ACIS – Arizona Crash Information System

Training Video 3

Crash Analysis using ACIS

ADOT Traffic Safety Group

Created on February 4, 2021

ACIS – https://adotdw/acis

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- ACIS can be used to download crash data for Crash Analysis / Warrant Study / Agency Summaries
- The Standard Detail Report are the most commonly used report for this type of analysis.
- This training will show how to download data and best practices on saving the data / links and using the data for analyzing the data.

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The Standard Detailed Report can be used for crash data with the following parameters:

- **CRASH PERIOD**
- **INCIDENT FLAGS**
- **LOCATION**
  - **Spatial region**
    - City
    - County
    - COG/MPO
    - Tribal Area
    - ADOT district
  - **By specific route**
    - Advanced map search (draw a box or rectangle around a location)
    - Milepost segment for a route (both directions can be selected if the route is divided)
    - Local road segment
    - Intersection (150 feet buffer is the default but any buffer can be used based on what is entered by the user)

For a specific route query, certain parameters such as incident flags or spatial region do not need to be selected, the route segment or intersection and the crash period are the most common parameters used

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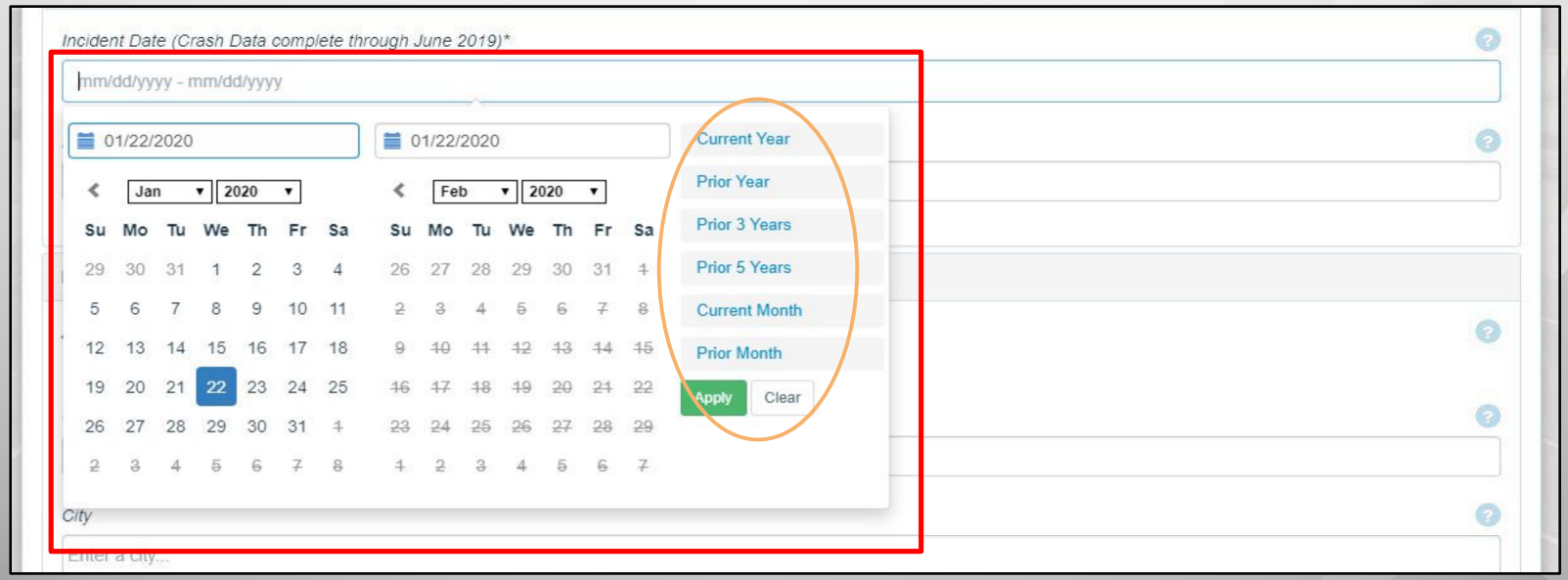
- The first step when running the query is to **enter the crash period**, it is recommended that the user does not leave this blank
- The most common crash period used is the **last 5 years of complete data** available (example: if crash data is complete through June 2020 then the most current 5 year period will be 7/1/2015 to 6/30/2020)
- The ACIS site will show the crash completion date, this is updated every 3 months
- Options are available to select the prior 5 years or 3 years, please note that is for calendar years only and may not reflect the most current 5 year period of complete data



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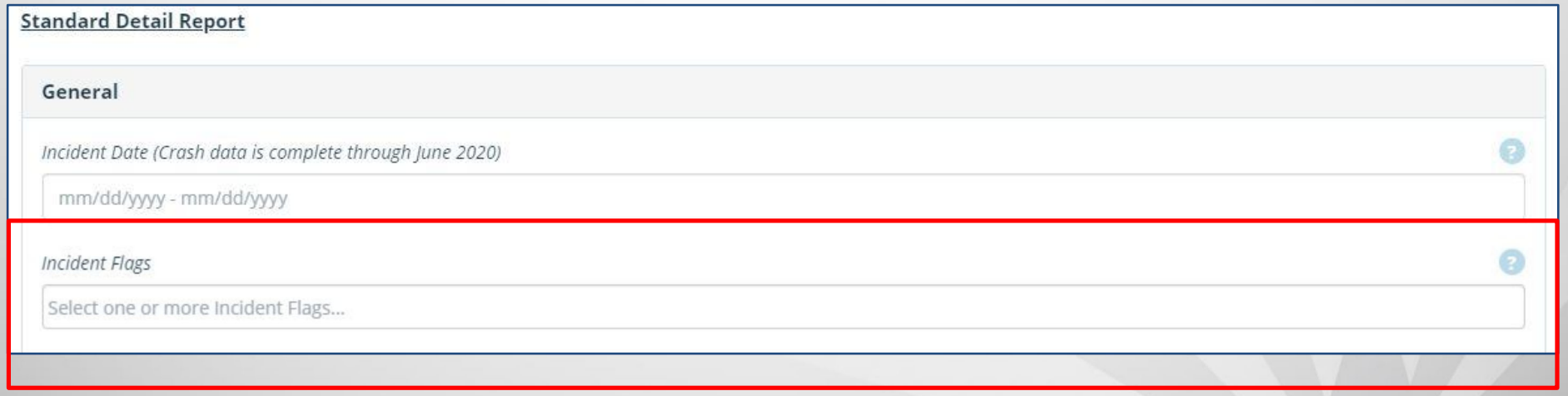
- ➔ The incident flags can be entered next. This is optional when using the standard detailed report
- ➔ The user should not enter any flags if they want all the data for a given location



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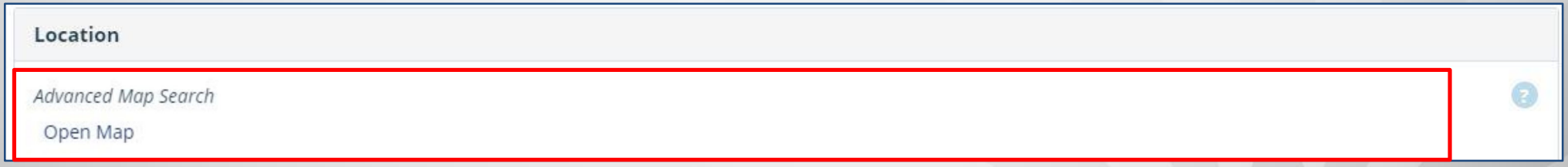
- ➔ The location should be entered next. The user can enter the route and crossing feature manually or use the advanced map search
- ➔ **Please do NOT use the advanced map search and the manual route search in the same query as this will create a potential conflict and no data will be found**
- ➔ The advanced map search is recommended for intersections or traffic interchanges only and not segments
- ➔ Click on the **Open Map** link to use this feature



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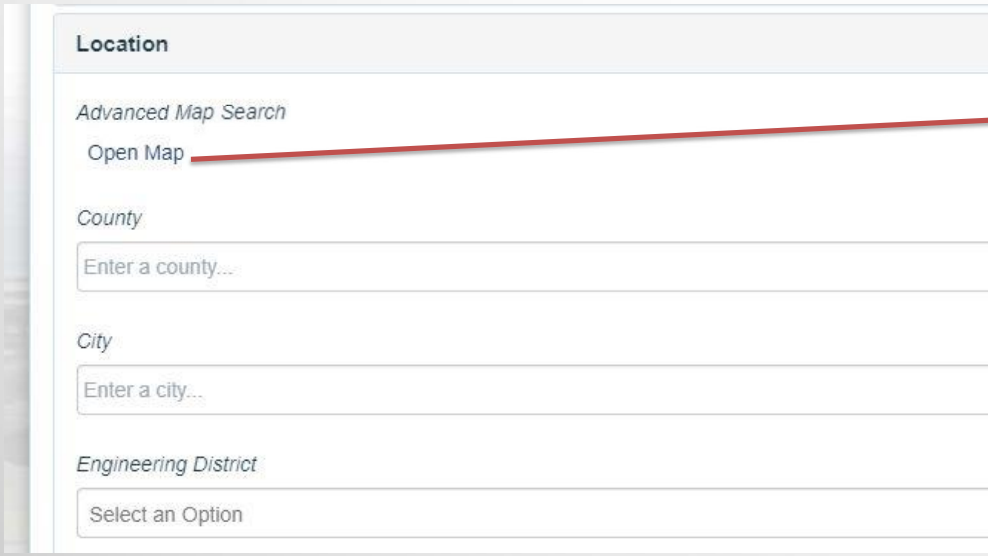
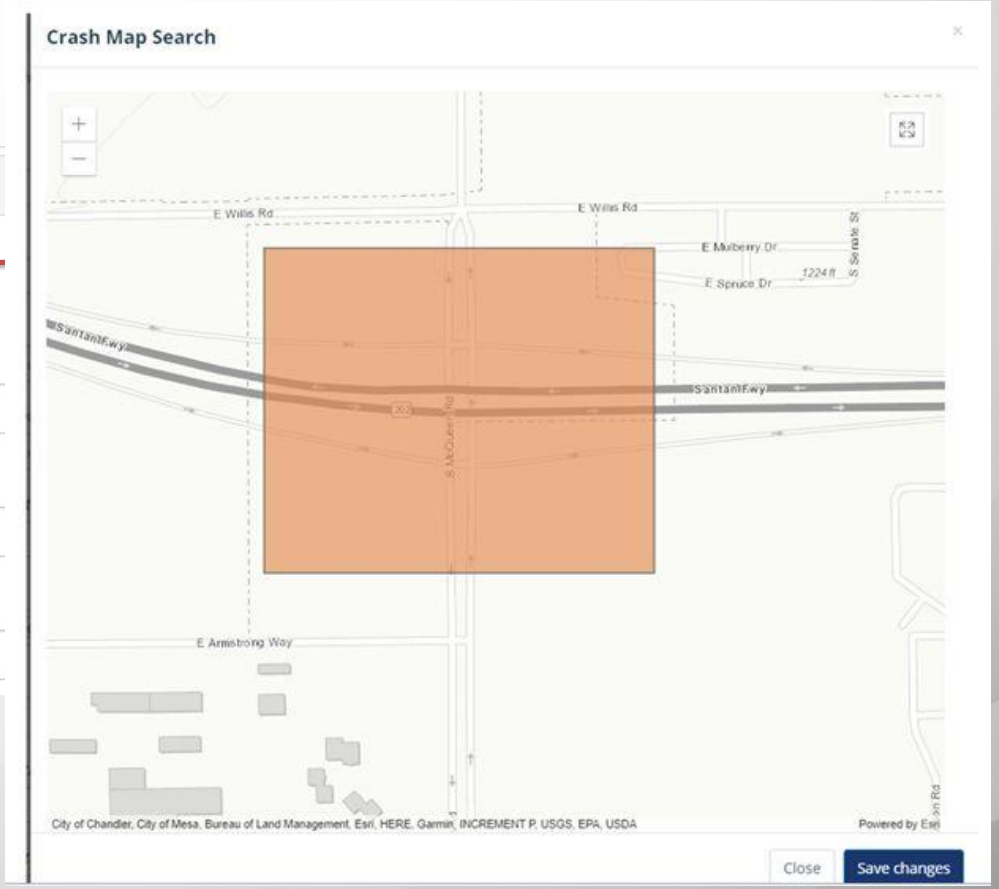
The example here shows an easy way to query data for an urban freeway interchange





Please note that some filtering and review of the data will be necessary after using the map search, in this example some crashes on the mainline may be pulled in the query but these crashes may not be needed in the analysis of the data for the traffic interchange

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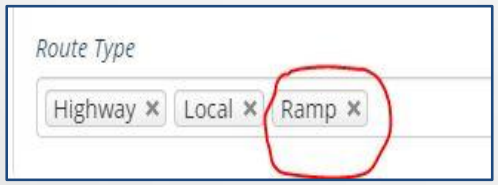
- The **spatial regions** such as County, City, COG/MPO, Tribal Area, ADOT District should be selected only **for querying agency data**.
- **To query Route specific data**, the spatial regions such as County, City, COG/MPO, Tribal Area, ADOT District are optional and do not need to be entered when using the **ROUTE** data field. Entering these fields may restrict your query or cause a potential conflict and no data may be found
- The **Route Type** field is used for the type of road that is entered, highway or local or ramp
- To search for ramps the user must manually add ramp to the *Route Type* data field.



