import Date \geq 06/01/2020 **AND**
- Import Date \leq 06/30/2020 **AND**
- USDOT # Is blank

Creating Queries – Crash Module



Demo: Crash Query #5

Which crash records were edited by a particular user in January 2020?

Query Construction:

- Last Edit Date \geq 01/01/2020 **AND**
- Last Edit Date \leq 01/31/2020 **AND**
- Last Edit UserID = SNETADMIN (example)

Creating Queries – Crash Module



Demo: Crash Query #6

How many Federally recordable crashes occurred in the first six months of 2020?

Query Construction:

- Crash Date >= 01/01/2020 **AND**
- Crash Date <= 06/30/2020 **AND**
- Federally Recordable = Yes

Creating Queries – Crash Module



Demo: Crash Query #7

How many Federally recordable **fatal** crashes occurred during the last six months of 2020?

Query Construction:

- Crash Date \geq 07/01/2020 **AND**
- Crash Date \leq 12/31/2020 **AND**
- Federally Recordable = Yes **AND**
- Fatalities $>$ 0

Creating Queries – Crash Module



Exercise: Crash Query #8

How many recent crash records have a Gross Vehicle Weight Rating (GVWR) \leq 10k lbs?

Query Construction:

- Import Date \geq Current Date - 90 **AND**
- GVWR = 1

Creating Queries – Crash Module



Exercise: Crash Query #9

How many crash records after December 1, 2020, on interstate carriers, are missing a DOT#?

Query Construction:

- Crash Date > 12/01/2020 **AND**
- Interstate = Interstate **AND**
- USDOT # is blank

Creating Queries – Crash Module Exercises



Exercise: Crash Query #10

Identify any crash records in the database that haven't been verified

Query Construction:

- Verified = No

Creating Queries – Crash Module Exercises



Exercise: Crash Query #11

How many crashes did a particular Reporting Agency (Gary City Police, for this example) have in January -June 2020

Query Construction:

- Crash Date >= 01/01/2020 **AND**
- Crash Date <= 06/30/2020 **AND**
- Reporting Agency Like %Gary City%

Creating Queries – Crash Module Exercises



Exercise: Crash Query #12

How many crashes did a particular county have in 2020?

Query Construction:

- Crash Date \geq 01/01/2020 **AND**
- Crash Date \leq 12/31/2020 **AND**
- County Code - FIPS = 047

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!