- In the **Route** data field, type the route name and select from the drop down list

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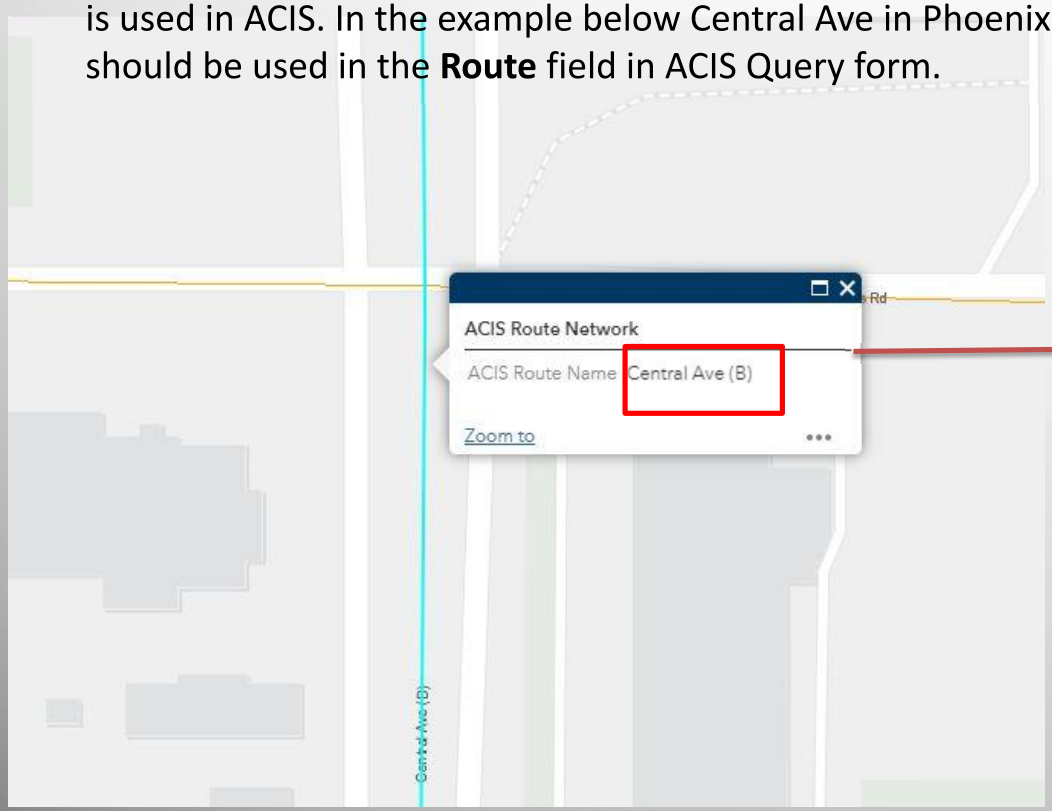
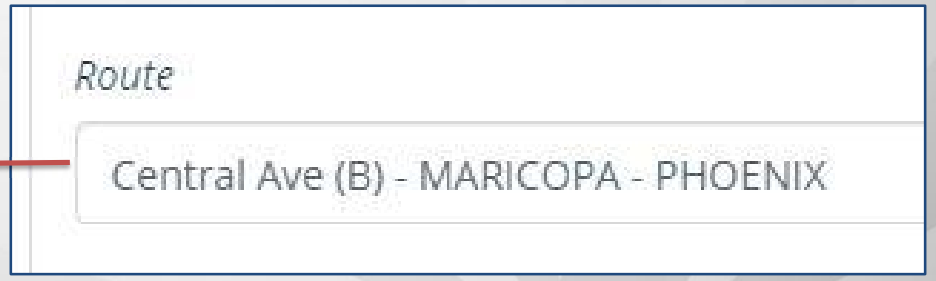
- If the user can't identify the route that is needed based on the drop down selections available in the **Route** field, they can use the ACIS route explorer

- After clicking on the route explorer link, the user can zoom into the location and click on the route to show the name that is used in ACIS. In the example below Central Ave in Phoenix was identified as Central Ave (B). This is the route name that should be used in the **Route** field in ACIS Query form.





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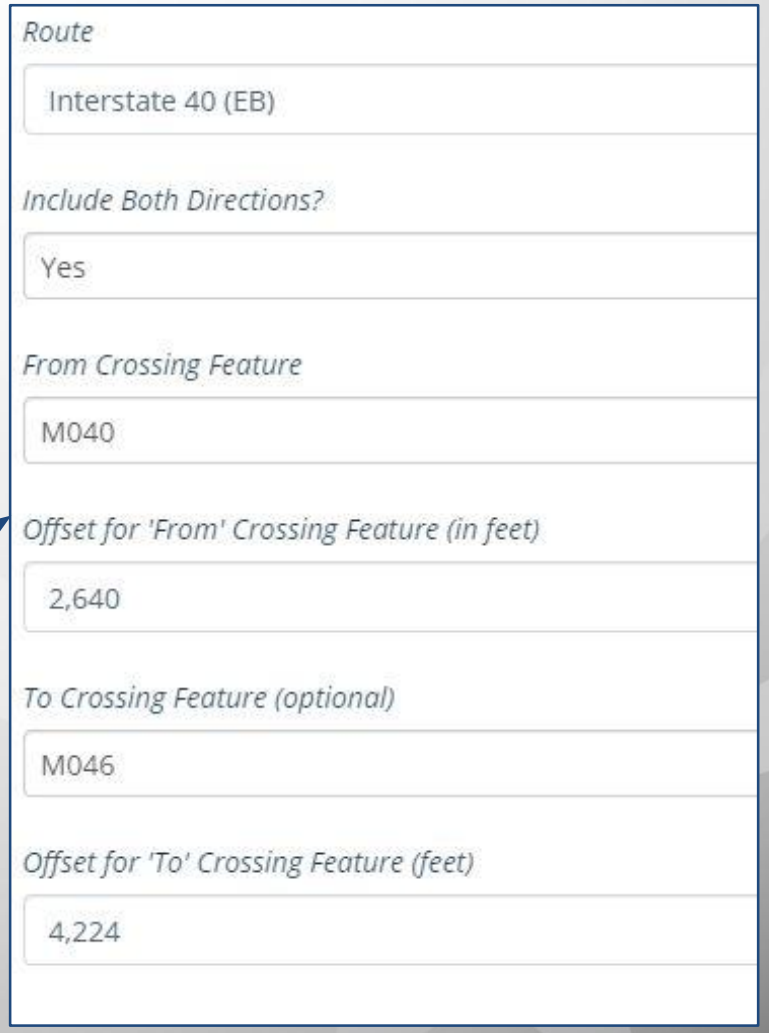
➔ After the route is selected, the user can select **Include Both Directions** for routes that are divided

- To enter a MilePost (MP) segment for a state highway, make sure to enter the offset (if needed) in feet and not miles. In this example, the MP range for the route was entered as 40.5 to 46.8



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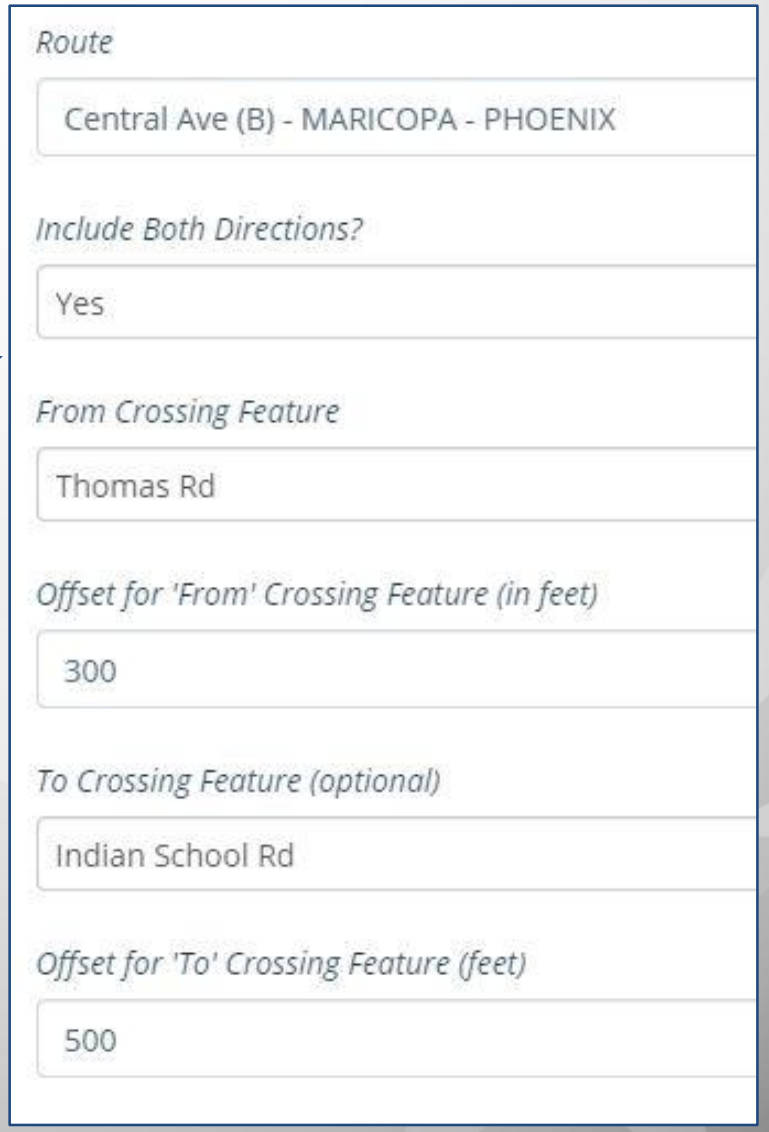
➔ To query data for a local road segment, enter the route names and the buffer around the beginning and end of the segment

- In this example, all crashes on Central Ave from Thomas to Indian School will be pulled, for crashes at the Thomas intersection the buffer is 300 feet and the Indian School intersection buffer is 500 feet



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- **To query Intersection Data**, enter the intersecting road in the "From Crossing Feature" field and do NOT enter any route in the field. When the "To Crossing Feature"is left blank the query automatically becomes an intersection query.
- The default buffer is 150 feet for an intersection if no value is entered in the offset for "From Crossing Feature"
- The user can enter any value here (in feet) for the buffer they want to use, for example, if a roundabout location is queried the buffer may need to be larger

- In this example, all crashes that occured within 1000 feet of this intersection (in all directions) will be pulled in the query

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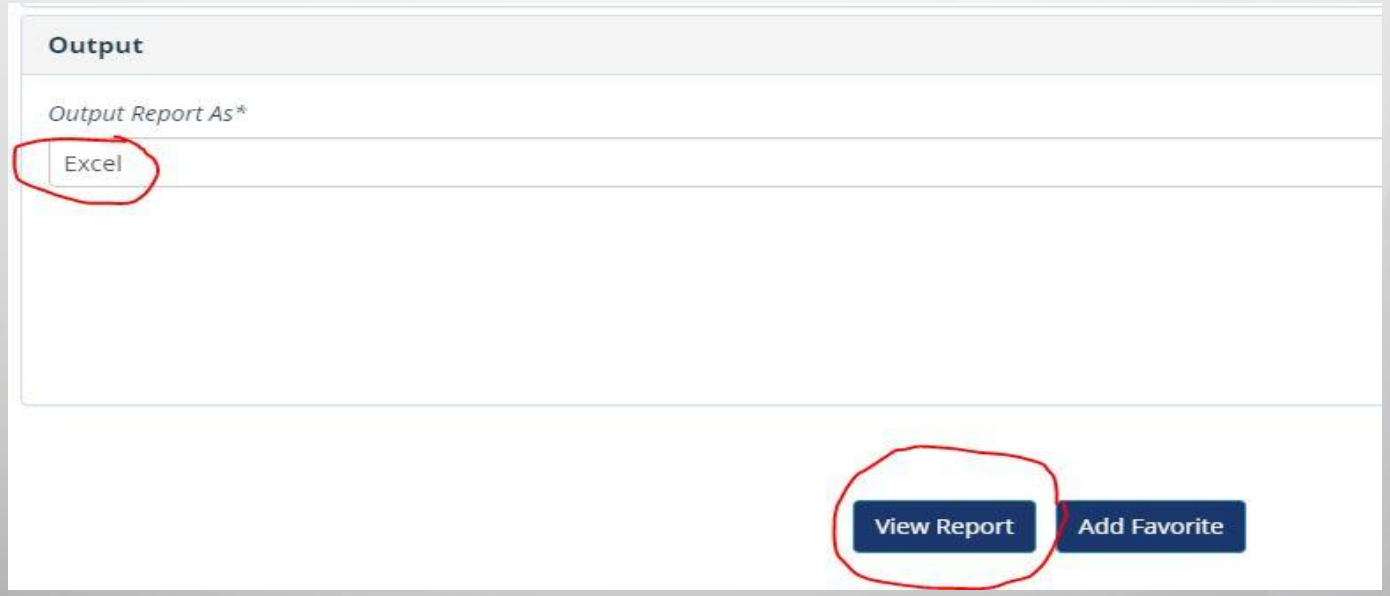
- **Output Report As** field select the **EXCEL** as output type and then clicking on the **View Report** button
- The most common output type is **Excel**, since this format will allow the user to view, filter, sort, and do additional analysis on the data by creating charts, graphs, etc. if necessary
- Other report outputs such as XML, CSV, and PDF are not recommended for data analysis unless the output is being imported into another software.



Crash Analysis using ACIS

➔ The standard detailed report has all the crash-related variables based on the incident id such as location, light and weather condition, direction of travel for each unit involved, violations, physical condition, safety device usage, and body style.

Incident ID	Unit Event Sequence Desc1
Incident Microfilm	Unit Event Sequence Desc2
Incident Date & Time	Unit Event Sequence Desc3
Incident On Road	Unit Event Sequence Desc4
Incident Crossing Feature	Person Type Desc
Incident Offset	Person Safety Device Desc
Incident Injury Severity Description	Person Violation Desc1
Incident First Harmful Description	Person Physical Desc0
Incident Collision Manner Desc	Person Physical Desc1
Incident Light Condition Desc	Person Physical Desc2
Incident Weather Desc	Person Physical Desc3
Incident Intersection Type Desc	Person Physical Desc4
Incident Junction Relation Desc	Person Physical Desc5
Incident Traffic Way Type Desc	Person Physical Desc6
Incident File Number	Person Physical Desc97
Incident Officer Ncic	Person Physical Desc99
Unit Body Style Desc	Latitude
Unit Travel Direction Desc	Longitude
Unit Action Desc	X
Unit Road Condition Desc1	Y
Unit Surface Condition Desc1	Geocode On Road
Unit Env Condition Desc1	Geocode Crossing Feature
Unit Defect Desc1	Geocode Offset (miles)
Unit Number	

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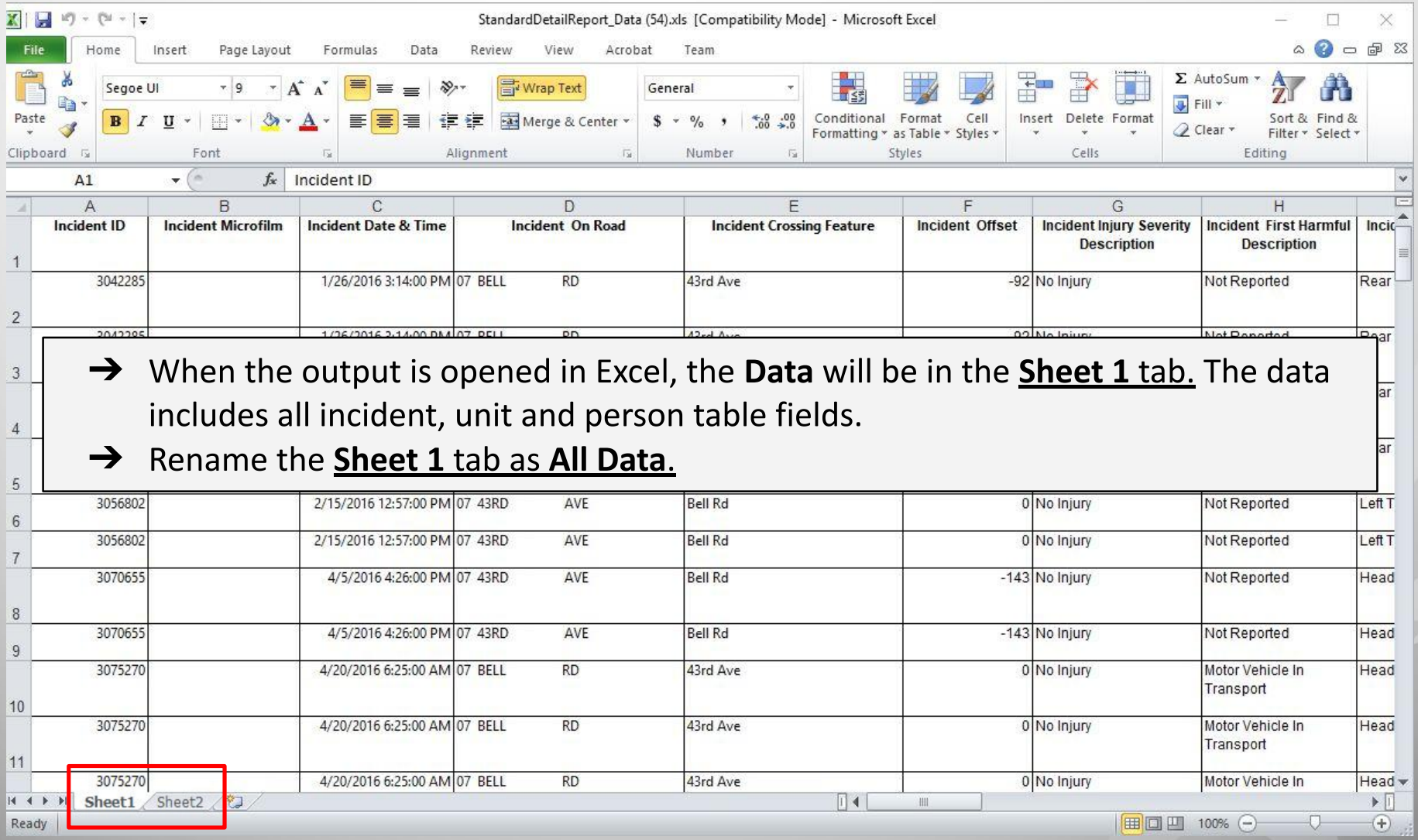

Incident ID	Incident Microfilm	Incident Date & Time	Incident On Road		Incident Crossing Feature	Incident Offset	Incident Injury Severity Description	Incident First Harmful Description	Inci
3042285		1/26/2016 3:14:00 PM	07 BELL	RD	43rd Ave	-92	No Injury	Not Reported	Rear
3056802		2/15/2016 12:57:00 PM	07 43RD	AVE	Bell Rd	0	No Injury	Not Reported	Left T
3056802		2/15/2016 12:57:00 PM	07 43RD	AVE	Bell Rd	0	No Injury	Not Reported	Left T
3070655		4/5/2016 4:26:00 PM	07 43RD	AVE	Bell Rd	-143	No Injury	Not Reported	Head
3070655		4/5/2016 4:26:00 PM	07 43RD	AVE	Bell Rd	-143	No Injury	Not Reported	Head
3075270		4/20/2016 6:25:00 AM	07 BELL	RD	43rd Ave	0	No Injury	Motor Vehicle In Transport	Head
3075270		4/20/2016 6:25:00 AM	07 BELL	RD	43rd Ave	0	No Injury	Motor Vehicle In Transport	Head
3075270		4/20/2016 6:25:00 AM	07 BELL	RD	43rd Ave	0	No Injury	Motor Vehicle In	Head

- ➔ When the output is opened in Excel, the **Data** will be in the **Sheet 1** tab. The data includes all incident, unit and person table fields.
- ➔ Rename the **Sheet 1** tab as **All Data**.

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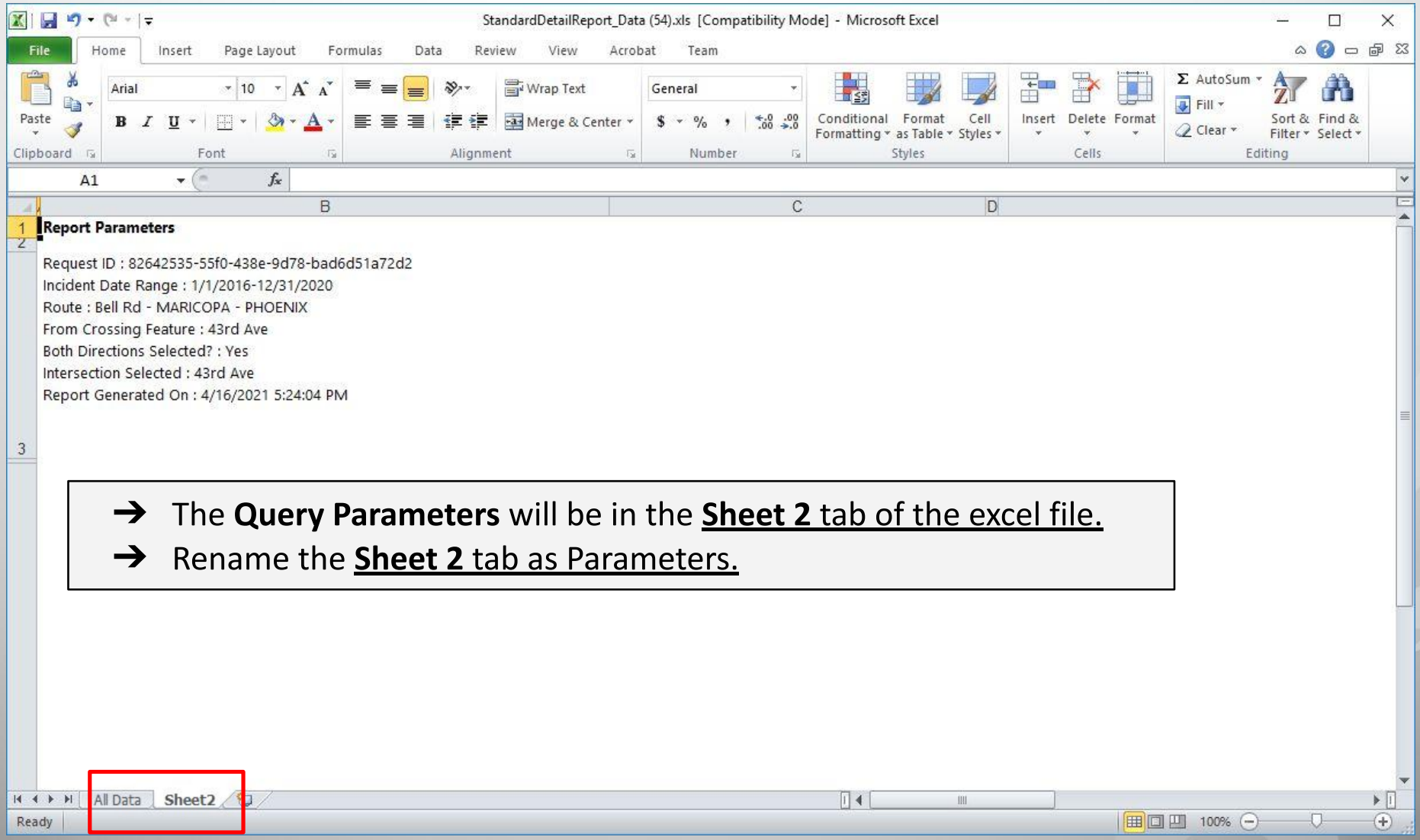

- ➔ The **Query Parameters** will be in the **Sheet 2** tab of the excel file.
- ➔ Rename the **Sheet 2** tab as Parameters.

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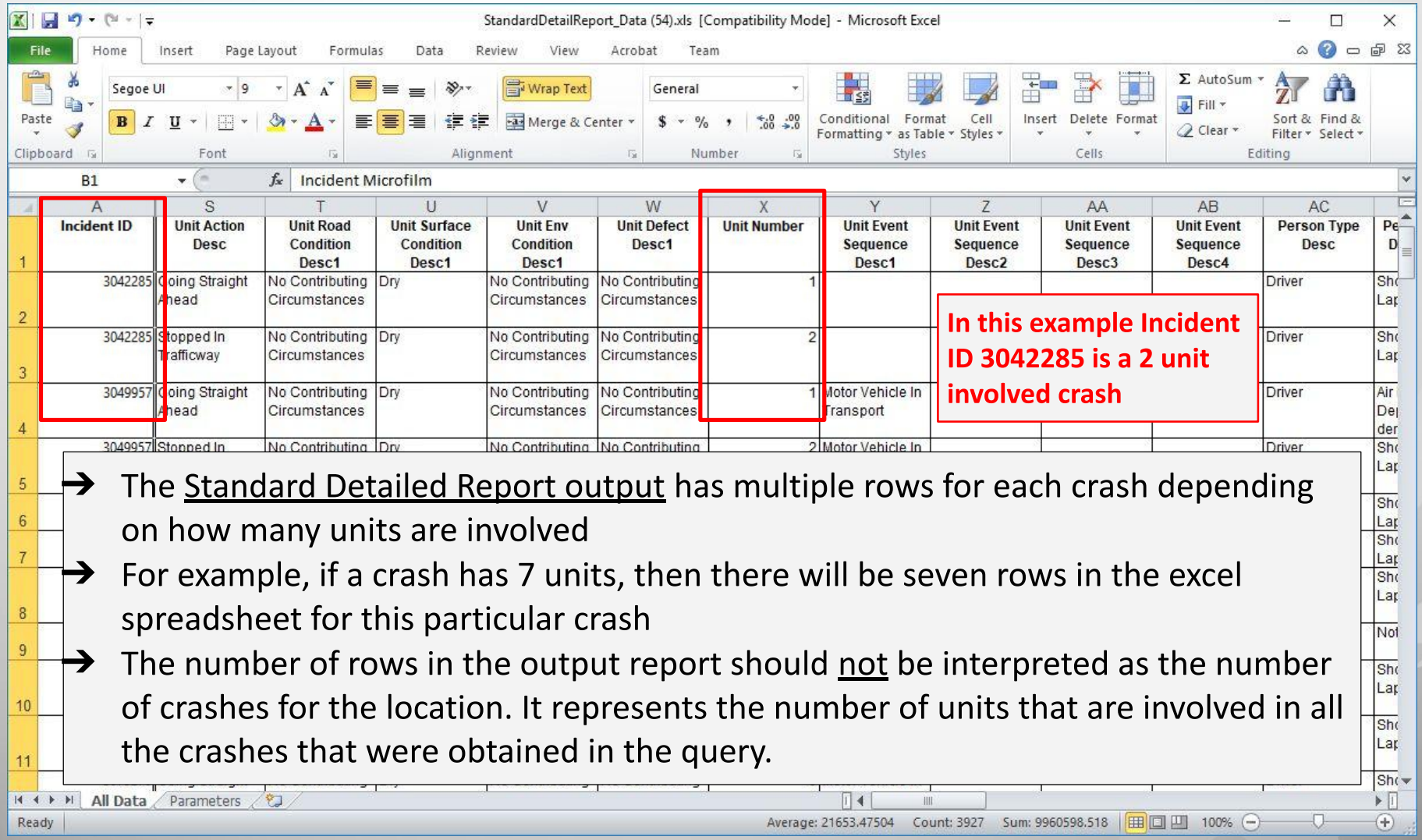

- The Standard Detailed Report output has multiple rows for each crash depending on how many units are involved
- For example, if a crash has 7 units, then there will be seven rows in the excel spreadsheet for this particular crash
- The number of rows in the output report should not be interpreted as the number of crashes for the location. It represents the number of units that are involved in all the crashes that were obtained in the query.

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- To obtain the number of crashes, the USER should filter on **Unit Number** for value **1** in the excel spreadsheet
- The **Unit Number** is located in column X
- Use the filter in excel to select **Unit Number = 1** only
- After the filter is selected, copy all data into a new tab in the excel spreadsheet and rename the tab as **Unit 1**
- The **Unit 1** tab in the excel spreadsheet is an easy way to find the number of crashes and also filter on other incident level criteria such as severity, year, crash type,light condition, first harmful event, etc. as need to study the crash.

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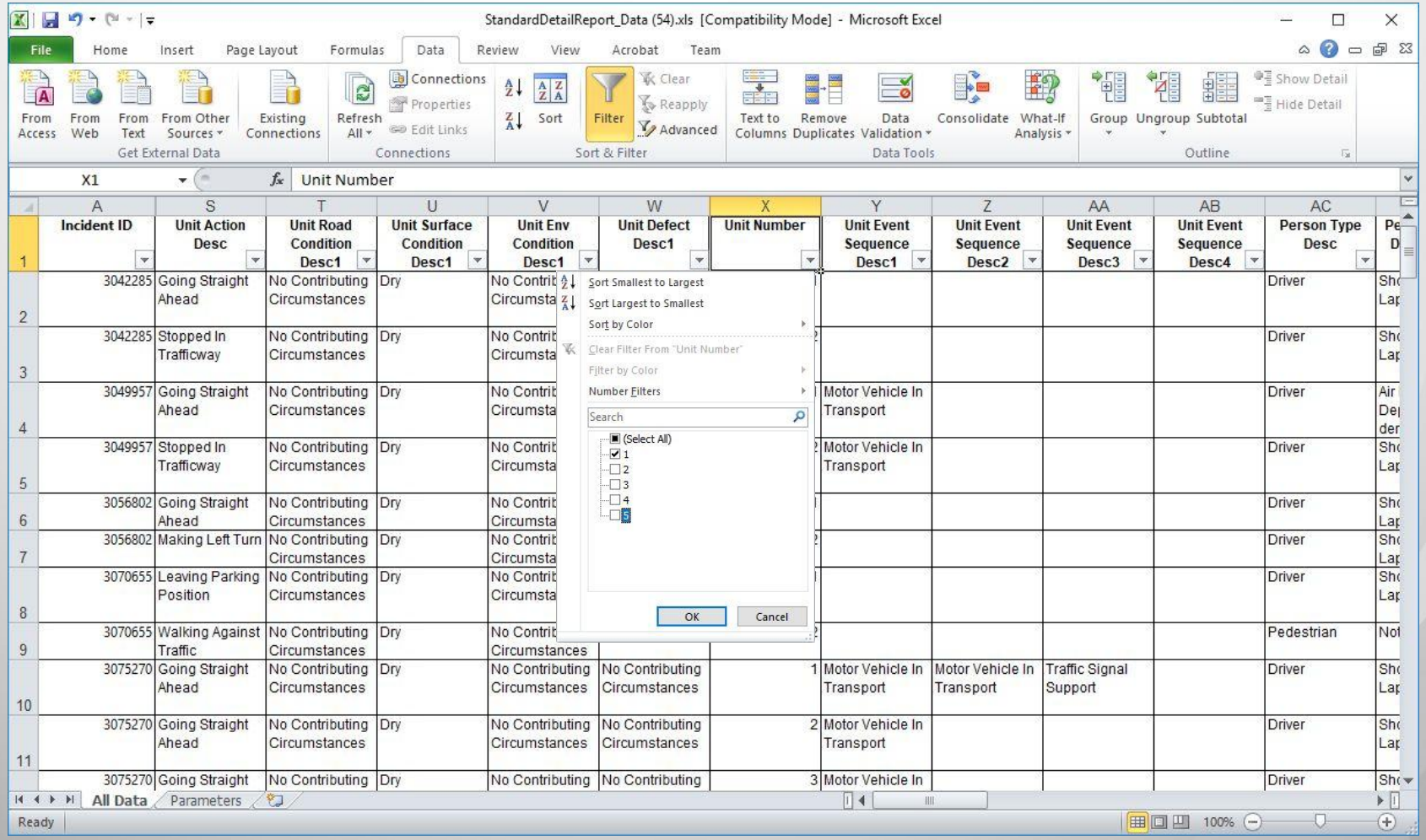

Incident ID	Unit Action Desc	Unit Road Condition Desc1	Unit Surface Condition Desc1	Unit Env Condition Desc1	Unit Defect Desc1	Unit Number	Unit Event Sequence Desc1	Unit Event Sequence Desc2	Unit Event Sequence Desc3	Unit Event Sequence Desc4	Person Type Desc
3042285	Going Straight Ahead	No Contributing Circumstances	Dry	No Contrit Circumsta							Driver
3042285	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contrit Circumsta							Driver
3049957	Going Straight Ahead	No Contributing Circumstances	Dry	No Contrit Circumsta			Motor Vehicle In Transport				Driver
3049957	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contrit Circumsta			Motor Vehicle In Transport				Driver
3056802	Going Straight Ahead	No Contributing Circumstances	Dry	No Contrit Circumsta							Driver
3056802	Making Left Turn	No Contributing Circumstances	Dry	No Contrit Circumsta							Driver
3070655	Leaving Parking Position	No Contributing Circumstances	Dry	No Contrit Circumsta							Driver
3070655	Walking Against Traffic	No Contributing Circumstances	Dry	No Contrit Circumstances							Pedestrian
3075270	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport	Motor Vehicle In Transport	Traffic Signal Support		Driver
3075270	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport				Driver
3075270	Going Straight	No Contributing	Dry	No Contributing	No Contributing	3	Motor Vehicle In				Driver

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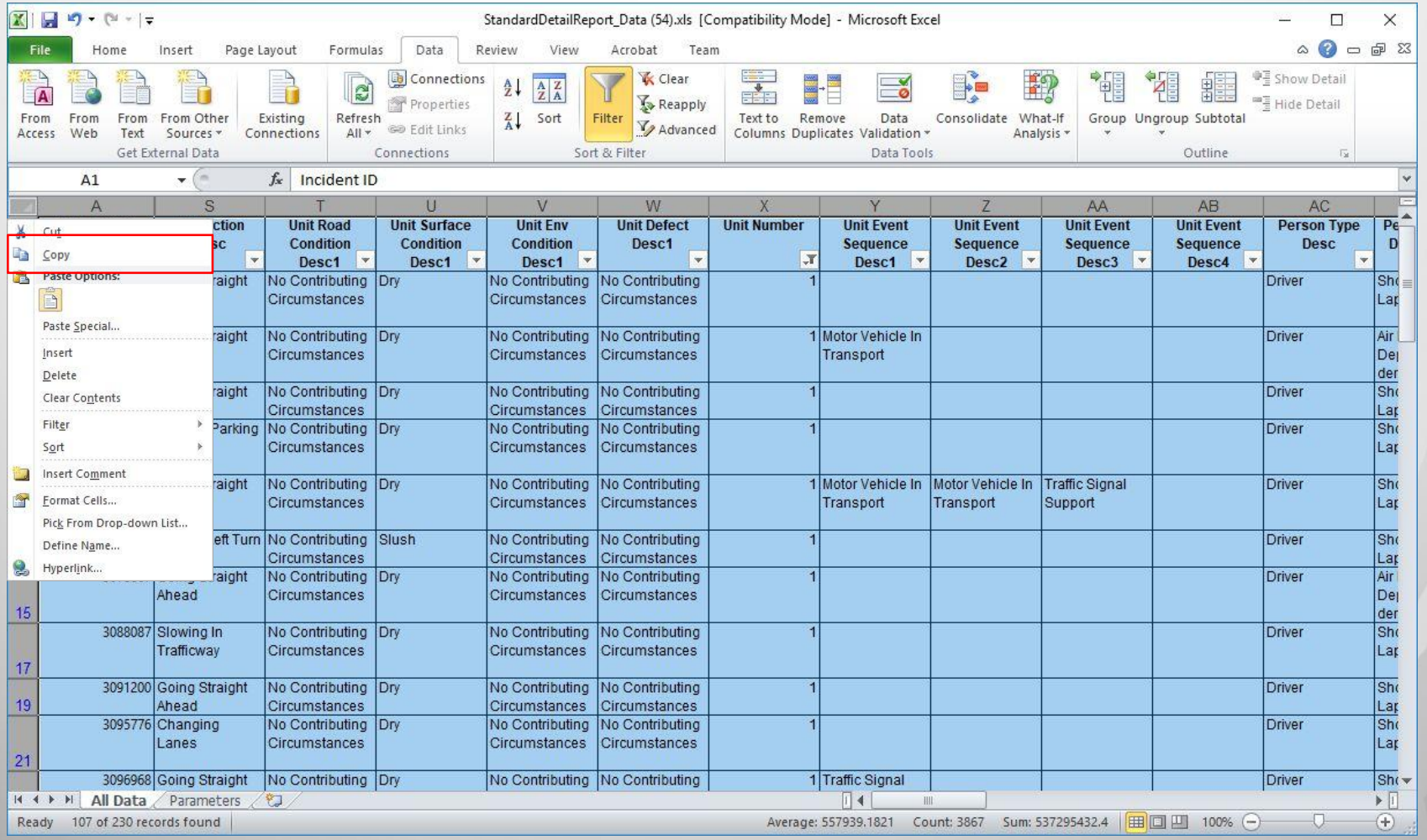

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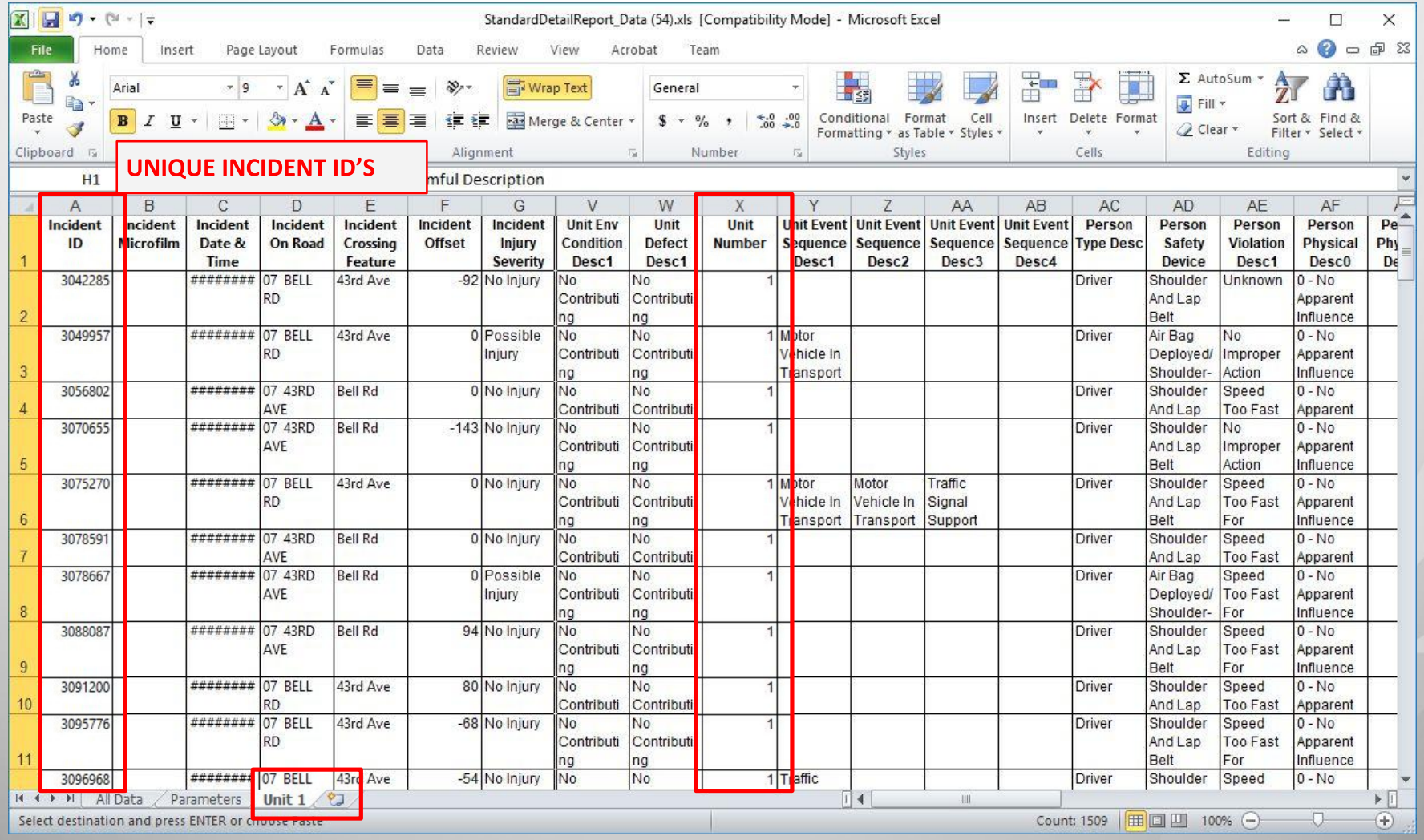

	A	B	C	D	E	F	G	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1	Incident ID	Incident Microfilm	Incident Date & Time	Incident On Road	Incident Crossing Feature	Incident Offset	Incident Injury Severity	Unit Env Condition Desc1	Unit Defect Desc1	Unit Number	Unit Event Sequence Desc1	Unit Event Sequence Desc2	Unit Event Sequence Desc3	Unit Event Sequence Desc4	Person Type Desc	Person Safety Device	Person Violation Desc1	Person Physical Desc0
2	3042285		########	07 BELL RD	43rd Ave	-92	No Injury	No Contributing	No Contributing	1					Driver	Shoulder And Lap Belt	Unknown	0 - No Apparent Influence
3	3049957		########	07 BELL RD	43rd Ave	0	Possible Injury	No Contributing	No Contributing	1	Motor Vehicle In Transport				Driver	Air Bag Deployed/ Shoulder-	No Improper Action	0 - No Apparent Influence
4	3056802		########	07 43RD AVE	Bell Rd	0	No Injury	No Contributi	No Contributi	1					Driver	Shoulder And Lap	Speed Too Fast	0 - No Apparent
5	3070655		########	07 43RD AVE	Bell Rd	-143	No Injury	No Contributing	No Contributing	1					Driver	Shoulder And Lap Belt	No Improper Action	0 - No Apparent Influence
6	3075270		########	07 BELL RD	43rd Ave	0	No Injury	No Contributing	No Contributing	1	Motor Vehicle In Transport	Motor Vehicle In Transport	Traffic Signal Support		Driver	Shoulder And Lap Belt	Speed Too Fast For	0 - No Apparent Influence
7	3078591		########	07 43RD AVE	Bell Rd	0	No Injury	No Contributi	No Contributi	1					Driver	Shoulder And Lap	Speed Too Fast	0 - No Apparent
8	3078667		########	07 43RD AVE	Bell Rd	0	Possible Injury	No Contributing	No Contributing	1					Driver	Air Bag Deployed/ Shoulder-	Speed Too Fast For	0 - No Apparent Influence
9	3088087		########	07 43RD AVE	Bell Rd	94	No Injury	No Contributing	No Contributing	1					Driver	Shoulder And Lap Belt	Speed Too Fast For	0 - No Apparent Influence
10	3091200		########	07 BELL RD	43rd Ave	80	No Injury	No Contributi	No Contributi	1					Driver	Shoulder And Lap	Speed Too Fast	0 - No Apparent
11	3095776		########	07 BELL RD	43rd Ave	-68	No Injury	No Contributing	No Contributing	1					Driver	Shoulder And Lap Belt	Speed Too Fast For	0 - No Apparent Influence
	3096968		########	07 BELL	43rd Ave	-54	No Injury	No	No	1	Traffic				Driver	Shoulder	Speed	0 - No

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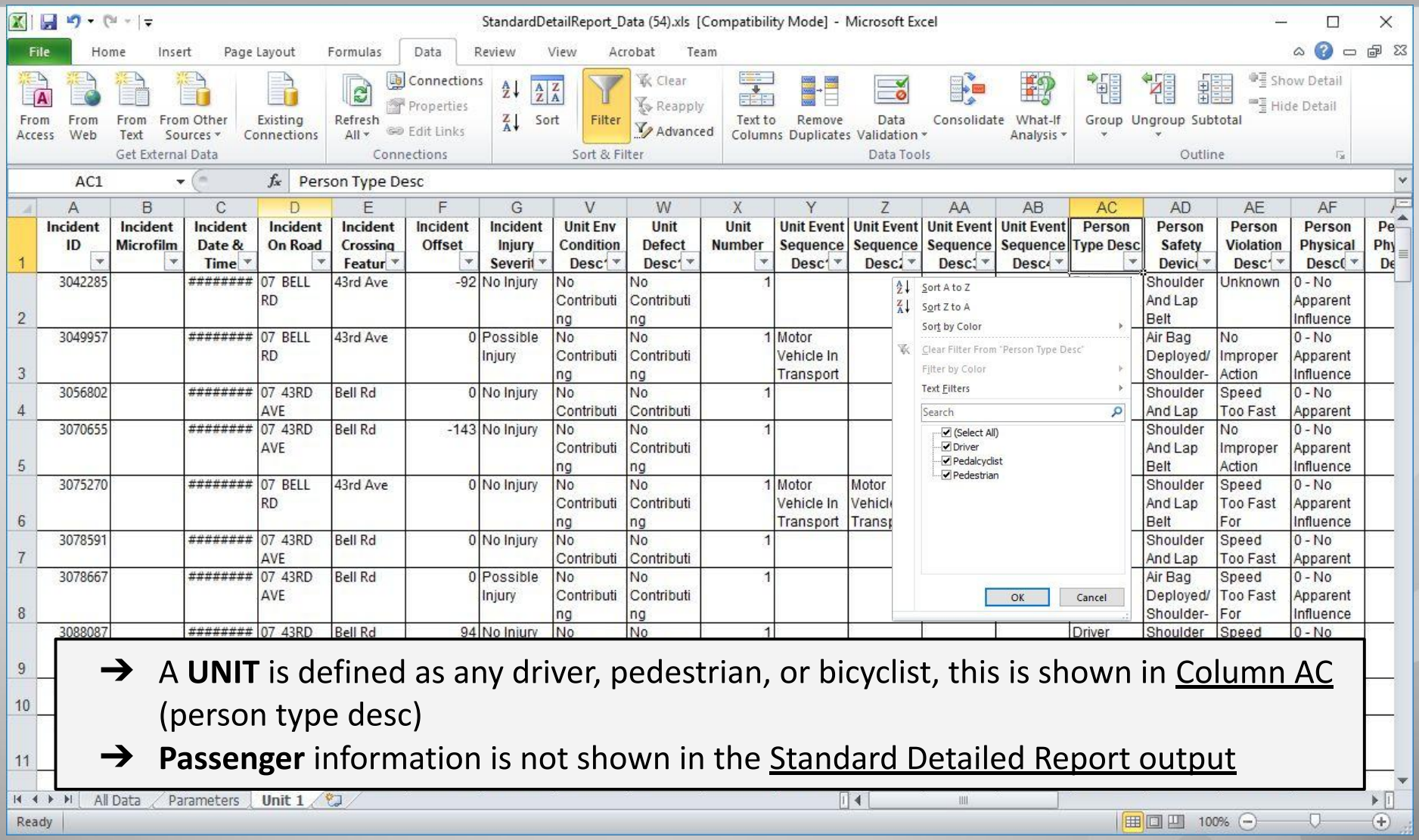
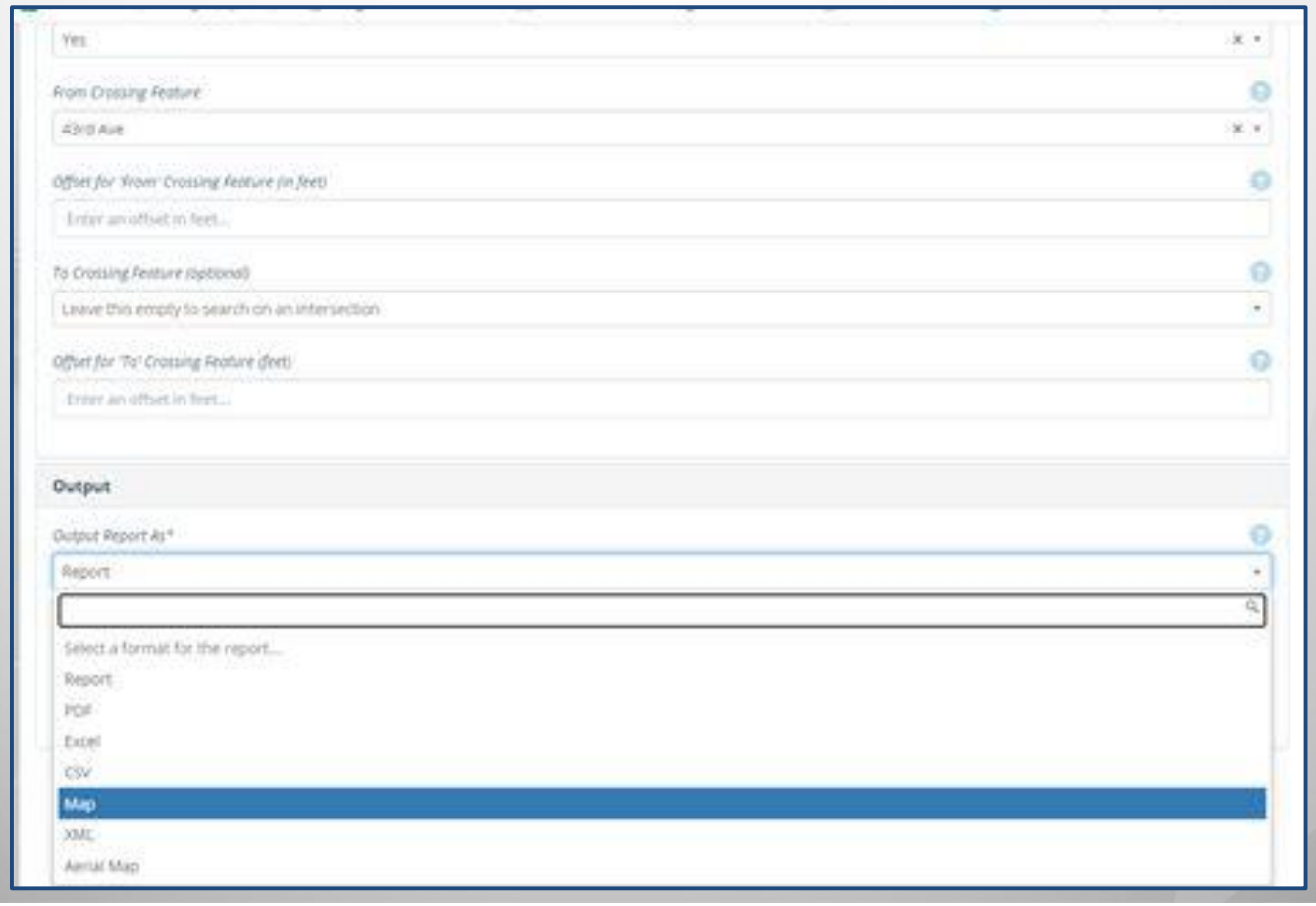


	A	B	C	D	E	F	G	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1	Incident ID	Incident Microfilm	Incident Date & Time	Incident On Road	Incident Crossing Featur	Incident Offset	Incident Injury Severit	Unit Env Condition Desc	Unit Defect Desc	Unit Number	Unit Event Sequence Desc	Unit Event Sequence Desc	Unit Event Sequence Desc	Unit Event Sequence Desc	Person Type Desc	Person Safety Devic	Person Violation Desc	Person Physical Desc
2	3042285		########	07 BELL RD	43rd Ave	-92	No Injury	No Contributing	No Contributing	1						Shoulder And Lap Belt	Unknown	0 - No Apparent Influence
3	3049957		########	07 BELL RD	43rd Ave	0	Possible Injury	No Contributing	No Contributing	1	Motor Vehicle In Transport					Air Bag Deployed/ Shoulder-	No Improper Action	0 - No Apparent Influence
4	3056802		########	07 43RD AVE	Bell Rd	0	No Injury	No Contributi	No Contributi	1						Shoulder And Lap	Speed Too Fast	0 - No Apparent
5	3070655		########	07 43RD AVE	Bell Rd	-143	No Injury	No Contributing	No Contributing	1						Shoulder And Lap Belt	No Improper Action	0 - No Apparent Influence
6	3075270		########	07 BELL RD	43rd Ave	0	No Injury	No Contributing	No Contributing	1	Motor Vehicle In Transport	Motor Vehicl Transp				Shoulder And Lap Belt	Speed Too Fast For	0 - No Apparent Influence
7	3078591		########	07 43RD AVE	Bell Rd	0	No Injury	No Contributi	No Contributi	1						Shoulder And Lap	Speed Too Fast	0 - No Apparent
8	3078667		########	07 43RD AVE	Bell Rd	0	Possible Injury	No Contributing	No Contributing	1						Air Bag Deployed/ Shoulder-	Speed Too Fast For	0 - No Apparent Influence
9	3088087		########	07 43RD	Bell Rd	94	No Injury	No	No	1					Driver	Shoulder	Speed	0 - No

- ➔ A **UNIT** is defined as any driver, pedestrian, or bicyclist, this is shown in <u>Column AC</u> (person type desc)
- ➔ **Passenger** information is not shown in the <u>Standard Detailed Report output</u>

Generate Crash Map

➔ **Output Report As** field select the **MAP or Aerial Map** as output type and then clicking on the **View Report** button



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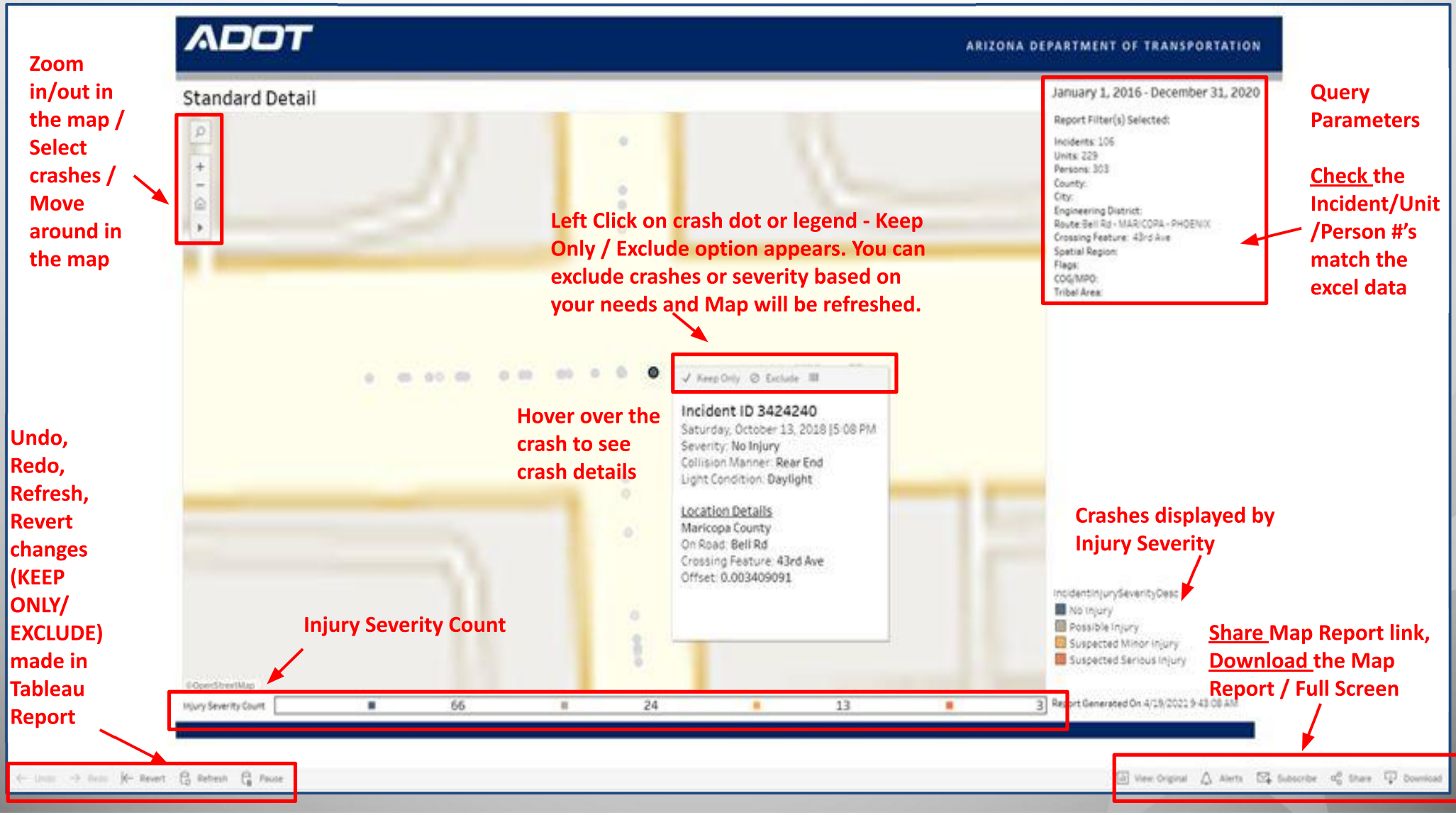

Zoom in/out in the map / Select crashes / Move around in the map

Left Click on crash dot or legend - Keep Only / Exclude option appears. You can exclude crashes or severity based on your needs and Map will be refreshed.

Query Parameters

Check the Incident/Unit /Person #'s match the excel data

Hover over the crash to see crash details

Undo, Redo, Refresh, Revert changes (KEEP ONLY/ EXCLUDE) made in Tableau Report

Injury Severity Count

Crashes displayed by Injury Severity

Share Map Report link, Download the Map Report / Full Screen

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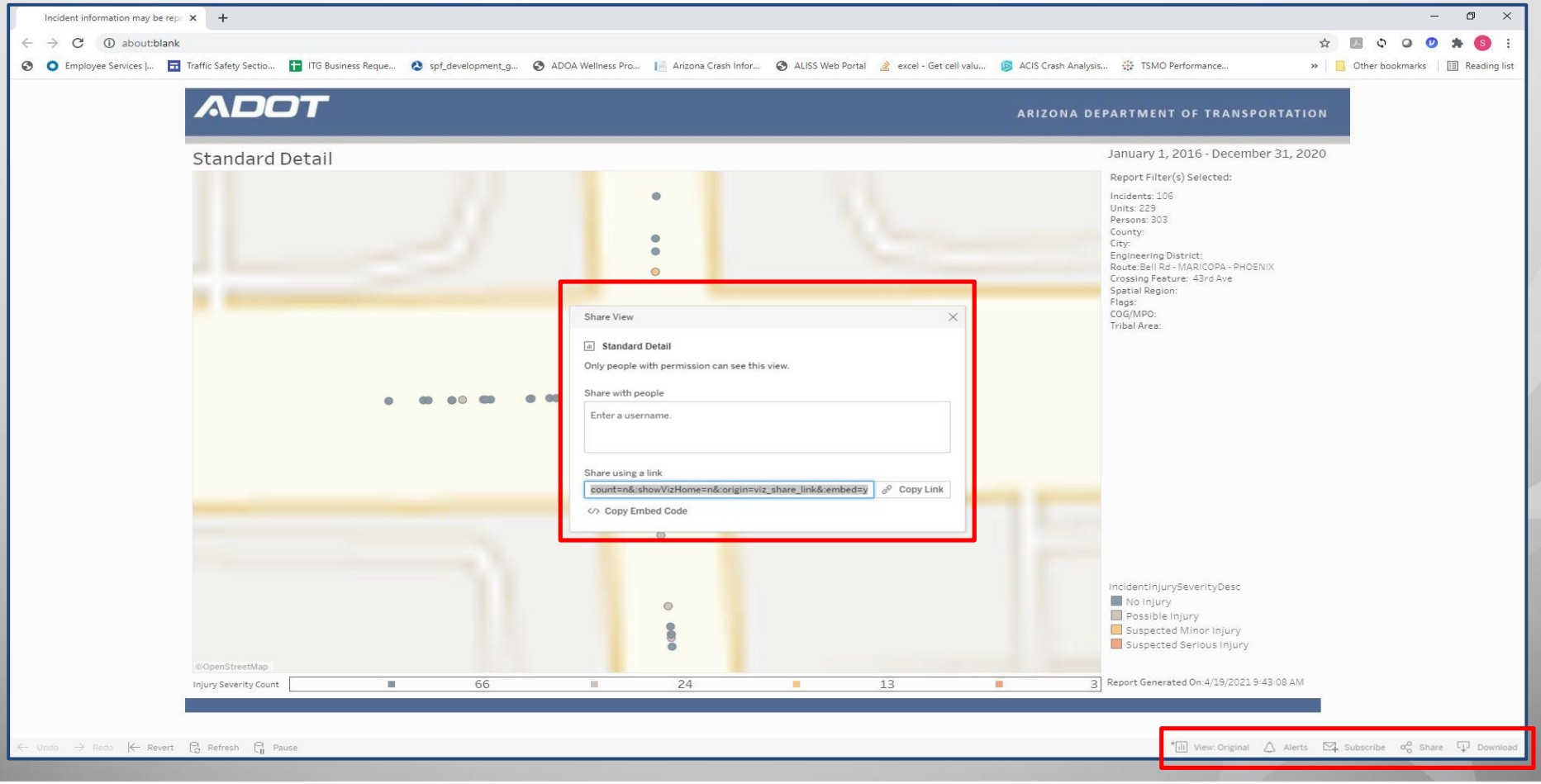
➔ **Click on Share button on the bottom right corner. Copy the link and paste in the excel data sheet for future reference. The link will open the same map report. The link works only in ADOT network.**



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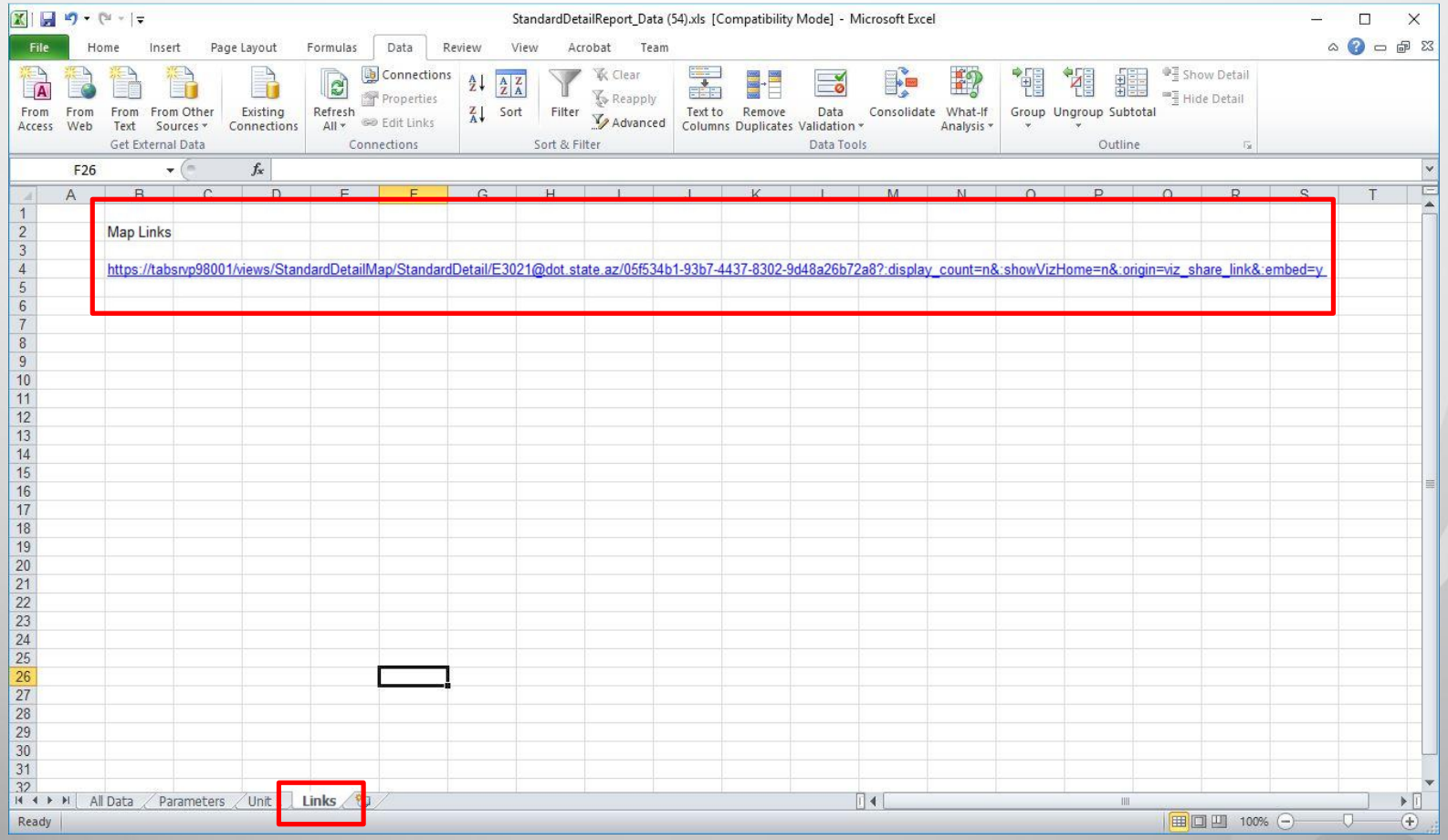
- ➔ **Create a tab and name it <u>Links</u>**
- ➔ **<u>Paste</u> the copied map link path in the excel as shown below**
- ➔ **<u>Save</u> the excel file**



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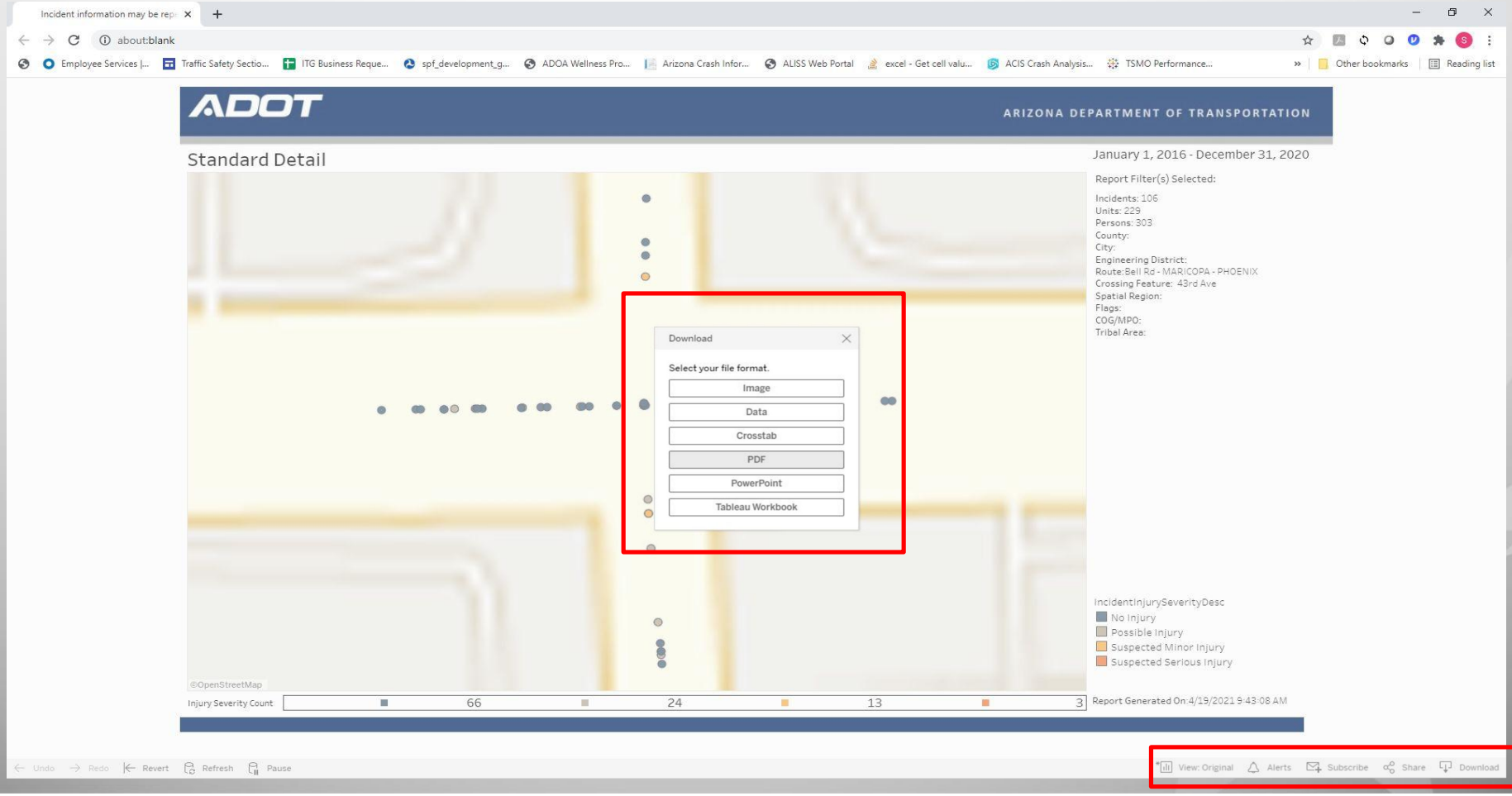
➔ **Click on DOWNLOAD button on the bottom right corner. Create a the map report as PDF or image per your needs. Save this file in the same folder where you saved your excel crash data.**



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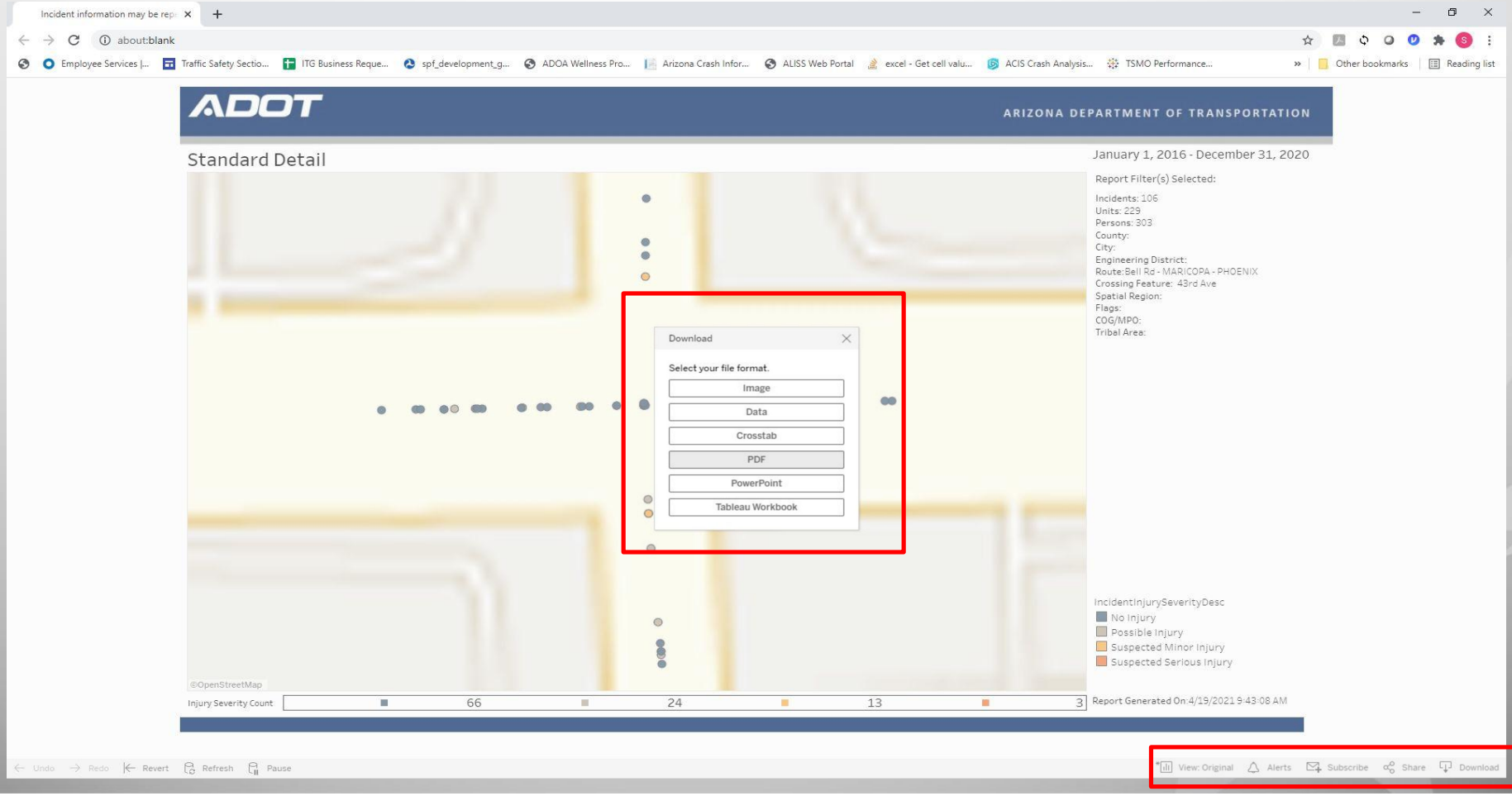
➔ **Click on DOWNLOAD button on the bottom right corner. Create a the map report as PDF or image per your needs. Save this file in the same folder where you saved your excel crash data.**



Crash Analysis using ACIS

Generate Crash Charts / Tables

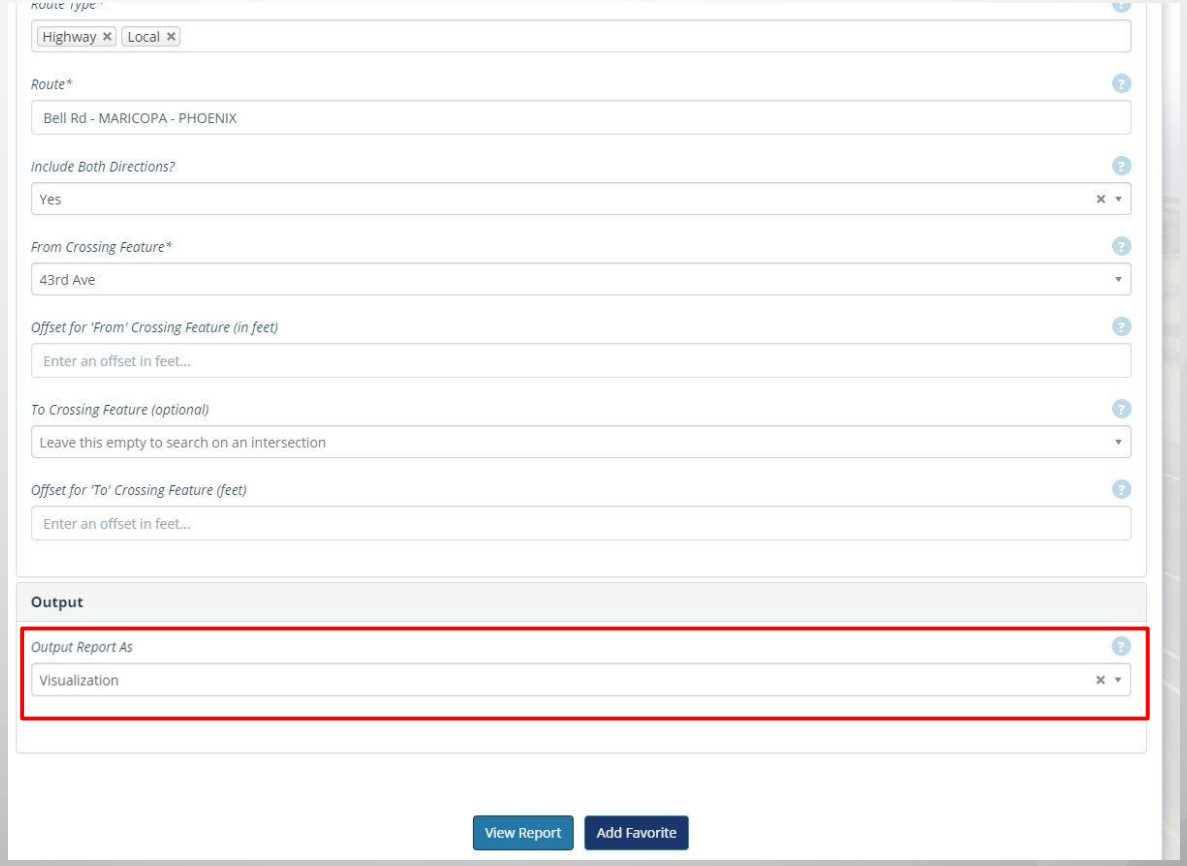
➔ **Select Site Summary Graphs ACIS Report**

Crash Analysis using ACIS

ADOT

ARIZONA DEPARTMENT OF TRANSPORTATION

- **Enter the query parameters. The parameters should be same as the Standard Detail Report you ran for the same project site.**
- **Output Report As** field select the **Visualization** as output type and then clicking on the **View Report** button



Crash Analysis using ACIS

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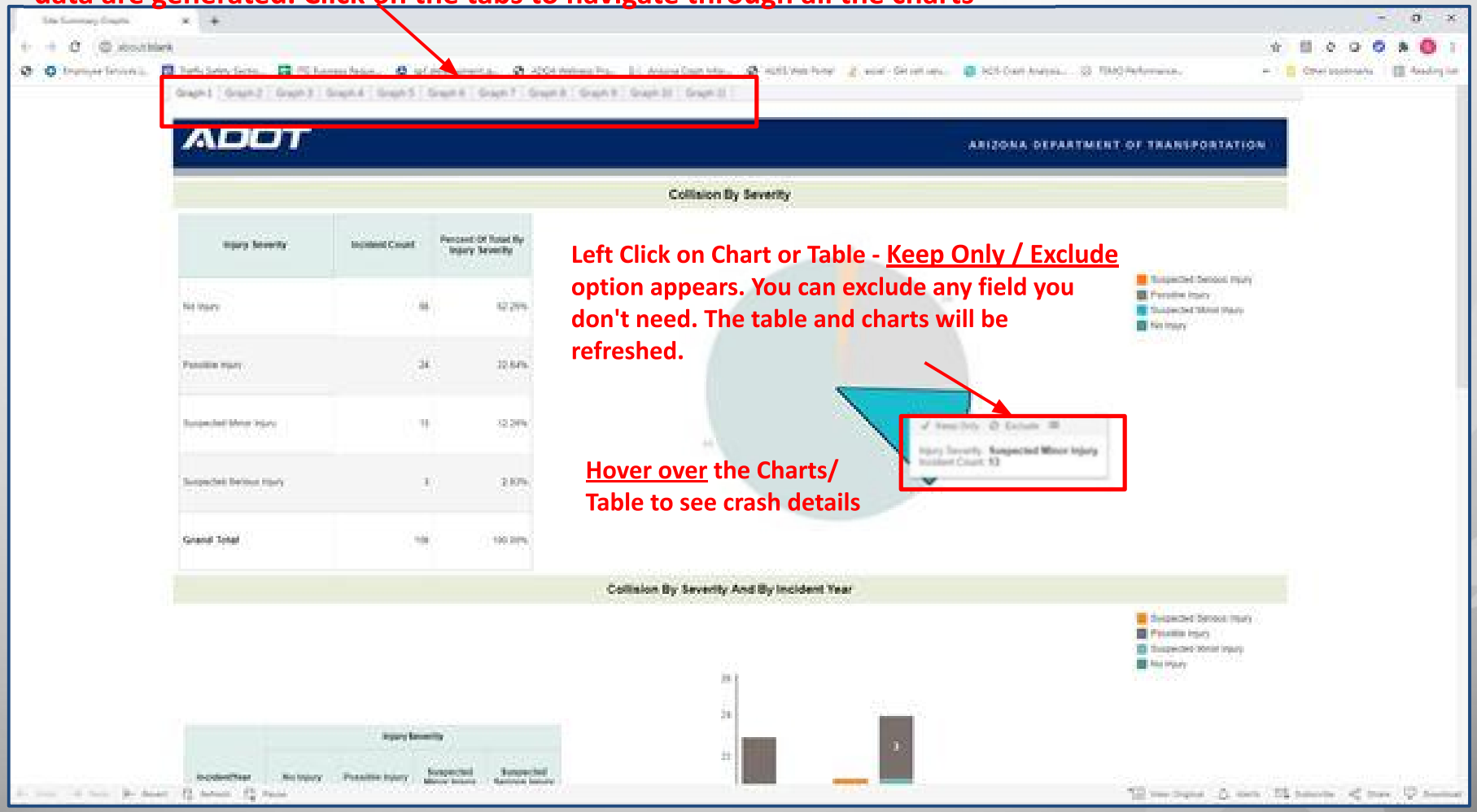
11 Tabs of Graphs/ Charts summarizing the crashes (incident/unit/person) data are generated. Click on the tabs to navigate through all the charts



Crash Analysis using ACIS

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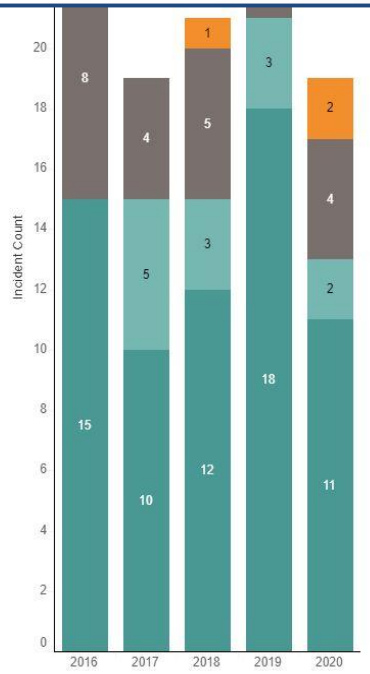
IncidentYear	No Injury	Possible Injury	Suspected Minor Injury	Suspected Serious Injury
2016	15	8		
2017	10	4	5	
2018	12	5	3	1
2019	18	3	3	
2020	11	4	2	2
Grand Total	66	24	13	3



Report Fiter(s) Selected:
January 1, 2016 - December 31, 2020

Start Date :January 1, 2016
End Date :December 31, 2020
County :Null
City :Null
Route :Bell Rd - MARICOPA - PHOENIX
Crossing Feature :43rd Ave - Null
Flags :Null
Engineering District: Null
COG/MPO: Null
Tribal Area: Null

Query Parameters

Report Summary

Total Incidents: 106
Total Units: 229
Total Persons: 303

Check the Incident/Unit/Person #'s match the excel data

Share Map Report link, Download the Map Report / Full Screen

Undo Redo Revert Refresh Pause

Undo, Redo, Refresh, Revert changes (KEEP ONLY/ EXCLUDE) made in Tableau Report

View: Original Alerts Subscribe Share Download

Crash Analysis using ACIS

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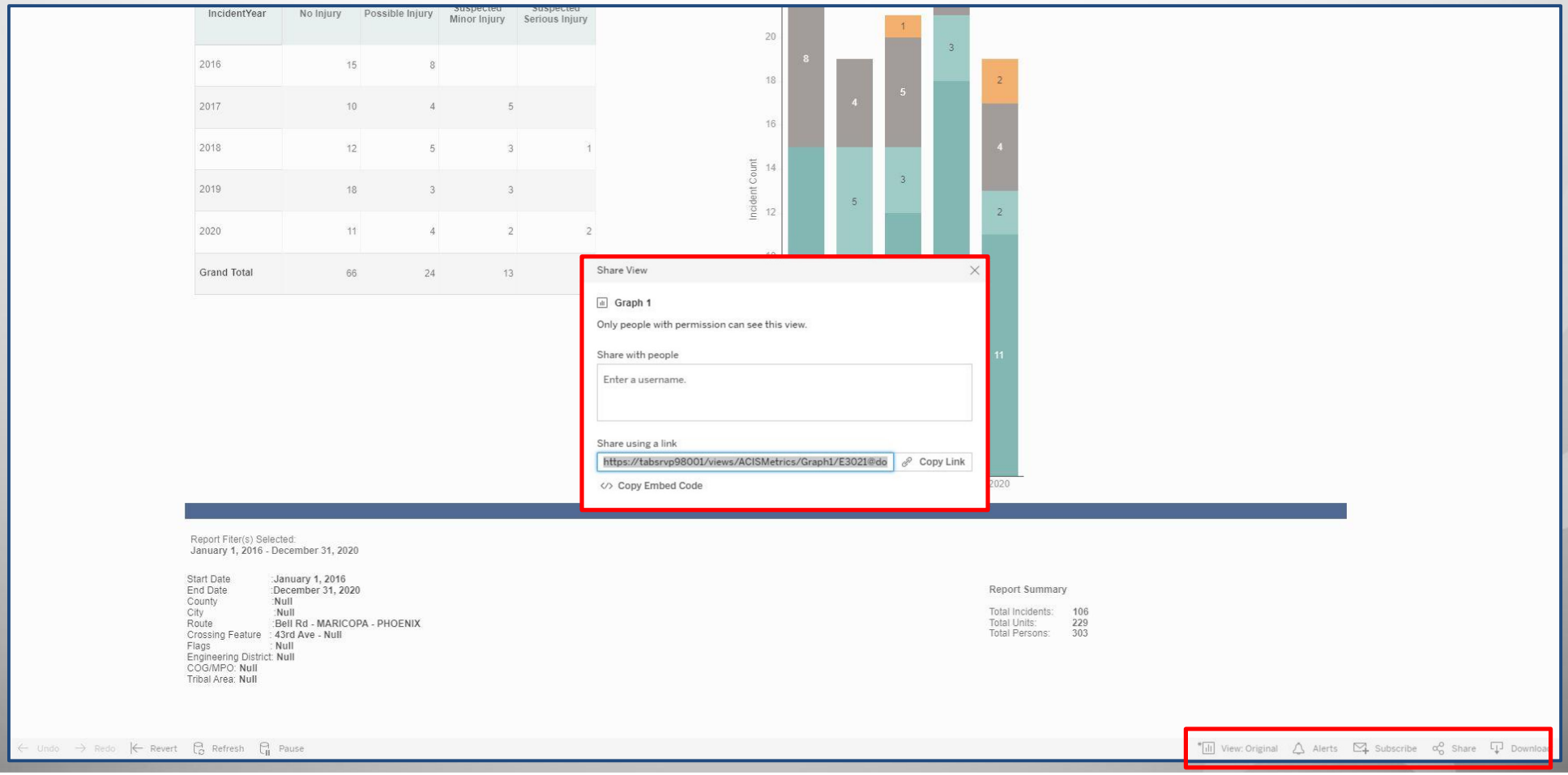
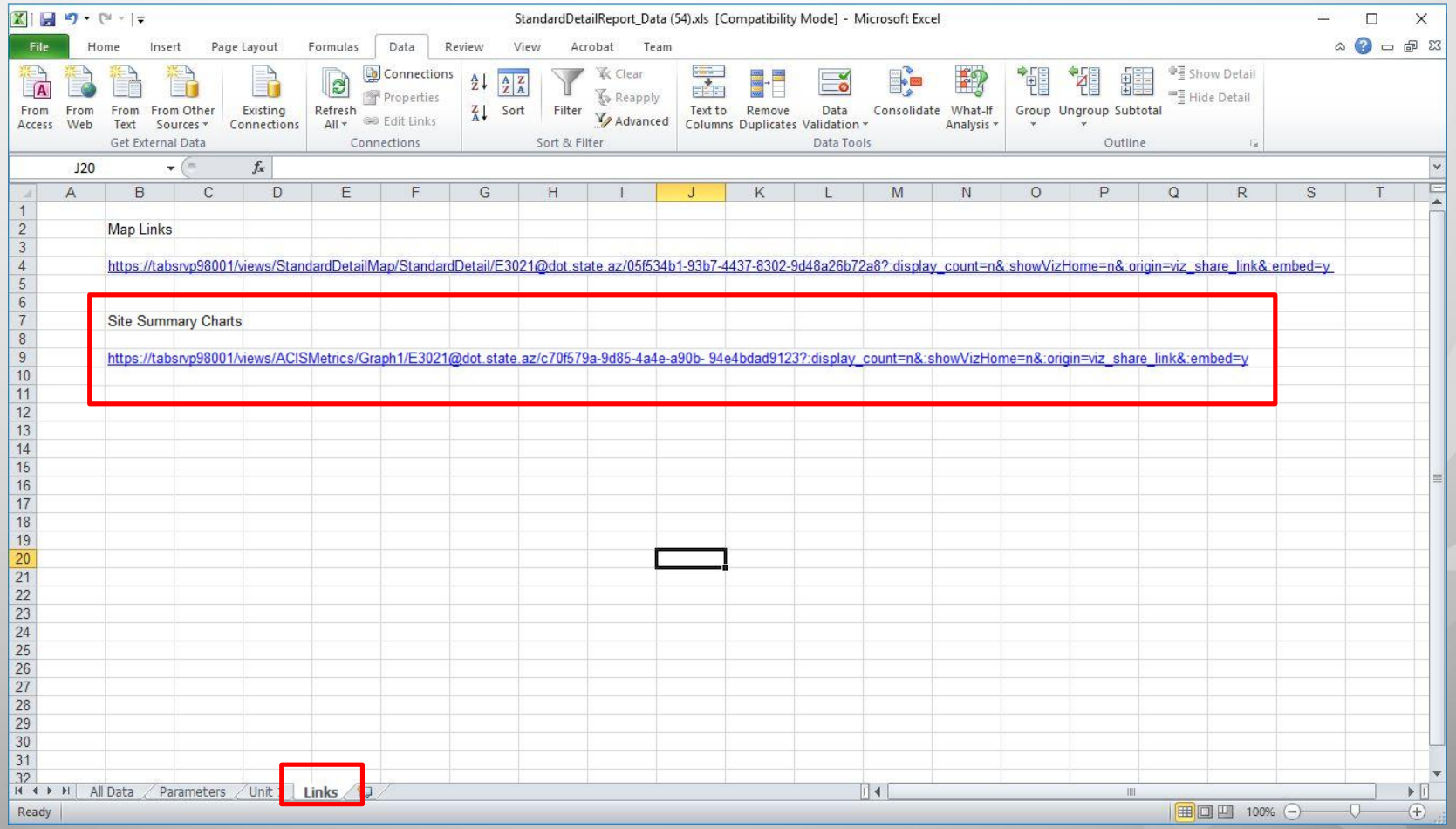
➔ **Click on Share button on the bottom right corner. Copy the link and paste in the excel data sheet for future reference. The link will open the same Site Summary Graphs report. The link works only in ADOT network.**



Crash Analysis using ACIS

- ➔ **In the <u>Links</u> tab of the excel data file <u>PASTE</u> the copied Site Summary Graphs link path in the excel as shown below**
- ➔ **<u>Save</u> the excel file**



Crash Analysis using ACIS

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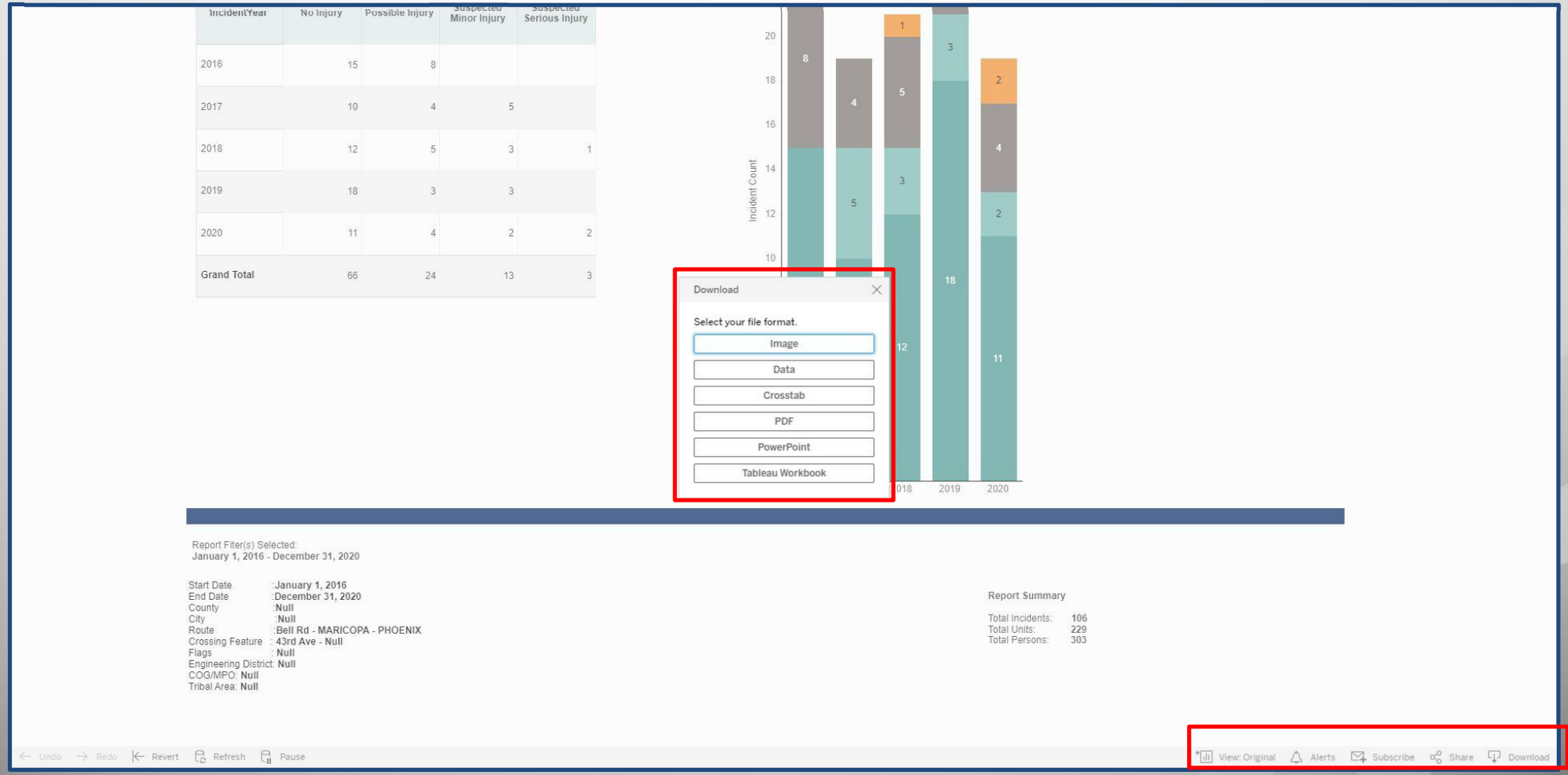
➔ **Click on DOWNLOAD button on the bottom right corner. Create a the map report as PDF or image per your needs. Save this file in the same folder where you saved your excel crash data.**



Crash Analysis using ACIS

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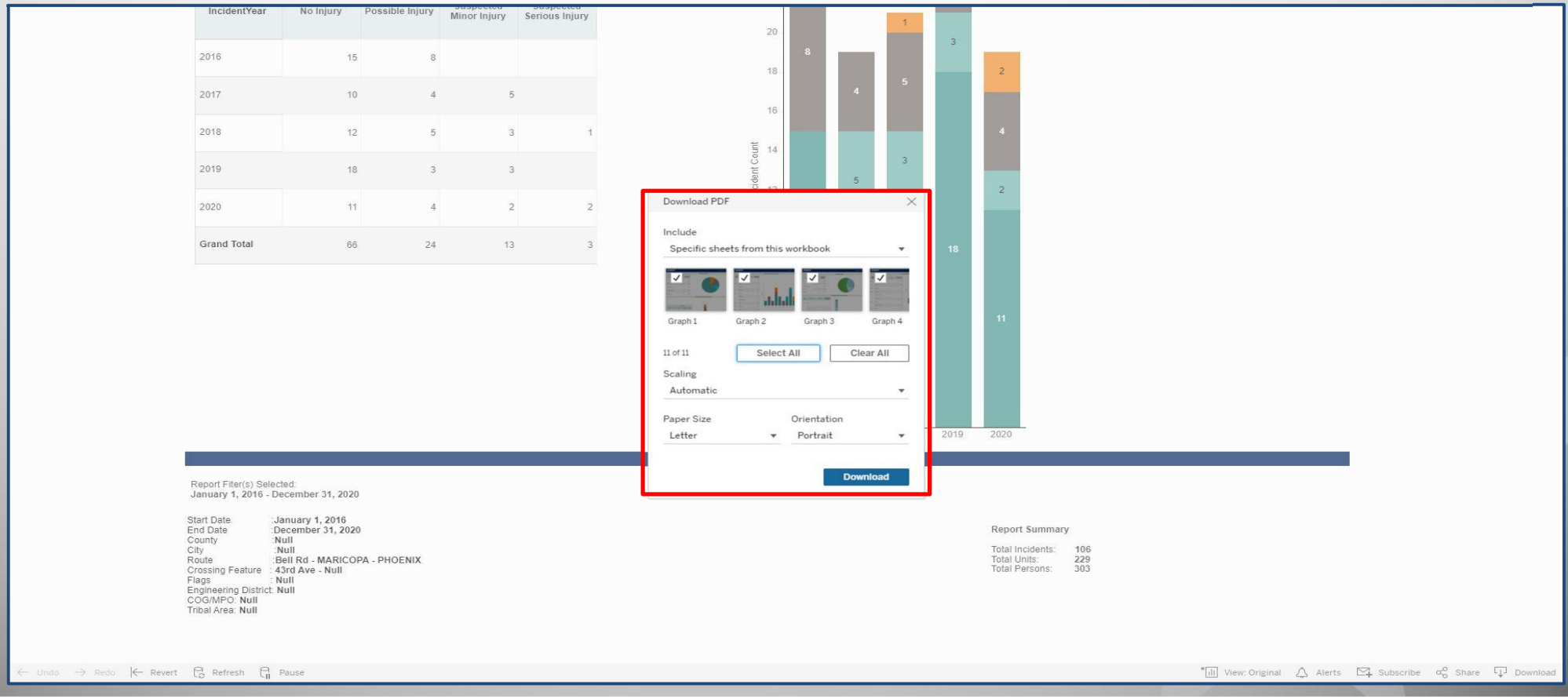
- ➔ **Select “Specific Sheets from this workbook” option in Include field.**
- ➔ **Click on <u>SELECT ALL</u>. This will select all the 11 tabs.**
- ➔ **<u>Create</u> a the map report as PDF or Image per your needs. <u>Save</u> this file in the same folder where you saved your excel crash data.**

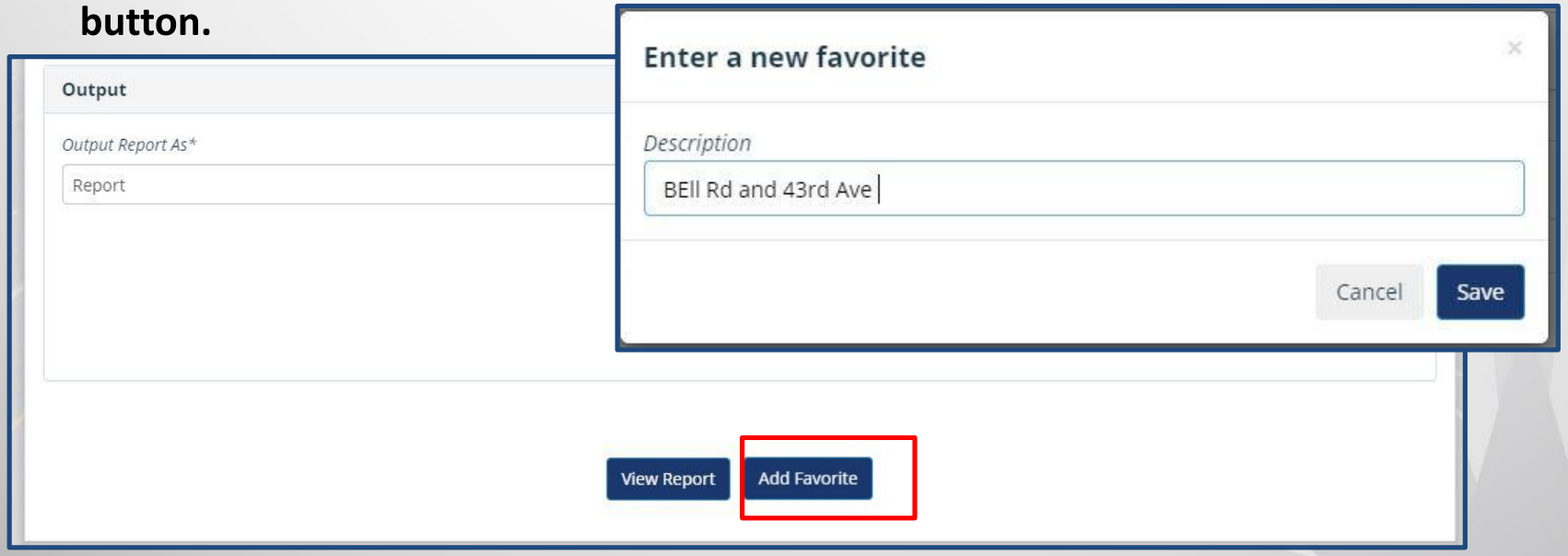


Best Practices in Downloading, Saving Crash Data from ACIS

- ➔ Following the above described steps will help the user to download crash data, crash location maps, summary charts / tables needed to understand the crash location, patterns and understand the safety concerns.
- ➔ Saving the files with Project Location name and Query date will help locate the files in future easily.
- ➔ Renaming the excel data Tabs. Creating new tabs, naming them and adding UNIT 1 data and links to Map and Site Summary Graphs will help retrieve the same reports without re-running the queries.
- ➔ CHECK the Query Parameters, Incident #, Unit # and Person # are same between Excel / Map and Site Summary Graph OUTPUTS.

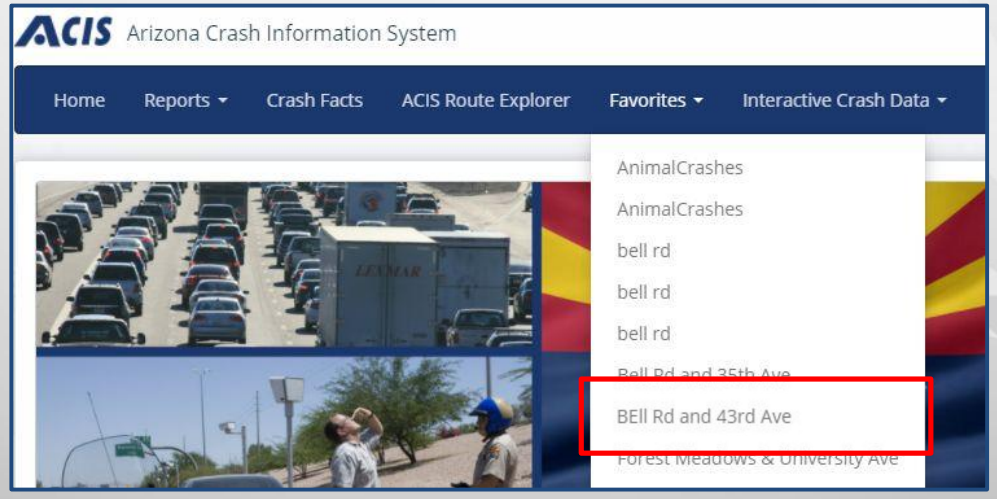
Best Practices in Downloading, Saving Crash Data from ACIS

➔ **If you are querying Crash Data for a BEFORE & AFTER study. Run the BEFORE query for the project site. Create FAVORITE by clicking the Favorite button at the bottom next to View Report button.**



Best Practices in Downloading, Saving Crash Data from ACIS BEFORE AND AFTER ANALYSIS

- ➔ When you are running AFTER query, go to Favorites and select on the project site.
- ➔ The query form will open with BEFORE saved query with all the parameters
- ➔ Change the CRASH PERIOD field to after period dates. Rerun the Standard Detail Report and Site Summary Queries.



Best Practices in Downloading, Saving Crash Data from ACIS

- ➔ Copy the web brower link for the BEFORE query Favorite saved.
- ➔ Paste in the Parameter Tab of the excel data for future use. This will help reduce Query Form errors if another user is querying the after data.
- ➔ Save the excel file